

Perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospitals of North West Province

T. Denge

Student number

32537158



<http://orcid.org/0000-0002-9536-3917>

Research proposal for the Dissertation submitted in *partial* fulfillment of the requirements for the degree *Master of Nursing Science* in NuMIQ Research Focus Area of the Faculty of Health Sciences of the North-West University

Supervisor: Prof. Mahlasela Rakhudu

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Declaration

I, Denge Takalani, declare that all the information included in this proposal entitled, **“PERCEPTIONS OF NURSES ON OCCUPATIONAL HAZARDS AND SAFETY PRACTICES IN DITSOBOTLA PUBLIC HOSPITALS OF NORTH WEST PROVINCE”** is my own work, and all sources quoted have been indicated, and acknowledged by means of complete references. This proposal has not been submitted before for any other degree at any other institution.

Signature

T Denge

Date

____/____/____

30/11/2020

Acknowledgements

Thanks to God for giving me strength and courage to complete the study. I would like to thank the following people for their contribution towards the success of the study:

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Abstract

Background: By profession, nurses are one of healthcare workers who attend patients through a variety of preventive and curative services. However, while their attention is on providing care, they are vulnerable to hazards that affect their health and wellbeing. This is very common in public hospitals, more especially in developing countries where health service delivery is poor with minimal safety practices against exposures to infectious agents. Nurses exposed to various forms of occupational hazards while doing their work.

Aim: The aim of this study was to explore perceptions of all categories of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province.

Methodology: The study used qualitative exploratory and descriptive design. The population of this study was nurses of all categories working in different units within Ditsobotla public hospitals of North West Province. Purposive sampling was applied as data was collected from a minimum of 15 participants. Data collected using Semi-structured focus group discussions and recorded by audiotape and Donabedian framework used to assist the researcher in data collection and analysis. Four (4) focus group discussions were conducted wherein first group consisted of three (3) participants and last three groups consisted of four (4) participants. Donabedian framework used to collect the data. Ethical approval was obtained from North West University (HREC) and permission to conduct the study from North West Department of Health. The HREC's standards of practice guaranteed participants' rights to informed consent, confidentiality and privacy.

The researcher analysed the data using the thematic framework proposed by Creswell. Verbatim quotes reported the findings, supported through literature control. Guba's model of assessment of trustworthiness ensured quality of data.

Section B, which is divided into two parts, presents the findings and discussion of the present study. Part 1 is an integrative literature review of the study, where Donabedian conceptual framework used. Part 2 gives the results of the study, presented in the form of themes and sub-theme.

Findings: The study revealed health hazards namely; infections such as HIV, hepatitis B and C virus, Covid19, musculoskeletal injuries, needle stick injuries, physical and verbal abuse back in the workplace. Nurses also reported fatigue, loss of sleep due to stress, anxiety and persistent tiredness.

Conclusion: The study concluded that nurses at Ditsobotla public hospitals perceived different occupational hazards in the workplace including; physical, chemical, biological and psychosocial health hazards.

Recommendation: There is a need for risk reduction and aversion through hazard mitigation strategies, proper job placement and safety education. Short courses should be available to inform nurses and improve their skills in being innovative in the implementation of Occupational Health and Safety Act (OHSA) for compliance in all nursing units.

Keywords: Nurse; occupational hazards; perceptions; public hospitals; safety practice

List of abbreviation

AIDS	Acquired Immune Deficiency Syndrome
ANAHSS	American Nurses Association Health and Safety Survey
ARV	Antiretroviral
CEO	Chief Executive Officer
Covid-19	Coronavirus Disease
CDCP	Centre for Disease Control and Prevention
CHBH	Chris Hani Baragwaneth Hospital
DoH	Department of Health
EN's	Enrolled Nurses
ENA's	Enrolled Nursing Auxiliary's
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
GDLR	General De La Rey
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HCWs	Healthcare Workers
HIV	Human Immunodeficiency Virus
HR	Human Resource
HREC	Health Research Ethics Committee
ILO	International Labour Organisation
NSIs	Needle Stick Injuries

OH	Occupational Health
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
SANC	South African Nursing Council
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus-2
SPSS	Statistics Package for Social Science
RN's	Registered Nurses
TB	Tuberculosis
WHO	World Health Organization

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SECTION 1: OVERVIEW OF THE STUDY

1 Introduction

Health workers are the bedrock for sustainable social and economic development of any given society at both local and global level, and they play a vital role in the functioning of a given health system. The majority of healthcare workers provide healthcare services to the consumer, while other staff carry out administrative duties; the unfortunate part is, these workers, while carrying out their duties, are exposed to a wide range of harmful and hazardous substances that could cause illness and injuries (Adamu & Abdulahi, 2017:1). According to Rawlance, Ndejjo, Buregyeya, & Williams (2015:1), nurses operate in an environment considered as one of the most hazardous occupational settings in addition to the usual workplace related exposures. The aim of this study was to explore perceptions of all categories of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province.

2 Background and rationale of study

The healthcare environment is characterised by multidimensional and complex changes that make nurses prone to occupational hazards as they provide direct patient care (Elewa & Guindy, 2017:12). This is determined by political, socioeconomic, cultural, environmental and nutritional factors. At the forefront of these healthcare environments are nurses, regarded as the backbone of the healthcare systems. Nurses are important components of the healthcare system because they play an important role in clinical services, thereby providing primary care in rural and remote areas (Li & Lambert, 2014:12). The environment that nurses operate in may influence their well-being and if not conducive, can cause serious injury to their health (Ramsay, 2015:18). Environmental factors that affect nurses' health must be taken into consideration in order to prevent occupational risk.

According to World Health Organization (WHO), occupational hazard is a dangerous circumstance, substance, human activity or condition that may cause loss of life, injury, disease or any other health impact at the workplace (WHO, 2020:6). This includes: biological, chemical, physical and psychosocial risks. While nurses fulfilling their duties there are exposed to different occupational hazards which harmfully affect their health and wellbeing and if hospitals do not

have a supportive working environment, employees can develop health problems or sustain injuries. Therefore, nurses' perceptions regarding occupational hazards need to be explored.

The World Health Organization (WHO) estimates the global burden of diseases from occupational exposure to be 40% of the hepatitis B and C infections and 2.5% of the Human Immunodeficiency Virus (HIV) infections among healthcare workers is attributable to exposure in the practice environment (WHO, 2012:34). The findings by WHO (2012:34) suggest that nurses are potentially exposed to these diseases as a result of percutaneous injury by sharps object and mucocutaneous exposure incident with contact of a mucous membrane or non-intact skin with blood, tissue or other bodily fluids. It is therefore important to explore perceptions of all categories of nurses on occupational hazards and safety practices in the hospital settings. Activities such as disinfecting, dusting or working in contaminated area exposes nurses to biological hazards in the practice environment (Sacadura-Lettie & Sousa-Uva, 2015:13).

Health care workers are at a high risk of needle stick injuries (NSIs) and blood-borne pathogens as they perform their clinical activities (Rawlance, Ndejjo, Buregyeya, & Williams, 2015:9). Through sharp injuries and contact with blood and other bodily fluids, nurses are exposed to blood-borne infections by pathogens such as HIV, Hepatitis B and Hepatitis C viruses (Rawlance *et al.* 2015:9). In developing countries where the prevalence of HIV infected patients is very high, recorded the highest frequency of needle stick injuries too. Additionally, Hossein (2015:11) concluded that nurses showed high incidence of NSIs because they do not follow standard precaution during immunisation of children. In total, nearly 1 000 000 workers suffer from occupational accident and every year 2,4 000 000 people die as a result of unsafe or unhealthy practice environment and this situation caused loss of 4% of global Gross Domestic Product (GDP) (ILO, 2015:12).

The world is currently confronted with a major threat to humankind in the form of the coronavirus disease (Covid-19), which emerged in Wuhan, China (WHO, 2019:2). Globally, coronavirus cases have passed 1, 2 million, with deaths topping 66, 000 and 253, 864 recoveries. As of April 20, 2020, 14 068 people have been infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in Africa, of whom 3158 (22.4%) are in South Africa (WHO 2020:12). The transmissibility of SARS-CoV-2, combined with the scarcity of crucial health equipment and the challenges of implementing widespread physical distancing and case isolation, poses a grave threat to the continent (WHO, 2019). Protecting South Africa is essential, not only for the continent itself, but also to safeguard the rest of the world. This

unprecedented pandemic has led to illness, death and economic destruction. Nurses are the only profession that spends a considerable amount of time in providing one-on-one care to COVID-19 patients.

The health workers as individual are holistic being with physical, emotional, social, mental and psychological aspects which could be affected when exposed to hazards. Occupational safety and health aimed at promotion and maintenance of optimum degree of physical, mental, psychological and social wellbeing of workers in any given institution (OHS, 2016:111). Every health facility had approach to safety and health towards accident and disease prevention in workplace and is shown in the supervisory force, safety regulation enforcement and hazards mitigations strategies that put in place. In spite of global, national, regional and local initiatives to develop a skilled health workforce to deliver better health outcomes, efforts to reduce OHS risks for health workers in developing countries are far from sufficient to protect their health (Positive Practice Environment 2015:20).

However, most of public hospitals in North West Province are faced with the challenges of occupational health and safety (ILO, 2015:4). There is a knowledge gap and literature dearth on nurses' perceptions regarding occupational hazards and safety practice in North West Province. The need for up-to-date information on occupational hazards and safety practices among the healthcare workers in Ditsobotla public hospitals are of critical importance for the purposes of identifying areas of required action and to fill gap in research.

3 Problem statement

Occupational hazards in the practice environment are a critical public health concern in our hospitals (WHO 2018). Healthcare workers such as doctors and nurses are subjected to a variety of occupational hazards as in the case of Ditsobotla public hospitals in North West Province. Nursing profession deals with health and most importantly life of the people in the society, hence, it demands a great deal of commitment. Personal fulfilment in nursing practice can be satisfying, yet some health risk associated with the work must be taken into consideration. Due to the nature of their work, nurses are at risk of so many occupational hazards including; cuts, bruises, accidental needle stick injuries and infections caused by bacteria, virus and fungi which can be transmitted via contact with infected patients or contaminated objects, body secretions, tissue or fluids (Owie, 2016:596). Although nurses at

Ditsobotla public hospitals face such hazards, this area is largely under-researched. Ditsobotla public hospital statistics between 2015 to 2019 show that there are 200 cases of needle stick, blood splashes and amniotic fluid (Ngamiland DoH, 2015).

The world of the 21st century is currently confronted with a very serious threat of Covid 19 (WHO, 2019). According to the World Health Organisation Covid-19 Dashboard, globally as 1 October 2020, there have been 33 842 281 confirmed cases of Covid19 including 1 010 634 deaths and new cases reported (WHO, 2020). Nurses in Ditsobotla public hospitals are primarily involved in organizing the environment, material resources, and coordinating the work of the health staff, as well as providing care to the patients with infectious disease. They also responsible for directing patient care tasks such as hygiene, administering medication, placing and changing bandages and vaccinating patients, while fulfilling their duties, they are at risk of contracting covid infection from one patient to another. As evident by increasing in the number of mortality and morbidity of associated occupational hazards in healthcare workers, it became necessity to explore nurses' perceptions on occupational hazards and safety practices in the workplace.

Although South Africa has legislation to address the challenges of occupational health hazards, much is not known about the extent to which nurses at Ditsobotla public hospitals are complying with written protocols designed to prevent and mitigate health hazards at the workplace. Workers especially in hospitals are likely to face many occupational health hazards. Literature demonstrated an increased in the number of cases of occupational hazards in health settings and major gap in the safety measure (Ndejjo *et al.* 2015:81). However, the result of this study will generate more insight on gap that exists in meeting the occupational health and safety in Ditsobotla. Findings from this study would be useful for other researchers following the publication to fill the existing gap. Therefore, the aim of this study was to explore and describe perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province.

4 Research Questions

- What are the perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province?

5.1 Research aim

The aim of this study was to explore perceptions of all categories of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province, using the Donabedian structure, process and outcome approach.

5.2 Research objectives

- To explore and describe perceptions of all categories of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province.

6 Conceptual framework

This study adopted Donabedian's theory as a conceptual framework to guide the research study. The Donabedian conceptual framework guided the decision-making during data collection, data analysis and data review.

6.1 Donabedian theory

The Donabedian theory is a conceptual model that provides a framework for examining health services and evaluating quality of healthcare. The author identified a three-component approach for evaluating quality of care including structure, process and outcomes. In this study, Donabedian was used to structure the interview guide and even to analyse data. Donabedian believed that structure measures have an effect on process measures, which in turn affect outcome measures (Donabedian, 1988:1743). This model implies that the structural characteristics of the places where care takes place may influence the process of care so that its quality is decreased or increased. Changes in the process of care will in turn have an effect on patient's health (Donabedian, 1988:1748). The theory is illustrated in Figure 1.1 and described in the following few sections.

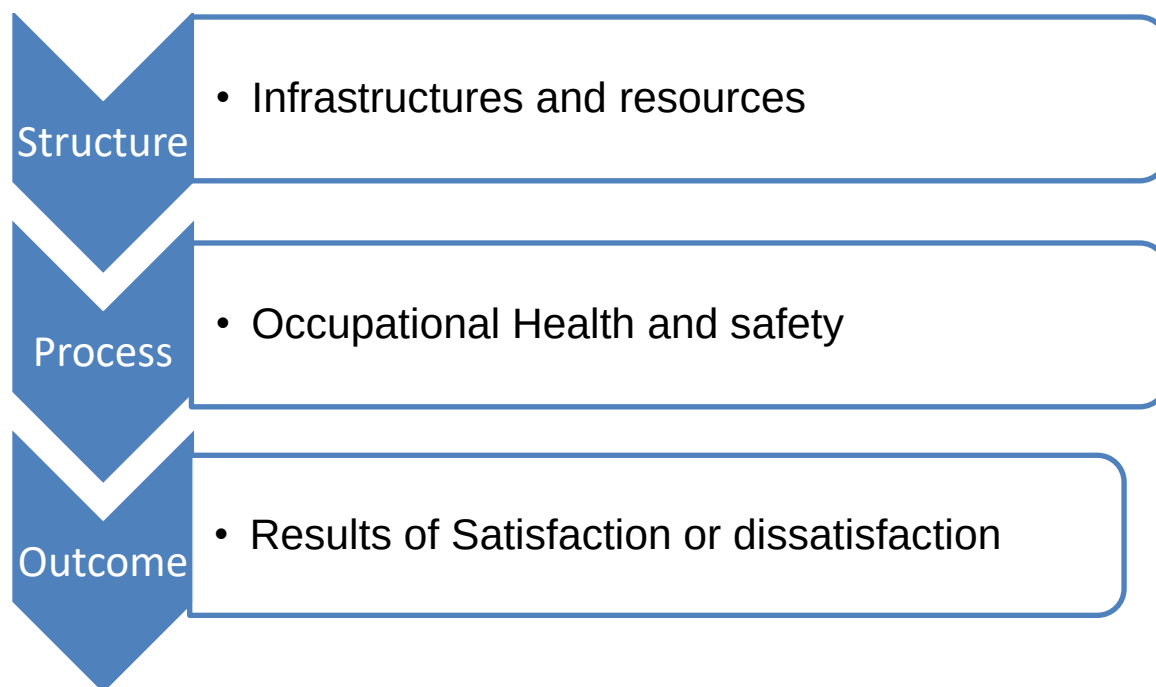


Figure 1.1 Donabedian theory adapted from (Ghaffari, Shourab, Jafarnejad & Esmaily, 2014:50).

6.1.1 Structure

Structure in the Donabedian model refers to the factors that influence the context. In this study structure refers to prerequisites such as hospital infrastructure where healthcare services rendered and its resources (Donabedian, 1988:1744).

6.1.2 Process

According to Donabedian (1988:1745), process refers to that which is being done or things done to the patients. Process describes how structure is put into practice. In this study, the process was occupational health and safety in the working environment.

6.1.3 Outcome

An outcome is the desired or undesired result of care provided by the healthcare workers (e.g. patient satisfaction or dissatisfaction with quality of care provided to the patients) (Ghaffari *et al.* 2014:50).

6.2 Conceptual definition

A conceptual definition is a definition that tells what the concept means and what constructs are, by explaining how they relate to other constructs, and operational definition only tells how to measure it (Cambridge Advanced Learner Dictionary, 2013:150). The following few sections discuss the conceptual definitions related to this research study:

6.2.1 Hazards

A hazard is a problem, which has the potential to cause harm to a vulnerable target, damage to humans, property or the environment and lead to negative consequences (Zaatynskyi, 2013:53). In this study, hazards were any risks that nurses come across within the practice environment and can cause either permanent or temporary damage to their life.

6.2.2 Health

“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 2020:1). For the purpose of this study, health refers to the state of being free from illness and the absence of physical and emotional problems from nurses.

6.2.3 Nurse

According to the Nurses and Midwives Professional Ethics and Practice Regulation, a nurse is a person who has completed a programme of nursing education in an institution approved by

nursing council and licenced by that council to provide nursing services (SANC, 2011:5). For the purpose of this study, a nurse is an either a registered, enrolled or enrolled auxiliary nurse working in Ditsobotla public hospitals in North West Province.

6.2.4 Occupational health

Occupational health refers to the branch of medicine dealing with the prevention and treatment of job-related injuries and illness (Cambridge Advanced Learner Dictionary, 2013:280). For the purpose of this study, occupational health refers to the promotion and maintenance of physical, social and mental wellbeing of all workers in the practice environment.

6.2.5 Occupational hazards

An occupational hazard is a dangerous circumstances, substance, human activity or condition that may cause loss of life, injury, disease or any other health impact at the workplace (WHO, 2009:6). For the purpose of this study, occupational hazards are biological, chemical, physical and psychosocial risks experienced by all categories of nurses working in Ditsobotla public hospitals.

6.2.6 Occupational health and safety

Occupational health and safety (OHS) is a multidisciplinary field concerned with the safety, health and welfare of people at work and focuses on primary prevention methods (Fanning, 2013:22). In this study, OHS is operationalised as a promotion of health and safety by preventing harm from incidental hazards arising in the practice environment.

6.2.7 Perceptions

Perception is a method of apprehending reality and experience through the sense, thus enabling discernment of figure, behaviour and action (Cambridge Advanced Learner Dictionary,

2013:104). For the purpose of this study, perceptions are operationalised as the knowledge and understanding of nurses on occupational hazards and safety practice in Ditsobotla public hospitals.

6.2.8 Public hospitals

Public hospitals are institutions maintained for the reception, care and treatment of those in need of medical, surgical or dental attention, being an institution that is not for private gain (WHO, 2015:11). In this study, public hospitals are institutions located in Ditsobotla area, which provide patient care and treatment with specialised medical and nursing staff together with medical equipment free of charge.

6.2.9 Safety practices

Generally, safety practices are written methods outlining how to perform a task with minimum risk to people, equipment, materials, environment and processes (WHO, 2012:14). For the purpose of this study, safety practices involved the structure and process that was free from harm.

7 Research approach and design

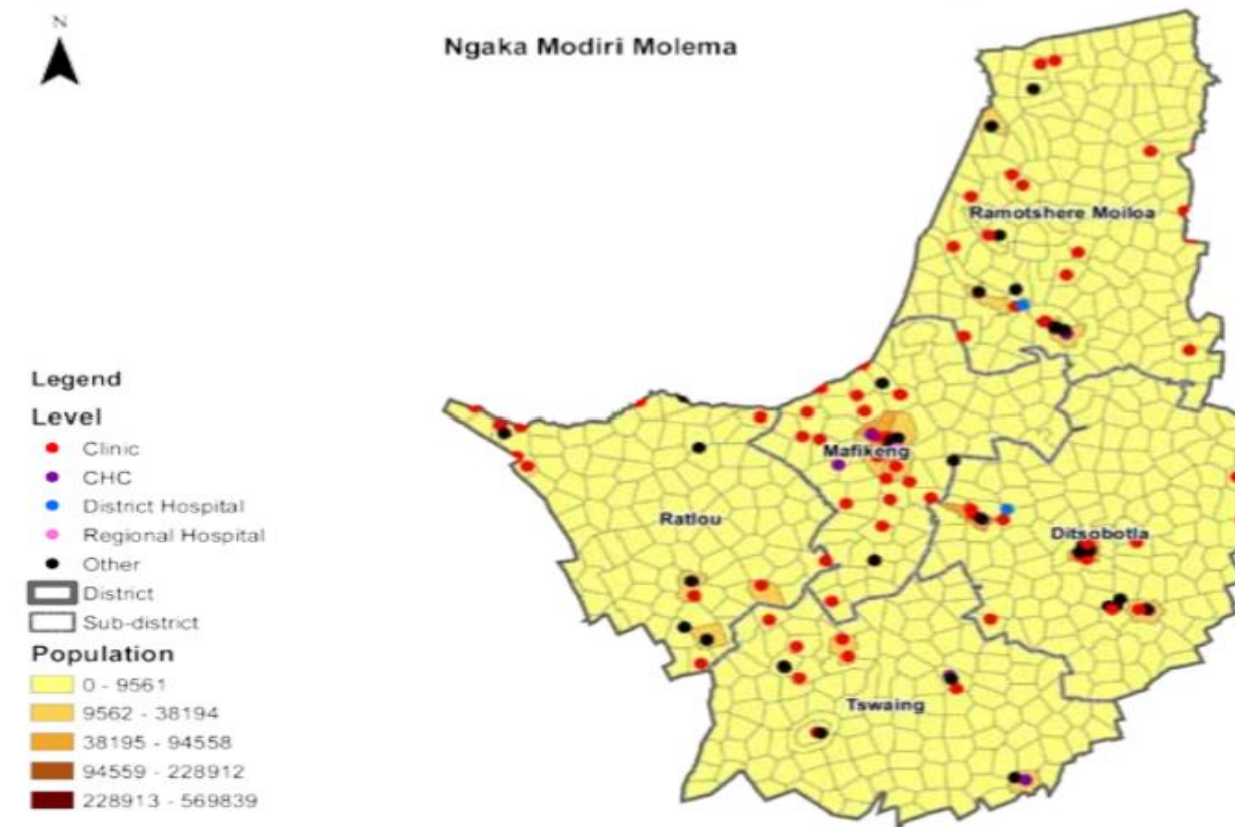
A research design is a structured framework of how the researcher intends to conduct the research process in order to solve the research problem (Burns & Groves, 2013:22). The researcher used a qualitative research approach because is the most appropriate for gaining insight and understanding into a phenomenon. Exploratory design used to gain insight, explore the richness and complexity and help shed more light on the various ways in which the phenomenon manifests (Burns & Grove 2013:23). Therefore, qualitative exploratory design was the best methods in this study.

8.1 Research setting

Research setting refers to the specific place where data is collected (Brink *et al.* 2018:51). For the purpose of this study, study context was the environment or setting in which the research was conducted. This study took place in Ditsobotla, which is a sub-district of Ngaka Modira Molema District in General De La Rey hospital (GDLR) and Thusong hospital. GDLR hospital is in Lichtenburg, on the R514 in North West Province. It is approximately 230 km west of Johannesburg on the main route to Mmabatho. Thusong hospital is in the Ditsobotla Local Municipality of North West Province, in the Ditsobotla Health Sub-district of the Department of Health between Lichtenberg and Mafikeng, on the R503 national road, and the nearest township is Itsoseng. The researcher chose these public hospitals due to accessibility and because they are the only district hospitals situated in the deep rural area where farming is the main economic activity. These hospitals are estimated to serve a population of 149 737 (Statistics of South Africa, 2011:54).

The package of services provided in these two district hospitals includes trauma and emergency care, inpatient and outpatient visits, paediatric and obstetric care. Staffing includes advanced midwives, midwives, enrolled nurses and nursing auxiliaries, social workers, a dietician, full time medical officers and visiting specialist obstetricians (Department of Health, 2015:19). They open 24 hours a day, seven (7) days a week and the services are free of charge. They refer psychiatric patients to Bophelong psychiatric hospital.

Population distribution sub-district boundaries and health facility locations



a Statistics South Africa. Census 2011 Municipal fact sheet. Report No. 03-01-58. Pretoria: Statistics SA; 2012.

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Figure 1.2 Map of Ngaka Modira Molema showing the location of study area

8.2 Population and sampling

Population is the entire group of persons or objects of interest to the researcher, in other words that meet the criteria that the researcher is interested in studying (Burns & Groves, 2013:25). Sampling refers to the process of selecting the sample from a population in order to obtain information regarding a phenomenon in a way that represents the study population (Brink *et al.* 2018:115).

8.2.1 Population

The total population of nurses working in Ditsobotla public hospitals (GDLR/Thusong) consists of 150 nurses of all categories (registered nurses, enrolled nurses and enrolled nursing auxiliary).

Table 1.1 Populations of all categories of nurses working in GDLR and Thusong hospitals (nurses' profile)

Categories of nurses	Registered nurses (RNs)	Enrolled nurses (ENs)	Enrolled nursing auxiliary (ENAs)	Total	Overall total
General De La Rey (GDLR) hospital	50	10	30	90	150
Thusong hospital	25	15	20	60	

8.2.2 Sampling

In this study, the researcher used non-probability sampling called purposive sampling. The basis of purposive sampling, also referred to as judgemental sampling, is the researcher's judgement regarding participants (Brink *et al.* 2018:126). The two selected public hospitals in Ditsobotla sub-district were chosen purposively because they are the only existing district hospitals in this area where occupational health and safety remains the biggest challenge and the targeted group included all categories. According to Grove *et al.* (2017:144), purposeful samples can range from one to 40 participants or more. A minimum of 15 participants were included in the study, 7 participants were from Thusong hospital and 8 were from General De La Rey hospital. Brink *et al.* (2018:144) found that 15 participants from a homogenous group are sufficient to reach data saturation. In addition, Brink *et al.* (2018:145) indicate that purposive sampling implies that the selection of participants is because of some defining characteristic or a criterion that makes them the holders of the data needed for the study. Four (4) focus group discussions were conducted wherein first group consisted of three (3) participants and last three groups consisted of four (4) participants.

Non-probability sampling allows the researcher to assess and select participants who know the most about the phenomenon and who are able to articulate and explain nuances. The aim was to learn as much as possible about participant's perceptions on occupational hazards and safety practices. The advantage of purposive sampling allows the researcher to select the sample based on knowledge of the phenomena being studied (Brink *et al.* 2018:127).

8.3 Inclusion and exclusion criteria

Inclusion criteria are characteristics the prospective subjects have to possess if they are to be included in the study, whereas the exclusion criteria are those characteristics that disqualify prospective participants from inclusion in the study (Cambridge Advanced Learner Dictionary, 2013:26). A minimum of 15 participants were included until data saturation reached. Nurses are targeted population in this study because occupational hazards are common in the nursing profession, and nurses are the only HCWs who spend 24 hours with patients.

8.3.1 Inclusion criteria

The inclusion criteria for this research study were as follows:

- All categories of nurses, including Registered Nurses (RN's), Enrolled Nurses (EN's) and Enrolled Nursing Auxiliary's (ENA's)
- Able to speak English
- Registered with South African Nursing Council (SANC) as a body entrusted to set and maintain standards of nursing education and training
- Working in Ditsobotla public hospitals in North West Province
- Permanently employed nurses of all categories
- Two years of working experience in Ditsobotla public hospitals in different units, as this is sufficient time to have insight into the setting.

8.3.2 Exclusion criteria

The exclusion of the nursing students was because their clinical placement in these healthcare services was for a short period for clinical learning only, thus their experience maybe minimal.

8.4 Recruitment of participants

According to Polit and Beck (2014:87), recruitment of participants entails the identification of potential participants who qualify to partake in a research study. Before recruitment of participants commenced, the researcher received approval from NuMIQ and HREC of the North West University. Once approved, a letter requesting permission to conduct study was sent to the Department of Health (DOH) provincial office and to Ditsobotla public hospitals North West Province (Annexure B & C). The gatekeepers were the Chief Executive Officer (CEO) of Ditsobotla public hospitals and the Nursing Service Manager, and mediators were administration clerks. The researcher used two administration clerks throughout the study, one from GDLR hospital and one from Thusong hospital. The researcher had a meeting with the gatekeepers and mediators to inform them about the study, including the main purpose of the study. The researcher explained the expected role of the mediators in the study and trained them in the recruitment process.

After the mediators agreed to assist the researcher in recruitment process, they were asked to sign the confidentiality agreement (Annexure F) and researcher gave them the information sheet and recruitment flyers for the study. The mediators' role was to advertise the study to all nurses in Ditsobotla public hospitals by distributing the flyers during nurse's staff meetings and posting them on the notice boards of the hospitals so that everyone had access to the information. The researcher emphasised to the mediators, who had social contact with participants that their role was to simply disseminate recruitment flyers, not to pressure or coerce potential participants into joining the study. Participants interested in participating in the study were asked to contact the researcher via the contact details provided in the recruitment flyer (see Annexure E). Once the potential participants who met the inclusion criteria were identified, the researcher set the date, time and venue suitable for a meeting regarding the study.

During the meetings, the researcher presented the important information of the study and participants were given time to ask questions. The researcher was in a position to clarify the participants and answer all their questions. Participants who were interested received an informed consent form, as well as an envelope and information sheet to read and voluntarily sign at their convenience. Participants had one week to read and sign the consent form; the consent

form was to be placed inside the envelope, after signing it, and returned to the mediators. The mediators had received training on all matters concerning confidentiality, and told to put the consent forms in the lockable cupboard for safekeeping. After a week, the researcher collected the envelopes and phoned the potential participants to set a date and time convenient for them to participate in a focus group discussion. The conducting of the focus group discussions were in the nurse's boardroom within the hospitals, which was free from noise and harm.

8.4.1 Role of gatekeepers and mediators

Gatekeepers and mediators are people who have power or influence to grant or refuse access to a field or research setting (Gray, 2013:13), and the people involved in the process to allow or deny researchers' access to participants. In this study, gatekeepers were the CEO of Ditsobotla public hospitals and nursing service manager and the mediators were administration clerks of Ditsobotla public hospitals.

The gatekeepers had the following responsibilities:

- To ensure that people within their institution remain protected and free from coercion at all times
- They have power to deny access to the researcher and they may influence whether individuals opt in and out of a process
- To act as guarantors of the researcher's legitimacy within the institution or organisation, and ultimately saving the researcher time and resources (Bryman, 2008:6)
- To have an interest in maintaining their credibility and ensuring the researcher did not jeopardise their relationships in the institution (Clark, 2011:485)

The mediators had the following responsibilities:

- To help the researcher in recruiting the participants
- Recruiting directly with prospective participants, mediators helped to speed up the recruitment process
- To help the researcher become more culturally competent

8.5 Process of obtaining informed consent

Informed consent is a process in which a person learns key factors about a clinical trial, including potential risks and benefits before deciding to participate or not in a study (Noble *et al.* 2009:77). Informed consent is a legal procedure to ensure a participant knows all of the risks and costs involved in a study (Brink *et al.* 2018:31). In order for informed consent to be valid, the participants must be competent and consent given voluntarily (Brink *et al.* 2018:31). The elements of informed consent include informing the participant about the nature of the study, the potential risks and benefits, privacy and confidentiality, the purpose of the research, reasons why the participant has been selected and time to reflect before and after making the decision to join a study (De Vos, Strydom, Fouche & Delport, 2011:117). Effective communication is the key to enabling potential participants to make informed decisions about their involvement in research. (De Vos *et al.* 2011:117). The process followed as described in 8.4.

8.6 Data collection

According to Polit and Beck (2012:12), data collection is the process of gathering and measuring information on targeted variables in an established systematic fashion, which then enables one to answer relevant questions and evaluate outcomes. Data collection describes the way in which the researcher approaches answering the research question (Maree, 2016:20). In this study, data collection provides a clear and specific explanation on how the data was collected, including the research findings. The Donabedian framework approach namely; structure, process and outcome were used to collected data. When researcher developed the in interview tool that guided the questions asked in the focus group discussions, three approaches used (see Annexure K).

8.6.1 Data collection tool

Data collection tool/instrument refers to the device used to collect data, such as questionnaires, tests, structured interviewed schedules and checklists (Brink *et al.* 2018:139). In this study, data collection used a semi-structured focus group discussion and incorporated the Donabedian framework. The carefully planned focus group discussion's design was to obtain perceptions on

a defined area of interest in a permissive, non-threatening environment (Brink *et al.* 2018:144). According to Grove, Gray and Sutherland (2017:80), there are three basic uses for focus groups:

- Firstly, as a primary method of data collection
- Secondly, as a secondary and supplementary source of data collection
- Thirdly, they are used in multi-method studies that combine two or more methods of data collection, in which no one primary method determines the use of the others

This study made use of a focus group discussion as the principal source of data collection, as it was more practical and economical than individual interviews. It saves time and allows the participants to hear other peoples' points of view and to argue theirs.

Number and size of focus group

According to Grove, Gray and Sutherland (2017:80), the ideal size for a focus group is three (3) to five (5). Focus group discussions also include groups of about five (5) to 12 people whose opinions and experiences are requested simultaneously (Brink *et al.*, 2018:144). In this study, a group of three to five participants were included in the focus group discussion; grouped according to their categories and their scope of practice. Out of 150 nurses of all categories, a minimum of 15 participants were included until data saturation reached. Four (4) focus group discussions conducted, first group consisted of three (3) participants and the last three groups consisted of four (4) participants. The researcher chose small group in order to be able to manage them. The reasons for using a focus group discussion was to allow participants to share their thoughts with one another, generate new ideas and consider a range of views before answering (Brink *et al.* 2018:144). Focus groups are a self-contained method in studies, in which they serve as the principal source of data. The focus group discussions' time ranged from 60 to 90 minutes.

8.6.2 Development of data collection tool

When developing the questions, the researcher went through the processes, including clarifying the problems, identifying the questions by brainstorming; prepare first draft questions by phrasing them, sequencing them, estimating the time needed for questions, obtaining feedback

from others and testing the question (De Vos *et al.* 2011:370). Before writing the questions for a focus group, the researcher considered several principles developed by Brink *et al.* (2018:145).

- Ask questions in a conversational manner, because a focus group is a social experience, conversational questions are essential to create and maintain an informal environment.
- Clear effective questions. The wording of the questions should be direct, comfortable and clear. Clear questions are short, one-dimensional and jargon free.
- Seek help when developing quality focus group questions. The researcher obtained feedback from others, such as participants, experts or members of the research team.
- Quality questions not produced quickly. The researcher did revision several times.
- Questions posed to use easy terms for the participants.

The researcher prepared techniques for communication and facilitation as acquired by intensive pre-graduate and post-graduate group work training. In addition, the researcher studied the process, procedure and techniques of conducting focus groups in recent literature, as prescribed by Steward and Shamdasani (2014:124). During the semi-structured focus group discussions, the researcher asked a specified number of questions but also posed additional ones. Open-ended questions were included. The questions were non-directive, but guided the topic of interest, followed by probes (Annexure H). During the probes, the researcher asked 'for examples' and 'please elaborate on that.'

8.6.3 Data collection process

The data collection process describes the way in which the researcher approaches answering the research question (Maree, 2016:12). It provides an audit trail, which includes a clear and specific explanation of how data were collected, how the results or findings were derived, as well as the rationale for the method selected (Brink *et al.* 2018:133). When planning the data collection process, the researcher posed the following questions: What, How, Who, Where, and When.

- Qualitative explorative data using semi-structured focus group discussions collected data in three to four groups of participants. Participants included were all categories of nurses working in Ditsobotla public hospitals.

- The collection of data occurred in the nurse's boardroom. The researcher had asked the management of the hospital to utilise the boardroom, which was far from units and free from noise. Data collection took place over a period of two (2) months, from 30 July to 28 September 2020 between 14h00 to 16h00.
- The researcher prepared the guide for questions to be asked during the discussion.
- The researcher compiled a list of items to take to the discussion, including for example, a tape recorder, notebook and pen.
- Before beginning the focus group discussion, the researcher took time to explain the purpose of the study, information of confidentiality and participants' role. Dominance in a group was not acceptable, and participants requested to listen to questions carefully before giving their answers. Participants had the opportunity to express their opinions, explain, discuss and share experiences on the topic of research.
- During focus group discussions, the researcher was mentally prepared to act if there were unexpected issues raised or occurred during the discussion.
- An audio recorder recorded the data and notes taken to capture information regarding non-verbal behaviour, such as gestures between group members, eye contact, posture and fidgeting during discussions (Merriam, 2009:110), and integrated with the data obtained from the group discussion.
- Permission to use the recorder was requested from the participants. Collected data were password protected and kept safe in a locked cupboard. Data were stored in the NuMIQ director's office for a period of 5 years. The researcher used codes (e.g. label A or B) in reporting the results instead of information that identified the participants. The outcomes or research report were distributed to the library of the university for reference purposes and the journal was written as indicated in the consent form.

8.7 Data analysis

Data analysis is an active and interactive process that involves organising, structuring and eliciting meaning from narrative materials (Polit & Beck 2012:124). Qualitative data analysis is an on-going process, which continues throughout data collection. The focus group discussions were recorded using an audiotape and transcribed for analysis by the researcher. Through reading the transcribed data, the researcher carefully identified the initial codes to collect

additional data until data saturation occurred. The researcher analysed and discussed data as one set of data using the framework proposed by Creswell & Clark (2017:140).

- The researcher familiarised herself beforehand with the data by transcribing the audio recordings. During the analysis, the researcher immersed herself in the data, by reading and re-reading the transcripts.
- Each transcript gave the researcher an overall picture and explored the underlying meaning.
- The researcher read the transcripts and highlighted features relevant to the research questions. During the reading, the researcher identified common patterns and themes among the data. The researcher achieved this by highlighting the recurring themes; language and opinion of the participants (see Annexure L). Thereafter, the data were grouped and codes provided for each group. Therefore, the researcher links the data to the research idea without preceding conceptualisation and reviews the initial responses to construct a coding scheme based on major categories that emerge. The researcher then searched for themes from meaningful patterns (by linking codes) that emerged from the data and relevant to the research question
- Codes were given to topics and subtopics and added along the appropriate segment in the text
- Final decision made regarding which categories to be included
- The most descriptive wording was selected for topics and converted into categories
- Corresponding data was grouped under each category to highlight themes and sub-themes.

9 Rigour

According to Gray, Grove and Sutherland (2017:36), rigour is the striving for excellence in research, which implies discipline, attention to detail and accuracy. It refers to the soundness or precision of the study in terms of planning research design, data collection and data analysis. For the purpose of this study, rigour is a critical aspect that needs following in a research process. In this study, the collection of data was systematic, objective and thorough, and analysed and interpreted in a manner that minimised contamination and enhanced accuracy. A description of the components of rigour follows.

9.1 Measures to ensure trustworthiness

Trustworthiness is the qualitative researcher's degree of confidence in the research findings, which persuades others that the findings of the research are worth paying attention to (Tappen & Ouslander 2010:111). Qualitative validity refers to the employment of procedures to ensure accuracy of findings. The use of multiple strategies results in authenticity and credibility. Strategies recommended by Creswell *et al.* (2017:34) ensured validity such as: making detailed descriptions of data, the researcher self-reflecting to clarify possible biases, discussing contrary data as part of the identified themes and external editing. Qualitative reliability refers to consistency across studies and researchers. Ensuring this is by making data accurate and comprehensive, checking transcripts for correctness and crosschecking codes (Cresswell *et al.* 2017:35). It proposes three criteria for developing trustworthiness in a qualitative study: credibility, dependability and transferability (Polit & Beck, 2017:96).

9.1.1 Credibility

Credibility refers to the confidence in the truth-value, or believability of the study's findings (Brink *et al.* 2018:159). The researcher strived to obtain a clear representation of the various participants' views, following Holloway and Wheeler (2013:303). To be credible, this study followed the steps as detailed below.

The researcher's own structure markers presented these steps:

- Honesty: The researcher applied various skills and used clear communication with participants to ensure honesty in the interactions. The researcher aimed to provide individuals opportunity to participate, with frankness encouraged throughout.
- Reflective commentaries: After concluding the study, the researcher added reflective commentary, which helped to evaluate the project. These commentaries enhance the techniques used.
- Peer review: After finalising the project, the researcher submitted the study for peer scrutiny.

- Institutional scrutiny: Finally, the project underwent scrutiny of a senior researcher, colleagues, and peers, before writing the report.
- Data review: Scrutinising the data intensively in both audio and written format further ensured credibility. The researcher transcribed the data herself and paid attention to detail in all collected data.
- Written feedback: After data analysis, participants involved in the research received written feedback. Participants had the opportunity to indicate whether the findings made by the researcher were a reliable and true reflection of the discussions during the focus group discussions.

9.1.2 Dependability

Dependability refers to the provision of evidence, in that if repeated with similar participants in the same or similar content, its findings would be similar (Brink *et al.* 2018:159). It establishes the research study's findings as consistent and repeatable. Holloway and Wheeler (2013:303) define dependability as the ability to provide an audit trail that helps readers find the path leading to the conclusions drawn by the researcher, which means if the work was duplicated in the same context with the same method, similar results would be attained. The researcher ensured dependability of the study by implementing these recommendations; for example, carefully explored the research design and its planning and execution, noting the operational aspects of data collection in detail. The researcher audit data collection and analysis thereby examining its processes and the results of the research study in order to confirm the accuracy of the findings and to ensure the findings are supported by the data collected.

10 Ethical considerations

The researcher sought to comply with ethical principles, inclusive of respect, scientific merit, distributive justice and beneficence (Department of Health, 2015:12).

10.1 Ethical principle

The following are ethical principle that the researcher followed in the research process:

10.1.1 Principle of beneficence

According to Brink *et al.*, (2018:29), to adhere to this principle, the researchers need to secure the wellbeing of the participant, who has a right to protection from discomfort and harm. In this study, Participants will be protected from physical or psychological harm at all the time, they will be told that they are free to withdraw from the study at any time they feel exhausted.

10.1.2 Principle of justice

Brink *et al.*, (2018:30) refers this principle as, “the fair selection and treatment of the participants during the study”. In this study, participants will be fairly selected and treated equally. The researcher will respect and honour any agreement they make with participants.

10.2 Probable experience of participants

This research was a non-invasive study, as the participants who agreed to participate in the study and met the inclusion criteria were involved in focus group discussions. Since this was an exploratory study, participants were required for about 60-90 minutes for the group discussions. The serving of refreshments was before the group discussion and the researcher conducted one focus group discussion per day. No harm anticipated in this study since it did not involve vulnerable people and occurred in the nurse’s boardroom, which was safe and free from noise. During the group discussion, the researcher ensured privacy and confidentiality by putting a “Do not Disturb” notice on the boardroom door and participants were informed about the principle of respect, meaning they must respect one another and not to interrupt when someone was talking. A request was made of the participants not share information from the group discussions with anyone, as doing so would be considered unethical; therefore, the participants signed a confidentiality agreement form.

10.3 Risk and precautions

Risk	Precautions
Fatigue because the group discussion is time-consuming. Focus group discussion	Participants informed there would be refreshment served before the group discussion.

estimated time was 60-90 minutes. Focus group discussion has a risk of breach of confidentiality	Confidentiality ensured in the following way: before group discussion, the researcher presented the information of confidentiality to the participants and told not to share information of group discussion to anyone as sharing of such information would be considered as unethical; therefore confidentiality agreement signed by participants. Ground rules set by both researcher and participants before discussion, including respect one another and not to interfere while someone is talking. During data collection, all the forms, including consent forms, kept in locked cupboard for safekeeping and data collected from the participants stored on the researcher's password protected computer. After data collection, the audio recordings from each group discussion were transferred directly to the researcher's password protected computer, and then deleted from the audio recorder. The researcher reported the findings using codes instead of information that would identify the participants.
Potential spread of Covid 19 given the context of the pandemic.	The boardrooms, which served as the interview venues, were fumigated with antiseptics. The following protocols to curb the spread of COVID-19 were adhered to at all times during interaction with participants: wearing of masks or a home-made item that covers both nose and mouth at all times; all

	participants were subjected to screening for COVID-19 related symptoms before interaction with the researcher or fellow participants; the researcher ensured that participants adhered to social distancing of at least 1.5m and good hygiene practices upheld by means of sanitisation. In the event of participants presenting with any sign of COVID-19 or high temperature, they were not allowed to take part in the study at that time. Such participants were redirected to the preferred physician for further management.
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10.4 Anticipated benefits

The anticipated benefit of this study was to determine perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province, to help improve working conditions and safety for nurses. Participants benefited more in this study; therefore, anticipated benefits were to give recognition to expertise and add to the individual's knowledge base by sharing with other experts, gain the opportunity for professionals' talk and share work experiences of working in different units. This helped to gain new insight in safety practices. Some good networking and forming of friendships would also occur during the execution of the focus groups.

10.5 Direct and indirect benefits

Direct benefits were immediate for the participants due to their participation in clinical research; no indirect benefits observed (Brink *et al.* 2018: 34).

10.5.1 Direct benefits

There was no direct benefit in this study.

10.5.2 Indirect benefits

- The gains for you if you take part in this focus group would give recognition to expertise and add to the individual's knowledge base by sharing with other experts. Had opportunity for professionals to talk and share about your work or experiences of working in different units. This helped to gain new insight in safety practices.
- Some good networking and forming of friendships would also happen during the execution of the focus groups.
- The participants would have an opportunity to voice their opinions regarding their perceptions on occupational hazards and safety practices.
- It would also help to contribute towards nursing research in North West through new knowledge gained in the study.

10.6 Risk/benefits ratio analysis

Risks refers to the possibility that participants may be harmed during research process, whereas benefits refers to the positive values that the research provides and includes a study's potential contribution to knowledge, its practical value to society and its use to participants (Brink *et al.* 2018:35). It is essential that the benefits of the study exceed the risks that participants face during the research study. In this study, the benefits outweighed the risk. Potential benefits would give recognition to expertise and add to the individual's knowledge base by sharing information with other experts and the opportunity for professionals to talk and share about work or experiences of working in different units. Participants had the opportunity to voice their opinions regarding their perceptions on occupational hazards and safety practices. There were minimal risks involved, such as fatigue, breach of confidentiality, and Covid, and measures to minimise this adhered too.

10.7 Experience, skills and competency of researcher

The researcher, who is post-graduate student, holds an Honours degree in Bachelor of nursing and is currently doing a research for a Master's degree. The researcher, who attended the ethics-training course, assisted in the application of ethical measures in the research (Ethical training attendance is included in Annexure H). The researcher did not have much experience on research especially in conducting focus group discussions and although still a novice in the field, her supervisor was well experienced when it came to conducting interviews in research and developing a dissertation. Her supervisor is a professor currently supervising the Masters and PHD students on both qualitative and quantitative research.

10.8 Legal authorisation

Approval was obtained from the following entities before the researcher started collecting data:

- Scientific review committee of Quality in Nursing and Midwifery (NuMIQ) at North West University (NWU)
- Ethical approval was obtained from Health Research Ethics Committee (HREC) at NWU
- Permission to conduct the study on perception of nurses on occupational hazards and safety practices in Ditsobotla public hospitals was obtained from the Department of Health (DOH) in North West Province
- Permission to conduct the study was also obtained from the provincial office of North West Province and district management of Ditsobotla public hospitals in North West Province.

10.9 Goodwill permission/consent

- Goodwill permission was asked from the gatekeepers
- In this study, permission was asked from the CEO and nursing service manager of Ditsobotla public hospitals
- Informed consent was obtained from participants who voluntarily participated in the research study, which contained ethical principles and confirmed protection of participants from any harm.

10.10 Vulnerable participants

Vulnerable participants are those research participants who are likely to be vulnerable to coercion or lack decision-making capacity (Brink *et al.* 2018:156). In this study, there were no vulnerable participants involved because they were professionals able to make decisions on their own.

10.11 Respect for participants

Individuals are autonomous, in other words they have the right to self-determination. This implies that an individual has the right to decide whether to participate in a study without the risk of penalty (Brink *et al.* 2018:29). In this study, the researcher ensured this, by treating participants with respect and ensured the maintenance of their safety and wellbeing at all times. Participants were informed that only the researcher would conduct focus group discussions and would use an audio recorder.

10.12 Measures to ensure privacy/confidentiality

Participants' privacy rights also need upholding. Privacy in its most basic meaning is to keep to oneself that which is not intended for others to observe or analyse (De Vos *et al.* 2011:119). Every individual has the right to privacy and it is his or her right to decide when, where, to whom and to what extent his or her information will be revealed (Brink *et al.* 2018:31). Participants were informed of all possible limits to this principle, thereby keeping participant's information unavailable to anyone and codes used when reporting the results instead of information that identified the participants. The conducting of the focus group discussions was in the nurses' boardroom, with a Do not Disturb notice posted on the door.

Confidentiality is the right of a participant to withhold information from third parties (Brink *et al.* 2018:31). De Vos *et al.* (2011:119) explain that researchers at times may compromise confidentiality about a participants' identity. Ensuring confidentiality in this study was in the following way: before the group discussion, the researcher presented the information of confidentiality to the participants and told them not to share information from the group

discussion with anyone, as sharing of such information would be considered as unethically; participants therefore signed a confidentiality agreement. Both the researcher and participants set ground rules before the discussion; these included respect one another and not to interfere while someone is talking. During data collection, all the forms, including consent forms, remained in a locked cupboard for safekeeping, and data collected from the participants were stored on the researcher's password protected computer. After data collection, the audio recordings from each group discussion were transferred to the researcher's password protected computer and deleted from the audio recorder. The researcher reported the findings using codes instead of information that identified the participants.

10.13 Anonymity

According to Brink *et al.* (2018:31) anonymity is the act of keeping individuals nameless in relation to their participation in research; the participant is assured of anonymity, with no record of their name. During data collection and analysis, anonymity maintained by not calling participants by their own names, and the researcher used the codes A or B when writing the reports.

10.14 Data management

Data management occurred throughout the research, by collecting suitable data to answer research questions and analyse the relevant data appropriate to the study. The researcher was responsible for transcribing the focus group discussions. Upon completion, all transcribed data were deleted from the digital recorder, as well as the electronic copies, and on completion of data analysis, the researcher destroyed the hard copies. At the end of the study, all the data were stored on a memory stick before deletion from the researcher's computer. The memory stick containing all the information was given to the NuMIQ director to be placed in a lockable cupboard. Only the researcher, supervisor and research team would have access to this data.

10.15 Data storage

During data collection, the entire file containing participant's information, such as consent form, remained in the locked cupboard. All backed up electronic data was saved on the researcher's password protected computer and on an external password-protected memory stick. Upon completion, a memory stick with all the information would be stored in the NuMIQ director's office for a period of 5 years. After transcription of all the discussions, the researcher deleted the recording from the computer. The researcher ensured the destroying of all the data after the study, and that the director's at NuMIQ office would discard the information following the five years period.

10.16 Research safety plan

During group discussions, the researcher treated participants with respect and ensured their privacy and confidentiality at all times. However, if something happened to the participants, the incident was reported to the supervisor and the ethical and scientific review committee to ensure safety of the participants. The researcher was committed to staying attentive in order to pick up immediately when a certain topic upset a group member to steer the conversation away in order to protect the participant. The submission of report monitoring was every 6 months, as required by NWU-HREC.

10.17 Dissemination of research results

What	• The outcomes or research report would be distributed to the library of university for reference purposes • The other reports would be submitted to the Department of Health provincial and district level within North West Province
How	• The researcher planned to send a scientific article as soon as the study finalised. Participants would be informed about any new relevant findings in the scientific article • The results would be presented at a North West Province research day event • The researcher would also submit the article to Curatonis Journal

When	The result would be distributed and presented after completion of the study
To whom	- A copy of the results would be sent to the DoH, provincial office and district hospitals (participants would also have an access to the results via the hospital) - A copy of the dissertation would remain in the NWU library for other students to have access to the results

10.18 Conflict of interest

Conflict of interest includes any circumstances where the researcher has a real, perceived, or potential opportunity to prefer their own interests or those of any other person or organisation to the interest of the university and it occurs when an individual who is involved in multiple interests has one interest that interferes with another (Brink *et al.* 2018:54). In this study, no conflict of interest existed.

11 Time Frame

Activity	Time frame	Due Date
Finalise proposal	8 weeks	20 January 2020
Scientific Committee Review	4 weeks	17 February 2020
Application for ethical approval by HREC – NWU and title registration	8 weeks	13 April 2020
Write literature review – Chapter 2	3 weeks	4 May 2020
Attend methodology workshop	1 week	11 May 2020
Data collection	8 weeks	6 July 2020
Data analysis	4 weeks	3 August 2020
Write Chapter 1 – overview of study	2 weeks	17 August 2020

Report writing – methodology, conclusion, recommendations – final chapter Book editors	4 weeks	14 September 2020
Notice of submission	3 months before examination	14 December 2020
Language and technical editing	2 weeks	28 December 2020
Make corrections and proof read	2 weeks	11 January 2021
Prepare examination copies	2 days	13 January 2021
Submission for examination	Date from PG office	
Examination	6 weeks	24 February 2021
Examination corrections and rebuttal	2 weeks	10 March 2021
Extract and submit report	2 weeks	24 March 2021
Planned graduation	Dates from PG office	

12 Budget

In order to obtain a Master's degree, the researcher remains accountable for the financial responsibility of the research study. The researcher self-funded the research. The planned budget was as follows:

Table 1: Proposed budget for this study

Item	Description	Cost
Technology	1 Acer laptop and Samsung J5	R5000,00
Internet use	@ R200/months for 18 months	R2500,00
Phone calls	@ R30 ($\pm$ 15 participants)	R450,00
Editing: Technical and language	@ R25/page ($\pm$ 200 pages)	R2000,00
Final exemplars: copies and binding	@ R2/page ($\pm$ 200 pages)	R400,00
	@ R50 each binding ($\pm$ 200 pages) 3 binding	R450,00

Dissemination of results: local conference	Conference registration, poster printing, travel, accommodation	R1500,00
Refreshments and small token	@ R100 for (±15 participants)	R1500,00
Article registration and publishing	@ Curationis Journal	R1340, 00
Unforeseen costs		R1500,00
Total:		R16 640,00

13 Research report structure

In this study, the researcher reported in the article format wherein the following sections were included:

Research report structure (article format)

Section 1: Overview of the study

Section 2: Literature and article

Part 1: Literature review: TITLE in this chapter.

Part 2: Article – The article titled: ARTICLE TITLE submitted to the *Curationis Journal*.

Section 3: Conclusion, limitations and recommendations

14 Conclusion

This chapter introduces the study by describing the background and rationale of the study. It provided a problem statement, followed by research aims and objectives. The study clarified key concepts and outlined the research design together with the research methods.

Reference

Adib-Hajbaghery, M. & Lotfi, M.S. 2013. Behaviour of healthcare workers after injuries from sharp instruments. *Trauma Mon*, 18(2): 75.

Ahasan, E.M. & Partnen, A. 2013. The role of psychosocial stress at work for development of cardiovascular diseases: A systematic review. *International Achieves of Occupational and Environmental Health*, 85(1): 67-79.

Bless C., Higson-Smith, C. and Kagee, A., 2016. *Fundamentals of social research methods: An African perspective*. Juta and Company Ltd.

Brink, H., Van der Walt, C. & Van Rensburg, G. 2018. *Fundamental of Research Methodology for Healthcare Professionals*. 4th ed. Cape Town: Juta and Company (Pty) Ltd.

Bryman, A., Becker, S. & Sempik, J., 2008. Quality criteria for quantitative, qualitative and mixed methods research: A view from social policy. *International Journal of Social Research Methodology*, 11(4): 261-276.

Burns, N. & Grove, S.K. 2013. *Understanding nursing research-eBook: Building an evidence-based practice 5th Ed*. Philadelphia: Elsevier Health Sciences.

Burns, N. & Grove, S.K. 2012. *The practice of nursing research 6th ed*. Philadelphia: Elsevier.

Cambridge Advance Learner Dictionary. 2013. Cambridge University Press. <https://www.cambridge.org/about-us/legal-notices/privacy-notice>.

Clack, T. 2011. Gaining and maintaining access: Exploring the mechanisms that support and challenge the relationship between the gatekeepers and researchers. *Qualitative social work*, 10(4): 485-502.

Creswell, J.W. & Clark, V.L.P. 2017. Designing and conducting *Mixed Methods research*. Sage Publications.

Dawson, J. 2012. ANA releases 2011 Health and Safety Survey results. *American Nurse Today*, 7(2).

De Kok, J., Deiji, C. & Veldhuis-Van Essen, C. 2013. *Literature review of recent empirical evidence of the contribution of SMEs to employment creation*. Deutsche: Gesellschafter International Zusammenarbeit (GIZ).

Department of Health, South Africa. Ethics in research: principles, processes and structure. 2015. Pretoria: National Health Research Ethics Council, 9-17.

De Vos, A.S., Strydom, H., Fouche, C.B. & Delport, C.S.L. 2011. *Research at Grass Roots: for the social sciences and human service professions fourth edition*. Pretoria: Van Schaik.

Donabedian, A., 1988. The quality of care: how can it be assessed. *Jama*, 260(12): 1743-1748.

Elewa, A.H. & Guindy, E.I. 2017. Nursing Students' Perception and Educational Needs regarding Nursing informatics. *International Journal of Nursing Didactics*, 7 (3):12-20.

Fanning, F.E., 2013. Basic safety administration. *A handbook for new safety specialist*. Chicago. American Society of Safety Engineers.

Gaber, M., 2013. Relationship among nurses' safety compliance, organizational safety climate, worker's variables and job satisfaction at Zagazig University hospitals. *Life Science Journal*, 10(12): 1041-1055.

Ghaffari, F., Shourab, J., Jafarnejad, F., & Esmily, H. 2014. Application of Donabedian quality-of-care framework to assess the outcomes of preconception care in urban health centres, Mashhad, Iran in 2012. *Journal of Midwifery and Reproductive health*, 2(1), pp.50-59.

Gray, D.E., 2013. *Doing research in the real world*. Sage.

Grove, S.K., Gray, J., & Sutherland, S. 2017. *The Practice of Nursing Research*. London: SAGE Publication.

Halman, P., Takala, J. & Kiat, T.B., 2017. Global estimates of occupational accidents and work-related illnesses, 3(17): 3-4.

Heale, R. & Twycross, A., 2015. Validity and reliability in quantitative studies. *Evidence-based nursing*, 18(3): 66-67.

Holloway, I. and Galvin, K., 2016. *Qualitative research in nursing and healthcare*. John Wiley & Sons.

Hosseini, A. 2015. *Occupational hazards and safety practices in cardiac cath units*. Germany: Lambert publisher academy.

International Labour Organizations. 2015. *Code of practice on workplace violence in service sector and measure to combat this phenomenon*. Geneva: International Labour Office.

Leedy, P.D. & Omrod, J.E. 2016. *Practical Research: Planning and Design*. 9th ed. Boston: Pearson Education.

Li, J. & Lambert, V.A. 2014. Workplace stressor, Coping, Demographic and Job Satisfaction in Chinese Intensive Care Nurses. *Nursing in critical care*, 13(1): 12-24.

Mareer, R. 2016. Gender based occupational health hazards among paramedical staff in public hospitals of Jheulum. *American Journal of Public Health*, 1 (4):16-18.

Makhonge, P.W., 2009. African news on occupational health and safety. *Planning of Occupational Safety and Health Activities*, 2(27): 25.

Mareer, K. 2016. *First steps in research*. 2nd ed. Pretoria: Van Schaik.

Marsh, S. 2012. "The smoke factor: things you should know." *Journal of Perioperative Practice*, 22(3): 91-94.

McDonald, D.R. 2014. Questionnaires and interview in survey research. Available at <http://eds.b.ebscohost.com.nwulib.nwu.ac.za/eds/detail?sid=3947b83f-fdfb-4fff-99cd-d3d60ebbbaf5%40sessionmgr120&vid>. Date of access. 14 March 2019.

Mehrdad, R., Dennerlien, J.L. & Haghighat, M. 2010. Association between psychosocial factors and musculoskeletal symptoms among Iranian nurses. *American Journal of Medicine*, 2 (5):53.

Menish, Z.A., Zumla, A.L. & Assiri, A. 2015. Middle East respiratory syndrome coronavirus infections in healthcare workers. *New England Journal of Medicine*, 369(9):884-886.

Polit, D.F & Beck, C.T. 2012. *Essentials of nursing research: Methods, appraisal, and utilization*. New York. Lippincott.

Polit, D.F. & Beck, C.T. 2017. *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. Philadelphia: Lippincott.

Positive Practice Environments campaign (PPE). 2015. Website
.http://www.ppecampaign.org (accessed 1 June 2020).

Ramsay, J.A. 2015. New Look at Nursing Safety in the Emergency Department. *Journal of SH & E Research*, 2 (2):18.

Rawlance, G., Ndejjo, M., Buregyeya, E. & Williams P. 2015. Occupational Health Hazards among Healthcare Workers in Kampala, Uganda. *Journal of Environmental and Public Health*, 2 (20):1-9.

Sacadura-Lettie, E. & Sousa-Uva, A. 2015. *Healthcare workers' health: old, new and emerging occupational hazards, International Symposium on Occupational and Safety*. Portugal: Sine nomine.

South African Nursing Council. *Nursing and Midwifery Council of South Africa Ministry of Health*. South Africa: Gaborone.

South African statistics. 2011. Basic population characteristics by administrative districts. Available from: <http://www.statistics.gov.my/portal/index.php?option=com-content&view=article&id=emid>. Assessed Date 20 Feb 2019.

(WHO) World Health Organization, 2020. *[Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Acute Health Care Facility Level]*. World Health Organization. Country Office for Thailand.

World Health Organization, 2015. *International statistical classification of diseases and related health problems (ICD-10) in occupational health*: Italy. Stresa.

Zaplatynskyi, V., 2013. Danger-a subjective evaluation of objective reality. *Science & Military Journal*, 8(1):53.

SECTION 2

PART 1: LITERATURE REVIEW

Integrative literature review on occupational hazards and safety practices: Lessons for the North West Province in RSA

2. 1 Introduction

Occupational health and safety remains neglected in public hospitals, especially in developing countries. For the most part, injuries and occupational health hazards are not well studied or recorded for communication with other healthcare workers (Owie & Apanga, 2016:596.). However, literature has revealed numerous occupational injuries in developing countries lacking necessary expertise and resources to manage them (Owie *et al.* 2016:596). Nonetheless, within the health sector rural hospitals are work environments where employees are most at risk of exposure to occupational health hazards that threaten their lives, safety and well-being. Occupational health and safety requires effective incorporation into rural public hospitals because of the high rates of associated morbidity and mortality of exposed workers (Owie *et al.* 2016:596). However, every organization needs healthy and safe human resource base for its performance and general productivity.

According Mossburg, Agore, Nkimheng and Commodore-Mensahto (2019:1), occupational hazards include biological, chemical, physical, ergonomic, psychosocial, fire and explosion, and electrical hazards that threaten healthcare workers' lives, safety, and well-being. Hospitals are one of the most vulnerable places in this regard (Lebni *et al.* 2020:1).

This chapter highlighted the purpose and objectives of literature review, methodology used and themes from the literature review on occupational health and safety from the health sciences perspective. The chapter focused on the review of occupational health and safety literature globally and regionally comparing occupational health and safety practices from 2014 to date. A few articles published before 2014 have been included, based on their direct relevance and significant contribution to the purpose and objectives of the study. Literature review is crucial in a study as it indicates that already known about the topic under investigation, the context under which similar or related studies occurred, and the gaps emanating from recommendations of other studies on the topic that needs exploring. There have been several studies conducted globally on occupational health and safety from different disciplines. Themes addressed in this literature review include the following:

common occupational Hazards, Covid 19 infections as a priority hazard, recommended preventive or safety measures and theoretical framework guided the study.

2.2 Purpose of literature review

The purpose of this integrated literature review was to familiarise the researcher with what is already known about the topic of occupational health and safety and risks or hazards in nursing and health sciences perspectives, occupational health and safety models that exist in nursing education and benefits and challenges entailed therein.

2.3 Objectives of literature review

For the purpose of this study, objectives of literature review were in accordance with Brink, Walt and Rensburg (2014:71), to:

- describe occupational health, safety, risks and hazards in nursing and allied health literature from 2014 to 2020;
- identify gaps in the current literature on occupational safety and risks in allied health literature;
- describe the theoretical framework that guides the study in data collection and analysis.

2.4 Design or Approach

The integrated literature review adopted for this study sought to identify gaps in occupational health and safety literature in relation to methodologies, study population, context of the studies and identify occupational health and safety models, limitations and recommendations made by other researchers on occupational health and safety. According to Whittmore and Knafl (2005:546), the integrative literature review is a specific review method that summarises past empirical or theoretical literature to provide a more comprehensive understanding of a particular phenomenon or healthcare problem. This approach allows for the combination of diverse methodologies and has the potential to play a greater role in the evidence-based practice for nursing. Integrative reviews, thus, have the potential to build

nursing science, informing research, practice, and policy initiatives (Whittmore *et al.* 2005: 546).

Search strategy: The following databases were used for literature search: CINAHL, SA ePublications, Google scholar, Ebscohost, A to Z Journals, Science Direct databases and PubMed. Also reviewed was literature from unpublished sources and textbooks.

The search terms included occupational safety practices, occupational risks and occupational hazards, workplace safety, workplace health, industrial health, industrial safety, employee health and safety.

Selection criteria

The following criteria selected the articles to be included in the review.

- Published in English
- Published from 2014 to 2020
- Addressed occupational hazards and safety in healthcare institutions or organisations

Thematic analysis was undertaken and emergent themes explored with similar and divergent perspectives to support the purpose and objectives of this study. The model has been adapted because of the quality of structures and processes involved in occupational health and safety, which determine the quality of outcomes.

2.5 Results

Over 4000 articles on occupational health safety in nursing and allied health sciences exist in literature. All articles were reviewed, and irrelevant and duplicate studies were excluded. There were 57 full texts and applicable articles to the study and reviewed in detail. Finally, 27 articles that meet the inclusion criteria were included in the final analysis. The identification of the results is in the form themes.

Theme 1: Occupational hazards conceptualised and application to the content displayed in the health settings

Occupational hazard refers to work environment activities, materials, substances, processes or conditions that have potential to increase the risk of injury or ill health (Rajan, 2014:7). In other words, occupational hazards are risks arising from one's employment and can be categorised as follows: biological, physical, chemical and psychosocial hazards. According to Shetty *et al.* (2020:981), biological hazards are infectious agents capable of being transmitted to others through contact with infectious patients or bodily fluids, physical hazards are workplace agents that can cause tissue damage by transfer of energy from the agent such as noise radiation, chemical hazards are hazardous energy released through disruption of molecular bonding as a result of chemical reaction and psychosocial hazards are factors that can cause stress, strain or interpersonal problems of the workers.

Theme 1.1: Biological hazards in the health settings

Biological hazards in healthcare workers are more frequent and most serious risks, which can lead to the development of various diseases. Nurses are always at risk of developing infectious diseases due to direct contact with patients, blood and contaminated body fluids of patients (Nolan & Rosenberg, 2014:1). In other words, nurses are prone to risk of infections in the workplace because of their duties and responsibility in the workplace. Biological hazards can occur in the form of infection through contact with contaminated blood or body fluids or needlestick caused by sharp instruments, which increased risk of contamination from blood of patients with human immunodeficiency virus (HIV), hepatitis C or B virus. Nurses in contact with needles contaminated with bodily fluids (in addition to exposure to the sharp device itself) are at an increased risk of exposure to infection by blood-borne pathogens and addressed by various studies in the literature (Nolan *et al.* 2014:1). **The evident revealed** that occupational health hazards remain a challenge for health professionals in the workplace.

According to study conducted by Rapiti, Pruss-Ustun and Hutin (2014:24), sharp injuries to healthcare workers resulted in 16, 000 HCV infections, 66, 000 HBV infections and 1, 000 HIV infections. Rapiti *et al.* (2014:24) further stated that between 2000 and 2030, the estimate is that these infections will cause 145 premature deaths in the health science perspectives. The prevalence of HBV, HCV and HIV infections among healthcare workers who experience sharp injuries differs from developed countries to developing countries. **The findings evident by Hossein (2015:11) who stated that nurses in developing countries do not follow standard precaution during immunization of children. It became necessity to determine nurse's perceptions on occupational hazards and safety practices in the workplace.**

The world has been on the onset of a pandemic of a new infectious disease from December 2019, formally named as the Coronavirus Infectious Disease (COVID)-19 (WHO, 2020). Covid-19 poses an important occupational health risk to healthcare workers who have attracted global scrutiny. The global and national pandemic of coronavirus disease Covid-19, which is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has challenged the health systems of countries, and resulted in 14 068 people infected in Africa, of whom 3158 (22. 4%) are in South Africa (WHO, 2020). According to Mhango *et al.* (2020:19), as of 30 April 2020, Covid 19 has infected more than 3, 2 million individuals, with over 230,000 fatal cases in 187 countries. The statistics by WHO (2020: 19) suggest that, it is necessary to explore and describe perceptions of all categories of nurses on occupational hazards and safety practices in the hospitals in North West Province.

Healthcare workers are at the forefront of the Covid-19 outbreak response and as such, exposed to hazards that put them at risk of infection (WHO 2019). The review by Mhango *et al.* (2020:19) revealed lack of Personal Protective Equipment (PPE), exposure to infected patients, work overload, poor infection control, and pre-existing medical conditions as Covid-19 risk factors among healthcare workers. These pose a potential risk of transmitting communicable diseases from one healthcare worker to another in the hospital settings. Joshua and Karkada (2017:28) review occupational health hazards and their consequences among nurses, and concluded that nurses face various kinds of occupational hazards due to their nature of work. Given the outbreak of Covid 19, exploration of nurses' perceptions on occupational risks and safety practices is mandatory.

Theme 1.2: Physical hazards in the health settings

Nurses are arguably the most important frontline healthcare professionals available in most healthcare facilities, performing a broad range of tasks. In their day-to-day practice, nurses have to lift and transport patients or equipment from one place to another (Joshua & Karkada, 2017:29). Nurses often perform tasks in difficult environments, particularly in developing areas where lifting aids are not available or practicable. However, such tasks bring a strenuous effect on the back and lead to musculoskeletal injuries in nurses (Tanui, 2015:1).

An Asian study revealed there is a higher prevalence of lower back pain among nurses, a systematic review of lower back pain among Asian nurses revealed that the overall prevalence was 71.5% (Tanui, 2015:1). This high existence of physical hazards among

nurses in the rural public hospitals and Asian nations might be due to the existence of high workload (Shieh, 2016:525) for patient care and conducting advanced procedures that require prolonged standing, while some studies indicated the prevalence of physical hazards linked with both demographic characteristics of nurses and hospitals organisational factors, such as poor staff training on occupational health hazards (Soylar & Ozer, 2018:479). **The findings revealed that nurses suffer from back injuries due to strenuous activities done in the workplace.**

Literature clearly reports that lower back pain among nurses was at a high rate (Attar, 2014:6). An earlier study questioned 1,008 nurses and nursing auxiliaries and found that 1.3% of resigning nurses left their positions permanently because of lower back pain, and 12% intended to leave permanently reporting back pain as a contributing factor (Attar, 2014:6). A study by Maha *et al.* (2015:20) using face-to-face interviews with the aim of assessing low back pain and coping strategies among nurses in government hospitals of Port-Said City, concluded that more than three quarters of nurses suffered from low back pain due to long standing and more than two thirds due to heavy lifting and hospital work.

Theme 1.3: Chemical hazards in the health settings

Chemical hazards in the workplace for nurses include exposure to antibiotic drugs, antineoplastic agents (e.g. chemotherapy) and disinfectant agents (DoH, 2018). Nurses' exposure to chemotherapy may be via the air, contact with work surfaces and medical equipment during spills of liquid chemotherapy in the work environment and through handling patients' bodily fluids, urine, faeces and emesis (DoH, 2018). **Chiou, Chiang, Huang, Wu, & Chien (2020:5)** further stated that chemical residue left on a surface can become airborne and inhaled, and often contributes to poor indoor air quality with consequences for the asthmatic and allergic people. These residues contain chemicals that can cause cancer, reproductive disorders, respiratory ailments, eye and skin irritation, central nervous system impairments and other human health effects (Chiou *et al.* 2020:5).

Chemical solutions, such as alcohol-based hand sanitisers, as recommended by CDC for hand hygiene during the worldwide pandemic, have been effective against viruses **(Shetty *et al.* 2020:981).** The chemical constituents of hand sanitisers normally include 60-90% ethyl alcohol and additional chemical ingredients for fragrance; these constituents while using often get aerosolised due to vigorous and frequent rubbing and may generate a potential threat to the skin and eyes and can cause allergic and irritant contact dermatitis, mild to

moderate inflammatory effect, similar to allergic conjunctivitis (Shetty *et al.* 2020:981). The majority of nurses reported problems related to this in their working environment, necessitating the need to explore nurses' perceptions on occupational hazards and safety practices.

As COVID-19 spreads across the globe, the increased use of disinfectants might lead to worldwide secondary disasters in human health and ecosystems (Casey, Hawley, & Edward, 2017:1133). There has been extensive research done previously for exposure to most frequently used disinfectant compounds, sodium hypochlorite, hydrogen peroxide, alcohol and glutaraldehyde and results were linked to an increased risk of chronic obstructive pulmonary disease (COPD), asthma and eye irritation in health workers and individuals when used regularly (Casey *et al.* 2017:1133). The literatures reviewed indicate that in the health settings, nurses are at risk of such problems because they work directly with those chemicals.

Theme 1.4: Psychosocial hazards in the health settings

Healthcare workers especially nurses, continue to experience high rates of violence, very often situations occur where relatives of patients in critical condition, or the patient themselves in stress situations, physically assault health providers or provoke episodes of violence that somehow involves health workers (Baydin & Erenler, 2014:288). Literature reveals that many workers fail to report work-related injuries for many reasons, such as fear, pain, and lack of management support, aging and fear of losing jobs (Lee *et al.* 2015:93). The findings demonstrated that as a result of psychological hazards exposed in the workplace, healthcare workers safety must be maintained at all time in order to protect the health and safety of workers.

A recent review of the literature highlights the problem of violence in emergency departments and its consequences for the healthcare workers (Baydin *et al.* 2014:288). According to a study done in the Emergency Nurses Association (ENA), 53.4% of nurses reported experiencing verbal abuse and more than 90% reported experiencing physical abuse. In the same survey, 68% revealed they perceived an increase in the frequency of violence and 27% had to take leave from work due to an episode of violence (Fernandes *et al.* 2019:1245). Based on the above scenario, more study needed to fill gap on occupational hazards in the workplace.

COVID-19 disease causes considerable mental stress in nurses, resulting in high levels of anxiety and post-traumatic stress disorder (Huang *et al.* 2020:1). These conditions have a major impact on nurses but also undermine their decision-making ability and quality of interaction with patients. While nurses may accept an increased risk of infection as part of their chosen profession, they may have considerable anxiety about spreading the virus to their children, families and friends, especially the elderly or people with chronic condition. Support among healthcare workers, especially nurses, through social media such as the Vula platform in South Africa, could relieve stress, and might be helpful if extended to other countries (Kang *et al.* 2020:4). **It becomes necessity to support and protect the health of healthcare workers thereby practicing the safety measures.**

Theme 2: Safety measures and health legislation practice in the health settings

The Occupational Safety and Health (OSH) are concerned with the duty of protecting the safety, health and welfare of people engaged in work. The OSH policy placed responsibility of the cost of workers accidents, injury and diseases in the workplace on employers for medical treatment, compensation and rehabilitation of affected workers (ILO, 2015:12). Safety regulatory standard policy was set at the national, regional and international level to establish minimum standard requirements for safety and health protection of workers, with strict compliance (ILO, 2015:12). **However, in order for employees to be active participants in a safety program, they must receive occupational safety training on OHS policy in order to apply mitigating measures to hazards exposed in the workplace.**

The use of PPE is the most important measure to safeguard nurses who are constantly in contact with patients who make them liable to exposure to occupational hazards, particularly in developing countries where occupational safety control rules remains a challenge to implement (Assefa, Kelaye & Tadesse, 2016:25). Moreover, the Occupational Safety and Administration have ordered the use of PPE to protect clinical and non-clinical healthcare workers from exposure to body fluids or to prevent infection with blood-borne diseases and its use is based on risk assessment and evidence of the transmission for a given microbe (Assefa *et al.* 2016:25). **Based on literature reviewed, majority of nurses perceived the use of PPE as important safeguard measures in protecting infections by blood borne pathogens.**

Worldwide pandemics create a huge problem in health settings' perspectives, due of shortage of appropriate administrative equipment, which has a negative impact on service

delivery to society. Nurses work in hazardous environments without appropriate protective and this result in the risk of contracting infections (WHO, 2019). Usually PPE is discarded after single patient or procedure use, however, due to acute shortage during the current COVID-19 outbreak, the World Health Organization (WHO) and the Centre for Disease and Control (CDC) is considering extended use or reuse of certain PPE. In South Africa, the preferred recommendation is the extended use of PPE to reprocessing, including N-95 masks and face shields (WHO, 2019). The literature reviewed that shortage of equipment's compromise the quality of service delivery and increase the risk of exposed to health hazards in nurses.

Physical distancing and other control measures have been implemented in some parts of African countries, including in the capital of DR Congo (Gentilini *et al.* 2020:10). However, authorities in Ghana and South Africa have already begun to consider lifting restrictions. Given the dearth of health-care facilities and equipment across Africa, we urge investing heavily in prevention, including lockdowns on densely populated areas and shelter-in-place orders for the most vulnerable. Nurses perceived that since the implementation of control measure, many cases of occupational hazards reduced. Mitigation strategies must be implemented in conjunction with social protection measures, such as price controls, the waving of utility bills and taxes, and targeted cash transfers (Gentilini *et al.* 2020:10). It is therefore necessary to investigate safety measures in healthcare environment in order to prevent occupational hazards

According to the National Institute for Occupational Health's Annual Review (2015:18), the development of formal and informal training is to train primary healthcare nurses in the recognition of occupational diseases and related issues and appropriate referral to the next level. The modifying of the training was to include community health workers to align itself with the ward-based outreach team concept within the National Health Insurance system (Yeshitila *et al.* 2017:4). The findings of studies suggest that training of nurses on safety measures and the use of PPE is essential to improve nurses' knowledge regarding prevention of injuries and other unsafe practices.

According to Asa, Marcus and Jones (2013:13), a safety culture reflects individual, group and organisational attitudes, values and behaviours concerning safety. Safety management relates to the formal safety practices and responsibilities documented in a safety management system (Asa *et al.* 2013:13). Yeshitila *et al.* (2017:4) stated poor compliance on safety culture was the fault of the supervisor for not training staff on infection prevention and safety precautions in the health settings. It became necessity to developed safety

culture in an organisation to enables the maintenance and improvement of safety performance, with an emphasis on safety work and improvement processes for safety.

2.6 Theoretical framework adopted in the study

The Donabedian theory guided the theoretical framework used in this study. The Donabedian theory is a conceptual framework for examining health services and evaluating quality of healthcare (Donabedian, 1988:1743). He identified three approaches, not limited to the following: structure, process and outcome (SPO). These three concepts are used interchangeably and guide the researcher, data collection and analysis. Donabedian believed that structure measures have an effect on process measures, which in turn affect outcome measures. Structure in Donabedian theory includes infrastructure and resources. The Occupational Health and Safety (OHS) training in the Donabedian process is purposefully directed towards helping people to acquire specific knowledge and skills to improve knowledge in operating equipment, carrying procedures, keeping safety regulations and information on risk, containment and elimination (Occupational health centre, 2016). An outcome is the desired or undesired change that occurred due to the results of process (Ghaffari *et al.* 2014:50). In this study, the outcome is the result of processes put in place.

2.7 Lesson learned from reviewed literature

The findings from reviewed literature demonstrated that nurse's exposure to accidents and injuries in the workplace and these affect quality of care and service delivery to the community. The result of most reviews indicated that within the different group of people who work in the healthcare facility, including doctors, dentists, pharmacists, psychologists, radiologists, etc., nurses are the group who are most exposed to occupational hazards, including biological or contact with body or blood fluids, physical, chemical and psychosocial hazards (Mossburg *et al.* 2019:1). Therefore, it is important to explore perceptions of nurses on occupational hazards and safety practices in the health settings.

Literature reviewed many short falls with compliances to workplace safety for employers and employees, which affect their health negatively and the quality of care. An occupational health and safety study would most likely provide moral, legal and economic benefits to the society, when proper lessons are drawn. Additionally Owie *et al.* (2016:596) further stated that adherence to set standards and guidelines in the workplace not only promotes safety but also prevents disability, economic loss, meets job demands and quality assurance.

However, further studies are necessary in order to describe underlying factors, which hinder implementation of safety practices in the workplace. These key issues could help strengthen worker safety and ensure employees' participation in safety programmes.

The findings demonstrated that occupational hazards at the workplace are preventable by maintaining good hygiene and sanitation. Therefore, healthcare workers require training on the donning and doffing of appropriate protective equipment at the end of procedures. Guidelines and policy for the control and prevention of occupational infectious diseases must be in place in the health settings. Although generously discussed in the literature, the topic still does not seem to be a closed issue. For instance, risks related to violence, stress and its consequences continue to undergo study and evaluation. This means that local studies are necessary to close the gaps and contextualise the relevant completed knowledge.

2.8 Recommendation

In this review, the researcher outlined occupational risks nurses are exposed to in the workplace. The study recommended further research in the area of occupational health and safety in order to obtain broader views, as well as knowledge and perceptions of nurses related to occupational injuries in the hospitals. Strategies must be in place, such as training and workshops to improve employee's knowledge on occupational health and safety issues in order to be familiar with policy and guidelines of OHS in the workplace. Healthcare institutions should also be equipped with adequate protective equipment at all times. There is a need for more research to understand the perception of nurses on occupational hazards and occupational health and safety in North West Province.

2.9 Conclusion

This chapter presented the literature review for this study, covering the introduction of review, aims and objectives, methodology used as well as conceptual framework. Literature has shown that nurses face infectious diseases, toxic substances, back injuries and radiation as well as subjected to hazards such as stress and violence in the workplace. Some hazards occur more commonly than do others, such as biological/infectious hazards, which arise through patients' bodily fluids or contact with an infected patient. Thus, the conclusion is that the environment of nurses should receive support at all times and high morale in the workplace safety would be successful in promoting health, safety and risk prevention in the

health settings. However, identifying the knowledge gap would assist other researchers to focus on other broad perspectives of occupational hazards.

References

Asa, E.K., Marcus, R. & Jones, B. 2013. *Relationships between safety cultures aspects- a work process to enable interpretation*. Sweden: Lund University.

Assefa, Kelaye & Tadesse, 2016. *Utilization of personal protective equipment and associated factors among textile factory workers*: Hawassa Town.

Attar, S.M. 2014. Frequency and risk factors of musculoskeletal pain in nurses at a tertiary centre in Jeddah, Saudi Arabia: a cross sectional study. *BMC Res Notes*, 7 (1), 6.

Baydin, A & Erenler, A.K. 2014. Workplace violence in emergency department and its effects on emergency staff. *International Journal Emergency Mental Health*, 16 (2), 288-90.

Carter, E.J., Pouch, S.M. & Larson, E.L. 2014. Common infection control practices in the emergency departments: a literature review. *Am J Infect Control*, 42 (9), 957-62.

Casey, M.L., Hawley, B. & Edward N. 2017. Health problems and disinfectant product exposure among staff at a large multispecialty hospital. *Am J Infect Control*, 45 (10), 1133-38.

Chena, N., Zhou, M. & Dong, X. 2020. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet*, 395 (10223), 507-13.

Choi, Y., LeeY, H. & LimC, H. 2020. Assessment of respiratory and systematic toxicity of Benzaikonium chloride following a 14-day inhalation study in rats. *Part fibre Toxicol*, 17 (1), 5.

Department of Health. 2018. National guidelines for the development of health promoting schools/sites in South Africa. Pretoria: Government Printers.

Donabedian, A., 1988. The quality of care: how can it be assessed? *Jama*, 260(12), 1743-1748.

Fernandes, C.M., Bouthillette, F., & Rabound, J.M. 2019. Violence in the emergency department: a survey of healthcare workers. *CMAJ*, 161 (10), 1245-8.

Gentilini U., Almenfi M., Orton I. & Dale, P. 2020. Social protection and jobs responses to COVID-19.

Gharpure, R., Hunter, C.M. & Schnall, A.H. 2020. Knowledge and practices regarding safe household cleaning and disinfection for COVID-19 prevention. United States. *MMWR Morb Mortal Wkly Rep*, 69 (23), 705-709.

Huang, J.Z., Han, M.F. & Luo, T.D. 2020. Mental health survey of 230 medical staff in a tertiary infectious disease hospital for COVID-19. *Chinese Journal of Industrial Hygiene and Occupational Diseases*, 38 (0), 1.

ILO. 2015. *ILO Introductory report: Global Trends and Challenge on Occupational Safety and Health*. Geneva: International Labour Office.

Joshua, R. & Karkada, S. 2017. A Review on Occupational Health Hazards and its Consequences among Nurses. *International Journal of Nursing Research and Practice*, 2 (4), 28-36.

Kang, L., Li, Y. & Chen, M. 2020. *The mental health of medical workers in Wuhan, China, dealing with the 2019 novel coronavirus*. China: Lancet Psychiatry.

Lebni, J.Y., Azar, F.E., Sharma, M. 2020. Factors Affecting Occupational Hazards among Operating Room Personnel at Hospitals Affiliated in Western Iran: A Cross-Sectional Study. *J Public Health (Berl.)* (2020). <https://doi.org/10.1007/s10389-019-01169-y>

Malatjie, S. & Radzilani-Makatu, M. 2014. Perceptions regarding occupational injuries by employees at Letaba hospital in Mopani district, South Africa. *African Journal for Physical, Health Education, Recreation and Dance (AJPHERD)*, 1 (2), 469-480.

Maha, M.M., El-Ezaby, H.H & El-Mowafy, R.I. 2015. Low back pain and coping strategies among nurses in Port Said City, Egypt.

Mhango, M., Dzobo, M., Chitungo, L. & Dzinamarira, T., 2020. COVID-19 risk factors among health workers: A rapid review. *Safety and Health at Work*.

Mossburg S. 2019. Occupational Hazards among Healthcare Workers in Africa: A Systematic Review. *Annals of Global Health*. 85(1): 78, 1–13. DOI: <https://doi.org/10.5334/aogh.2434>

Nolan, C., & Rosenberg, E. 2014. *“Breach in protocol” blamed for Dallas healthcare workers who contracted Ebola*. New York.

Occupational health centre. 2016. *Workplace hazards: four common types*: The Center for Disease Control and Prevention.

Owie, H.O. & Apanga, P.A. 2016. Occupational hazards prevailing among Healthcare Workers in Developing Countries. *JAIDS Clin Res*, 7 (5), 96.

Rajan, D. 2014. Occupational Hazards and Health: A comparative study among medical laboratory technicians. *International Journal for Research in Applied Science and Engineering Technology*, 2 (4), 7.

Rapiti, E. Pruss-Ustun, A. & Hutin, Y. 2014. Sharps injuries: assessing the burden of disease from sharps injuries to healthcare workers at national and local levels. Geneva: World Health Organization.

Shetty, R., Jayadev, C. & Chabra, A. 2020. Sanitizer aerosol-driven ocular surface disease (SADOSD) A COVID-19 repercussion? *Indian J Ophthalmo*, 68 (6), 981-983.

Tanui, B.C. 2015. *Assessment of Work-related Musculoskeletal Disorders among Nurses in Mombasa Country*: Kenya.

Shieh, S.H., Sung, F.C., Su, C.H. & Tsai, Y.H.V. 2016. Increased low back pain risk in nurses with high workload for patient care: a questionnaire survey. Taiwan. *J Obs Gynecol*, 55 (4), 525-9.

Soylar, P. & Ozer, A. 2018. Evaluation of the prevalence of musculoskeletal disorders in nurses: a systematic review. *Med Sci*, 7 (3), 479-85.

Vanguard. 2015. Shortage of medical personnel. Tougher times ahead for Nigerians. Available from: <https://www.vanguardngr.com/2015/01/shortage-medical-personnel-tougher-times-ahead-nigerians-1/>. (assessed on Oct 2019).

WHO. 2019. Coronavirus disease 2019 (COVID-19) situation report-74.

WHO. 2020. Coronavirus (COVID-19). <https://www.afro.who.int/health-topics/coronavirus-covid-19> (assessed on April 2020).

Yeshitila, B.B., Tefera, B.L., Gugssa, N.G & Yohannes M.A. 2017. Blood/ Body Fluid Exposure and Needle Stick/Sharp Injury among Nurses Working in Public Hospitals Southwest Ethiopia. *Journal of Public Health Education and Promotion*, 299 (5), 4.

PART 2: ARTICLE

Perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province

T. Denge. North West University; Potchefstroom, South Africa. Orcid.org/ 0000 0002 9536-3917

M. A. Rakhudu. North West University; Mafikeng, South Africa Orcid.org/ 0000 0003 0573-0734

Abstract

Background: Nurses are the backbone of the healthcare system. During the fulfilment of their duties and responsibilities, they experience various types of work-related risks, which harmfully affect their health and nursing quality.

Purpose: The purpose of this study was to explore perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province.

Research methodology: A qualitative exploratory design using semi-structured focus group discussion collected data from purposively recruited participants guided by Donabedian model. Four focus group discussions were conducted until data saturation, namely at the point where no new themes from participants' perceptions emerged.

Results: Five (5) themes emerged from the data analysis, namely nurses' perceptions on general occupational hazards, nurses' perceptions regarding structural issues on occupational hazards, nurses' perceptions regarding safety practices process, occupational health outcomes experienced by nurses and lastly, suggestions regarding safety measures for incorporation in the health settings.

Conclusion: The study concluded that shortage of equipment and poor infrastructure put nurses at risk of occupational hazards resulting in high staff turnover. Nurses' working environment should be supportive at all time and emphasis should be on maintaining their health. The recommendation is that education and training for all nurses should be incorporated as a safety measures and practices in the health settings to update nurses' skills and knowledge.

Keywords: Hazards; health settings; nurses; occupational hazards; occupational health perceptions; public hospitals; risk and safety.

Introduction and background

The nursing profession deals with health and most importantly, the lives of patients and society, and due to the nature of their duties, nurses confront many occupational hazards, including physical hazards such as sharps, slippery floors, falling objects and exposure to chemical, psychosocial and biological hazards during the course of discharging their duties (Chio, Chiang & Huang *et al.* 2013:1377). Nurses continue to report high levels of job-related injury and illness (Irtyah, 2014:59). It is evident that working environment and responsibilities of nurses places them in the frontline of numerous occupational hazards, which can lead to acute or chronic problems.

Occupational hazards are mostly under-reported due to inadequate research. However, literature has revealed numerous occupational diseases or risks in South Africa and in developing countries lacking the necessary expertise and resources to manage it (Owie, 2016:596). In his study, Owie (2016:596) found that the increase in occupational health hazards in developing countries are largely blamed on healthcare workers not practicing universal safety measures, such as hand washing, wearing of gloves and usage of personal protective equipment. The finding revealed that unsafe practice increases the risk of injuries as well as transmission of infections to other healthcare workers; therefore it became necessity for nurses to be trained on safety measures adopted in the workplace. The nurses selected to be the focus of attention in this study, due to occupational hazards, are common in the nursing profession and have been a major public health concern as they contribute the largest cadre of healthcare workers. Therefore, this study explores perceptions of nurses on occupational hazard and safety practices in the workplace.

Statement of research problem

The researcher has been working in the research area for the past two years as a professional nurse and noted with concern the risk of occupational health hazards in the workplace. Although nurses at Ditsobotla public hospitals face with different hazards, this area is largely under-researched. Ditsobotla public hospital statistics between 2015 to 2019 show that there are 200 cases of needle stick, blood splashes and amniotic fluid (Ngamiland DoH, 2015). In rural areas, occupational risk is even higher due to harsher working conditions, greater isolation and insecurity, poor infrastructure, inadequate equipment and workload (OHS:2015:40), thus rural healthcare workers may be more likely to be sick or disabled. Ahasan and Partanen (2013:11) affirmed this by stating occupational health

remains neglected in developing countries under the pressure of devastating social, economic, and political changes. There was a dearth of literature on occupational risks and safety in North West Province, South Africa.

Conceptual framework

Donabedian's theory, which is a conceptual framework for examining health services and evaluating quality of healthcare, guided this study. The author identified a three-component approach for evaluating quality of care, including structure, process and outcomes. Donabedian believed that structure measures have an effect on process measures, which in turn affect outcome measures (Donabedian, 1988:1743). In this study, structure includes resources and infrastructure, process involves occupational health and safety policy, and procedures and outcomes are the results of safety measures in the workplace.

Aim and objective of the study

The aim of this qualitative study was to explore and describe perceptions of all categories of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province using the Donabedian structure, process, and outcome.

Research design and method

A qualitative, descriptive, explorative, and contextual design was employed using semi-structured focus group discussion (FGD) to collect data guided by the Donabedian framework.

Population and sampling

The total population of nurses working in Ditsobotla General De La Rey/Thusong hospitals is 150, including registered nurses (RNs), enrolled nurses (ENs) and enrolled nursing auxiliaries (ENAs). Out of 150 nurses, a minimum of 15 participants who met the inclusion criteria were purposively selected in the study until data saturation.

Inclusion and exclusion criteria

In this study, the inclusion criteria were: RNs, ENs and ENAs, who had two years of working experience in Ditsobotla public hospitals, registered with SANC, and willingly to participate in focus group discussion.

Data collection

The finding revealed that unsafe practice increases the risk of injuries as well as transmission of infections to other healthcare workers; therefore it became necessity for nurses to be trained on safety measures adopted in the workplace. Data saturation occurred after four FGD. Digital recording captured data in September 2020, during COVID 19 alert stage 1, taking into account the Global and National health guidelines. The following steps followed:

- Qualitative explorative data using semi-structured focus group discussions collected data in three to four groups of participants. Participants included were all categories of nurses working in Ditsobotla public hospitals.
- The collection of data occurred in the nurse's boardroom. The researcher had asked the management of the hospital to utilise the boardroom, which was far from units and free from noise. Data collection took place over a period of two (2) months, from 30 July to 28 September 2020 between 14h00 to 16h00.
- The researcher prepared the guide for questions to be asked during the discussion.
- The researcher compiled a list of items to take to the discussion, including for example, a tape recorder, notebook and pen.
- Before beginning the focus group discussion, the researcher took time to explain the purpose of the study, information of confidentiality and participants' role. Dominance in a group was not acceptable, and participants requested to listen to questions carefully before giving their answers. Participants had the opportunity to express their opinions, explain, discuss and share experiences on the topic of research.
- During focus group discussions, the researcher was mentally prepared to act if there were unexpected issues raised or occurred during the discussion.
- An audio recorder recorded the data and notes taken to capture information regarding non-verbal behaviour, such as gestures between group members, eye contact, posture and fidgeting during discussions (Merriam, 2009:110), and integrated with the data obtained from the group discussion.

Permission to use the recorder was requested from the participants. Collected data were password protected and kept safe in a locked cupboard. Data were stored in the NuMIQ director's office for a period of 5 years. The researcher used codes (e.g. label A or B) in reporting the results instead of information that identified the participants. The outcomes or research report were distributed to the library of the university for reference purposes and the journal was written as indicated in the consent form

Data analysis

The researcher analysed and discussed data as one set of data using the framework proposed by Creswell & Clark (2017:140).

- The researcher familiarised herself beforehand with the data by transcribing the audio recordings. During the analysis, the researcher immersed herself in the data, by reading and re-reading the transcripts.
- Each transcript gave the researcher an overall picture and explored the underlying meaning.
- The researcher read the transcripts and highlighted features relevant to the research questions. During the reading, the researcher identified common patterns and themes among the data. The researcher achieved this by highlighting the recurring themes; language and opinion of the participants (see Annexure L). Thereafter, the data were grouped and codes provided for each group. Therefore, the researcher links the data to the research idea without preceding conceptualisation and reviews the initial responses to construct a coding scheme based on major categories that emerge. The researcher then searched for themes from meaningful patterns (by linking codes) that emerged from the data and relevant to the research question
- Codes were given to topics and subtopics and added along the appropriate segment in the text
- Final decision made regarding which categories to be included
- The most descriptive wording was selected for topics and converted into categories
- Corresponding data was grouped under each category to highlight themes and sub-themes.

Trustworthiness

Trustworthiness in qualitative research means methodological soundness and adequacy, ensured through credibility, dependability, and transferability (Polit & Beck, 2017:96). The activities to ensure credibility included member checking and prolonged engagement with peer review and the supervisor. Dependability was utilised to ensure consistency, done by coding and re-coding of data. To ensure transferability, detailed descriptions of each of the themes developed from the research question were included in the results section to provide detailed findings from the study.

Ethical considerations

The Health Research Ethic Committee in North West University granted ethical approval to conduct the study, [NWU-00348-20-S1](#) and the Department of Health North West provincial office and the Chief Executive Officer of the selected hospitals gave permission to collect data. Participation was voluntary.

Ethical principle

The following are ethical principle that the researcher followed in the research process:

Principle of beneficence

According to Brink *et al.*, (2018:29), to adhere to this principle, the researchers need to secure the wellbeing of the participant, who has a right to protection from discomfort and harm. In this study, Participants will be protected from physical or psychological harm at all the time, they will be told that they are free to withdraw from the study at any time they feel exhausted.

Principle of justice

Brink *et al.*, (2018:30) refers this principle as, “the fair selection and treatment of the participants during the study”. In this study, participants will be fairly selected and treated equally. The researcher will respect and honour any agreement they make with participants.

Results

The results of this study were discussed by means of themes and subthemes:

Demographic profile

The study was completed with maximum of 15 participations. Four focus group discussions were conducted. The mean age of participants ranged from 24 to 55 years. Females were 11 and 4 males. Out of 15 participants 13 were black and speak Tswana and 1 coloured and 1 white. Four participants had certificate in Enrolled nursing and nursing auxiliary, three had a Diploma in nursing and eight had Degree in nursing. The majority of nurses had a diploma in nursing. Five themes emerged, namely nurses' perceptions regarding general occupational hazards occurring in the health settings, nurses' perceptions regarding structural issues on occupational hazards, nurses' perceptions regarding safety practices process, occupational health outcomes experienced by nurses and suggestions on safety measures, for incorporation into the health settings.

Themes and sub-themes

Table 1 depicts the five (5) themes and sub-themes from the data analysis.

Table 1: Themes and sub-themes for nurses' perceptions on occupational hazards and safety practices in the workplace

Theme	Sub-theme
Nurses' perceptions regarding general occupational hazards occur in the health settings	• Needle Stick or Sharp injuries resulted in risk to infections • Risk of slips, trips, and falls • Workplace violence
Nurses' perceptions regarding structural issues on occupational hazards	• Poor infrastructure and hygiene • Shortage of equipment • Shortage of staff
Nurses' perceptions regarding safety	• Poor compliance on Occupational

practices process	Health Safety policy. • Poor training and development of all categories of nurses • Inadequate procedures due to shortage of resources
Occupational health outcome experienced by nurses	• Increased absenteeism • High staff turnover • Work-related stress
Suggestions on safety measures to be incorporated in the health settings	• Education and training • Team collaboration and communication

Theme 1: Nurses perceptions regarding general occupational hazards occur in the health settings

Many participants perceived occupational hazards as risks or dangers accepted as consequences of a particular occupation. Furthermore, they stated occupational hazards can be injuries, illnesses, or diseases that one is exposed to while on duty and can result in physical and psychological impairment. This theme includes the following sub-themes: needle stick or sharp injuries resulted in risk of infections, risk of slips, tricks and falls and workplace violence.

Sub-theme one: Needle Stick or Sharp injuries resulted in risk infections

The majority of participants reported the problem of being exposed needle stick or sharp injuries in the workplace. Normally, the midwives are carrying out their work in high risk working environment even if they observe the precautionary measures, there are vulnerable to accidents and hazards and are to take the post-exposure prophylaxis regimen during a

period of one month. Majority of the participants highlighted that there are at risk of infectious diseases at work due to exposures of working directly with patients”.

- Participant C *from group 1*: *I was working night duty with diabetic patient monitoring blood glucose and nurses due to their negligence they leave needle inside the glucose machine and I mistakenly pricked myself with that needle.”*
- Participant J *from group 3*: *“Due to shortage of sharps containers, nurses walk with the needle from one area to another and this can result in sharps or needle injury, which can cause risk of HIV and hepatitis.”*
- Participant B *from group 1*: *“As a nurse I’m prone to Covid-19 in the workplace because I nurse the suspect and confirmed cases without proper personal protective equipment and sometimes this occurs as a result of mismanagement of the funds.”*

Sub-theme two: Musculoskeletal injury

Participants indicated that there are exposed to risk of falls and this resulted in staff absent from workplace due to musculoskeletal injuries sustained on duty. Data also show that participants had personal experiences of occupational injuries. Some of the nurses outlined they had knee joint injuries due to falling on wet floors because general workers did not use the caution sign when cleaning. **This is how participants expressed it:**

- Participants B *from group 1*: *“I was working night duty where I experience floods in the whole hospital, patients and nurse could not move around and this affect the routine and we were afraid that patients can be slip and fall and will be blamed as nurses.”*
- Participants E *from group 2*: *“Wet floors when general workers are cleaning the floor, the do not put the sign and someone can pass through the wet floor which can result in slippery leading to physical injury.”*

Chen, Wang and Chen (2014:283) supported this and stated that nurses are prone to lower back injury and pain because of falls, bending and lifting during clinical practice.

Sub-theme three: Workplace violence

Female nurses reported being the victims of verbal abuse more often than male nurses, and male nurses were reportedly the victims of physical abuse. The following are examples of sentiments verbalised by most participants:

- Participant J **from group 3**: *Sometimes we admit patients with psychiatric disorder in our unit and during the middle night they threatened to do violence thing to nurses and without male nurse, we end up calling the security to assist us in sedating patient.”*
- Participant K **from group 3**: *“I have once witnessed a nurse in a psychiatric ward being assaulted by a patient and that nurse ended up in resigning in the organization.”*

According to d’Ettorre and Pellicani (2017:337), workplace violence is defined as any incident in which a person is abused, threatened, or assaulted in circumstances related to their work; this can include verbal abuse and threats as well as physical attacks. This is in contrast with the study conducted by Mento *et al.* (2020:381), who concluded that female nurses often experience significant physical and psychological consequences after an episode of workplace violence resulting in higher rates of fear, anxiety, anger, suicidal thoughts and post-traumatic stress symptoms.

Theme 2: Nurses’ perception regarding structural issue on occupational hazards

This theme includes three sub-themes of structural occupational hazards, which are poor infrastructure and hygiene, shortage of equipment and shortage of staff.

Sub-theme one: Poor infrastructure and hygiene

Majority of participants indicated that poor infrastructure affect their health as they exposed to various work-related risks such as physical hazards wherein the buildings can fall at any time in the workplace and the structure of wards are too small more especially in labour ward and this can lead to risk of infections as a result of working with many patients in a small room.

- Participant C **from group 1**: *“The infrastructures are going beyond replacement, because the buildings are too old and ceilings are falling down, paints are peeling off, walls are gapping, not enough light, and this can contribute to occupational hazard.”*

- Participant A *from group 1*: “We are sharing bathroom with the patients and their relatives due to poor infrastructure and this demotivates us at work because it can lead to risk of infection.”
- Participant O *from group 4*: “Our hospital does not have isolation area, so we end up mixing patients together infectious and non-infectious diseases.

It is evident from findings that nurses face exposure to various infections as a result of sharing bathrooms with patient and due to poor hygiene, and this affected their health negatively. Therefore, nurses demand a clean and hygienic work environment. This is in line with South African Medical Association (2015:36), most facilities had problems, such as poor waste management, lack of cleanliness and poor maintenance of grounds and equipment. As stated by Nevhuthalu (2016:138), patients and staff confirmed that some departments had an unacceptable physical environment (e.g. dirty toilets for delivery of quality healthcare).

Sub-theme two: Shortage of equipment's

The participants' highlighted that shortage of equipment in the workplace, such as personal protective equipment, affected their health and well-being negatively, especially in the case of the worldwide pandemic infection/Covid-19. Participants verbalised comments similar to the following:

- Participant A *from group 1*: “I was working in an emergency unit, where I had to conduct the delivery without apron, I had to improvise in order to continue with my duty and I ended up wearing patient gown in order to protect myself from blood-borne infections.”
- Participant E *from group 2*: “Infection prevention and control requires us to wash our hands before and after any surgical procedure, sometimes this is difficulty in my unit since we do not have hand soap and warm water.”
- Participant G *from group 2*: “I consider the shortage of personal protective equipment for healthcare workers as an occupational hazard, because if there is no proper utilisation of gloves, plastic apron and eye goggles; I am prone to various cross infectious diseases such as Tuberculosis, covid-19 and meningitis.”

In this study, the participants reported that they experienced shortages of Personal Protective Equipment supplied by the supervisors and the Occupational Health and Safety representative, and this made them prone to Covid-19 in their working environment. This is

in line with Lines (2014:8), who reports that shortage of equipment in the healthcare facility does not only affect the healthcare workers but also the quality of service provided to the patients. Consequently, nurses were forced, by circumstances, to share protective clothing such as boots and gowns. The results further concur with the study by Mokoena (2017:67), which revealed lack of material resources, equipment and supplies in resulting in compromised care and occupational risks.

Sub-theme three: Shortage of staff

Majority of participants highlighted shortage of staffs as a serious concern in health facilities. Nursing shortage problem is a multifaceted problem and its associated factors vary from one country to another. The following are the comments from participants:

- Participant L from group 3: *"I was prone to Covid in the workplace due to shortage of staff, we end up being asked by manager to go and assist other unit since there were no staffs on that day."*
- Participant Q from group 4: *"I feel like shortage of staff is due to unfilled vacant because staffs are resigning, and some are absent themselves from work due to personal reasons."*

Rossester (2014:463) stated that the main cause of nursing shortage in the world are insufficient university student admissions, aging of nurses and their early retirement, inadequate employment, increase in stress, low job satisfaction, work-related injuries and willingness to leave the job.

Theme 3: Nurses perceptions regarding safety practices process

This theme had three sub-themes; poor compliance of nurses on Occupational Health Safety policy, poor training and development of all categories of nurses, and inadequate procedures due to shortages of resources.

Sub-theme one: Poor compliance on policy

Nurses explained that lack of supplies, poor maintenance of equipment's and inconsistent water supply disadvantage them when it comes to occupational health and safety compliance. Finding is evident in their stories:

- Participant B from **group 1**: *"There are rules and regulation for covid-19 that are put in place, however, I feel like there are not dynamic or stable because they change now and then. So it becomes difficult sometimes to implement and comply with those policy and guideline."*
- Participant M from **group 3**: *"I feel like occupational health and safety, quality assurance and infection prevention and control team are not training us enough with those policy and procedures in the workplace."*

Sub-theme two: Poor training and development of all categories of nurses

Participants perceived poor training and development in the workplace resulted in poor service delivery to the society. Majority of participants stated that there is a lack of training such as workshop and no career development in the organisation.

- Participant J from **group 3**: *"There is lack of in-service training on the waste control and prevention management."*
- Participant L from **group 3**: *"I feel like there is no development in our hospital, because staffs are not taken to schools."*

The results agree with those of Hamid *et al.* (2019:3), who identified the barriers to comply the OSH legislation are lack of skilled person power and inadequate information. **The finding demonstrated** that nurses need training and development empowerment in order to give quality and holistic care to society..

Sub-theme three: Inadequate procedures due to shortage of resources

A shortage of personal protective equipment's can delay total quality of service delivery to the patient in the working environment. Nurses stated that sometimes they work without protective equipment and they improvise in order to provide patient care. However, even in the midst of a pandemic certain procedure types must be performed, including appropriate

cancer treatment, emergency surgery and urgent transplantation as these are considered life saving procedures with curative potential.

- Participant C from group 1: *“The issue of resources again is also a problem, our equipment’s are very old and are not serviced for a very long time as a result they’re no longer functional so during emergency we are struggling and sometimes we even loose the life of patient as result of inadequate procedures due to poor resources.”*
- Participant E from group 1: *“Shortage of resources such as scrub soap sometime we end up washing our hands without soap and this compromise the health of patients when it comes to surgical procedures.”*

Theme 4: Occupational health outcomes experienced by nurses

Three subthemes were highlighted, increased absenteeism, high staff turnover and work-related stress.

Sub-theme one: Increase absenteeism

The majority of participants indicated that people absent themselves from work because of shortage of staff in the units. Comments similar to this were verbalised by most participants:

- Participant Q from group 4: *“In my unit, there are many people who report sick almost every months because working environment is not conducive and the problem of occupational hazards that when reported no action is taken by management.”*

It is evident from the participants that majority of staff does not report on duty because they are dissatisfied at work for many reasons.

Sub-theme two: High staff turnover

Participants highlighted that staff are resigning due to various problem in the workplace. Nurses moved from developing areas to developed areas in order to find better opportunities for themselves.

- Participant D from **group 2**: *“Majority of people are resigning and as a result we are pulling very hard to be able to render the best quality and holistic care to patients.”*
- Participant Q from **group 4**: *“We are also losing most of the qualified profession such as specialised nurses and doctors due to shortage of resources because sometimes patient died in front of you as a healthcare workers and you think that if you have sufficient resources you would have save the life of that patient, this can lead to stress in the workplace.”*

Sub-theme three: Work related stress

Nursing by its nature is one of the most stressful professions owing to the emotional nature of patient demands, long working hours and inter-professional as well as inter-personal conflict. Many participants highlighted that they experienced stress in the workplace due to long shift of working 12 hours per day and sometimes they did not go to lunch due to heavy workload. Staff shortage in some department has put job pressure and inability to engage new staff on proper job orientation and training before commencement on duty leading to stress at work.

- Participant D from **group 2**: *“The normal working hours is eight hours per day, 180 hours per month, but nurses made to work for about 200 hours per month, and even 210 hours per month without any form of compensation” like any other healthcare workers.”*
- Participant A from **group 1**: *Sometimes during night duty in my unit you work alone as a professional nurse due to shortage of staff, so in case of emergency this can cause a stress because you have to run around, calling doctors and resuscitate the baby in the meantime waiting for doctor.”*

Theme five: Suggestions on safety measures for incorporation in the health settings

This theme includes the following sub-themes: education and training, team collaboration and communication for incorporation as safety measures in the health settings.

Sub-theme one: Education and training

It is important to educate and train our newly employed staffs on the donning and doffing of personal equipment's in order to become familiar on practising the correct measure of infection prevention and control.

- Participant B from **group 1**: *"Training programme is needed for new employees when new equipment or processes are introduced, when procedures have been revised or updated and when information must be made available. For example, managers must design a training program for new employees in a workplace in cooperation with the safety measures in the facility."*
- Participant N from **group 4**: *Communication with management regarding any problem that we encounter in the units if think it can also help to vent out our problems and grieve."*
- Participant L from **group 3**: *"Giving health education to our patients especially patient with contagious such as Tuberculosis and covid-19 to wear mask always in order to prevent cross-infection."*

The use of personal protective equipment (PPE) is the most important measure to safeguard nurses who are in constant contact with patients who make them liable for exposure to occupational hazards, particularly in developing countries where occupational safety control rules remain a challenge to implement (Assefa, Kelaye & Tadesse, 2016:25). It is important to educate and train our newly employed staff on the wearing and removal of personal equipment in order to become familiar with practising the correct measures of infection prevention and control.

Sub-theme two: Team collaboration and communication

Participant's stated that they had communication problems, specifically with the multidisciplinary team such as managers, doctors and Occupational Health Safety team because they did not provide them with necessary information when dealing with occupational hazards in the workplace. **The findings are** evident in their stories:

- Participant J from **group 3**: *"I think there is a lack of communication among team members. Sometimes, we do not know whether a patient has hepatitis or what kind of infection the patient has. The doctors know, but they do not inform us in time."*
- Participant N from **group 4**: *"Communication with management regarding any problem that we encounter in our units I think it can also help to vent out our problems and grieve."*

Communication is the exchange of information to achieve a better understanding and when people come together and contribute their expertise for the benefits of a shared objective or mission is called collaboration (Brandt et al. 2014:393). Participants stated that it is worth taking a step back to how people collaborate in the workplace because organizations that collaborate well are likely to be more successful, more culturally aligned and have higher engagement rates as well as excellent service delivery.

Discussion of the results

The present study aimed to explore and describe the perception of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province, using a South African context. Main themes and sub-themes were outlined in the study. The findings of the study also revealed that nurses perceived different occupational hazards occurred in the workplace, including needle stick injury, slippery floors, infections, workplace violence and work-related stress, which harmfully affects their physical and psychological well-being. Anelli et al. (2020:386) found multiple risk factors contribute to the risk of infections in healthcare workers includes lack of awareness during the early weeks of the outbreak, inadequate personal protective equipment supply and training, insufficient rapid diagnostic testing for COVID-19, long working hours in high risk environments and on-going community spread and household exposures.

According to the participants, workplace violence can cause not only physical injuries but also psychological impacts, resulting in higher rates of fear, anxiety, anger, suicidal thoughts and post-traumatic stress symptoms. d'Ettorre (2017:342) further stated that the consequences of workplace violence include decreased job satisfaction, increase intent to leave organization and lowered health related quality of life. The International Labour Organization reported that the magnitude of exposure to violence at work depends not only on person's occupation but also on the circumstances referred as "situation at risk", including those associated with working alone, working with valuables, working with people in distress or working in an environment that is increasingly open to violence (Edward et al. 2016:299).

Based on the participant's experiences, structural issues relating to occupational hazards result in nurses leaving their jobs. As stated in the study, nurses suffered serious injuries and accidents due to poor infrastructure. These cases occurred especially when the physical areas were not conducive enough due to peeling ceilings, gaping walls, poor equipment and resources, all of which could lead one into physical hazards and risk of infections. Proper

infrastructure and sufficient physical space and ventilation systems are necessary for the safety of nurses (Samur & Seren Intepeler, 2019:1400). In a study conducted by Nevhutalu (2016:138), patient and staff confirmed that some departments had an unacceptable physical environment (e.g. dirty toilets for delivery of quality health care).

Participants believed that high levels of stress result from a lack of materials, unavailability of functional materials, or having to work with broken materials. Some of the nurses stated they have to extend extreme effort just to find the materials that are supposed to be used. Nkomo (2013:68) stated that shortage of resources contributed to negative outcomes experienced by nurses such as high staff turnover and vacancies that remain unfilled for a long time, which compromises the provision of health services to patients. However, lack of materials should be the hospital executives' responsibility, providing a supportive environment for nurses, not nurses problem to handle (Dutra *et al.* 2018:68).

This is line with study conducted by Mokoena (2017:67) revealed that about the lack of material resources, equipment and supplies (for example, glucometers for monitoring blood glucose and needles for lumbar puncture and investigating or diagnosing meningitis), resulting in prolonged patients stay in the hospital as patients were referred to other hospitals for investigation delayed diagnosis and treatment. Additionally, findings revealed a shortage of resources in the workplace, such as a limited supply of gloves, masks, plastic aprons and medications from the pharmacy, all of which hinder quality of services provided to the patients and society at large, resulting in negative nurse outcomes such as high staff turnover and absenteeism.

Health care professionals in general are thought to have a high vulnerability to burnout as a result of experiencing high levels of emotional strain, owing to stressful working environments exacerbated by sick and dying patients to whom they provide care (Maslach *et al.* 2016:103). They wear heavy personal protective equipment and perform tedious and detailed nursing work for confirmed covid-19 patients in isolated areas. In addition, they had higher exposure to be infected with the virus than others. Considering the possibility of bringing the virus to families, majority of the medical staff couldn't return home and had to live in hospitals accommodation and hotels (Maslach *et al.* 2016:103).

Training and development is seen as important element to adapt to in order to deliver the best excellence service delivery, empowers and keeps nurses updated with new knowledge and skills. According to Butler (2020:5), the best places to work are places where nurses are provided with training and opportunities to develop. Nurses perceived that poor training and development lead to job dissatisfaction

Recommendations

In the light of the findings and the limitations highlighted above, the researcher suggests the following recommendations:

Recommendations for nursing practice and policy

The proposed recommendations for nursing practice and policy are:

- Develop a short policy statement from the employer or senior executive that explicitly states senior management's commitment to and acceptance of responsibility for the workplace health management strategy within the workplace.

Recommendation for nursing education

The proposed recommendations for nursing education are:

- Short courses to inform nurses and improve their skills in being innovative in the implementation of the Occupational Health and Safety Act for compliance in all nursing wards.
- The establishing of a well-structured occupational health and safety programme, in the hospital, including awareness and strong infection control programme, and offered to newly recruited nurses during their orientation programme.
- The monitoring of the effectiveness of the education programme.

Recommendation for nursing research

The proposed recommendations for nursing research are:

- There is a need for harmonisation and international comparability of a well-designed study to develop tools and methods to develop organisational structures that can strengthen data sharing between worker safety and health and health programmes. Shared data might include personnel and programme structures, policies, protocols, plans and priorities.
- More studies to identify and evaluate strategies to promote effectiveness in preventing workplace hazards.

- Lastly, the conducting of studies, using mixed methods, on the barriers to effective communication of safety standard and practices in the workplace.

Limitations of the study

This study was limited to nurses' perceptions on occupational hazards; a follow-up study should incorporate all healthcare workers in the hospitals. The qualitative data were limited to the information the participants provided in the focus group discussion.

The conducting of this study was in level one district hospitals in North West Province, South Africa, thus generalisation to larger populations cannot be made. Only qualitative descriptive data extracted the themes, provided a better understanding and explored nurses' perceptions on occupational hazards and safety practices in the workplace.

Conclusion

This article explores perceptions of nurses on occupational hazards and safety practice in the health settings, and five themes were outlined. Nurses' perceived a risk of infection, such as Covid, was a common occupational hazard leading high staff turnover. The participants suggested additional measures to protect nurses from occupational hazards that benefit both patients and the healthcare system. Furthermore, this study serves to provide information to the Department of Health and managers on promoting health and safety for nurses, with emphasis placed on maintaining their health rather than only expecting them to be productive.

Acknowledgements

The researcher would like to thank the participants for agreeing to participate in this research study.

Competing interest

The authors have declared that no competing interest exists.

Authors' contribution

T.D. wrote the data for this manuscript and publication. M.A.R. assisted in her capacity as one of T.D.'s research supervisors and helped with conceptual contributions and reviews of the draft document, and facilitated in publication.

Funding information

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Disclaimer

The views and opinions expressed in this article are the author's own and not an official position of the institution or the funder.

References

- Adib-Hajbaghery, M. & Lotfi, M.S. 2013. Behaviour of healthcare workers after injuries from sharp instruments. *Trauma Mon*, 18, 75-80.
- Ahasan, E.M. & Partnen, A. 2013. The role of psychosocial stress at work for development of cardiovascular diseases: A systematic review. *International Archives of Occupational and Environmental Health*, 85(1), pp67-79.
- Anelli, F., Leoni, G., Monaco, R., Nume, C., Rossi, R.C., Marinoni, G., Spata, G. & Burgio, E. 2020. Italian doctors call for protecting healthcare workers and boosting community surveillance during covid-19 outbreak. *Bmj*, 368.
- Assefa, Y., Kelaye, T. & Tadesse, S. 2016. Utilization of personal protective equipment and associated factors among textile factory workers: Hawasa.
- Brandt, B., Lutfiyya, M.N., King, J.A. & Chioreso, C. 2014. A scoping review of interprofessional collaborative practice and education using the lens of Triple Aim. *J Interprof Care*, 28 (5), 393-9.
- Bureau of Labor Statistics. (2011b). Incidence rates for nonfatal occupational injuries and illnesses involving days away from work per 10,000 full-time workers by industry and selected events or exposures leading to injury or illness, 2010. Retrieved from www.bls.gov/iif/oshwc/osh/case/ostb2832.pdf.
- Chen H.M, Wang, H.H, Chen, C.H. (2014). Effectiveness of a stretching exercise program on low back pain and exercise self-efficacy among nurses in Taiwan: a randomized clinical trial. *Pain Manag Nurs* 15(1):283–291.
- Chiou, S.T., Chiang, J.H., Huang, N., Wu, C.H. & Chien, L.Y. 2013. Health issue among nurses in Taiwanese hospitals: National survey. *International Journal of Nursing Studies*, 50, (10):1377-1384.
- Creswell, J.W. & Clark, V.L.P. 2012. *The Mixed Methods Reader*. Thousand Oaks. Sage Publications.
- De Kok, J., Deiji, C. & Veldhuis-Van Essen, C. 2013. Literature review of recent empirical evidence of the contribution of SMEs to employment creation. Deutsche: Gesellschaft für International Zusammenarbeit (GIZ).

Democratic Nurses Organisation of South Africa (DENOSA). 2013: Statement by the Democratic Nursing Organisation of South Africa states that audit outcome on public healthcare facilities is a true reflection of conditions on the ground. www.polity.org.za (Assessed on 14 October 2019)

d'Ettorre, G.; Pellicani, V. Workplace Violence Toward Mental Healthcare Workers Employed in Psychiatric Wards. *Saf. Health Work* 2017, 8, 337–342.

Donabedian, A., 1988. The quality of care: how can it be assessed? *Jama*, 260(12), pp.1743-1748.

Edward, K.L.; Stephenson, J.; Ousey, K.; Lui, S.; Warelow, P.; Giandinoto, J.A. A systematic review and meta-analysis of factors that relate to aggression perpetrated against nurses by patients/relatives or staff. *J. Clin. Nurs.* 2016, 25, 289–299

Hamid, A.R.A., Razak, A.R.A., Yusof, A.M., Jaya, R.P., Zakaria, R., Aminudin, E., Anuar, M.A.S.K., Yahya, K., Haron, Z., Yunus, R. and Rashid, I.A., 2019. Noncompliance of the occupational safety and health legislation in the Malaysian construction industry. In *IOP Conference Series: Earth and Environmental Science* (Vol. 220, No. 1, p. 012043). IOP Publishing.

Foromo, M.R., Chabeli, M. & Satekge, M.M. 2016. 'Survey on the implementation of the Occupational Health and Safety Act at an academic hospital in Johannesburg, *Curationis* 39(1), a1524. <http://dx.doi.org/10.4102/curationis.v39i1.1524>.

Gorman, E., Yu, S. & Alamgir, H. 2010. When healthcare workers get sick: exploring sickness absenteeism in British Columbia. *Canada Work*, 35 (2), 117-123.

Irtiyah, M., Lamia, B. & Ahlem M. 2014. Influence of shift work on the physical work capacity of Tunisian nurses: a cross-sectional study in two university hospitals. *Pan Afri Med J*, 26, 59.

Ives, J. & Huxtable, R. 2020. Surgical ethics during a pandemic: moving into the unknown? *British Journal of Surgery*.

Kang L, Li Y, Hu S, Chen M, Yang C, Yang BX, et al. The mental health of medical workers in Wuhan, China, dealing with the 2019 novel coronavirus. *Lancet Psychiatry*. 2020; 7: 3

Maslach, C. & Leiter, M.P. 2016. Understanding the burnout experience: recent research and its implication for psychiatry. *World Psychiatry*, 15, 103-111.

Matsiko, W. 2010. Positive Practice Environment in Uganda: Enhancing health worker and health system performance. Switzerland: Geneva.

Mento, C., Silvestri, M.C., Bruno, A., Muscatello, M.R.A., Credo, C., Pandolfo, G. and Zoccali, R.A. 2020. Workplace violence against healthcare professionals: A systematic review. *Aggression and violent behaviour*, 51,101-381.

Mokoena, M.J. 2017. "Perceptions of professional nurses on the impact of shortage of resources for quality patient care in a public hospital: Limpopo Province." (Doctoral dissertation).

Nevhutalu, H.K. 2016. Patient's rights in South Africa's public health system: moral-critical perspectives (Doctoral dissertation, Stellenbosch: Stellenbosch University).

Nkomo, P. 2013. Views of professional nurses regarding proposed National Health Insurance. Unpublished Master's dissertation. Pretoria: university of South Africa.

Nwankwo, C.M., Karanja, S. and Vasanthakaalam, H., 2017. The assessment of the compliance to occupational health and safety measures among the health workers in three selected districts health facilities in Kigali, Rwanda. *J Biomed Sci Appl*, 1(2), p.8.

Owie, H.O. & Apanga, P. A. 2016. Occupational hazards prevailing among healthcare workers in developing countries. *JAIDS Clin Res*, 7, 596.

Polit, D.F. & Beck, C.T. 2017. *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. Philadelphia: Lippincott.

Rossester, R. 2014. Nursing shortage fact sheet. In: *Nursing*, 202, 463-6930.

Smith, A. 2007. Musculoskeletal disorder among hospital nurses in rural Japan. *Rural Remote Health*, 3 (3), 241.

South Africa. South African Nursing Council. 2013. What is the South African Nursing Council? www.sanc.com (Assessed on 14 October 2019).

South African Medical Association, 2015. Submission to Minister of Health, National Department of Health Comments in Respect of White Paper for National Health Insurance for South Africa: Towards universal coverage.

Sujatha, C., Vadasseril, J. & Jayaprakash, G. 2017. Needlestick injury among healthcare workers in a tertiary care hospital, Kerala. *Orig Res Artic J Evid Based Med Heal*, 4, 4846-50.

Wang, J., Zhou, M & Lui, F. 2020. Reasons for healthcare workers becoming infected with novel coronavirus disease 2019 (COVID-19) in China. *J Hosp Infect* 2020, (10), 1016.

World Health Organization. Coronavirus disease 2019 (covid-19). Situation report-79. 2020. <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200408-sitrep-79-covid-19.pdf?sfvrs=4796b143-6>. (Accessed 18 September 2020).

Yeoh, H. T., Lockart, T. E. & Wu, X. 2013. "Non-fatal Occupational Falls on the Same Level." *Ergonomics* 56 (2): 153–165.

SECTION 3

CONCLUSION, LIMITATIONS AND RECOMMENDATION

3.1 Introduction

This chapter presents a summary of the findings of the study, conclusions drawn from the study and implications emanating from the findings. It discusses the limitations or barriers faced during the research study process, and suggestions for the future appear at the end of the chapter. The chapter concludes with reflection of the research process by the researcher.

3.2 Conclusion

The present study aimed to explore and describe the perception of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province, using a South African context. Previous studies conducted globally focused on occupational health outcomes experienced by nurses and revealed that health professionals, especially nurses, experienced high workload, burnout, stress, and demotivation in their work (Van Bogaert *et al.* 2017:5). However, this study, conducted in a developed country with the highest population, revealed a variation in the incidents of physical hazards, whereas the current study took place rural public hospitals. Other studies indicated that occupational health remains neglected in developing countries under the pressure of devastating social, economic and political changes (Ahasan & Partanen, 2013:11).

However, there has been little research conducted on occupational hazards and safety practices in public hospitals of South Africa. The aim of the research was to explore and describe perceptions of all categories of nurses on occupational hazards and safety measures using the Donabedian structure, process and outcome. A qualitative methodological approach using semi-structured focus group discussions collected data from the participants. A purposive sampling method recruited participants for the study. Based on the sampling criteria, participants in the study must had to have two years working experience, were registered, enrolled and enrolled nursing assistants registered with SANC, and able to voluntarily participate in focus group discussion in English.

Participants were selected purposively from Ditsobotla public hospitals (GDLR/Thusong). The collection of data for the research was by means of semi-structured focus group discussions, which took place between August and September 2020, based on the agreed date between

the researcher and participants. The FGDs were audio recorded, transcribed, and the data analysed using inductive thematic content analysis (Creswell, 2012:24). The process consisted of firstly transcribing the recorded focus group discussions, followed by a reading and re-reading process for the researcher to familiarise herself with the data and to generate initial insights in relation to the research question. With the research question in mind, initial ideas within the transcribed interviews were extracted, then given codes by means of descriptive labels. Following the coding process was a subsequent phase, which involved examining the codes for their similarities and differences, grouping them together into categories based on their conceptual similarities, then grouping the categories into overarching themes.

Five main themes, nurses' perceptions regarding general occupational hazards that occur in the health settings, nurses' perception regarding structural issue on occupational hazards, nurses' perceptions on safety measures process, occupational health outcome experienced by nurses, safety measures for incorporation in the workplace and 14 sub-themes, were outlined in the study. The findings of the study also revealed that nurses perceived different occupational hazards occurred in the workplace, including needle stick injury, slippery floors, infections, workplace violence and work-related stress, which harmfully affects their physical and psychological well-being.

Structural issue relating to occupational hazards may result in nurses leaving their jobs. As stated in the study, nurses suffered serious injuries and accidents due to poor infrastructure. These cases occurred especially when the physical areas were not conducive enough due to peeling ceilings, gaping walls, poor equipment and resources, all of which could lead one into physical hazards and risk of infections. Proper infrastructure and sufficient physical space and ventilation systems are necessary for the safety of nurses (Samur & Seren Intepeler, 2019:1400).

Additionally, findings revealed a shortage of resources in the workplace, such as a limited supply of gloves, masks, plastic aprons and medications from the pharmacy, all of which hinder quality of services provided to the patients and society at large, resulting in negative nurse outcomes such as high staff turnover and absenteeism. Generally, healthcare professionals have high vulnerability to burnout due to experiencing high levels of emotional strain, owing to stressful working environments exacerbated by sick and dying patients to whom they provide care (Maslach *et al.* 2016:103).

Studies indicate that high levels of stress could result from a lack of materials, unavailability of functional materials, or having to work with broken materials. Some of the nurses stated

they have to extend extreme effort just to find the materials that are supposed to be used (Nowrouzi *et al.* 2015:308). According to Nkomo (2013:68), shortage of resources contributed to negative outcomes experienced by nurses such as high staff turnover and vacancies that remain unfilled for a long time, which compromises the provision of health services to patients. However, lack of materials should be the hospital executives' responsibility, providing a supportive environment for nurses, not a problem for nurses to handle (Dutra *et al.* 2018:68).

Nurses also incorporated some safety measures to minimise occupational hazards in the workplace; these include education and training of staff and team collaboration and communication. Brandt *et al.* (2014:393) stated that inter-professional collaboration teamwork is essential for healthcare quality, safety and patient and job satisfaction. It is a necessity for newly employed nurses to receive training on health and safety issues in the health settings.

3.3 Limitations of the study

The study was limited to Ditsobotla public hospitals, namely General De La Rey/Thusong hospitals, and the results cannot be generalised to all hospitals in North West Province and health service. Future studies can employ quantitative methods to complement and extend the current study.

3.4 Obstacles encountered

There were a number of obstacles encountered during the course of the study.

- Firstly, there was an unexpected delay in committee decision making at the HREC and Department of Health in the North West due to Covid-19, which caused a delay in commencing with the research.
- Secondly, unavoidable difficulties arose setting appointments with potential participants; after scheduling the appointment for group discussions, some potential participants would change dates due to personal reasons. This resulted in prolonging the time required to complete the discussions, and caused the completion of the study to be later than planned.

3.5 Recommendations for future research

- The findings of this research suggest the conducting of more quantitative research with a larger sample and other healthcare workers from different institutions.
- There is a need for risk reduction and aversion through hazard mitigation strategies, proper job placement and safety education. Short courses should be available to inform nurses and improve their skills in being innovative in the implementation of the OHSA for compliance in all nursing wards.
- The same applies for the health outcomes experienced by nurses in the workplace. Future efforts and research could be directed to the implementation of safety practices as incorporated in the study (based on findings such as those derived from this study) in order to minimise and protect nurses from occupational hazards in their health settings.

3.6 Summary

This chapter provided a brief overview of the study, a discussion of the conclusions, and an outline of the limitations and obstacles. Also presented were the recommendations for future studies, with the great hope that the factors outlined would support various practical initiatives and interventions to stimulate additional research, with the aim of mitigating occupational hazards in the workplace.

Reference

- Ahasan, E.M. & Partnen, A. 2013. The role of psychosocial stress at work for development of cardiovascular diseases: A systematic review. *International Achieves of Occupational and Environmental Health*, 85(1), 67-79.
- Brandt, B., Lutfiyya, M.N., King, J.A. & Chioreso, C. 2014. A scoping review of interprofessional collaborative practice and education using the lens of Triple Aim. *J Interprof Care*, 28 (5), 393-9.
- Creswell, J.W. & Clark, V.L.P. 2012. *The Mixed Methods Reader*. Thousand Oaks. Sage Publications.
- Dutra, H.S., Cimiotti, J.P. & De Brito Guirardello, E. 2018. Nurse work environment and job-related outcome in Brazilian hospitals. *Applied nursing research*, 41:68:72.
- Maslach, C. & Leiter, M.P. 2016. Understanding the burnout experience: recent research and its implication for psychiatry. *World Psychiatry*, 15, 103-111.
- Nowrouzi, B., Lightfoot, N., Lariviere, M., Carter, L. Runkholm, E., Schinke, R & Belanger-Gardner, D. 2015. Occupational stress management and burnout interventions in nursing and their implications for healthy work environments: A literature review. *Workplace health and safety*, 63 (7):308-315.
- Nkomo, P. 2013. Views of professional nurses regarding proposed National Health Insurance. Unpublished master's dissertation. Pretoria: university of South Africa.
- Samur, M. & Seren Intepeler, S. 2019. Nurses' views of their work environment health and safety: A qualitative study. *Journal of Nursing Management*, 27 (7):1400-1408.
- Van Bogaert, P., Peremans, L., Van Heusden, D., Versup, M., Kureckova, V., Van de Cruys, Z. & Franck, E. 2017. Predictors of burnout, work engagement and nurse reported job outcomes and quality of care: A mixed method study. *BMC Nursing*, 16 (1):5.

ANNEXURE A: NWU ETHICAL APPROVAL



Tel: 018 299-1111/2222
Web: <http://www.nwu.ac.za>

Health Sciences Ethics Office for Research,
Training and Support

North-West University Health Research Ethics
Committee (NWU-HREC)
Tel: 018 299-1206
Email: Ethics-HRECApply@nwu.ac.za

6 August 2020

To whom it may concern

APPROVAL OF THE RESEARCH STUDY FROM THE NORTH-WEST UNIVERSITY HEALTH RESEARCH ETHICS COMMITTEE (NWU-HREC) OF THE FACULTY OF HEALTH SCIENCES

Ethics number: NWU-00348-20-S1

Kindly use the ethics reference number provided above in all future correspondence or documents submitted to the administrative assistant of the North-West University Health Research Ethics Committee (NWU-HREC).

Study title: Perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospital of North West Province

Study leader/supervisor: Prof MA Rakhudu

Student: T Denge - 32537158

Application type: Single study

Risk level: Minimal

You are kindly informed that this application was reviewed at the meeting of the North-West University Health Research Ethics Committee (NWU-HREC), Faculty of Health Sciences, North-West University, held on 24/04/2020. Following review of the application, it has been decided that the study is approved. Approval in this letter means that **final ethics approval** was indeed granted for the **research methodology and the ethical aspects** of this study and that the NWU-HREC has **no further ethical concerns** relating to the research ethics process, except for the outstanding documentation indicated below, which must be provided to the NWU-HREC by the researcher. It is important to mention that this letter indicates that there are no further ethical concerns that exist, regarding the execution of the research. A final ethics letter will be issued upon the receipt of the following documentation:

- A copy of the permission letter from you as the provincial Department of Health, indicating that the study can proceed.

The mentioned document, as indicated above, should be submitted to Ethics-HRECProcess@nwu.ac.za by the researcher, for review before the ethics approval certificate can be provided. This approval is provided for **a year**, after which continuation of the study is dependent on receipt of an annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation for another year.

Please note: Due to the nature of this project i.e. (face-to-face semi-structured interviews with nurses), once approval has been obtained, *the study will have to be placed on hold until the appropriate alert level is reached for the study to proceed*. Researchers undertaking these types of studies will have to *apply to the appropriate REC to resume the study*, once the appropriate alert level is reached. If the researcher has not implemented a *COVID-19-research risk assessment and management analysis and amended the study accordingly* they will first have to **amend** their study, before they can apply for their research to continue.

If you have any questions or need further assistance, please contact the Faculty of Health Sciences Ethics Office for Research, Training and Support at Ethics-HRECApply@mnu.ac.za.

Yours sincerely


Digitally signed
by Pool Petrus
Beder
Date: 2020.08.06
19:18:51 +0200

Chairperson: NWU-HREC

Current details: (20230802) 0:00ly Docu00: Research and Postgraduate Education 0:10:3 Letters Template0:18:3 E_Guidelines_Letter_HREC.docx
02 Apr 2020
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ANNEXURE B: GOODWILL PERMISSION LETTER TO DITSBOTLA PUBLIC HOSPITALS (GENERAL DE LA REY/THUSONG)



Nursing Department
INSNQ Research focus area
Tel: +27 18 (018) 299 2092
Fax: +27 18 (018) 299 4910
Internet: <http://www.nwu.ac.za/>

To the CEO: Mr Seleke
GDLR/Thusong hospital
Lichtenburg 2740
Tel: 018 632 3041/42
Fax: 018 632 4270

Dear Mr Seleke

Request for goodwill Permission to conduct study

I am Denge Takalani master student registered in North West University Potchefstroom campus. I hereby tender my request to conduct research study on "**perceptions of nurses on occupational hazards and safety practice in Ditsobotla public hospital of North West Province**". This research project is part of my studies for Master in nursing science and involves the theory generating, qualitative exploratory design using semi-structured focus group interviews with minimum of 15 participants to be included until data saturation occurs. This study is supervised by Prof Mahlasela Rakhudu (Associate professor) in North West University Mafikeng Campus.

The aim of the study:

- To explore perceptions of all categories of nurses on occupational hazards and safety practices in Ditsobotla public hospital of North West Province using Donabedian structure, process and outcome approach.

The objective of the study:

- To describe and explore perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospital of North West Province.

Please find enclosed proposal for further information and consent forms that will be used in the research process. If you require any further information, please do not hesitate to contact me on 0763169364 or dengetakalani@gmail.com or my supervisor on 0822008004 or hunadi.rakhudu@nwu.ac.za. Thank you for your time and consideration in this matter.

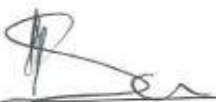

Yours sincerely,

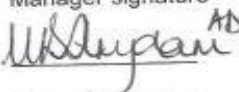
T Denge (Master's Candidate).

Request for goodwill Permission to conduct study on nurses

Title: Perceptions of nurses on occupational hazards and safety practice in Ditsobotla public hospital of North West Province

I am DENGGE TAKALANI hereby seeking your consent to conduct research on nurses including registered nurses, enrolled nurses and nursing auxiliary working in Ditsobotla sub-district public hospital to provide participants in this project.

Approved by  . C. SELEKE
Signature  . HOSPITAL CEO .

Manager signature
 ADMN

Date

2020. 02. 28.

Witness signature



Date

2020. 02. 28.

**ANNEXURE C: PERMISSION LETTER TO CONDUCT STUDY IN NORTH WEST
DEPARTMENT OF HEALTH**

	health Department of Health North West Province REPUBLIC OF SOUTH AFRICA	3801 First Street New Office Park MAHIKENG, 2735	Enq: Nthabiseng Mapogo Tel: 018 391 4504 NMapogo@nwp.gov.za www.nwhealth.gov.za
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RESEARCH, MONITORING AND EVALUATION DIRECTORATE

Name of researcher : Ms. T. Denge
North West University

Physical Address THABO MBEHRI DRIVE
(Work/ Institution) LICHTENBURG
GENERAL DE LA REY

Subject : **Research Approval Letter- Perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospitals of North West Province.**

This letter serves to inform the Researcher that permission to undertake the above mentioned study has been granted by the North West Department of Health. The Researcher is expected to arrange in advance with the chosen facilities, and issue this letter as proof that permission has been granted by the Provincial office.

This letter of permission should be signed and a copy returned to the department. By signing, the Researcher agrees, binds him/herself and undertakes to furnish the Department with an electronic copy of the final research report. Alternatively, the Researcher can also provide the Department with electronic summary highlighting recommendations that will assist the Department in its planning to improve some of its services where possible. Through this the Researcher will not only contribute to the academic body of knowledge but also contributes towards the bettering of health care services and thus the overall health of citizens in the North West Province.

Kindest regards

 Dr. F.R. M. Reichel Director: RM&E		<u>17/08/2020</u> Date
 Researcher		<u>18/08/2020</u> Date


Healthy Living for All

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ANNEXURE D: INFORMED CONSENT



HREC Stamp

INFORMED CONSENT DOCUMENTATION FOR NURSES

TITLE OF THE RESEARCH STUDY: Perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospitals of North West province.

ETHICS REFERENCE NUMBERS: NWU-00348-20-S1

PRINCIPAL INVESTIGATOR: Prof. Mahlasela Rakhudu

POST GRADUATE STUDENT: Miss T. Denge

ADDRESS: 39 Burgers Street, Lichtenburg

CONTACT NUMBER: 0763169364

You are invited to take part in a **research study** that forms part of my Master's degree in nursing at NWU Potchefstroom campus.

Please take some time to read the information presented here, which will explain the details of this study. Please ask the researcher or person explaining the research to you any questions about any part of this study that you do not fully understand. It is important that you are fully satisfied you clearly understand what this research is about and how you might be involved. Your participation is **voluntary** and you are free to say no to participation. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part now.

This study has been approved by the **Health Research Ethics Committee of the Faculty of Health Sciences of the North-West University (NWU)** and will be conducted according to the ethical guidelines and principles of Ethics in Health Research: Principles, Processes and Structures (DoH, 2015:9) and other international ethical guidelines applicable to this study. It might be necessary for the Research Ethics Committee members or other relevant people to inspect the research records.

What is this research study all about?

- The conducting of this study will be within the premises of Ditsobotla public hospitals in North West Province, in the nurse's boardroom around August 2020 and will involve participation in a focus group discussion with different categories of nurses working in the same institution. A group of three to five participants will be included per focus group discussion.
- We plan to gather rich information on perceptions or knowledge regarding occupational hazards and safety practice in your working environment.
- This research study plans to use this information together with the framework adopted from the Donabedian theory using structure, process and outcome approach relating to one's study.

Why have you been invited to participate?

- Your invitation to be part of this research is because you have been working in Ditsobotla public hospitals in North West Province full time, with 2 years' experience in the workplace. You also fit the research because you are registered nurse, enrolled nurse and enrolled nursing assistant registered with South African Nursing Council and able to speak English.

What will be expected of you?

- You will be expected to participate in a focus group discussion, with three to five in a group, with nurses of different categories grouped together for about 60-90 minutes. There will be four subjects or questions to discuss.
- The conducting of this study will be under the supervision of experienced health researchers at the NWU trained in qualitative research in Nursing Sciences.

Will you gain anything from taking part in this research?

1. The gains for you if you take part in this study will be recognition of expertise and add to the individual's knowledge base by sharing with other experts. You will have the opportunity for professionals to talk and share about your work or experiences of working in different units. This will help you to gain new insight into your practices.
2. Some good networking and forming of friendships might occur during the execution of the focus groups.
3. The participants will have an opportunity to voice their opinions regarding their perceptions of occupational hazards and safety practices.
4. It will help to contribute towards nursing research in North West through new knowledge gained in the study.

Are there risks involved in you taking part in this research and what will be done to prevent them?

1. There is the risk of fatigue but the researcher will overcome this by providing participants with refreshments before the group discussion.
2. Secondly is breach of confidentiality; confidentiality will be ensured in the following way: before group discussions, the researcher will present the information of confidentiality to the participants and you will be told not to share group discussion information to anyone. Sharing of such information is unethical and this will force the researcher to report such matters, therefore participants will sign a confidentiality agreement.
3. The researcher and participants will set ground rules before the discussion. These will include respecting one another and not interfering while someone is talking.
4. During data collection, participants will be informed their responses are to be documented through note taking by the researcher and recording using an audiotape. All the forms, including the consent form, will remain in a locked cupboard

for safekeeping and electronic data will be stored on the researcher's password protected computer.

5. After data collection, the audio recording for each group discussion will be transferred directly to the researcher's password protected computer before deletion from the audio recorder. The researcher will report the findings using codes instead of information that will identify the participants.

How will we protect your confidentiality and who will see your findings?

1. Anonymity of our findings will be protected, as only the researcher will have access to the identifying particulars of participants.
2. Respecting your privacy will be by ensuring the conducting of the session will be in a boardroom room where no other people can disturb the process. The researcher herself will transcribe all data from the session.
3. Nobody, other than the researcher, will have access to the collected data. Findings will remain safe by locking hard copies in a lockable cupboard within the office of the researcher.
4. Once data transcription is complete, deletion of the audio recordings of the session will occur. Transcriptions will not contain any identifying information on participants. Data will be stored for five (5) years.

What will happen with the findings or samples?

The findings of this study are for this study's use.

How will you know about the results of this research?

1. We will give you the results of this research by sending you our scientific article via email as soon as it is finalised. Participants will receive any new relevant finding in this scientific article.
2. The results will be presented at a North West Province Research Day event after completion of the study.
3. The researcher is also planning to submit the article to Africa Journal of Nursing and Midwifery.

Will you be paid to take part in this study and are there any costs for you?

1. The researcher funded this study with a bursary received from NWU and by herself.

2. There is no remuneration for taking part in the study because there are no costs involved and the focus group discussion will be take place in the nurse's boardroom inside the hospitals.
3. No travel expenses are involved in this study. Before each group discussion, there will be refreshments provided. Thus, there will be no costs involved for you, if you do take part in this study; the researcher will however prepare a small token (a nice pen) to thank participants for their time.

Is there anything else that you should know or do?

1. You can contact Takalani Denge on 076 316 9364, or Prof. Mahlasela Rakhudu at 082 200 8004 if you have any further questions or have any problems.
2. You can also contact the Health Research Ethics Committee, via Mrs Carolien van Zyl, on 018 299 1206 or carolien.vanzyl@nwu.ac.za if you have any concerns that were unanswered about the research, or if you have complaints about the research.
3. You will receive a copy of this information and consent form for your own purposes.

Declaration by participant

By signing below, I,, agree to take part in the research study titled: Occupational health hazards amongst nurses in public hospital within North West Province

I declare that:

- I have read the information/had it explained to me by a trusted person in a language with which I am fluent and comfortable
- The research was clearly explained to me
- I have had a chance to ask questions of the person receiving the consent from me, as well as the researcher, and had all my questions answered
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part
- I may choose to leave the study at any time and will not be handled in a negative way if I do so
- I may be asked to leave the study before it has finished if the researcher feels it is in the best interest, or if I do not follow the study plan, as agreed to

Signed at (*place*) on (*date*) 20....

.....
Signature of participant

.....
Signature of witness

Declaration by person obtaining consent

I, (*name*), declare that:

- I clearly and in detail explained the information in this document to

.....

- I did not use an interpreter
- I encouraged him/her to ask questions and took adequate time to answer them
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I gave him/her time to discuss it with others if he/she wished to do so

Signed at (*place*) on (*date*) 20....

.....
Signature of person obtaining consent

.....
Signature of witness

Declaration by researcher

I, Denge Takalani, declare that:

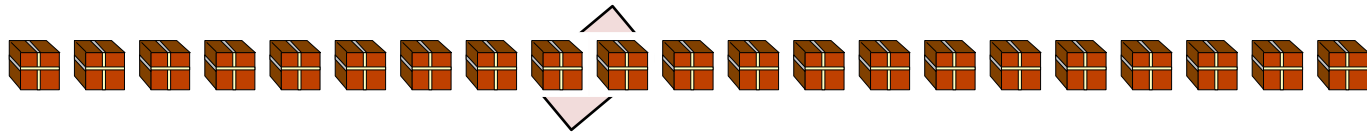
- The independent person, whom I trained for this purpose, explained the consent form.
- I encouraged the independent person to ask questions and took adequate time to answer them.
- The independent person obtained the informed consent.
- The independent person did not use an interpreter.
- I am satisfied that the independent person adequately understands all aspects of the research, as described above.
- I am satisfied that the independent person had time to discuss it with others if they wished to do so.

Signed at (*place*) on (*date*)20

A handwritten signature in dark ink, appearing to read 'Denge', followed by a horizontal line.

Signature of researcher

Signature of witness



ANNEXURE E: RECRUITMENT MATERIAL

INVITATION TO PARTICIPATE IN RESEARCH

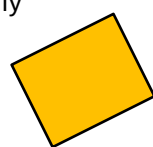
TOPIC: PERCEPTIONS OF NURSES ON OCCUPATIONAL HAZARDS AND SAFETY PRACTICES IN DITSOBOTLA PUBLIC HOSPITALS OF NORTH WEST PROVINCE

INVITATION

You are cordially invited to participate in the above mentioned by Denge Takalani Masters student from North-West University.

WHY IS THIS RESEARCH NEEDED?

An occupational hazard seems to be particularly challenges amongst healthcare workers especially nurses at the forefront of healthcare system that are regarded as the backbone of healthcare.



WOULD THIS STUDY BE A GOOD FIT FOR ME?

This study might be a good fit for you if:

- ❖ You are nurse (different categories) working in Ditsobotla public hospitals of North West province
- ❖ Registered with SANC as a nurse
- ❖ With two years of working experience in the institution and able to speak English.
- ❖ Willing to participate in focus group discussion.

THE BENEFITS OF THE STUDY

- ❖ **There is no direct benefit in this study.**

Indirect benefits include:

- ❖ The gains for you if you take part in this focus group will give recognition to expertise and add to the individual's knowledge base by sharing with other experts.
- ❖ You will have opportunity for professionals to talk and share about your work or experiences of working in different units. This will help you to gain new insight into your practices.



PROJECT DATE: 2020

IF YOU DECIDE TO PARTICIPATE IN THIS STUDY YOU WILL BE REQUIRED TO:

- ❖ Be willing to participate in focus group discussion and recorded using audiotape
- ❖ You may be required to participate in the research in your convenient time which will be done in nurses' boardroom.

DECLINE TO PARTICIPATE/PRIVACY

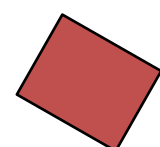
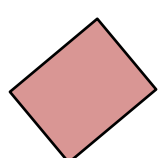
- ❖ Participation is completely voluntary and you may withdraw from the study at any time.
- ❖ You are free to decline to participate in the research and no penalty for that.
- ❖ Your personal data will be kept safe under the locked cupboard.
- ❖ The study is anonymous; it will not report any information that will identify the participants.

If you are interested in this study, please contact the researcher below:

CONTACT DETAILS

Denge Takalani
E – mail: dengetakalani@gmail.com
076 316 9364

Rakhudu mahlasela
Email: Hunadi.Rakhudu@nwu.ac.za
082 200 8004



ANNEXURE F: STANDARD NWU CONFIDENTIALITY AGREEMENT



CONFIDENTIALITY UNDERTAKING

Between the researcher and the mediators

I, the undersigned,

Prof/Dr/Mr/Ms _____

Identity Number: _____

Address:

Hereby undertake in favour of **NORTH-WEST UNIVERSITY**, a public higher education institution established in terms of the Higher Education Act No. 101 of 1997

Address: Office of the Institutional Registrar, Building C1, 53 Borchard Street,
Potchefstroom, 2520

(Hereinafter the “NWU”)

1 Interpretation and definitions

1.1 In this undertaking, unless inconsistent with or otherwise indicated by the context:

1.1.1 “Confidential Information” shall include all information that is confidential in its nature or marked as confidential and shall include any existing and new information obtained by me after the Commencement Date, including but not be limited in its interpretation to research data, information concerning research participants, all secret knowledge, technical information and specifications, manufacturing techniques, designs, diagrams, instruction

manuals, blueprints, electronic artwork, samples, devices, demonstrations, formulae, know-how, intellectual property, information concerning materials, marketing and business information generally, financial information that may include remuneration detail, pay slips, information relating to human capital and employment contract, employment conditions, ledgers, income and expenditures and other materials of whatever description in which the NWU has an interest in being kept confidential.

1.1.2 "Commencement Date" means the date of signature of this undertaking by myself.

1.2 The headings of clauses are intended for convenience only and shall not affect the interpretation of this undertaking.

2 Preamble

2.1 In performing certain duties requested by the NWU, I will have access to certain Confidential Information provided by the NWU in order to perform the said duties and I agree that it must remain confidential.

2.2 The NWU has agreed to disclose certain parts of this Confidential Information and other information to me subject to me agreeing to the terms of confidentiality set out herein.

3 Title to the Confidential Information

I hereby acknowledge that all rights, title and interests in and to the Confidential Information are vested in the NWU, and that I will have no claim of any nature in and to the Confidential Information.

4 Period of confidentiality

The provisions of this undertaking shall begin on the Commencement Date and remain in force indefinitely.

5 Non-disclosure and undertakings

I undertake:

5.1 to maintain the confidentiality of any Confidential Information to which I shall be allowed access by the NWU, whether before or after the Commencement Date of this undertaking. I will not divulge or permit to be divulged to any person any aspect of such Confidential Information otherwise than may be allowed in terms of this undertaking;

5.2 to take such steps as may be necessary to prevent the Confidential Information falling into the hands of an unauthorised third party;

5.3 not to make use of any of the Confidential Information in the development, manufacture, marketing and/or sale of any goods;

5.4 not to use any research data for publication purposes;

5.5 not to use or disclose or attempt to use or disclose the Confidential Information for any purpose other than performing research purposes only, and includes questionnaires, interviews with participants, data gathering, data analysis and personal information of participants/research subjects;

5.6 not to use or attempt to use the Confidential Information in any manner which will cause or be likely to cause injury or loss to a research participant or the NWU;

5.7 that all documentation furnished to me by the NWU pursuant to this undertaking will remain the property of the NWU, and upon the request of the NWU will be returned to the NWU. I shall not make copies of any such documentation without prior written consent of the NWU.

6 Exception

The above undertakings by myself shall not apply to Confidential Information that I am compelled to disclose in terms of a court order.

7 Jurisdiction

This undertaking shall be governed by South African law, subject to the jurisdiction of South African courts, in respect of any dispute flowing from this undertaking.

8 Whole agreement

8.1 This document constitutes the whole of this undertaking to the exclusion of all else.

8.2 No amendment, alteration, addition, variation or consensual cancellation of this undertaking will be valid unless in writing and signed by NWU and myself.

Dated at Potchefstroom this _____ 20____

Witnesses:

1

2

(Signatures of witnesses)

(Signature)

ANNEXURE G: CODE OF CONDUCT



CODE OF CONDUCT FOR RESEARCHERS

This code of conduct is applicable to all NWU researchers.

As a researcher of the North-West University (NWU), I subscribe to the rules of the NWU Institutional Research Ethics Regulatory Committee (IRERC) as well as all national and international laws and regulations applicable to my field of study. Furthermore, I commit myself to abide by the ethical principles and responsibilities as set out in the Singapore statement on Research Integrity (22 September 2010), in any and all research endeavours that I undertake as a researcher of the NWU.

The four major principles of research integrity to which I will adhere and that will guide my research are:

- Honesty in all aspects of research
- Accountability in the conduct of research
- Professional courtesy and fairness in working with others
- Good stewardship of research on behalf of others

Consequently, I will also adhere to the following ethical responsibilities:

- I will take responsibility for the trustworthiness of my research.
- I will stay abreast of and adhere to all institutional, national, and international laws, regulations, and policies applicable and related to my research and research as a whole.
- I will at all times employ appropriate research methods, base my conclusions on critical analysis of the evidence and report my findings and interpretations fully and objectively.
- I will keep clear and accurate records of all research that I have conducted in a manner that will allow verification and replication of my work by others.
- I will share my data and findings openly and promptly. This will be done as soon as possible after I have had an opportunity to establish priority and ownership claims.
- I will take responsibility for my own contributions to publications, funding applications, reports and other representations of my research. I will also and only include authors who meet valid authorship criteria.
- I will acknowledge the names and roles of those who made significant contributions to my research in publications, including writers, funders, sponsors, and others, but do not meet authorship criteria.
- In my peer reviews, I will provide fair, prompt and rigorous evaluations and I will respect confidentiality when I review others' work.
- I will disclose all conflicts of interest (financial and other) that could compromise the trustworthiness of my work in research proposals, publications, public communications, and in review activities.
- When I publically address a community I will in all stages base my professional comments on research findings (if applicable) and my expertise. I will distinguish between professional comments and opinions based on personal views.
- Should any irresponsible research practices and/or research misconduct become known to me or brought under my attention, I will report such irresponsible research activities to the appropriate authorities.
- I will respond to irresponsible research practices or conduct, by taking prompt actions as set out in the procedures of the university. I will also protect those who report misconduct in good faith, to the best of my abilities.
- I will endeavour to create and sustain an environment that encourage research integrity through education of students, research teams and peers, as well as abide by policies, and reasonable standards for advancement.
- I will at all times weigh societal benefits against the risks inherent in my work.

Name: Denge Takalani

Signature: Denge T.

Date: 30 Nov 2020

ANNEXURE H: NARRATIVE CURRICULUM VITAE

Curriculum Vitae

Of

Denge Takalani

Miss Takalani Denge obtained the Bachelor of Nursing (honours) BCURP at the University of Venda in Limpopo Province, South Africa. She completed hospital attachment at Tshilidzini hospital, Donald Frazer, Malamulele, Letaba and Nthume psychiatric hospitals on February 2018, as a requirement for obtaining BCURP at the University of Venda.

Miss Denge worked as a community service nurse in Naledi sub-district, North West Province from March 2018 to February 2019. She is a member of the professional nurses who serve the community of North West Province.

Denge enrolled at North West University (NWU), Potchefstroom Campus, South Africa, in January 2019, where she is currently a student of Masters in Nursing under general nursing science, doing research under the topic of Occupational health hazards amongst nurses in public hospitals within North West Province of South Africa. She received and completed training in the basics of health research ethics and completed TB prevention and research methodology and introductory modules in nursing by September 2017.

ANNEXURE I: ETHIC TRAINING CERTIFICATE



Ms Takalani Denge

Private Bag X6001, Potchefstroom
South Africa 2520

Tel: +2718 299-1111/2222

Web: <http://www.nwu.ac.za>

**Faculty of Health Sciences Ethics
Office for Research, Training
and Support**

Tel: 018 299 2092

Email: minrie.greeff@nwu.ac.za

8 March 2019

Dear Ms Denge

PROOF OF ATTENDANCE AND ASSESSMENT

This letter certifies that you have attended the 2-day ethics training entitled:

The Basics of Health Research Ethics

(Accreditation number: PSB002/110/01/2019 from University of Free-State CPD accreditation
department accredited by the HPCSA)

Presenter: Prof M Greeff (Head of the Health Sciences Ethics Office for Research, Training and Support) on
the 22nd – 23rd January 2019.

This letter of attendance, serves as proof of ethics training and assessment and is valid for three (3) years and
expires on 31 January 2022. (Where applicable, Ethics CEUs awarded: 14 CEUs)

Yours sincerely

Digitally signed
by Prof Minrie
Greeff
Date: 2019.03.20
15:52:35 +02'00'

Prof Minrie Greeff
Head of Health Sciences Ethics
Office for Research, Training and Support

Prof Jeanetta du Plessis
Deputy Dean: Research and Innovation
Faculty of Health Sciences

ANNEXURE J: LETTER FROM LANGUAGE EDITOR

Gill Smithies

Proofreading & Language Editing Services

59, Lewis Drive, Amanzimtoti, 4126, Kwazulu Natal

Cell: 071 352 5410 E-mail: moramist@vodamail.co.za

Work Certificate

To	Ms. T. Denge
Address	Faculty of Health Sciences, North West University, Private Bag X6001, Potchefstroom
Date	17/11/2020
Subject	Research Proposal: Perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province
Ref	GS/TD/01

I, Gill Smithies, certify that I have proofed the following for language, grammar and style,

Research Proposal: Perceptions of nurses on occupational hazards and safety practices in Ditsobotla public hospitals in North West Province, by T. Denge, to the standard as required by NWU, Potchefstroom Campus.

Gill Smithies

ANNEXURE K: SEMI-STRUCTURED FOCUS GROUP DISCUSSION (FGD)

I Pre- FGD

- The researcher will check the recording equipment to make sure it is working and the sound is recording at an acceptable level, and check all the necessary materials such as notebooks and pens.
- As people assemble, the researcher will offer refreshments. Once participants are settled, the researcher will check with the group whether they know each other. If not, the researcher will go round the group and get everyone to introduce himself or herself. The researcher will make sure everyone is comfortable before starting the discussion.

II Introduction and project explanation

- Appreciation of honouring the invitation to participate in the study on occupational hazards and safety practices
- Reiteration of the purpose of the meeting and introduction to the session
- Reinforcing the issues of anonymity and confidentiality through explanations
- Clarification of autonomy in participating and freedom to withdrawal if deemed necessary
- Reading out loud the information sheet of confidentiality and request for confidentiality agreements
- Explanation of focus discussion's guidelines including the process, rationale for use of digital recordings, do's and don'ts of FGD. For example:
 - a. No right or wrong answers, only differing points of view
 - b. Recording the discussions digitally and one person to speaking at a time
 - c. No need to agree with others, but must listen respectfully to others' views
 - d. Rules for cellular phones and pagers if applicable.

III Gather demographic information

- Age, gender, race, cultural group and marital status of the participants
- Educational level, occupational rank and unit at work
- Years of experience working in the current unit

IV Perceptions of nurses on occupational hazards and safety practices

- a. General question:** What do you consider as occupational hazards in the workplace?
Probes or paraphrases may follow this, such as:
What is it about those details that stick in your mind?

Can you share your reasons for that decision?

- b. **Question on Structural Occupational issues:** What occupational hazards have you had exposure to in your workplace?

Clarifications and probes, such as:

When you say ____, what exactly do you mean?

So are you saying [paraphrase their response]?

Alternatively, share your perceptions, why do occupational hazards occur in your workplace.

- c. **Question on process:** What according to you should safety practices entail or consist of within the workplace?

Probe questions: What do you mean?

Please kindly elaborate/describe or give an example on that.

- d. **Question on outcomes/results:** What safety practices are in place in your workplace, and in what way are these practices sufficient or not within the context of your workplace?

Alternative: Explain the results of the current safety practices in your working environment (either complying or not complying)

- e. **Question on suggestions:** What other safety practices according to you should also be incorporated in your workplace?

The following questions will be used if information is not coming clearly from the discussions

1. Which occupational hazards have you had exposure to in your workplace?
2. In your perception, why do occupational hazards occur in your workplace?
3. What according to you should safety practices entail/consist of within the workplace?
4. What safety practices are in place in your workplace, and in what way are these practices sufficient or not within the context of your workplace?
5. What other safety practices according to you should also be incorporated in your workplace?

V Provide Time for Participants' Questions

- Ask participants if they have any questions.

VI Ending the session

Finally, the researcher will summarise the discussions and thank participants for their time.

ANNEXURE L: TRANSCRIBED FOCUS GROUP DISCUSSION

GROUP 1 CONSISTED OF THREE PARTICIPANTS

Demographic factors	Participant A	Participant B	Participant C
Age	51	24	26
Gender	Female	Female	Female
Race	Black	Black	Black
Cultural group	Tswana	Tswana	Tswana
Marital status	Divorced	Single	Engaged
Educational level	Honours degree in Bachelor of nursing	Honours degree in Bachelor of nursing	Certificate in enrolled nurse
Occupational rank	Registered nurse (RN)	Registered nurse (RN)	Enrolled nurse (EN)
Unit at work	Female medical surgical ward (ward 5)	Female medical surgical ward (ward 5)	Male medical/surgical ward (ward 3)
Years of working experience	8 years	2 years	3 years

The following questions were asked during focus group discussion

Questions	Responses	Category
1 What do you consider as occupational hazards in the workplace?	Participant B- Needle pricks is a biological hazard, which can result in risk of HIV and hepatitis. As nurses, we are exposed to needle prick injuries, in a way that I can prick myself while giving injection to the patient at work and exposed to hepatitis and HIV infections. Working in an environment which is highly contagious, like TB area, you place yourself at risk together with your own families since you can contract an infection at work and transmit it to the families more especially if you are an immunosuppressant because sometimes we work with those patients without proper Proper Personal Equipment's (PPEs). Stress from long shifts, we are only healthcare workers who work long hours 12 hours per day with heavy workload unlike others who knock off at 16h00 and sometimes we did not go to lunch due to heavy workload, because would be prioritizing patient care and at the same time we are compromising our own health because no one can work without having lunch at work. Another issue that cause stress in us as nurses is the issue of changing shifts; normally we suppose to change from one shift to another after 3 months; however, management do not apply that policy due to poor communication they just swap any person without informing him/her regarding the changeover. I feel like as a nurse I'm not getting the support that I suppose to get from the management in terms of pandemic covid-19, I am exposed to covid-19 at work because I am working with different people, not only patients but also the mixture of other healthcare workers, if I come in contact with Covid patient I didn't go home for seven days I stayed at nurses home because I am afraid of transmitting the virus to my family. However no counselling done on such issues. Participant A: I considered Wet floor as an occupational hazards because what happen in my unit is that, when general workers are cleaning the floor they do not put a caution sign indicating that this floor is wet, passing through it will be your own risk and someone might pass through without realising that floor is wet and it might cause slippery and leading to physical injury. Participant C: Poor infrastructure, our institution is very old, ceiling is peeling off and our theatre room is not working as a result of structural	Needle prick injuries as biological hazards Risk of infection Working with infectious disease patients Stress due to long working hours Poor communication No support Physical injuries caused by wet floor leading to slippery Poor infrastructure

	issue because the building can fall to anyone at any time leading to physical hazards The issue of equipment's again is also problem, our equipments are very old and are not serviced for a very long time as a result they're no longer functional so during emergency we are really struggling and sometimes we even lose the life of patient as result of poor equipments and patients bed are not adjustable when we do bed making we have to bend and this is killing our back.	Poor equipment's Back pain
2 In your perceptions, what occupational hazards have you been exposed to and why do occupational hazards occur in your workplace?	Participant B- Prone to Covid 19 suspect and confirmed cases, I'm nursing patient with Covid without proper PPEs. It occurs with the mismanagement of the funds affecting the delivery of enough PPE in the hospital. Floods- I was working night duty where I experience flood in the hospital and nurse could not move around and this affect the routine and I was afraid that patients can be slip and fall and be blamed as a professional nurse. Incident reported written regarding the natural disaster that has occurred and management came after so many trails of being called. All this was causing a stress as moving around the pool of water collecting files and recording everything and inform relatives about the disaster that had occurred. Participant C: When I was working night duty with a diabetic patient, what happened is that I was monitoring the blood glucose of the patient, and some nurse leave needle inside the machine and I prick myself that night. The needle prick injury was caused by the negligence of the nurse by leaving needle inside the machine instead of discarding it.	Prone to Covid-19 Mismanagement of funds Physical hazards Natural disaster/ floods Stress Needle prick Injury Negligence of nurses
3 What according to you should safety practices entail or consist in the workplace?	Participant B: Roofing must be reported to the maintenance and we should put a hazards tape indicate that this place is hazardous, no one must enter at that place. Inspection in terms of infrastructures and proper maintenance of geysers should be put in place because we are washing our hands with cold water. I think communication with protocols and procedure together with staff might help to implement as a safety measure in the workplace. Participant C: nurses should be supplied with enough PPEs. E.g. apron, mask, gloves, gowns for covid in order to protect themselves from infectious diseases. Participants A: screening when you arrive at the institution for Covid-19 if you have any symptoms such as; fever, cough, sore throat and also screening for TB and necessary investigation should be done in the ward.	Inspection of infrastructure and proper maintenance Team communication and collaboration Availability of PPEs at all times Screening of COVID and TB
4 What safety practices are in place in your workplace and in what way are these practices sufficient or not within the context of your workplace?	Participant B: There are rules and regulation for covid-19 that are put in place, however, I feel like there are not dynamic because they change now and then. So it becomes difficult sometimes to implement and comply but we try by all means to comply with them. Participant A: Safety measures are not enough in our unit. For example, one staff had signs for Covid, and swabbing was done to her, result came being positive nothing happen to us who were contact with that person. Counselling should be done to the staff in the hospitals especially those exposed to occupational hazards.	Policies and procedure of covid Compliance Safety measures not enough Counselling support

	Participants C: PPEs are not enough in pharmacy, because when we ordered from pharmacy they said they don't have in stock e.g. we had a challenges of apron in the ward wherein we go to an extent of wearing patients gowns. Shortage of PPEs can lead to infection and place risks to families	Shortage of PPEs Risk of infecting families
5 What other safety practices according to you should be incorporated in your workplace?	Participant B: Involvement, training and reviewing of guidelines in hospital will equip the staff with skills and knowledge on how to act appropriately following the guidelines. PPE- Proper PPE without compromise should be allocated to all healthcare providers, proper planning, follow-up and monitoring of budget and spent on safety measures. Psychological support- we should have a platform to go and vent out any problems without being stigmatised at work. Structures should have ventilators to allow gaseous exchange. Sharing the bathroom with the patients due to poor sanitation and this led to dissatisfaction at work. Quality assurance and OHS team must attend to health problems in the workplace. All employees should be assessed for medical and physical fitness. For example, obese staff should not been given heavy duty that require them to stand for long time and long working hours due to risk of Deep Veins Thrombosis (DVT) and oedema. Newly-employees staff should be involved in workshop and in-service trainings regarding drills and emergencies. It helps in improving skills and knowledge. Participants A: Sign posters when general cleaners are mopping, they should be put in place at all times to prevent slippery and we should be provided with grip shoes to prevent falling. Nurses should fill in the work book in terms of things that need to be repaired e.g. falling ceiling and falling doors and broken windows to prevent hazards. Waste management protocols policy should be put in place on how to dispose wastes, so that the newly employees will be able to practice the right things. Participant C: proper check-up and monitoring of equipment's especially bed because there are causing back pain wheels are not moving properly and beds are not adjustable.	Involvement Training Reviewing Proper allocation of PPE, proper planning, follow-up and monitoring Support at work Proper infrastructure Dissatisfaction OHS team must play role in improving health workplace. Training and education to newly staff. Sign posters put in place. Grip shoes Damage control Waste management policy Monitoring of equipment's

GROUP 2 CONSISTED OF FOUR PARTICIPANTS

Demographic factors	Participant D	Participant E	Participant F	Participant G
Age	29	24	57	60
Gender	Male	Female	Female	Female
Race	Black	Black	Black	Black
Cultural group	Zulu	Venda	Tswana	Coloured
Marital status	Single	Single	Single	Married
Educational level	Certificate in auxiliary nurse	Honours degree in Bachelor of nursing	Diploma in nursing	Certificate in enrolled nurse
Occupational rank	Enrolled nursing auxiliary (ENA)	Registered nurse (RN)	Registered nurse (RN)	Enrolled nurse (EN)
Unit at work	Female medical ward	Female medical ward	Female surgical ward	Female surgical ward
Years of working experience	2 years	2 years	33 years	39 years

The following questions were asked during group discussions

1 What do you consider as occupational hazards in the workplace?	Participant G: I consider the PPE for healthcare workers as an occupational hazards, if there is no proper utilisation of PPE for example gloves, apron, plastic apron and eye goggles, so I am prone to various cross transmission diseases such as TB, Covid-19, MDR and meningitis. Injury on duty, when cleaners are cleaning the unit, they supposed to put sign indicate that this is a wet floor, if they don't put caution sign and someone pass through and fell it can lead to fracture. When the cleaners are not marking their mops according to their colours for example, the red, blue and black, it's a health hazards because they will use the red mop which is highly infectious and use it to clean area such as nurses' station which will cause a cross-transmission of infection from one area to another. Participant E: If you are not wearing gloves you can even touch the blood of patient who are infected with infection like HIV and being at risk of such infection. Incorrect waste segregation for example, if someone throw a needle in a black plastic and when cleaners collect the waste, he or she can prick herself with needle and this can be prevented. Participant F: Slippery, someone can fall as a result of wet floor and can cause injury	Prone to various infection due to shortage of PPE Injury due to slips and fall Risk of infection Risk of infection such as HIV Needle prick injuries due to incorrect waste segregations Slippery due to wet floor
2 In your perceptions, which occupational hazards have you been exposed to and why do occupational hazards occur in your workplace?	Participant D: I was exposed to needle prick injuries in the workplace when I was doing the waste control, I was trying to correct things that they disposal wrongly, when I removed the general waste from red plastic I prick myself with needle, to my surprisingly I did not understand why needle disposed in the red plastic and this occur as results of not disposing needles accordingly. Our wards are divided in between with asbestos and structurally are not supposed to be divided with asbestos because it can cause asbestosis disease. Participant E: I have been exposed to injury on duty due to slippery floor	Needle and sharp injury due to not disposing accordingly Poor infrastructure cause asbestosis disease Slippery due not putting

	when the cleaners did not put a caution or a sign. Participant G: Cross-infection and contact, for example structurally we do not have an isolation room where we isolate patient with TB so mixing those patients can cause cross-infection. When the structure is not properly fixed, for example in our hospital we do not have hot water for long time and we ended up washing our hand with cold water and get sick due to influenza especially in winter. Snakes if the environment where we are working, health inspectors does not visit and spray where we are working, the snakes might run around more especially in winter can bite anyone in the workplace and sometimes it can happen as a result of environment if is not clean. Participant F: floods during rainy season our structure are old so we end up having flood in the ward, even the bed of patients they end up sleeping in cold mattress.	wet sign Shortage of spaces lead to cross-infection Cold water lead to influenza Risk of being bitten by snake when environment is not clean Old structures cause floods during rainy season
3 What according to you should safety practices entail or consist in the workplace?	Participant E: I think there must be an in-service training in the ward on waste segregation in order to practice the correct thing. Participant G: Utilization of proper PPE such as gloves, face mask, apron and goggles to protect ourselves from infection. Isolation of patient with infectious diseases in order to prevent cross-infection. Social distancing in terms of Covid-19 so that we prevent cross-infection if infected person sneezes or cough. Participant D: Fire extinguisher, we should have it in the ward in case of fire. Participant F: Maintenance personnel must attend to structural problem since we had a problem during raining season. Hand hygiene- we must wash our hands regularly to prevent cross-infection. Participant E: Cleaners must put the caution sign when there are cleaning indicating that this is a wet area	In-service training Sufficient PPE Isolation of patients Address structural problem Hand hygiene Caution sign
4 What safety practices are in place in your workplace and in what way are these practices sufficient or not within the context of you workplace?	Participant E: Shortage of resources such as scrub soap sometime we end up washing our hands with water only without soap and according to infection prevention control you suppose to wash hands with warm water and soap and in our institution we do not have warm water. Participant D: shortage of PPE such as apron and glove, sometimes we do bed making without apron and gloves we are at risk of contaminating ourselves with infections and our families also.	Shortage of resources affect compliance to infection prevention Shortage of resources
5 What other safety practices according to you should be incorporated in your workplace?	Participant G: We must always educate our patients of not sharing their utensils as it can cause cross-infection. Participant F: Clean the area with disinfectant solution to prevent infection. Emergency trolley should be checked regularly and monitored to prevent running around during emergency.	Health education to patients Disinfectant the surfaces

	Participant E: In-service training more especially the newly employees who are from school, they do not know properly how to segregate waste so education and training would help. Being provided with sufficient and proper PPE by our manager and from pharmacy.	In-service training
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GROUP 3 CONSISTED OF FOUR PARTICIPANTS

Demographic factors	Participant J	Participant K	Participant L	Participant M
Age	31	39	24	28
Gender	Male	Female	Female	Female
Race	Black	Black	White	Black
Cultural group	Zulu	Venda	Tswana	Coloured
Marital status	Married	Married	Married	Married
Educational level	Diploma in nursing	Certificate in enrolled auxiliary nursing	Honours degree in Bachelor of nursing	Certificate in enrolled nurse
Occupational rank	Registered nurse (RN)	Enrolled nursing auxiliary (ENA)	Registered nurse (RN)	Enrolled nurse (EN)
Unit at work	Antenatal care (ANC) and post-natal care (PNC)	Antenatal care (ANC) and post-natal care (PNC)	Gynae ward	Gynae ward
Years of working experience	6 years	12 years	2 years	7 years

The following questions were asked during group discussions

1 what do you consider as occupational hazards in the workplace?	Participant L: Lack of PPEs is an occupational hazard to me as a healthcare worker and to patients because sometimes we work without gloves and we work with patients' fluids so we are prone to contagious diseases like covid-19. Sharps containers, sometimes nurses walk with the needle from one area to another due to shortage of sharp containers in our unit so working around with sharps or needle can cause needle prick injury to nurses as well as to the patients and we are facing with pandemic of coronavirus of which everyone is afraid of being infected with the virus , not forgetting HIV and other infections Infection prevention and control, sometimes we do not have hand soap and paper towel in the ward we end up of washing our hands without warm water, soap and no paper towel after washing our hand we wipe with our clothes and this can also lead to infection and bacteria and viruses are everywhere so without warm water, soap and paper towel we are at risk of this pandemic called corona virus. Electrical hazards, it occur in terms of our pluck sometimes they are not working or the cover have removed so they end up using the tape to prevent the cover from falling, doing such can lead someone into electric hazards. Participant K: we do not have running water especially the hot water, so a nurse I must go to the kitchen and fetch warm water using Ann sometimes I can get burned because it was full of warn water it can lead to burn injury. Another occupational hazards is an electricity, during load shedding we do not have generator we end up using candle and without proper care of	Lack of PPE prone to covid diseases Sharps and needle stick injury Poor compliance to infection prevention and control due to shortage of resources Electric hazards Burn injury
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	such candle it can fall anytime and cause risk of fire of which is going to be a problem because we do not have enough fire extinguishers. Maintenance in our hospital is a serious problem, for example, what happened previously is that the plumbers, as renovating the institution putting ceilings and tiles while we were working, and their machine that they use is very noisy which can lead one into hearing problems. Participant J: Slippery, in our unit slippery can happen due to wet floor, normally when the general workers are cleaning the floor they must put a caution sign of wet in order to avoid slippery in the workplace because someone might fall. In addition to occupational hazards in the workplace, screening of patient is very much important when patient or visitors enter the hospital premises, they should be screened for Covid and TB, the reason for doing this is to isolate the suspect patients from others to prevent cross-infection, however this is become difficult in our ward since we mix TB patients with others because of shortage of isolation rooms and this can lead to cross-infection. The issue of resources in our unit we only have one cord bed and sometimes we admit many uncooperative patient that need that cord bed, the risk of fall in uncooperative patients is very high Participant M: occupational hazards can also occur as a result of structural issue, for example if you can see it in our institution, we do not a proper ventilation such as auvioletes where is clear air and allow for gaseous exchange and another issue is isolation room, we do not have enough isolation room in our unit, then we end up mixing patients together including patients with TB. This can contribute to nosocomial infection.	Risk of fire Shortage of fire extinguisher Physical hazards due to noisy Slippery Cross-infection with TB and Covid Lack of space Compromise patients' rights Shortage of cord bed Poor infrastructure Poor ventilation Lead to nosocomial infection
2 In your perceptions, what occupational hazards have you been exposed to and why do occupational hazards occur in your workplace?	Participant K: I was exposed to floods in the workplace I remember it was December it was rainy and our hospital had leakage everywhere in the roof, wall and doors so it ended up having floods in the ward so there was water everywhere where patients and nurses was not able to move. Previously we as a nurses we used to be porters where we used to wheel dead bodies to the mortuary, leaving patients alone in the ward is also hazards because anything can happen while we are not around the ward and as nurses we will be blamed for that. Secondly in the mortuary is very cold and there is a bad smell and this affect the health of nurses negatively. Thirdly nurses were complaining of back pain or injuries due to heavy workload since they carries out duties that not theirs Hygiene condition, sometimes general cleaners were nowhere to be found, so if there is any patient's fluid in the floor like vomitus, blood or liquor we end up of mopping in order to prevent cross-infection to other patients because general workers ar not doing Participant M: as a nurse I have been exposed to Covid-19, because I nurse the suspect patient and the confirmed cases of covid without proper PPE, it is my duty to nurse those patients because I take an oath as a nurse and I said the total health of my patient will be my first consideration, however nursing those patient I put myself at risk of such infection Like myself I once fell in the workplace due to slippery because there was no caution sign that was put in place so I walk through that wet floor	Flooding and risk of slip Health problems due to bed smell Back injuries Poor hygiene condition Exposed to covid-19 Fall injury due to slippery floor

	without realising that is wet and I ended up had injury so x-ray was done to me and lucky enough there was no fracture it was just a twisting of ankle which ended up corrected and I had so much pain. Participant L: I was exposed to patients bloods and body fluids in maternity because I was working there without sterile gloves and apron and conducting delivery without those PPE is a risk to me as a nurse, this happen as a result of shortage of PPE from pharmacy since they said that they do not have enough from the stores. I was prone to covid in the workplace due to shortage of staff and no proper introduction of using PPE in case of covid, we end up being asked by manager to go and assist OPD since there was no staff on that day we was working with covid cases and some patients were coughing and did not know that they are positive until 3 days later after testing positive and not wearing mask so we were prone to covid infection. Lack of fire evacuation drill, for example in case of fire we won't be able to redeem the situation since we do not have fire evacuation drill the our unit Participant J: I was exposed to needle prick injury because the bucket of sharp container bucket was full so when I dispose the sharps and needle I mistakenly prick myself this is due to non-compliance of infection prevention and control policy. I was prone to the risk of cervicitis because of sharing toilets with males, since we only have one staff toilet in the prone I got infection and I had to take antibiotics for seven days, sometimes our toilet are not in good condition cleaners clean only once after a while.	Exposed to blood-borne pathogens Covid infection Shortage of staff Risk of fire Needle prick injury Non-compliance of infection prevention and control Risk of infection due to poor hygiene
3 What according to you should safety practices entail or consist in the workplace?	Participant M: sufficient PPE such as gloves, apron, mask to prevent infection. Sufficient staffing, the employer must hire more so that nurses can concentrate on their work. Medicine room must be kept under locked because any one came inside and steal the medication and patients can also commit suicide with those medications. Correct identification of patients to prevent doing wrong procedure to the wrong person Participant J: Caution sign put in place every time when the cleaners are mopping the floor to prevent slippery. Waste management prevention and control more especially on how to fill up the container of sharps and vials. In our unit we have waste control books were we do our waste and control it every day and there is a policy that also guides us on how to segregate our waste. Isolation of patients with infectious disease in order to minimize cross-infection. In-service training in case of emergency on how to do it. Participant L: Maintenance role must be put in place to assess the structure and solve it for example; in case of leakage room they must close it. Screening of patients so that you can suspect can be identified early Participant K: Hand hygiene, according to covid regulation everyone must wash hand using soap and clean water, scrub using hand sanitizer, maintain social distancing in between person and always wearing mask to prevent cross-transmission of infection.	Availability of resources Safety caution sign staffing Risk of suicidal thoughts Caution sign Waste management Policy and procedure Monitoring and assessing structure Isolation In-service training Assessment Screening Covid regulation

	Hygiene condition, laundry must provide us with enough linen so that we can be able to promote good hygiene, by changing linen after patient being discharged	Proper condition
4 What safety practices are in place in your workplace and in what way are these practices sufficient or not within the context of your workplace?	Participant K: In my working area linen is not sufficient because most of the time when we do bed making we try to improvise in order to maintain a good hygiene Shortage of hand soap is also a problem to us a nurses because we work with infectious patient and washing hands without soap is not solving any problem since we are at risk of bacteria and virus Participant J: Infection prevention, we do not have enough sharp containers so we end up mixing vials and sharps and it is hazardous. Participant L: Shortage of PPEs, we do not have enough gloves and aprons in our unit; this is due to insufficient stock received from pharmacy and lack of budget allocated by government on PPE. Participant M: Nurses do comply with the issue of waste segregation; however some they do not since they end up mixing the waste even when we have enough resources.	Shortages of resources Risk of infection Shortage of sharp containers Shortage of PPE Negligence
5 What other safety practices according to you should be incorporated in your workplace?	Participant L: In-service training, I think if there is an in-service training to nurses that if there is something that is not working they should report it to the maintenance related issue request on the request book, nurse made be made aware of that. Giving health education to our patients especially patient with contagious such as TB and covid-19 to wear mask always of cross-infection. Participant J: In-service training on the waste control and prevention management in order to be aware of policy and procedure. Isolation of patients with contagious infection must be implemented to prevent cross-infection. Participant K: in-services training to the cleaners so say that every time when there is cleaning they must put the caution signs to prevent slippery. Participant M: in-service of medical equipment's to make sure that there are in a good working condition in order to prevent medico-legal; hazards to the patient. At least they should service those equipment's twice per quarter.	In-service training of nurses Health education Training Isolation In-service training In-service of the equipment's

GROUP 4 CONSISTED OF FOUR PARTICIPANTS

Demographic factors	Participant N	Participant O	Participant P	Participant Q
Age	31	26	25	28
Gender	Female	Female	Male	Male
Race	Black	Black	Black	Black
Cultural group	Tswana	Sotho	Tswana	Tswana
Marital status	Married	Single	Single	Single
Educational level	Certificate in enrolled auxiliary nursing	Honours degree in Bachelor of nursing	Diploma in nursing	Diploma in nursing
Occupational rank	Enrolled nursing auxiliary (ENA)	Registered nurse (RN)	Registered nurse (RN)	Registered nurse (RN)
Unit at work	Paediatric ward	OPD/causality	Labour ward	Labour ward
Years of working experience	2 years	2 years	2 years	6 years

The following questions were asked during group discussions

1 What do you consider as occupational hazards in the workplace?	Participant N: Doors in our unit does not close properly and some are broken because there are made up of glass it can cut the babies or even staff in the workplace leading to injury. We have a drainage at the back of the ward, we have been reporting that its blocked for very long time and babies can play there because we have a small playing area it can result in baby been drawn on that drainage and might die and lead to health problems in nurses since its smelly Blockage of drainage. Participant Q: Nurses are also prone to violence at work where in the relatives of the patients and confused patient end up biting the nurses if they don't get what they want. Nurses are exposed to both physical and verbal abuse. Our hospital is very old, some of us when this hospital was built we were not born yet, there is peeling of ceiling, walls are gapping but we are still operating 24/7 in such kind of hospital without renovation or maintenance, this hospital can fall at any time and one can be injured Participant O: We do not have a working rail in our unit; sometime we can admit baby with delayed milestone so there is no anything to assist that baby in working. Sometimes we work gloves in the ward due to shortage of resources and patients are discharged in the hospital without treatment due to shortage of treatment from the stores and this compromise the total health of the patients. Structural problems, our hospital does not have isolation area so we end up mixing patient together. For example we once admit patient with Tuberculosis (TB) in the ward and that patient must be in an isolation ward since we do not have isolation room we end up putting the patient with others and poor ventilation lead to risk of cross-infection disease. Participant P: We do not have warm water, so in the morning we use kettle to warm water and sometimes is not enough if the ward is full this can cause hygiene problem because the mothers are not bathing properly since we do not have warm water so hygiene when the mothers are in hospital is 50% compared to when there are at home and sometime mothers do not disinfect the bowel container that they use in bathing and because there are not enough for all mother they end up	Cut and sharp injury Problem with maintenance Health problems due to smelly drainage Violence in the workplace Physical injury Collapsing of building Shortage of resources Poor service delivery Poor infrastructure Risk of infection Hygiene condition
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	sharing or exchange them without being disinfectant.	
2 In your perceptions, what occupational hazards have you been exposed to and why do occupational hazards occur in your workplace?	Participant N: I have been exposed to TB. I was nursing babies in a ward who have diagnosed with TB and it was a first episode, due to problem with poor ventilation in the ward because our window does not open so I feel like I was at risk of TB infection and again nurse such kind of patient with other patients it might as well put everyone at risk more especially people with immune compromised such as HIV. I was working night duty without electricity because we do not have backup like generator, we ended up using candles to light and this can burn the baby leading to burns injury. Participant Q: I as working night shift, a male patient who was confused absconded from ward 3 and making noise threaten to kill everyone in the hospitals, nurses and other patients were shocked and afraid of that patient, this also go to the problem of staffing because we had no male nurse in the ward if that patient managed to come to our ward he would have been injured anyone, however, we end up calling security for backup and problem was resolved. In other way I am trying to say as nurses were are not safe in our working environment. Participant O: As a nurse, I feel like management does not care about our health because we share toilet with patients and without proper hygiene one can end up having risk of infection. Shortage of PPE, sometimes we work without proper PPE such as gloves and this can contribute to risk of infection like coronavirus and HIV because we work with patients' fluids and blood. A doctor that I was working with was diagnosed with covid-19, so he has to stay at home for 7 days until symptoms subside so I was afraid since I was a contact but because I did not have any symptoms I never tested. Participant P: I was exposed to Needles injury, during emergency everything done fast and after resuscitating the patient the emergency team tend to forget discard used materials accordingly so I heard to clean the materials that were used and there was a person who did not discard the needle so I ended up pricking myself, this happen as a result of neglecting the policy of waste segregation.	TB infection Risk of burns injury Risk of violence Poor staffing Risk of infection Needle or sharp injuries Risk of covid-19 Needle prick due to not complying with waste segregation policy
3 What according to you should safety practices entail or consist in the workplace?	Participant N: communication with the team such as doctors about the waste segregation because sometimes there are the one who mix things. Participant Q: Hand hygiene practices measures are put in place, indicating that you must wash your hand before and after every patient using hand soap and make use of hand sanitizer. Participant P: review and training on policy and guideline, in the workplace, as a nurse I think we should have one day in a month wherein in we are revising the occupational safety policy so that we can know them and able to implement into practice. Participant O: Staff must have their own toilets and should be labelled. Maintenance personnel must attend to problem immediately because we had a leakage in the toilet and they came after a very long time. Discard your waste properly, I have heard experience an incidence in which a nurse put the patient drip and throw drip stopper on the floor due to negligence someone just grip that stopper and fell and resulted in	Team communication Hand hygiene practice Revision of policies Poor sanitation Support from maintenance Waste control and prevention

	injury on duty. Disinfectant the surfaces, according to covid-19 regulation and policy, it stated that the surface must be disinfectant for every 3 hours using 70% disinfectant solution since it has been proven that it can kill germs and bacteria on the surface especially the surface that public touches everyday including door handles.	Disinfectant the surface
4 What safety practices are in place in your workplace and in what way are these practices sufficient or not within the context of you workplace?	Participant N: We have a shortage of gloves and there was a time where we have use re-use the gloves by washing them after each use and re-use to the next patient Participant Q: We are also losing most of the qualified profession such as nurses and specialized doctors due to shortage of resources because sometimes patient died in front of you as a healthcare workers and you think that if you have sufficient resource you would have save the life of that patient this can lead to stress in the workplace and sometimes absenteeism where many staff absent themselves from work Participant O: shortage of resources also affects the service delivery to patients. For example, I remembered when I was dressing patient, patient had sustained burn wound and doctor ordered that the wound must be cleaned with iodine and dressed with jelonet so in the ward we had no such we then asked the pharmacy with there is a stock and it was out of stock, as a nurse I had to improvise in order to provide care to the patient, however this can lead to a long stay of patient in the ward since there will be a delayed healing process of the wound. I personally I don't see myself working in this hospital for long time because I will end up having depression, firstly in this hospital there is no development, staffs are not being taken to school and there is no rotation I have been working with babies for long time. Participant P: In case of covid-19 regulation everyone in the hospital is complying on issue of social distancing, wearing mask and hand hygiene.	Shortage of gloves Staff leaving their job Stress Poor service delivery to patients Depression risk Covid-19 regulation compliance
5 What other safety practices according to you should be incorporated in your workplace?	Participant N: Communication with management regarding any problem that we encounter in our units i think it can also help to vent out our problems and grieve. Participant O: proper equipment's should be available at all time Matrons should make list on the changes that we need in the ward such as changing ward door. Implementation of safety practice measures such as wear mask, social distancing and wash our hands. In terms of privacy in between the babies they should put the curtains. Every person entering the institution must be screened for covid-19 and TB. Maintenance personnel must also do their work when we report something they must come and fix it. Participant P: In-service training on all staff regarding the proper use of PPE in the workplace.	Team communication Sufficient utilization of PPE Screening for infectious disease Training