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The opinions of nurses regarding low adherence to standard precautions to prevent healthcare acquired infections

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2018
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THE OPINIONS OF NURSES REGARDING LOW ADHERENCE TO STANDARD PRECAUTIONS TO PREVENT HEALTHCARE ACQUIRED INFECTIONS

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A research report submitted to the Faculty of Health Science, University of the Witwatersrand, Johannesburg, in partial fulfilment of
the requirements for the degree
of
Master of Science in Nursing

Johannesburg, 2018

DECLARATION

I, Kenneth Mmereki, declare that this research is my own work. It is being submitted in partial fulfilment of the Masters of Science Degree in Nursing at the University of the Witwatersrand, Johannesburg. It has not been submitted previously for examinations at this or any other university.

.....

(Signature)

_____dayof_____2018

Protocol no: M170520

DEDICATION

This work is dedicated to my mother Ditirafalo Mmereki (May Her Soul Rest In Peace), my late grandparents Moagi and Ofetotse, my sister, brothers, all other relatives, teachers, friends and everyone who took care of me as an orphan and for their support throughout this academic journey.

Let this work inspire all the disadvantaged children.

Lord, mostly I am thankful for the relationship that I have with you.

ACKNOWLEDGEMENTS

First, I have to thank the almighty God for this journey, for my health, for my family, friends, colleagues and lecturers at the University of the Witwatersrand for what they taught me.

I would like to show my appreciation to the Botswana Government for awarding me a scholarship for the Master's Degree course through the Ministry of Health.

Many thanks and kind regards to my supervisor, Barbara Hanrahan for the support, patient, guidance and encouragement. She will forever be in my heart. May God bless her always.

Many thanks to Wits Nursing Department staff for the support, friendship and assistance in the academic area.

To all my postgraduate colleagues and IPC nurses, thank you for your support during my clinical practice .May God bless all of you.

The participants: I appreciate your participation in the study and good luck in your future.

God bless you.

ABSTRACT

The purpose of this study was to explore the opinions of nurses as to why there was a low adherence to standard precautions (SP) of infection control , ways in which adherence might be improved and to make some suggestions to the Infection Prevention and Control policies and practice at an academic hospital. This study used a qualitative exploratory design. The population comprised of all Registered nurses (RNs) and Enrolled nurses working in the postnatal ward, general paediatric ward, medical ward, general surgical ward and general wards. Purposive sampling was used and the sample size was 28 (n = 28) .The self-administered narrative sketches were used as the data collection tool. This study employed directed content analysis in which the findings of the study were grouped independently and compared to findings of previous studies. The participants reaffirmed poor basic training, risk behaviours, inadequate provision of equipment and protective equipment and inappropriate work conditions as reasons for low adherence to Standard Precautions among nurses. Lack of skills and knowledge regarding standard precautions can lead to non-adherence. Behavioural and cognitive skills of individuals were associated with the low adherence to Standard Precautions. The study found that insufficient supply of resources, use of uncomfortable personal protective equipment, excessive workload, lack of time, high numbers of patients and shortage of nurses, all contribute to non-adherence to standard precautions among nurses. The findings of the study do not support unawareness of the importance of standard precautions as a reason for low adherence to SPs. Most participants felt that the level of adherence to standard precautions among nurses was satisfactory.

Nurses recommended continuous education, regular audits, motivation, increasing numbers continuous support visits and use of reminders. Recommendations to the policies of Infection Control at the hospital include continuing professional development/education, regular supply of Personal Protective Equipment, Institutional strategies to change risk behaviours, management support. Further research should be conducted to examine strategies to address barriers found in this study.

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LIST OF ABBREVIATIONS

AMR	Antimicrobial resistance
CPE	Carbapenemase-producing Enterobacteriaceae
CDC	Centers for Disease Control and Prevention
COJ	City of Johannesburg
ESBL	Extended-spectrum beta-lactamase (ESBL)
EN	Enrolled nurse
HAIs	Healthcare Acquired Infections
HBV	Hepatitis B virus
HBA	Hazardous Biological Agents
HAI	Health Acquired Infections
HICPAC	Hospital Infection Control Practices Advisory Committee
HCWs	Health care workers
IPC	Infection prevention and control
ICU	Intensive Care Unit
IPC	Infection prevention and control
IT	Information technology
MRSA	Methicillin resistant Staphylococcus aureus
NCS	National Core Standards
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
RN	Registered nurses
SPs	Standard Precautions
SANC	South African Nursing Council
VRE	Vancomycin-resistant enterococci
WHO	World Health Organization

CHAPTER ONE

OVERVIEW OF THE STUDY

1.0 INTRODUCTION

This chapter provides the overview and background of this study by exploring the opinions of nurses regarding low adherence to Standard Precautions (SPs) to prevent healthcare acquired infections at an academic hospital in Johannesburg. It also presents the problem statement, the purpose, the objectives and significance of the study, an outline of the research methodology, the operational terms, trustworthiness and ethical considerations.

1.1 BACKGROUND

Transmission of Healthcare Acquired Infections (HAIs) is a global concern(Rosenthal, 2011 ;WHO, 2011 ; Revelas, 2012), and of greater concern in developing countries than in developed ones(Lowman, 2016). National Infection Prevention and Control Policy & Strategy of South Africa (2007), defines Healthcare Acquired Infection, as “an infection obtained in a healthcare setting by healthcare personnel, healthcare user or any person who came to the facility for some reasons other than that infection”(Department of Health, 2007). The definition extends to say that infection was not incubating or present at the first stage of contact with a healthcare facility. These (HAIs) also encompass staffs’ occupational infections and hospital/clinic acquired infections manifesting after discharge, including infections appearing at an incision area within six weeks of operation(Department of Health, 2007).

In South Africa, the magnitude of most of the HAIs is still unknown due to inadequate surveillance and reporting(Dramowski, 2014; Mahomed *et al.*, 2017),but it is estimated to be higher in public sector-institutions than in private ones. Lowman (2016) claims it is around 10 to 20% (Lowman, 2016 ; Mahomed *et al.*, 2017). However, a Healthcare-Associated Infections (HAI) surveillance at an adult surgical ICU in Tygerberg Hospital, South Africa(Hakizimana, 2017) found

86.2% (n=29) of the patients in surgical ICU had HAIs, while four patients (13.8%) were colonised in the latter study. Acinetobacter baumannii was the most prevalent HAI (31% of all infections), while Pseudomonas was the most common pathogen causing colonisation. In the same study, the top four pathogens causing infections in the ICU were Acinetobacter baumannii, Methicillin-resistant staphylococcus aureus (MRSA), Klebsiella pneumonia and Pseudomonas aeruginosa.Lower respiratory tract infection (LRTI), Surgical Site Infection (SSI) and Blood Stream Infections (BSI) were the sites where these infections were found. Most of the pathogens (65.4%)in the above study were Multi Drug Resistant (MDR) organisms(Hakizimana, 2017).

The laboratory-based surveillance in South Africa has also revealed a high prevalence of hospital-acquired methicillin-resistant Staphylococcus aureus (HA-MRSA) (Perovic *et al.*, 2015).The highest prevalence was from the Gauteng Province, at 53%. The Staphylococcus aureus is the most important bacterial microorganism and a cause of many health conditions such as skin and soft tissues infections, sepsis, pneumonia and foreign body infections (David and Daum, 2010).Additionally, South African public and private sector hospitals are facing the emergence of Antimicrobial Resistance (AMR) microorganisms such as Methicillin Resistant Staphylococcus Aureus (MRSA), Vancomycin-Resistant Enterococci (VRE),Extended-spectrum Beta-lactamase (ESBL)-producing Gram-negative bacteria and Carbapenemase-producing Enterobacteriaceae (CPE)(Department of Health, 2017).

The healthcare professionals, according to Porto and Marziale (2016),particularly the nurses are exposed to health-acquired infections during their work activities. Efstathiou *et al.* (2011) argued that in general, nurses are mostly exposed to microorganisms through various modes, such as needle stick injuries, air-transmission and hand contact with the blood. United States Centers for Disease Control and Prevention (CDC) designed standard precautions to help prevent infection with these pathogens(Luo *et al.*, 2010). Standard precautions of infection control are described as a network of infection control measures that are used by all workers to reduce contact with potentially infectious body fluids, such as blood, secretions and excretions(CDC, 2014).According to Powers *et al.*

(2016),adherence to these measures is the most useful way of preventing transmission of these pathogens between the healthcare workers, patients and visitors. This prevention model (SPs) was adopted by both healthcare institutions and the World Health Organization and included the prevention of cross-infection between people (patient or staff), hand hygiene, personal protective equipment (PPE) and safe handling of sharps. Full protection is strengthened by other measures such as linen management, environmental cleaning, proper decontamination procedures, waste management and respiratory hygiene and cough etiquette (WHO, 2007).

Previous studies found that nurses' adherence to standard precautions is suboptimal (Piai-Morais *et al.*, 2015;Porto and Marziale, 2016).Porto and Marziale (2016) analysed 30 articles and suggested that poor training, "unawareness of importance" of standard precautions, risk behaviours, in adequate supply of personal protective equipment and unsuitable working conditions were reasons for low adherence to standard precautions by nurses.

Nieuwoudt (2014) conducted a study in the Cape Winelands District, South Africa, and found that nurses have low adherence to some standard precautions such as sharps management, personal protective equipment and hand hygiene. The participants in this study had undergone an Infection Prevention and Control course(Nieuwoudt, 2014). Furthermore, in another study that was conducted in KwaZulu-Natal Province, which aimed at outlining the pattern of needle-stick and sharps injuries at a hospital, 23 nurses (47%) obtained needle stick injuries in a two-year period(Adefolalu, 2014); the injuries occurred through recapping needles, venepuncture, surgical procedure and improper disposal of sharps. Therefore, both these studies indicate that despite training and education, nurses do not appear to adhere to standard precautions. This study will look at the opinions of nurses regarding low adherence to standard precautions in order to prevent health-acquired infections.

1.2. PROBLEM STATEMENT

Worldwide it is essential that nurses adhere to standard precautions in order to prevent Health Acquired Infections (HAIs) (Luo et al., 2010; Abubakar et al., 2015). health acquired infections According to (Efstathiou et al., 2011; Nieuwoudt, 2014; Mollaoglu et al., 2015) Nurses are taught the content of standard precautions during their training, which is reinforced during in-service education. A study done in South Africa (not in the institution where this study was done) showed that despite having knowledge their nurses do not adhere to standard precautions (Satekge, 2010). It is not clear what the opinions are regarding adherence to standard precautions of infection control as no data has been published in the selected institution.

1.3 PURPOSE OF THE STUDY

The purpose of this study was to explore the opinions of nurses as to why there was a low adherence to standard precautions of infection control, ways in which adherence might be improved and to make some suggestions to the Infection Prevention and Control policies and practice at an academic hospital .

1.4 OBJECTIVES OF THE STUDY

The objectives of the study were:

- To explore the opinions of nurses as to why there was a low adherence to standard precautions in an academic hospital in Johannesburg.
- To explore the opinions of nurses on ways in which adherence might be improved.
- To make suggestions to the Infection Prevention and Control (IPC) policies and practice at the hospital.

1.5 SIGNIFICANCE OF THE STUDY

As already mentioned, it is not known why, despite having knowledge, nurses do not adhere to standard precautions in South Africa. Having a baseline data regarding why there is low adherence to standard precautions among nurses, would guide the stakeholders in addressing these issues. The findings from the study will also make some suggestions towards improving Infection Prevention and Control policies and practices among nurses at the hospital and other healthcare facilities in Gauteng.

1.6 OPERATIONAL TERMS

Standard Precautions: are measures put forward by Centres for Disease Control and Prevention(CDC), which include hand hygiene, personal protective equipment(PPE),respiratory hygiene/cough etiquette, safe handling and disposing of sharps, environmental cleaning, handling and laundering soiled linens and reprocessing of reusable patient care equipment (CDC, 2017).

Healthcare Acquired Infections: "Infections acquired while in a healthcare facility by healthcare personnel, a healthcare user, or any person who came to the facility with reasons other than that infection." The said infection was not incubating or present at the first stage of contact with a healthcare setting (WHO, 2017).

Adherence: in the context of this study, adherence is described as following recognised protocol and guidelines when performing healthcare duties.

Registered nurse: In this study, Registered nurse refers to an individual who is registered with the South African Nursing Council under this category (Nursing Act, 2005)and "section 16 of the Nursing Act, Number 50 of 1978"(Nursing Act, 1978).

Enrolled Nurse: refers to an individual who appears in South African Nursing Council register under this category "in terms of section 31(2) of the Nursing Act, Number 33 of 2005"(Nursing Act, 2005).

1.7 OVERVIEW OF THE RESEARCH METHODOLOGY

This is the brief summary of the research methodology; the detailed outline will be discussed in Chapter 3.

1.7.1 Research design

This study used a qualitative exploratory design. A qualitative approach seeks to provide explanation of issues in subjective way by collecting and analysing non-numerical data (Flick, 2014). Exploratory study intends to determine the nature of the problem in a new light (Saunders (2011).

The self-administered narrative sketches were used to collect the opinions of nurses as to why there is a low adherence to standard precautions of infection control. Narrative sketch give participants time, space and allows them to give their actual point of view (Aarikka-Stenroos., 2010) .In this study, the data collection tool was pre-tested. The pre-test of the narrative sketch was done before the main study. The purpose of this exercise was to identify weaknesses and determine time requirements regarding the writing tool.

1.7.2 Research Methods

This study was conducted in an academic hospital in South Africa. The specific setting for this study was the postnatal ward, general paediatric ward, medical ward, general surgical ward and general wards depending on the data saturation.

- **Study Population**

The study population comprised all registered nurses (RNs) and enrolled nurses working in a postnatal ward, general paediatric ward, medical ward, general surgical ward and general wards depending on the data saturation, in September and October 2017.All registered nurses and enrolled nurses as per South African Nursing Council category and working in the above-listed wards were eligible for study.

- **Sample and sampling**

Purposive sampling was applied to select the sample. Participants were selected in each of the wards until data saturation was obtained (n=28). This is where no more new information can emerge from the data. The inclusion criterion was that a participant had to be a registered or enrolled nurse as per the South African Nursing Council category and working in the above-listed wards.

- **Data Collection**

Permission to conduct the study was acquired from the Chief Executive Officer of the Gauteng Province Department of Health, the Director of Nursing Services and the Chief Executive Officer of the academic hospital. Permission was also sought from Unit managers verbally**.** The whole procedure was done in accordance with ethical considerations of the study.

- **Data collection tool**

Data was collected through the narrative sketches designed by the researcher (Appendix D).The tool was divided into two segments. The first segment was a checklist of demographic data comprising of age, gender, ward and nurse category. This segment used a checklist developed by the researcher. The second segment explored opinions of nurses as to why there was a low adherence to standard precautions of infection control. Data were analysed using directed content analysis (Hsieh and Shannon, 2005).The data was grouped independently and compared to findings by Porto and Marziale (2016).

1.8 TRUSTWORTHINESS

The trustworthiness of this study was measured according to the following aspects: credibility ,transferability dependability and confirmability, as explained by Lincoln and Guba (1985).

1.9 ETHICAL CONSIDERATIONS

The following measures were taken to make sure this study was conducted to the acceptable and appropriate ethical standards.

- Department of Nursing Education reviewed the protocol.
- A clearance certificate (M170520) was issued by both the Human Research Ethics Committee of the University of the Witwatersrand (see Appendix A) and the Research and Postgraduate Committee of the Health Sciences Faculty of the Witwatersrand (see Appendix B).
- The permissions were sought and granted by Gauteng Department of Health and the Chief Executive Officer of the participating institution (see Appendix C).
- Participants were given information letters explaining the nature of the study (see Appendix E).
- Participants were informed that if a narrative sketch was completed, the Committee for Human Research Ethics had agreed that this was a form of consent. They were further informed that they could participate, decline or withdraw from the process if they wanted to without incurring any penalty.
- To uphold the principles of confidentiality and anonymity, no personal identification data was asked.

1.10 PLAN OF THE STUDY

Chapter One:	Overview of the study.
Chapter Two:	Literature review.
Chapter Three:	Research design and methods
Chapter Four:	Data analysis and discussion of results.
Chapter Five:	Summary of the study, main findings, limitations, recommendations and conclusions.

1.11 SUMMARY

This chapter outlined the background, problem statement, purpose (and objectives) and research methodology. An overview of trustworthiness ethical considerations was presented.

Chapter 2 presents the review of the literature Epidemiology of Health Acquired Infections, background of Standard Precautions, requirements for adherence to Standard Precautions in South Africa, key components of Standard Precautions of Infection Prevention and Control, Transmission Based Precautions, and Reasons for low adherence to Standard Precautions of Infection Prevention and Control among nurses.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter introduces the literature review conducted on the opinions of nurses regarding low adherence to Standard Precautions, as well as the reasons for the low adherence. Literature review is defined as “organised written presentation” of published relevant information with the aim of conveying what is currently known about a topic under consideration for study (Burns and Grove, 2005). The review will concentrate specifically on the following reasons (for low adherence): Inadequate training, risk behaviours of workers, inadequate supply of Personal Protective Equipment, unsuitable working conditions and unawareness of the importance of Standard Precautions. For convenience, this review has been divided as follows:

- Epidemiology of Healthcare Acquired Infections (HAIs).
- Background of Standard Precautions.
- Requirements for adherence to Standard Precautions in South Africa.
- Key components of Standard Precautions of Infection Prevention and Control.
- Transmission Based Precautions.
- Reasons of low adherence to Standard Precautions of Infection Prevention and Control among nurses.

2.2 EPIDEMIOLOGY OF HEALTHCARE ACQUIRED INFECTIONS

Healthcare Acquired Infections (HAI) is a challenge worldwide, especially with the rising of Multidrug Resistance (MDR). Recently, "healthcare associated infections and Healthcare Acquired Infections" are terms which have replaced "nosocomial /hospital acquired infections"(WHO, 2017).Healthcare Acquired Infections are “infections acquired while in a healthcare facility by healthcare personnel, a healthcare user or any person who came to the facility for some reason other than

that infection"(Hakizimana, 2017 ; WHO, 2017).According to Khan *et al.* (2015), worldwide studies indicate that 5% to 10% of all hospitalised patients in North America and Europe result in Healthcare Acquired Infections, while more than 40% was reported in Sub-Saharan Africa and Asia. Globally, urinary tract infections, surgical wound infections, bloodstream infections and respiratory tract infections are the most common Health Acquired Infections (Revelas, 2012 ; Bocicor *et al.*, 2017). Moreover, the common multi-drug-resistant health acquired microorganisms reported worldwide consist of methicillin-resistant Staphylococcus aureus, vancomycin-resistant enterococci, Pseudomonas aeruginosa and Klebsiella pneumonia(Khan *et al.*, 2015).

In South Africa, information on HAIs is insufficient due to inadequate HAI surveillance, shortage of trained infection prevention and control workers and information technology (IT) services(Dramowski, 2014). However, the National Institute for Communicable Diseases (NICD)'s Centre for Healthcare-associated Infections (HAIs), Antimicrobial Resistance (AMR) and Mycoses have indicated on their website that HAIs is the centre's new focus area .The centre also indicated that plans are in progress to conduct HAIs surveillance at sentinel hospitals. However, it is estimated that in South African healthcare facilities, one in seven patients is at risk of contracting Health Acquired Infections(Revelas, 2012).

Vawda and Variawa (2012) added that, there is a high prevalence of infections such as Hepatitis B, HIV and Tuberculosis in South Africa.

2.3 BACKGROUND OF STANDARD PRECAUTIONS

Standard precautions (formally universal precautions) were designed by the Centers for Disease Control and Prevention (CDC) in 1987 to help prevent the transmission of infection with blood-borne microorganisms in healthcare facilities (Amoran and Onwube, 2013).These recommendations were developed to protect healthcare workers, patients and visitors even in the absence of symptoms. This was specifically for infections such as Human Immunodeficiency Virus (HIV) or Hepatitis B virus (HBV). The main aspects of universal precautions and body substance isolation were subsequently merged into a unit of recommendations,

namely the Standard Precautions by the CDC's Hospital Infection Control Practices Advisory Committee (HICPAC) in 1995 (Amoran and Onwube, 2013). The use of these measures is aimed at minimising the spread of healthcare-associated infections (HAIs) in the handling of all body substances, such as blood, secretions and excretions. In addition, the application of this type of precaution is influenced by a risk assessment(CDC, 2017).The Standard precautions are made up of hand hygiene, personal protective equipment, respiratory hygiene and cough etiquette, the safe use and disposal of sharps, environmental cleaning, handling and laundering soiled linens and reprocessing of reusable patient care equipment(FGPS Challenge, 2009).

2.4 Requirements for Adherence to Standard Precautions in South Africa

According to Vawda and Variawa (2012), the South African Department of Health used WHO guidelines of 2003 as the foundation for its infection control policy, this included the introduction of WHO's idea of standard precautions. Healthcare providers and workers in South Africa have governed The National Infection Prevention and Control Policy of 2007 to implement the Infection Prevention and Control (IPC) measures, which includes standard precautions. The policy states that the role/responsibilities of the nurses include implementation of these measures in patient care, knowing and adhering to the IPC practices for all patients in the healthcare setting(Depatment of Health, 2007). The National Department of Health and other relevant stakeholders set the training standards for IPC professionals(Department of Health, 2007).

According to the Department of Health (2007),noncompliance to the IPC policies and guidelines may result in negative consequences for the employer or employee. This includes lawsuits against the state or individual employees for illness or death caused by deficient infection prevention and control procedures, the individual may face disciplinary action by health professional bodies for harming the patients and the public may lose trust in the healthcare provider(Depatment of Health, 2007).

In addition, South African employees, employers and self-employed personnel are obliged by the Occupational Health and Safety Act of 1993, on Regulations for Hazardous Biological Agents (HBA), to implement occupational safety measures and precautions to avoid occupational exposure to pathogens(Department of Labour, 2001). According to the Act, employers and the employees have the roles and responsibilities to ensure adherence to precautions in the workplace. The employer is obliged to ensure training and competency among the employees on different precautions, measures and safety procedures before possible exposure to HBA. The employer must also perform risk assessment in the workplace and medical surveillance on certain employees. Besides the employer's responsibilities, the employee, or any exposed person, has a duty to comply with any instructions regarding environmental, health and safety measures and precautions(Department of Labour, 2001).

The National Infection Prevention and Control Policy (2007) recommends that employers establish Infection Prevention and Control Committees and teams with specific roles and responsibilities for preventing and controlling Health Acquired Infections (HAIs).

The Infection Prevention and Control nurses are the driving force behind outbreak investigation, educating, auditing all units and all healthcare professionals, allied healthcare workers, including patients, family members and friends who come to a hospital. The policy discussed above also indicates that the role and the responsibilities of the Infection Control and Prevention nurse includes surveillance, identifying and investigating healthcare associated infections(Depatment of Health, 2007).

The National Department of Health (South Africa) added the use of standard precautions into the National Core Standards (NCS) for Antimicrobial Resistance (AMR) (antibiotic stewardship) programme (Department of Health, 2014).This programme mandates the use of standard precautions to reduce transmission of multi-drug resistant (MDR) bacterial infection. According to Guidelines on Implementation of the Antimicrobial Strategy in South Africa (2017), the AMR interventions include adherence to hand hygiene, environmental cleaning practice and use of isolation for infected patients (Department of Health, 2017).

The following paragraphs will discuss these key elements of standard precautions.

2.5 KEY COMPONENTS OF STANDARD PRECAUTIONS

The major elements include hand hygiene, personal protective equipment, respiratory hygiene/cough etiquette, safe handling and disposal of sharps, environmental cleaning, handling and laundering soiled linens and reprocessing of reusable patient care equipment.

2.5.1 Hand Hygiene

This term is commonly used to describe any method of reducing the amount of pathogens on hands. Hand hygiene methods include applying antiseptic hand rub and use of non-antimicrobial or antimicrobial soap and water to clean hands (FGPS Challenge, 2009).Hand hygiene is a major and most effective component of standard precautions because hands are considered the most common vehicle that can transmit pathogenic organisms(FGPS Challenge, 2009 ; CDC, 2014). Contrary to this fact, CDC (2017) reports that on average, healthcare workers, worldwide, practice hand washing less than half the recommended standards. Moreover, in 2009, the World Health Organization (WHO) designed the recommendations for hand hygiene in healthcare settings which involves the "My five moments for hand hygiene" approach aimed at improving the practice. The approach prompts healthcare workers to clean their hands at five different stages of patient care,“(1) before touching the patient or the patient's surroundings, (2) before an aseptic procedure, (3) after a body fluid exposure risk, (4) after touching the patient, (5) after touching the patient's surroundings”(FGPS Challenge, 2009).

2.5.2 Personal Protective Equipment (PPE)

The Occupational Safety and Health Administration (OSHA) define PPE as the specialised garments or equipment that protects workers from exposure to infectious materials and injuries in the workplace(OSHA, 2006).Gloves, gowns/aprons, masks, respirators and goggles are examples of Personal Protective Equipment (PPE) found in healthcare facilities. OSHA issues guidelines

for use of PPE in the workplace for health and safety (OSHA, 2006). The guidelines for type and conditions of PPE use in the prevention of HAIs are given by the Centers for Disease Control and Prevention (CDC, 2016) and the different organisations and governments adopt and localise these recommendations.

2.5.3 Respiratory Hygiene and Cough Etiquette

Healthcare workers are encouraged to adhere to the respiratory hygiene and cough etiquette to reduce the spread of infection via respiratory secretions (e.g. mucus and saliva), measures which include covering the mouth or nose when sneezing, use and safe disposal of tissues (CDC, 2016).In addition, hand hygiene should be practised after contact with respiratory secretions or possibly infectious objects/materials; health providers should avail the materials for adhering to this strategy in patients/visitors' waiting areas. Furthermore, CDC (2016) recommends that people with signs of respiratory infections should be given a space to sit far away from other patients or visitors. The healthcare facilities should also provide hand hygiene resources, such as dispensers of hand rub (alcohol-based), soap, disposable towels, in or near waiting areas.

These measures apply to anyone with respiratory infection signs and symptoms, such as a cough, sneezing elevated respiratory secretions, congestion or a runny nose, in a healthcare facility (CDC, 2016).

2.5.4 Prevention of Needle Stick Injuries from Other Sharp Instruments

Globally, the needle stick injuries have been described as the most prevalent source of workplace exposure to blood-borne infections, especially among nurses(Kruger *et al.*, 2012). Sharps-related injuries are associated with transmission of microorganisms such as Hepatitis B and C viruses as well as Human Immunodeficiency Virus (HIV)(CDC, 2010; Bhattarai *et al.*, 2014). According to Jahangiri *et al.* (2016), a high prevalence of unsafe injection practises and needle stick injuries (NSIs)among healthcare staff has been reported in developing countries. Approximately 50% of needle stick injuries (NSIs) are among nurses.

A South African study was conducted amongst 202 nurses at a regional hospital to depict the incidence and factors associated with needle stick injuries. Thirty eight (18.8%) nurses reported having such injuries in the previous 12 months (Kruger *et al.*, 2012), with 78.3% associated with syringe needles and 28.9% during recapping of needles; only 50% of the injuries were reported to the relevant authorities.

Another study conducted by Ledibane (2015) described the epidemiology and management of needle-stick injuries between 2008 and 2011 among healthcare workers in Mangaung sub district, Bloemfontein(South Africa). This study reviewed records of staff members who reported needle-stick injuries and 34 cases were reported in this four-year period. The largest number of injuries was amongst nurses - professional (38.2%) and auxiliary nurses (14.7%). Most injuries were linked to administering injections (38.5%) (Ledibane, 2015).

There are some measures aimed at ensuring injection/sharps safety. Healthcare workers should implement OSHA and CDC recommendations to ensure safe injection practises in the workplace(CDC, 2016).These recommendations include safe discarding of all used sharps, refraining from recapping, bending or manipulating the needles. Additionally, sharps such as scalpels and other sharp instruments must be handled with care and sharps containers must be placed in a convenient area in each clinical unit(FGPS Challenge, 2009).

2.5.5 Environmental Cleaning

Contamination of surfaces and materials is one of the main causes of outbreaks of infection in healthcare facilities (Ling *et al.*, 2015). The WHO (2011) encourages healthcare providers to conduct environmental risk assessments for HAIs and execute appropriate interventions. In addition, FGPS Challenge (2009) and CDC (2017) recommend the routine cleaning of frequently touched surfaces and those that are likely to be contaminated with body fluids using the appropriate procedures in the healthcare environment. The staff should use appropriate disinfectants while following manufacturer's guidelines and in accordance with local authorities. The healthcare providers should ensure all employees

understand their responsibilities for establishing a safe and clean care environment(CDC, 2017).According to Dramowski (2014), it is important to establish tasks and responsibilities for environmental cleaning between domestic workers and nurses to ensure all areas are covered.

2.5.6 Handling and Laundering Soiled Linens

CDC and the WHO recommend that healthcare workers should handle, manage or segregate and transport used linen in a way that prevents transfer of pathogens to the environments, visitors, other healthcare workers and patients(CDC, 2017). Studies around the world have reported some pathogens, such as the methicillin-resistant Staphylococcus aureus (MRSA), Pseudomonas aeruginosa and Vancomycin-resistant enterococci (VRE) found in hospital linen, as possible sources of Health Acquired Infections of both patients and workers (Fijan and Turk, 2012). It is therefore important to ensure that healthcare linen is properly cleaned, disinfected and in some cases, even sterilised.

2.5.6 Waste Management and Disposal

Healthcare waste can serve as a reservoir of pathogens in a healthcare environment (Chemaly *et al.*, 2014), therefore it requires safe handling and management to control and reduce Health Acquired Infections;Chartier *et al.* (2014) gave the same recommendations for the safe management of healthcare-related waste. Healthcare generated waste can be classified as non-infectious, infectious, or hazardous. This waste should be treated in accordance with the local waste management policy. The COJ (2012)has published the Waste Management By-laws for the management and handling of waste including hazardous or healthcare risk waste. These by-laws specify how healthcare providers should handle, store, segregate, transport and dispose of hazardous or healthcare risk waste (COJ, 2012).

2.5.7 Reprocessing of Reusable Patient Care Equipment

Studies have found that patient care equipment can be contaminated by microorganisms, including methicillin-resistant Staphylococcus aureus (MRSA), Clostridium difficile and Acinetobacter species(Oliveira and Damasceno, 2010). Furthermore, evidence has shown that contaminated equipment particularly those items frequently touched by hand, can serve as a source of transmission and infection for both the healthcare workers and patients(Mehta *et al.*, 2014).Therefore the WHO (2007) and CDC (2017) recommend that healthcare workers should always practice cleaning, disinfection and sterilisation of reusable equipment.

Fourtounas (2016) conducted a study at Helen Joseph Hospital in Johannesburg, South Africa, delineating the identity and quantity of the pathogens isolated from reusable laryngoscope blades and the effectiveness of a new decontamination protocol for the same blades. In the study mention above a new decontamination technique using Cidex OPA disinfectant was established. The study found that out of 73 samples, two (2.9%) samples indicated microbial growth and identification, whilst 67 (97.1%) samples had no microbial growth (four samples were mislaid by the laboratory). The isolated pathogens were Chryseobacterium indologenes and Streptococcus salivarius (Fourtounas, 2016). These findings show the importance of adhering to high-level decontamination.

2.6 TRANSMISSION BASED PRECAUTIONS

Extra precautions may be required in some conditions where standard precautions alone are insufficient to prevent transmission (CDC, 2017).This includes conditions where standard precautions alone may not be enough to reduce the spread of HAI or an outbreak, e.g. Ebola. In an outbreak of the Ebola virus, standard precautions will be applied together with restricting patients and healthcare workers' movements in affected areas. According to (CDC, 2017), the Transmission Based Precautions include contact, droplet and airborne precautions. These types of precaution can be utilised in a combination of infection control practices; for example, some microorganisms , such as chickenpox, have multiple routes of

transmission, therefore will need airborne and contact precautions (Dramowski, 2014).In identifying potentially infectious patients (precautions), the healthcare facility uses a triaging strategy to identify any patient showing symptomatic infection such as coughing or rash (CDC, 2017).A patient showing symptoms of active infection may be taken to a private room or asked to come back later (if possible) when the symptoms have subsided or when there are fewer patients.
Contact precautions are applied when the patient or environment is known or suspected to have contact transmission risks and where a use of standard precautions alone cannot contain the spread of microorganisms (Dramowski, 2014). For example, there are special procedures for donning and removing Protective Equipment (PPE) when nursing a known or suspected Ebola virus disease patient(CDC, 2014).

Droplet precautions are used together with standard precautions to reduce transmission of pathogens that can be transmitted through close contact with large respiratory droplets (Dramowski, 2014; CDC, 2017).One example of an application for these precautions is the use of a single room or cohort isolation, putting patients with the same organism together, in Meningococcal meningitis patients.

Lastly, in transmission based precautions, there are airborne precautions which are applied when patients are known or suspected to have an agent that can spread in small particles (called aerosols) (CDC, 2017). For example, where possible the Measles or Chickenpox (varicella) patients may not be admitted (Dramowski, 2014).

2.7 REASONS FOR LOW ADHERENCE TO STANDARD PRECAUTIONS AMONG NURSES

This part of the literature review will focus on reasons for low adherence to Standard Precautions of Infection Prevention and Control among nurses.

It has been proved by numerous studies that adherence to Standard Precautions among nurses, is lower than the recommended levels (Jeong *et al.*, 2008; Porto and Marziale, 2016 ; Haile *et al.*, 2017) .

Literature has suggested that the adherence rate amongst healthcare workers (HCWs) is less than 50% and “the reasons for this suboptimal adherence to SP are underexplored” (Hessels *et al.*, 2016 ; Pyrek, 2017).

According to different literature, there are different reasons for low adherence to SPs among healthcare professionals and allied staff. These reasons include but are not limited to lack of insufficient knowledge on SPs, work overload, insufficient resources, inadequate training, risk behaviours of workers, geographical location of healthcare facilities, socio-demographic characteristics of workers and lack of support from management (Efstathiou *et al.*, 2011; Amoran and Onwube, 2013 ; Porto and Marziale, 2016; Haile *et al.*, 2017).

Porto and Marziale (2016) carried out a worldwide bibliographic survey of 30 articles to analyse why nurses have low adherence to standard precautions and the consequences. The authors found the reasons relate to inadequate training, risk behaviours of workers, unawareness of the importance of standard precautions of infection control, insufficient supply of PPEs and unsuitable working conditions. These were the categories used in the directed content analysis method in this study.

A Brazilian study, by Pereira *et al.* (2013),among Intensive Care nurses evaluated individual factors related to adherence to standard precautions and found ‘risk-taking personality' as an example of individual factors associated with low adherence to SPs. The study revealed that nurses were engaged in potentially harmful situations just for the amusement or “preferring unpredictable experiences.”

A study in a Kenyan hospital documented motivating factors and barriers to compliance to standard precautions amongst nurses (Moyo, 2013). This study found feeling at risk of contracting infections, continuous supply of IPC materials, adequate knowledge of IPC, regular education and training and offering incentives for positive work performance to be motivating factors for compliance to standard precautions among nurses. Problems with a supply of infection prevention and control equipment and supplies were found to be barriers to adherence (Moyo,

2013).A related study conducted in Nigerian public secondary health facilities found that the compliance to standard precautions among healthcare workers was below the recommended levels, with the main reason being an inadequate supply of IPC equipment and materials (Okechukwu and Motshedisi, 2012).

In South Africa, Nieuwoudt (2014) carried out a study (discussed in chapter 1) with the aim of establishing personal and contextual factors which effect adherence to standard precautions at public healthcare facilities in the Cape Winelands and Overberg District. Nurses' attitude, staff shortages and a lack of training were identified as the main factors that impeded adherence (Nieuwoudt, 2014).
Another study was conducted in Northern KwaZulu-Natal (Massinga *et al.*, 2016), South Africa, to describe perceptions of registered nurses regarding factors influencing adherence to standard precautions in operating theatres. Findings show that compliance to standard precautions was suboptimal and insufficient knowledge was associated with inadequate training and orientation. Insufficient knowledge, communication factors, insufficient resources(human and supplies)and healthcare workers 'negative attitudes were cited as factors impeding compliance to standard precautions (Massinga *et al.*, 2016).

A study conducted by Hakizimana (2017) in an Adult Surgical ICU at Tygerberg Hospital(South Africa)found that the high HAI rate (86.2 %) was linked with low level of adherence to hand hygiene (29.3%);20.7% of staff practiced hand hygiene before patient contact and 37.9% after patient contact. The study also found that patients with HAIs were put with those without infections, and isolation precautions were only taken at a later stage after instructions from Infection Prevention and Control practitioners from the hospital's Infection Prevention and Control Unit(Hakizimana, 2017).

Literature emphasise the importance of continuous education and training on standard precautions (Oliveira *et al.*, 2010; Efstathiou *et al.*, 2011; Sreedharan *et al.*, 2011; de Carvalho Nagliate *et al.*, 2013).However, in South Africa not many studies have been done to examine the impact of education on the adherence to standard precautions among nurses.

2.8 SUMMARY

This chapter reviewed the literature on epidemiology of health acquired infections, background of standard precautions of infection prevention and control, requirements for adherence to standard precautions in South Africa, key components of standard precautions of infection prevention and control, transmission based precautions and reasons for low adherence to standard precautions of infection prevention and control among nurses.

Literature has shown that Health Acquired Infections and low adherence to standard precautions is a world problem, but there is insufficient information to explain the reasons among nurses in South Africa and recommendations to improve the situation.

CHAPTER THREE
RESEARCH DESIGN AND METHODS

3.1 INTRODUCTION

This chapter discusses the research design and methods used in this study. The research design discussed is followed with consideration to the setting, population, sample and sampling method, data collection, study instrument, data collection procedure, pre-test, main study, data analysis, trustworthiness, ethical considerations, results and summary.

3.2 OBJECTIVES OF THE STUDY

The following objectives of the study will be repeated for consistency:

- To explore the opinions of nurses as to why there was a low adherence to standard precautions in an academic hospital.
- To explore the opinions of nurses on ways in which adherence might be improved.
- To make suggestions to the Infection Prevention and Control (IPC) policies and practice at the hospital.

3.3 RESEARCH DESIGN

Research design, according (Polit and Beck, 2012), is “the researcher’s overall plan for answering the research question.” This study used a qualitative exploratory design to meet the study objectives set out in Chapter One.

3.3.1 Qualitative study

A qualitative approach seeks to interpret subjective explanation of issues, events or practices in social life by collecting and analysing non-numerical data (Flick, 2014).Therefore, in this study a self-administered narrative sketch was used to

collect non-numeric (opinions and recommendations) information for analysis and interpretation. The nurses were asked to write freely in answering the question about their opinions on the level of adherence. Nurses were given enough time to reflect on the topic and to respond to questions at their convenience.

3.3.2 Exploratory design

According to Saunders (2011),an exploratory study intends to determine the nature of the problem in a new light and helps the researcher to have a better understanding of the problem. Labaree (2009) adds that an exploratory study is aimed at producing insight into the essential facts and a base picture of situations or concerns, settings and generating the new information. Thus, this study sought to explore the opinions of nurses as to why there is a low adherence to standard precautions and ways in which adherence might be improved.

3.3.3 Narrative sketch

Data was collected through the narrative sketches designed by the researcher (Appendix D). According to Aarikka-Stenroos (2010) narrative approach give participants more space and stimulates them to give information from “their own viewpoint” thus allowing the researcher to get the most relevant and new information.

3.4 STUDY SETTING

According to Given (2008),the study setting is “the physical, social, and cultural location” where a study is conducted. Polit and Beck(2012) elaborates that a research setting is the set of situations and actual place within which research occurs, and the place should be neutral. In this study, the setting was the postnatal ward, general paediatric ward, medical ward, general surgical ward and general wards of a public sector academic hospital in South Africa.

The researcher chose this hospital because it is a tertiary research and training institution, with different healthcare professionals (Government, 2017). The

nursing fraternity consists of senior management registered nurses, senior to junior registered nurses, enrolled nurses and auxiliary nurses. These units admit patients needing varying healthcare, with referrals from local hospitals, community centres and self-referred patients; therefore, nurses are exposed to a variety of Health Acquired Infections. The nursing services' areas of focus in these wards include education (training and research), nursing care standards and practices, surgical and medical nursing care, maternal and childcare as well as infection control and prevention. It is suitable for this study because the nurses are of different categories and educational background, and would accurately reflect the population under study.

In addition, emphasise that the researcher should ensure the setting is neutral, accessible, and comfortable and has minimal biases and influences. In this study, the setting was not manipulated or altered by the researcher. There is an infection control file with all guidelines, policies and standards of practice in every ward for all staff to read. All nurses in these hospital wards are obliged, by hospital policy, to adhere to standard precautions of infection control. The setting does have an infection control unit and infection control and antibiotic stewardship committees.

3.5 STUDY POPULATION

A population is the well-defined collection of individuals having similar characteristics (Polit and Beck, 2012). The target population for this study was all registered (RNs) and enrolled nurses working on wards listed above, depending on the data saturation, during the months of September and October 2017. A preliminary review of the April 2017 staff allocation register indicated there were approximately 155 (N=155) nurses, 112 registered nurses and 43 enrolled nurses in the selected wards. This was the target population because they were accessible to the researcher and met the inclusion criteria for this academic hospital.

3.5.1 The Eligibility Criteria

LoBiondo-Wood and Haber (2017) indicate that eligibility criteria identify characteristics that populations must possess in order to be included in a study. Inclusion and exclusion criteria form an 'eligibility criteria used to rule in or out' for the study population (Salkind, 2010).Polit and Beck (2010) elaborate that the inclusion criteria is the eligibility criteria because it specifies the predefined attributes that a population must have to be included in a study.

The inclusion criteria for eligibility for this study were:

- Registered by the South African Nursing Council (SANC) as a registered or enrolled nurse.
- Working at a postnatal ward, general paediatric ward medical ward, general surgical ward or general wards.
- One year or more nursing experience.

The exclusion criterion for this study excluded staff categories other than nurses, as well as nurses with less than one year's nursing experience. The reason for this was that such nurses may have insufficient knowledge of standard precautions of infection control (Etikan *et al.*, 2016).

3.6 SAMPLE AND SAMPLING METHOD

A sample is a "subset of the population "that to represent the entire group of interest in a study (Polit and Beck, 2010).Sampling, is described as all procedures carried out by researcher in selecting the sample to obtain information regarding a phenomenon in a way that represents the entire population'(Brink *et al.*, 2012).

This study employed purposive sampling strategy. Etikan *et al.* (2016) state that purposive sampling involves the selection of accessible participants who are "proficient and well-informed with a phenomenon of interest" and willing to provide their opinions.

Brink *et al.* (2012) adds that purposive sampling is a non-probability sampling method and encompasses the selection of certain participants by the researcher

based on the objective of the study until data saturation has been achieved. Fifteen participants who met the criteria were selected in each of the wards (postnatal ward, general paediatric ward, medical ward and general surgical ward). A minimum selection of 15 participants per ward was based on the assumption that this number was sufficient to inform this study.60 (n=60) participants were reached. Liamputtong (2013) defines data saturation as the point in study where no more new categories, themes or explanations can emerge from the data. In this study, the boxes were emptied daily and the process was interrupted when the researcher found that the participants 'responses had become repetitive, indicating data saturation. At this point, 35 (n=35) narrative sketches were collected, and from these, four (n=4) were blank and three (n=3) had only the demographic section filled, which resulted in a sample size of (n= 28).

3.7 DATA COLLECTION

Data collection, according to Brink *et al.* (2012),is gathering of information in a study. Data in this study was collected in the form of a self-administered narrative sketch format. The aim was to gather the opinions of nurses as to why there was a low adherence to standard precautions.

3.7.1 Data collection tool

The narrative sketch was utilised in this study, the advantages being it guaranteed participants' confidentiality, was practical and needed no interviewer, which ensured no interviewer inclination when contrasted with interviewing participants (Polit and Beck, 2012). Houser (2016) adds that composing the instructions in basic clear language would bolster the culmination and precision of the responses. The challenge of the tool is that it does not guarantee probing. The tool was self-administered and designed by the researcher, and the instructions were written in simple, straightforward language. Nurses were asked to write their opinions freely. This was a qualitative design as it provided subjective views of the participants on the adherence to standard precautions. Houser (2016) also explains that the exploratory design may require descriptive information to explain the phenomenon. In this instance, a summary of standard precautions from the

Hospital Infection Control Policy (from where study was carried out) was attached to the data collection tool to remind participants what the standard precautions were (refer Appendix F).

The data collection tool was divided into two segments (refer Appendix D). The first segment was a checklist of demographic data comprising of age, gender, ward and nurse category. This segment used a checklist developed by the researcher. The second segment explored opinions of nurses as to why there was a low adherence to standard precautions of infection control. Participants were asked to write freely giving opinions regarding the level of adherence to standard precautions for infection control among nurses.

3.7.2 Data collection procedure

Permission to conduct the study was obtained from the Chief Executive Officer of the Gauteng Province Department of Health, the Director of Nursing Services and the Chief Executive Officer of the academic hospital and the Wits University Human Research Ethics Committee. Data was collected from the registered and enrolled nurses in the postnatal ward, general paediatric ward, medical ward, general surgical ward and general wards until data saturation had occurred. Before data collection began, the researcher went to each ward to enquire from the duty roster the estimated number of potential participants.

The researcher commenced this procedure by distributing copies of the narrative writing tool to the participants who met the inclusion criteria at the selected wards. Participation in this study was voluntary and there were no consequences for refusal to take part. Each participant was given an information sheet (Appendix E) regarding the purpose and nature of the study. The participants were given time to read and understand the information sheet and to ask questions where necessary.

The participants were assured confidentiality and anonymity principles would be maintained, and that the responses would be kept in a lockable cabinet with only the supervisor and researcher having permission to access them. Participants were also informed that any questions pertaining to the study could be forwarded

to the researcher/supervisor/ethics committee as indicated on the information sheet. They were further informed that if a narrative sketch was completed, the ethic committee agreed that this was a form of consent. They were reminded that they could withdraw from study anytime without penalty. Participants were informed that a summary sheet of standard precautions, from the said Hospital Infection Control Policy (Appendix F), was attached to the data collection just to remind them what the standard precautions were.

The narrative sketch tool was distributed by the researcher during each shift. The participants were approached individually. Participants were allowed a week to ensure flexibility and enough time to respond. The distribution of the study tool continued in each ward until no more new data was forthcoming. The completed narrative sketch tool was placed in an envelope, sealed and put into sealed collection box in the operational managers' office**.** The collection box had an opening designed to permit only the envelopes. The data collection stopped when the researcher found that the participants 'answers had become repetitive, indicating data saturation. The data collection period was approximately two months. Towards the end of the conceptualisation of data ,the reseacher returned to the study setting to carryout member check .

3.7.3 A Pre-test

Pre-test entails "simulating the formal data collection" procedure on a small-scale to test the narrative sketch and methodology for any problems(Hurst *et al.*, 2017). Brink *et al.* (2012) add that pre-testing the data collection tool is aimed at establishing weaknesses or determining time requirements in order to refine the tool.

In this study, the data collection tool was pre-tested. The pre-test of the narrative sketch was done on five participants who worked at the actual study setting. The purpose of this excise was to identify weaknesses and determine time requirements regarding the writing tool. The pre-test findings indicated that the narrative sketch tool was understandable and about 5 to 10 minutes was needed to complete it. No alterations were applied to the tool after the pre-test. The

responses, together with individuals who participated in the pre-test phase, were excluded from the actual study.

3.8 DATA ANALYSIS

According to Brink *et al.* (2012),data analysis involves "categorising, ordering and summarising the data, and describing it in meaningful terms." This study employed directed content analysis, as described by Hsieh and Shannon (2005). Directed content analysis can be done to confirm a framework or theory. It can also be dome to extend a framework or theory. As such, the findings of the study were grouped independently and compared to findings of Porto and Marziale (2016).Porto and Marziale (2016), researchers who analysed 30 articles (all were set in developing countries – as is South Africa) for the reasons and consequences of low adherence to standard precautions of infection control by nurses. They documented the following reasons for low adherence to standard precautions of infection control by nursing staff as:

- Category 1: Poor training.
- Category 2: Risk behaviours (individual aspects of workers)
- Category 3: Unawareness of the importance of SPs
- Category 4: Inadequate provision of equipment and protective equipment.
- Category 5: Inappropriate work conditions (excessive workload and reduced teams).

These reasons were compared to the participants' responses in this study.

This resulted in a Table (4.2) of columns labelled theme, categories, subcategories and text examples.
This analysis was verified by the supervisor.

3.9 TRUSTWORTHINESS

Trustworthiness, as described by Anney (2014), is the measure of accuracy and adequacy of the research design and method (including data collection and analysis) accuracy soundness).Brink *et al.* (2006) argue that it is a 'classic source' of illustrating trustworthiness in qualitative inquiry. Lincoln and Guba (1985)

describe trustworthiness as how accurately the researcher interpreted the participants' response.

The trustworthiness of this study was measured according to the aspects as described by Lincoln and Guba (1985),being credibility, transferability, dependability and confirmability.

3.9.1 Credibility

Credibility is defined as "confidence in the truth" of data collected in a study (Lincoln and Guba, 1985).To increase the credibility of the study findings the following measures were conducted: peer debriefing, member checking (Lincoln and Guba, 1985).

Use of Peer debriefing

Lincoln and Guba (1985) argue that use of peer debriefing gives the qualitative researcher an opportunity to seek guidance advice and support from disinterested peers and professionals, such as members of academic staff, the research committee(s) and other related departments(s).The researcher submitted the findings to academic staff and other experienced researchers in order to seek scholarly guidance, ensure honesty, and obtain perceptions in developing the conclusion of the study.

Member Checks

In member checking, the researcher returned to the study participants, from whom the data were originally collected, to discuss the conclusions of the preliminary results (Lincoln and Guba, 1985). This activity gives participants an opportunity to assess the adequacy of information, acknowledge their own opinions, challenge interpretations and eliminate errors and researcher's bias (Carlson, 2010).Creswell (2013), emphasised that member checking is best done with the analysed data, such as themes and categories emerging from the participants' response, as opposed to the actual transcripts. Therefore in this study, member check of synthesised analysed data was used (Birt *et al.*, 2016).This member checking

method is used to examine whether findings of the study “have resonance” with the participants’ opinions. The process used analysed data from the whole sample and took place a few months after data collection (Birt *et al.*, 2016).

The member check was carried out in November 2017, towards the end of the conceptualisation of data. Firstly, an interpretative summary of data analysis was prepared to return to participants(Harvey, 2015), who were then checked for eligibility to discuss the interpretation of preliminary findings. This procedure, according to Birt *et al.* (2016),promotes protection of participants (part of ethical considerations).Ten participants were selected, all of whom had particpiated in the main data collection. Two participants were selected from each place of work (ward). From these ten participants, eight were registered nurses (RN) and two were enrolled nurse (EN).In terms of gender,the sample had eight females and two males. The researcher made appointments with selected participants;all adhered to the scheduled appointments and these were individualised sessions.The purpose of the procedure and summary of preliminary results were presentedtoeach participant at a time (Doyle, 2007). Each participant was informed that they could comment on the contents and that the results were not yet final. Almost all the participants (n=10) agreed with the findings. The researcher intended to revisit the data and undertake further analysis after member checks, especially where there was new information or disapproval of the findings, but this proved unnecessary.

3.9.2 Transferability

Transferability, according to Lincoln and Guba (1985),is a showing that the results of an inquiry can be applied in another context, target populations, periods of time and situations. The researcher in this inquiry provided detailed, sufficient information on the nature of participants (including demographic data), the types of wards, the nature of the hospital, the duration of data collection and the researcher’s observations during data collection. The researcher also elaborated on the fieldwork activities and wrote a research report to ensure that it can be possible to generalise or apply the study findings to other settings or target populations.

3.9.3 Dependability

Lincoln and Guba (1985) describe dependability as the indication that the results of a study are consistent and can be done in the same way over time and conditions. The external audits are techniques of establishing dependability.

In this study, the research supervisor examined and reviewed the operational definitions given to predetermined categories identified in data analysis to ‘’increase the accuracy” of the categories (Hsieh and Shannon, 2005).The external audits in this enquiry included submitting the study to a researcher, who was not involved in the process, to examine the whole study. The audit trail was done through a review of all the study stages under the guidance of experienced researchers and the findings were submitted to two (2) experienced researchers who were not involved in the study process to assess it officially. The purpose of this audit trail was to evaluate if findings and interpretations were supported by the data collected (Lincoln and Guba, 1985). The researcher, supervisor and peer researchers executed official examination.

3.9.4 Confirmability

Confirmability is the extent to which the results of an enquiry represent the opinions of participants and not researcher biases or perspectives (Lincoln and Guba, 1985). The researcher ensured the findings represented the opinions of participants rather than his thoughts or interests. Furthermore, he ensured there was an agreement between him, the participants and the supervisor on researcher’s interpretation and data collected. Some of the criteria applied to ensure confirmability involved auditing and examining the researcher’s beliefs and values towards the phenomenon of interest (Brink *et al.*, 2012).To ensure this principle, the researcher utilised an experienced researcher who reviewed the data collection and analysis process. The researcher also examined his values as an infection control student to minimise biases in analysing participants’ opinions. Lincoln and Guba (1985) add that this technique involves an audit trail, whereby records of the research steps are kept from the start to the developmental stage, and a report of the results. To achieve confirmability in this study a clear

description of the research path was documented, which involved all steps taken including research design, sampling, data collection, data analysis and report.

3.10 ETHICAL CONSIDERATIONS

Ethics in this context is concerned with the manner in which the researcher conducts himself in connection with the rights of participants(Saunders, 2011).Additionally, Creswell (2013) emphasised that a research is morally and legally bound to have a due regard for participants' rights, preferences and values.

The following ethical considerations were employed in this study:

3.10.1 Permission

Written permission was obtained from the following authorities:
A clearance certificate, **Protocol Number M170520,** was issued by both the Human Research Ethics Committee of the University of the Witwatersrand (see Appendix A) and the Research and Postgraduate Committee of the Health Sciences Faculty of the Witwatersrand (see Appendix B). The Gauteng Department of Health and the Chief Executive Officer of the hospital (see Appendix C) granted permissions before the commencement of the study.

3.10.2 Confidentiality and anonymity

Confidentiality, as elaborated by Saunders *et al.* (2009), involves keeping the information provided by the participants secret or undisclosed**.** Anonymity is "the process of concealing the identity of participants in all documents resulting from the research"(Saunders *et al.*, 2009).

To ensure confidentiality in this study, only the researcher and his supervisor had access to the raw information from participants. Information collected was kept by the supervisor in a secure place and will be disposed of once the study has been published. Participants did not add any personal identifying particulars to their narrative sheets as a measure of ensuring participant anonymity. Again,

anonymity of both the participants and the hospital were ensured by making it difficult to connect parts of information to a particular individual or facility. The data collection stages were arranged and actualised with integrity and sensitivity to maintain participants' confidentiality and promoting their privacy rights.

3.10.3 Informed Consent

Informed consent is a procedure that protects study participants and gives them an opportunity to participate of their own free will (Judkins-Cohn *et al.*, 2014). According to Jefford and Moore (2008), two fundamental goals of this process are the protection of participants from potential harm and respect to their autonomy.

In this study, participants were informed that if a narrative sketch was completed, the Committee for Human Research Ethics agreed this was a form of consent. They were informed about all study activities and that they could participate or decline and withdraw during the process if they wanted to without incurring any penalty. Participants were also told that any point of view expressed would be regarded as making a meaningful contribution to understanding why there was low adherence to standard precautions to prevent health-acquired infections. Additionally, participants were reassured that no harm would be experienced. Finally, the participants partook in the study eagerly without being pressured.

3.11 SUMMARY

This chapter discussed the research design and methods utilised to achieve the research objectives. The research design used in this enquiry was a qualitative exploratory approach; the research setting and study population were discussed extensively. The study employed purposive sampling method. The data collection process together with the data collection tool (narrative sketch) and a pre-test were elaborated broadly. Directed content analysis was used together with the independent grouping of data and comparison to findings by Porto and Marziale (2016), ways of measuring the trustworthiness of this study were described in detail. An in-depth description of ethical considerations was also provided.

The next chapter presents data analysis and discussion of results.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.1 INTRODUCTION

The previous chapter described the research methodology used in the study. This chapter presents the analysis of data. Data collected in a study should be analysed systematically so a meaning can be drawn from it (Polit and Beck, 2010).This study employed directed content analysis as described by Hsieh and Shannon (2005). Data was grouped independently and compared to findings by Porto and Marziale (2016). Direct content analysis, as explained by Hsieh and Shannon (2005), involves the use of existing research to identify “key concepts as initial coding categories.” Nieuwenhuis (2014) adds that the directed content analysis provides “operational terms for each category” using existing research.

4.2 APPROACHES TO DATA ANALYSIS

The demographic data of nurse participants at an academic hospital, which consisted of place of work (ward) in the hospital, nurse category (enrolled or registered nurse), and gender and age are presented in Table 4.1.

The analysis steps were as follows:

- Data was grouped independently and compared to findings by Porto and Marziale (2016) in this directed content analysis. These Categories were written in the left-hand column (column1) of Table 4.2 and were as follows:

  Category 1: Poor training.(*sub-item 4.3.2.1*)

  Category 2: Risk behaviours (individual aspects of workers) (*sub-item 4.3.2.2*)

  Category 3: Unawareness of the importance of SPs (*sub-item 4.3.2.3*)

  Category 4: Inadequate provision of equipment and protective equipment (*sub-item 4.3.2.4*)

  Category 5: Inappropriate work conditions (excessive workload and reduced teams) (*sub-item 4.3.2.5*)

- The responses were read and all text that appeared to represent the reasons related to adherence to standard precautions was highlighted. Starting with highlighting text rather than jumping straight into the
- grouping and comparing process helped the researcher to identify all instances and possible occurrences of adherence to Standard precautions (Hsieh and Shannon, 2005).
- Highlighted texts were grouped independently and compared to the above listed categories and placed into a second column as concepts, but due to the broadness of concepts, the researcher decided to identify subcategories (Hsieh and Shannon, 2005). The text examples were given for each concept.
- This procedure was repeated with each narrative sketch.

All texts compared with these concepts. However, a new category, level of adherence, emanated from the data. These category emanated from responses such as the "adherence is high or low." The narrative sketches were reviewed several times to check whether some components might have been overlooked. This led to the illustrations in Table 4.2.

4.3 PRESENTATION OF THE FINDINGS

Section A and B present the study findings.

4.3.1 Section A: Demographic data

This section presents the demographic data of participants (n=28), which comprised four variables: place of work (ward), nurse category, gender and age (Table 4.1).

Table 4.1: Demographic characteristics of participants

Variables	Participants N=28	
	Frequency (n)	Percentage (%)
Place of work (ward)		
General	8	29.0
General surgery	5	18.0
Medical	7	25.0
Paediatrics	6	21.0
Postnatal	2	7.0
Nurse Category		
Registered nurse (RN)	24	85.7
Enrolled nurse (EN)	4	14.0
Gender		
Female	23	82.0
Male	5	18.0
Age		
20-29	4	14.0
30-39	8	29.0
40-49	11	39.0
50 & above	5	18.0

4.3.1.2 Age

The ages of the participants were categorised into four ranges, namely 20 to 29, 30 to 39, 40 to 49, 50 and above respectively. The results are presented in Figure 4.1.

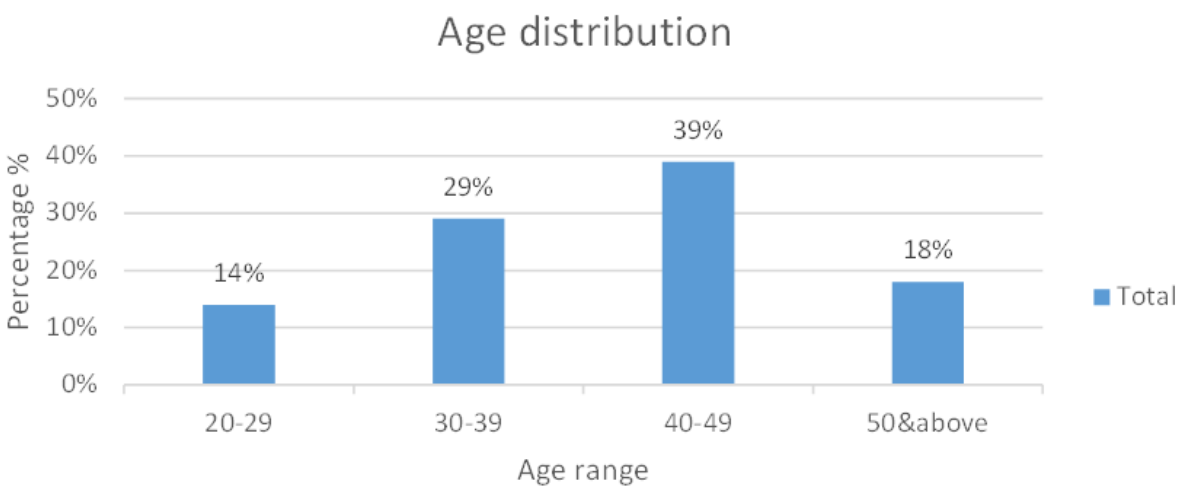


Figure 4.1 Age distribution of the nurse participants

Fourteen percent of (n=4) nurse participants were within the age group of 20 to 29, followed by 29%(n=23) between 30 to 39,39% (n=11) within age group 40 to 49 years, and 18%(n=20) in the 50 years and above age categories, respectively, the average age group was 40.6 years. These findings showed that 86% (n=24) of the sample had the largest number of nurses between 30 to 50 years+, which indicates the nursing profession in South Africa is dominated by an aging population (refer to Figure 4.1).The South African Nursing Council's "Age Analysis of Persons" (2016), indicates there are 287456 nurses on the register, with approximately 9.5% (27410) below 30 years and 90.5% 30 years and above (SANC, 2017), confirming the domination of an aging population.

4.3.1.3 Place of work (ward)

The nurse participants worked in five wards of general, general surgery, medical, paediatrics and postnatal. The results of those who responded are shown in Figure 4.2.

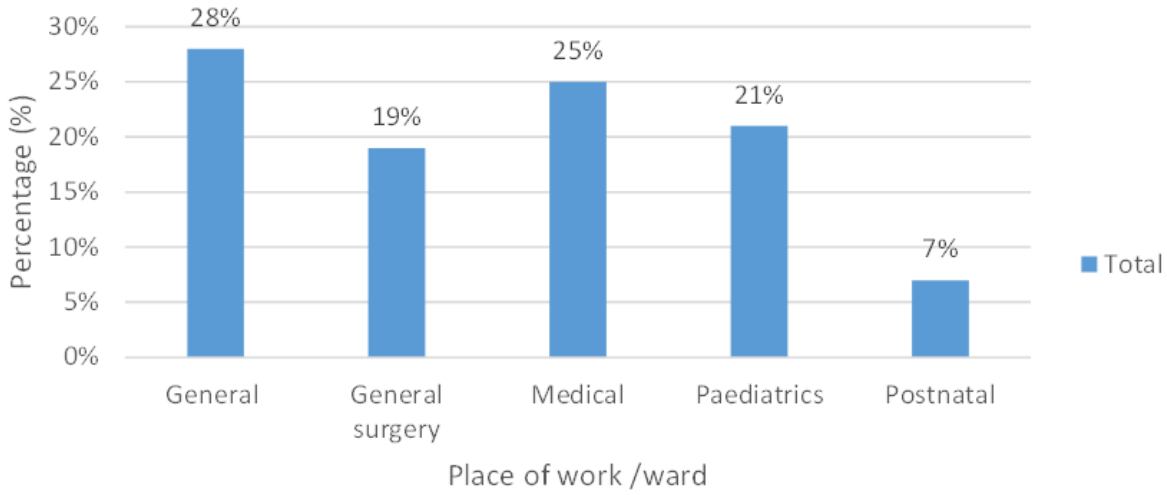


Figure 4.2 Distribution of nurse participants in terms of ward (place of work)

In terms of place of work (ward), a higher response was indicated from nurse participants in the general ward (28 %; n=8), followed by 25 %(n=7) from the medical ward, 21% (n=6) in paediatrics and 19% (n=5) in the general surgery ward respectively. The lowest (7%; n=2) number of responses were indicated in the postnatal ward of the 15 narrative sketches distributed to postnatal wards, only two were returned, as some recipients were on leave or not available for different reasons, giving a response rate of 13.3%. Findings are presented in Figure 4.2 above.

4.3.1.3 Nurse Category

In this present study, the majority of responses was indicated from registered nurse (RN) participants (85.7%; n=24) and only 14% (n=4) from enrolled nurses (EN). The South African Nursing Council(2016)“Provincial distribution statistics of nursing manpower versus the population of South Africa” indicates there are 36603registered nurses and 18734 enrolled nurses in Gauteng region (SANC, 2017). This supports the higher number of registered nurses (RN) than enrolled nurses recorded in this study.

4.3.1.4 Gender

In terms of gender of participants, the number of female nurses (82%; n=23) was higher than that of male nurses (18%; n=5). The South African Nursing Council's component of persons on the register (2016) indicates a total of 31744 nurses, 28556 females and 3188 males (SANC, 2017). These statistics indicate there are a higher number of females joining the nursing profession in South Africa compared to males, which was reflected in this study.

4.3.2 Section B: The reasons for low adherence to standard precautions among nurses

The categories together with concepts and subcategories will be discussed to help in the presentation of findings of the study. The categories, concepts and subcategories, regarding reasons for low adherence to standard precautions among nurse participants, are depicted in Table 4.2.

NB: P stands for Participant e.g. (P4) Participant number 4.

Table 4.2: Overview of the categories, concepts and subcategories regarding reasons for low adherence to standard precautions among nurses.

Categories	Concepts	Subcategories	Text examples
4.3.2.1 Poor training	Insufficient training	Organisational factors	In-service training is always done. (P4)
		Basic nursing programme	It should be introduced at school. (P1)
		Lack of continuing education opportunities	We need more training in the area. (P1)
	Lack of skills & knowledge	Inability to make diagnosis	Knowledge deficit: failure to make a prompt nursing diagnosis. (P14)
		Inaccurate assessment	If a nurse does not perform an initial accurate patient assessment, she/he will miss taking precautionary measures, from the word go.
4.3.2.2 Risk behaviours (individual aspects of workers)	Cognitive aspects	Naivety	Young nurses don't care sometimes. (P1)
		Knowledge of patient's diagnosis.	Some nurses do not adhere to infection control measures unless the patient is known to have an infectious disease. (P10)
		Omissions	Nurses forget sometimes to remove gloves from patient to patient especially during bed making. (P21)
		Attitude	It's mostly attitude. (P7)
		Laziness	Some nurses are just lazy to work. (P15)
		Shortcuts in service	Sometimes some nurses don't want to do it and

	Behavioural aspects		take shortcuts. (P28)
		Hurrying	They are always rushing. (P7)
		Ignorance	Despite the fact that nurses are exposed to microorganisms that lead to lethal infections, they continue being ignorant. (P22)
4.3.2.3 Unawareness of the importance of SPs	Level of adherence	High	The nursing staff are the most compliant to standard precautions. (P2) Nurses do adhere to standard precautions because our unit has an infection control team. P8)
		Low	The level of adherence is poor. Nurses will always blame the shortage of staff. (P5) The level is still low as some nurses do not adhere to infection control measures, unless the patient is known to have an infectious disease. (P10)
4.3.2.4 Inadequate provision of equipment and protective equipment	Shortage of resources	Insufficient isolation facilities	Isolation rooms not enough in the ward, only 2 rooms for 22 beds. (P27)
		Shortage of PPE	Shortage of aprons, goggles & proper size gloves. (P22)
		Faulty equipment	The taps leak making the environment wet and untidy while doing the procedure.(18)

	Uncomfortable PPE/materials	Environment related problems	When dialysing there is no tap to wash hands for the sterile technique. (P18)
		Soap causes irritation & allergies	Hibiscrub causes irritation in some nurses & powder gloves (some nurses) are allergic.(P13)
		Use of inappropriate materials	Use of low-grade quality soaps & disinfectants. (P19)
4.3.2.5 Inappropriate work conditions (excessive workload and reduced teams)	Lack of time	Omissions	Sometimes we are forced to omit some other stuff because of time. (P15)
		Characteristics of the job	Most of the time in ICUs due to emergencies, there's no time to take measures. (P10)
	Reduced teams Excessive workload	Workload pressure	Suctioning is sometimes not done aseptically because of time or emergencies e.g. resuscitation. (P22)
		Shortage of staff	These few nurses who are looking after these patients end up being very tired & not doing what they are supposed to be doing. (P5)
		Patient traffic flow	Patient traffic-pressure to admit limits time to adhere properly/outlined measures of cleaning.(P19)
		Exhaustion	Burn out is the major problem. (P5)

4.3.2.1 Category 1: Poor training (nursing education)

Two concepts related to poor training were identified. Table 4.3 present the factors related to the poor training in standard precautions of infection.

Table 4.3: Factors related to the poor training in standard precautions of infection

Concepts	Sub categories
Insufficient training	-Organisational factors. -Basic nursing curriculum. -Lack of continuing education opportunities.
Lack of skills & knowledge	-Inaccurate assessment. -Inability to make diagnosis.

- Concept 1: insufficient training

The participants explained how organisational factors, such as the availability of infection control nurses, basic nursing curriculum and lack of continuing education opportunities, impacts on adherence to SPs. The following quotes demonstrate the impact of insufficient training on adherence to SPs:

''As IPC nurses, we do SPs training if and when we observe any deviations from the Standard precautions in the ward." (P4).

"*In my own opinion, those who are doing well are the ones who have gone to training. Nurses need more workshops. I think infection control should be taught at school. Workshops can help too.*" (P 13).

Silva *et al.* (2012) agreed that insufficient training in biosecurity interferes with adherence to standard precautions. In addition, Jeong *et al.* (2008) asserted that lack of consistent training on biosafety can be one of the reasons for low adherence.

- Concept 2: Lack of skills & knowledge

The nurse participants in this study cited another factor that may lower adherence to standard precautions of infection - lack of skills and knowledge, which lead to the inability to make a diagnosis, and inaccurate assessments lead to low adherence.
The following quotations illustrate this finding:

"Knowledge deficit: failure to make a prompt nursing diagnosis, informed by patient assessment and findings…..If a nurse does not perform an initial accurate patient assessment, even daily, she/he will miss taking precautionary measures, from the word go" (P 13).

"……and knowledge (nurses sometimes don't know how to differentiate the isolation cubicles). Therefore we won't know which protective clothing to wear" (P 7).

This is consistent with the findings of other studies (Campos *et al.*, 2011; Efstathiou *et al.*, 2011 ; Fernandes Costa *et al.*, 2012).

4.3.2.2 Category 2: Risk behaviours (individual characteristics)

Table 4.4 presents the concepts and subcategories of aspects related to risk behaviours (individual characteristics) cited by nurse participants.

Table 4.4: Aspects related to risk behaviours (individual characteristics) cited by nurse participants

Concepts	Subcategories
Cognitive aspects	-Naivety -Knowledge of patient's diagnosis. -Forgetfulness -Attitude

Behavioural characteristics	-Laziness -Shortcuts in service -Hurrying -Ignorance

- Concept 1: Cognitive aspects

Participants described how inexperience, forgetfulness and lack of knowledge of patient's diagnosis made it difficult to adhere to standard precautions in some instances. These findings are illustrated in the following quotes:

"Young nurses don't care sometimes." (P 1)

"… ..Some nurses do not adhere to infection control measures unless the patient is known to have an infectious disease." (P 10)

"….. nurses forget sometimes to remove gloves from patient to patient especially during bed making." (P 22)

"I think nurses are having negative attitudes to infection control precautions." (P 27)

A study among Intensive Care nurses in Brazil also found that individual factors such as a 'risk-taking personality' are associated with low adherence to SPs (Pereira *et al.*, 2013).

- Concept 2: Behavioural characteristics

The participants in this study explained how behavioural aspects, such as laziness, ignorance, shortcuts during practice and rushing through work, interfere with adherence to standard precautions. The impact was demonstrated in the following quotes:

"Some nurses are just lazy to work." (P 15)

"They are always in rush. They don't want to do the right things." (P7)

"Sometimes some nurses don't want to do it and take shortcuts." (P28)

Melo *et al.* (2006) confirmed that cognitive, emotional and behavioural features are directly associated with non-adherence to standard precautions.

4.3.2.3 Category 3: Unawareness of the importance of SPs

Table 4.5 presents the subcategories of high levels of adherence and low levels of adherence related to the unawareness of the importance of standard precautions.

TABLE 4.5: Level of adherence related to unawareness of the importance of SPs

Concepts	Subcategories
Level of adherence	High Low

In order for nurses to be rated as high level of adherence, that had to be aware of to the importance of standard precautions. Low adherence then means that nurses were unaware of the importance of standard precautions.

High adherence :

"*Yes, Nurses do adhere to standard precautions for IPC because in our unit we have IPC team. Policies and protocols are in place."* (P5)

"*The nursing staff are the most compliant to standard precautions*". (P2)

Low adherence :

"Others argued that the nurse's level of adherence was low. No, nurses don't want to use standard precautions. They are always in rush. They don't want to do the right things." (P4)

"*The level of adherence is poor. Nurses will always blame the shortage of staff*". (P5)

"The level is still low as some nurses do not adhere to infection control measures, unless the patient is known to have an infectious disease". (P10)

The participants expressed mixed opinions, with most revealing that in some areas adherence is suboptimal.

This is consistent with the findings of other studies (Campos *et al.*, 2011; Efstathiou *et al.*, 2011 ;)

4.3.2.4 Category 4: Inadequate provision of equipment and personal protective equipment

The concepts and subcategories of factors related to the inadequate provision of equipment and personal protective are summarised in Table 4.6.

TABLE 4.6: Conditions related to the inadequate provision of equipment and personal protective equipment

Concepts	Subcategories
Shortage of resources	-Insufficient isolation facilities - Shortage of PPE - Faulty equipment -Environment related problems
Uncomfortable PPE/materials	- Soap causes irritation & allergies - Use of inappropriate materials

- Concept 1: Inadequate provision of equipment and personal protective equipment

According to nurse participants in this enquiry, shortage of resources such Personal Protective Equipment (PPE) and isolation rooms, faulty equipment and environment-related problems contribute to low adherence. The contribution is illustrated in the extracts below:

"Isolation rooms not enough in the ward, only 2 rooms for 22 beds. Sometimes we need to isolate more than 2 patients." (P 27)

"Sometimes the blame will be on the shortage of resources. No enough PPE to use during care of patients." (P 5*)*

"The taps leak making the environment wet and untidy while doing the procedure." (Questionnaire, participant 18*)*
"Structural problems-less availability/unavailability of enough handwashing basins in the unit."(P 14)
This findings are also supported by Oliveira et al (2010).

- Concept 2: Uncomfortable PPE/materials

Use of uncomfortable materials such as hand soaps which cause irritations, gloves that cause allergic reactions (e.g. latex gloves) and inappropriate materials (like low-quality disinfectants), were cited as factors that hinder adherence to standard precautions. These quotations give participants opinions towards such materials:

*"…hibiscrub causes irritation in some nurses and powder gloves (some nurses) are allergic." (*P 13)

"Use of low grade/quality soaps and disinfectants." (P 19)

Reda *et al.* (2010) also established that insufficient supply of Personal Protective Equipment leads to lower adherence to standard precautions (SPs).

4.3.2.5 Category 5: Inappropriate work conditions

Table 4.6 presents summary of the categories and subcategories of factors related to inappropriate work conditions.

Table 4.6: Factors related to inappropriate work conditions

Concept	Subcategories
Lack of time	- Omissions - Characteristics of the job
Reduced teams	-Shortage of staff
Excessive workload	- Patient traffic flow - Exhaustion

- Concept 1: Lack of time

The participants commented that lack of time leads to exclusion of some precautionary measures. They also indicated that work schedules (time) are influenced by characteristics of the job and emergency situations (such as hypoxia).The nurses indicated that sometimes they come across life or death situations and end up omitting SPS to save lives. These findings were illustrated by the following quotations:

*"….. Sometimes we are forced to omit some other stuff because of time, but we know standard precautions." (*P 15*)*

"Most of the time in ICU's due to emergencies, there's no time to take measures (precautions)."(P 10)

A study in Cyprus documented similar findings (Efstathiou *et al.*, 2011).

- Concept 2: Shortage of staff

In the presents study, nurse participants argued that the shortage of nurses negatively contributed to adherence to standard precautions of infection control. These findings are presented in the quotations below:

"……. *the shortage of staff … Few nurses who are looking after these patients end up being very tired and not doing what they are supposed to be doing*."(P5).

- Concept 3: Excessive workload

Participants explained the combination of high numbers of patients, physical and emotional exhaustion contributed to low adherence to precautionary measures. The findings are revealed in the extracts below:

"Patient traffic… Pressure to admit limits time to adhere to properly/outlined measures of cleaning."(P 19)

*"High turnovers of patients which leads to a unit overcrowding. Nurse-patient ratio no longer 1:1 but 1:3 or more." (*P 14)*.*

"The nurses possess the knowledge, they are sent to in-service training, but burn out is the major problem."(P 5)

This finding corresponded with a study in Brazil, by Nowak *et al.* (2013),which found excessive work, double shifts and reduced teams as potential reasons for low adherence to standard precautions of infection control.

4.4 DISCUSSION OF FINDINGS

The purpose of the study was to explore the opinions of nurses as to why there was low adherence to standard precautions, ways in which adherence might be improved and to make some suggestions to IPC policies and practices. The study

utilized a directed content analysis according to the method of Hsieh and Shannon (2005).

In this study nurses gave varying opinions on the level of adherence: 42.9% (n=12) indicated the level of adherence was satisfactory among nurses, 39.3 % (n=11) believed the level was suboptimal, while the remaining number (n=5 17.8%) did not give their opinions on this matter. Many studies have revealed that nurses' adherence regarding standard precautions is relatively low (Jeong *et al.*, 2008;Efstathiou *et al.*, 2011; Haile *et al.*, 2017), but in this study, the participants expressed mixed opinions, with most revealing that level of adherence is satisfactory.

The presence of policies and protocols in wards, supervision and Inspection by Infection Prevention and control committee and nurses, introduction of "Best care always" bundles were cited as some of reasons why adherence to standard precautions was satisfactory in this study. These findings resonate with those from study by Sreedharan *et al.* (2011), in Ajman, on the awareness and knowledge of SPs among nurses in a university teaching hospital . A study among healthcare workers in Ethiopia also found that supervision in the workplace is important in adherence to standard precautions (Haile *et al.*, 2017).

This discussion focused on those reasons that affect adherence negatively, leading to low adherence. The majority of reasons that emerged were in accordance with findings of previous studies.

Poor basic training and poor continuing educational opportunities were cited as possible reasons for low adherence to standard precautions of infection among nurses in this enquiry. Participants reported that lack of skills and knowledge is a barrier to adherence. They argued that nurses need more training activities, such as in-service training and workshops, and some suggested the inclusion of standard precautions in the undergraduate nurses' curriculum. The researcher however realised that SPs are included in both diploma and degree curriculum and the reason why the participants might have missed the inclusion is that the majority (86%;n=24) were in age group of 30 and 50 years onwards, so it was quite some time since nurses underwent their basic training. This calls for

refresher courses in SPs. The same results were found by de Carvalho Nagliate *et al.* (2013), Efstathiou *et al.* (2011) and Oliveira *et al.* (2010),who widely described the insufficient training and lack of knowledge as factors that negatively influence adherence to standard precautions. Efstathiou *et al.* (2011) also added lack of insufficient qualification and lack of orientation to the arguments.

In the current study, risk behaviours were reported as an impediment to implementing standard precautions (SPs).Participants reported that cognitive aspects, such as attitude and omissions, among nurses negatively influenced adherence. Similar results were seen in other studies. A Jordanian study documented positive attitudes and high levels of adherence to SPs among healthcare professionals despite insufficient knowledge(Nofal *et al.*, 2017). A related focus group study among nurses in Cyprus found several psychological factors that may influence a nurse's adherence to standard precautions(Efstathiou *et al.*, 2011).These factors included feeling embarrassed to follow standards (procedures/guidelines) that are not routinely used in the unit and feeling too healthy to contract infections. Female nurses in this study (Cyprus) insisted they avoid facemasks and hair caps because they ruin their make-up and lipstick and hair appearance. This behaviour was also pointed out in the current study, as one participant argued *"female nurses must avoid long hair extensions because they can transmit infections"* (P7). Additionally, the study in Cyprus revealed that the negative behaviour displayed by more experienced nurses towards standard precautions could affect younger nurses' adherence. Luo *et al.* (2010) conducted a study in China on registered nurses' compliance with standard precautions and observed that self-efficacy (person's beliefs) has an influence on compliance with the standard precautions.

Besides the cognitive aspects, this study revealed that behavioural aspects, such as ignorance and hurrying among nurses, negatively affected the level of adherence. A study among Intensive Care nurses in Brazil evaluated individual factors related to adherence to standard precautions and found that individual factors, such as a ‘risk-taking personality,' was associated with low adherence to SPs (Pereira *et al.*, 2013). Risk-taking behaviours found in the cited study included nurses ‘being exposed to hazardous situations just for the thrill, and preferring

unpredictable experiences,' this type of behaviour was also cited by participants in this study as they indicated, “nurses do it (SPs) only when they see bosses or IPC sisters.” In addition, another study conducted among surgeons and nurses in operating theatres in Wales found that eagerness to follow guidelines has an influence on adherence to SPs (Cutter and Jordan, 2012). A study by Kim and Oh (2015),conducted among nursing students from two universities in South Korea, revealed students can copy these risk behaviours from their clinical placements. The study found that students generally witnessed non-adherence to standard precautions by healthcare workers, through a process termed ‘negative role models.’ "Nursing students are nurses of the future" (Kim and Oh, 2015),therefore the risk behaviours of nurses are “infecting” future generations of nurses to adopt non-adherence.

Additionally, the findings of the present study documented the insufficiency of isolation rooms and shortage of personal protective equipment (PPE), such as aprons, goggles, N95 masks and proper size gloves, as reasons for low adherence to standard precautions. These findings resonate with those from Ethiopia, where adherence to standard precautions among healthcare workers was found to be inadequate, because of unavailability of certain personal protective equipment (e.g. goggles and facemasks) (Haile *et al.*, 2017). This Ethiopian study also documented that continual shortage of personal protective equipment could demotivate previously energetic workers. Another study among healthcare workers (HCWs) in public secondary healthcare facilities in Abuja, Nigeria, found the main constraint to use of PPE was irregular supply. In the present study, this was the most cited reason for low adherence under this category.

The participants in the current study also indicated environmental problems, such as the site of necessary equipment or facility (e.g. availability of isolation room and distance to washing basins), influenced the adherence to SPs. This was consistent with the study by Oliveira and Damasceno (2010), which reported that limiting factors for adhering to hand hygiene guideline included distance from the hand washing sink and inappropriate storage of scrubs. A supporting result was observed in a Cyprus study, in that during emergencies it was sometimes difficult

to use PPE due to it being “stored or even locked far away from the place nursing care is provided.”(Efstathiou *et al.*, 2011).

The other reason for low adherence to SPs cited by participants in this study was the uncomfortable PPE; for example, one participant argued, “Hibiscrub (chlorhexidine) causes irritation.” This reason is similar to reports in other studies, as healthcare workers in Ghana have revealed that discomfort of wearing PPE is a barrier to adherence. Likewise, a study in India among Healthcare workers reported that wearing PPE is uncomfortable (Punia *et al.*, 2014), and HCWs in Sierra Leone indicated they recognise the importance of the PPE, but their main concern was that equipment causes sweating and itching (Ratnayake *et al.*, 2016).Uncomfortable PPE (causing skin irritation) was also documented as a reason that influences nurses' adherence to SPs in the study of Efstathiou *et al.* (2011).

No support for unawareness of the importance of standard precautions was found in this study as none of the participants’ responses was related to this theme. Varying findings have however been reported by other studies.Sreedharan *et al.* (2011), in Ajman, assessed the awareness and knowledge of SPs among nurses in a university teaching hospital and observed that most participants were familiar with the concept of standard precautions, but less than half the nurses acknowledged that the standard precautions were meant to protect both the healthcare personnel and the patient to be infectious.

In a Brazilian study (Nazario *et al.*, 2017), among Intensive Care nursing professionals, awareness surfaced as a reason that could influence the adherence to SPs. The participants in the Brazilian study emphasised that awareness can promote the usage, or negatively influence it. The researchers argued that when workers gain experience they often "believe having full mastery of the techniques and not being thus susceptible to accidents." Nursing professionals develop self-confidence and may end up being complacent, considering SPs not important (Nazario *et al.*, 2017). In the present study, most participants have experience and had performed the same tasks for a long time and chances are they may neglect some precautions, especially PPE. Participants in the current study may have had

some of these reasons for not citing unawareness of the importance of standard precautions.

Another reason for low adherence to standard precautions documented in this study was challenging work conditions. The participants reported excessive workloads, lack of time and a shortage of nurses as barriers to adhering to SPs. The nurses in this study argued that sometimes they come across situations of life or death (such as hypoxia) and end up omitting SPS to save lives. These study findings corroborate with those of other studies, as workload has been widely described as a barrier to adherence to SPs (Nowak *et al.*, 2013; Punia *et al.*, 2014; Porto and Marziale, 2016; Nazario *et al.*, 2017)
Nazario *et al's.* (2017) study among ICU nurses found that the number of workers might negatively influence the adherence to SPs due to the limited time to resolve issues and the need to hurry to get the job done.

Nurses in Cyprus 'public hospitals have proved that shortage of nurses is a barrier to adherence(Efstathiou *et al.*, 2011). The participants indicated they are too busy, and usage of SPs is time-consuming. Nowak *et al.*(2013)also found that excessive work, double shifts, and shortages of nurses interferes with adherence to standard precautions. The participants in the present study also reported that the increased number of patients and too few nurses led to exhaustion among nurses and skipping of standard precautions. A study among healthcare workers in Ethiopia also added that lack of management support in the workplace and emergency situations (such as hypoxia and bradycardia) can lead to low adherence to SPs (Haile *et al.*, 2017).This report supports findings in the present study, where emergencies(such as hypoxia) were reported as a barrier to adhering to SPS.

4.5 SUMMARY

This chapter presented the analysis of the qualitative data obtained from the study through narratives received from nurse participants at an academic hospital. Responses were grouped independently and compared to findings from previous studies. Many of the reasons that emerged from this study contributed to low adherence to SPs and are in accordance with findings of previous studies. In this

study, no reasons were related to unawareness of the importance of standard precautions. Most participants felt that adherence to standard precautions was satisfactory.

The following chapter will present a summary of the study, main findings, limitations and recommendations and conclusion.

CHAPTER FIVE

SUMMARY OF THE STUDY, FINDINGS, LIMITATIONS RECOMMENDATIONS AND CONCLUSIONS

5.1 INTRODUCTION

This chapter concludes the study with a summary, the main findings that emerged, as well as limitations, the main findings will be discussed in relation to the study objectives. The chapter also discusses the research recommendations for clinical nursing practice and nursing education, and ends with areas for further research and the conclusions.

5.2 SUMMARY OF THE STUDY

5.2.1 Purpose of the Study

The purpose of this study was to explore the opinions of nurses as to why there was a low adherence to standard precautions of infection control, ways in which adherence might be improved and to make some suggestions to the Infection Prevention and Control policies and practice at an academic hospital .

5.2.2 The Objectives of the Study

The objectives of the study were:

- To explore the opinions of nurses as to why there is a low adherence to standard precautions of infection control.
- To explore the opinions of nurses on ways in which adherence might be improved.
- To make suggestions to the Infection Prevention and Control (IPC) policies and practice at the hospital.

5.2.3 Methodology

Ethical clearance (see Appendix A) was granted by the Committee for Human Research Ethics (Medical) of the University of the Witwatersrand before the beginning of the study. The Faculty of Health Sciences Postgraduate Committee (see Appendix B), the Gauteng Department of Health and the Chief Executive Officer of the hospital (see Appendix C) granted permissions before commencement of the study.

The study was conducted at an academic hospital. The population in this study comprised of all registered nurses (RNs) and enrolled nurses working in the postnatal ward, general paediatric ward, medical ward, general surgical ward and general wards of this hospital.

The pre-test of the narrative sketch was conducted on five participants who worked in the actual study setting. The purpose of this excise was to identify weaknesses and determine time requirements regarding the writing tool. The results of the pre-test indicated the narrative sketch tool was understandable and took approximately 5 to 10 minutes to complete. No changes were done to the tool.

A qualitative exploratory design was used for this study. Data were collected during the months of August and September 2017, from a sample (n=28) using a self-administered narrative sketch designed by the researcher. The narrative sketch consisted of two parts. The first part of the narrative tool comprised demographic data of the participants. The second section comprised of one question related to the opinions of nurses regarding the level adherence to standard precautions.

This study employed directed content analysis as described by Hsieh and Shannon (2005). In this analysis, responses were grouped independently and compared to the findings of five categories by Porto and Marziale (2016), and thereafter compared to what literature concluded.

5.3 SUMMARY OF RESEARCH FINDINGS

5.3.1 Demographic Data

Results illustrated that the majority (82%; n=23) of the participants were female nurses with only 18% (n=5) being male. The average age group was 40.6 years, which indicates an aging population in the nursing profession in South Africa. In terms of place of work (ward), 28% (n=8) of participants were from the general ward, followed by 25% (n=7) from the medical ward, 21% (n=6) in the paediatrics and 19% (n=5) in the general surgery ward. The lowest (7%; n=2) number of responses were indicated in the post-natal ward. Most of responses were from registered nurse (RN) participants (85.7%; n=24) and only 14% (n=4) were among enrolled nurses (EN).

5.3.2 The reasons for low adherence to standard precautions among nurses

As discussed previously, the first objective of the study was to explore the opinions of nurses as to why there was a low adherence to standard precautions of infection. Findings yielded in this study supported reasons for low adherence to standard precautions among nurses documented by Porto and Marziale (2016); this included poor basic training, risk behaviours, inadequate provision of equipment and Inappropriate and work conditions. In this study, there was no support for unawareness of the importance of standard precautions as a reason for low adherence, as none of the participants' responses related to this.

Poor basic training and poor continuing educational opportunities were related to lack of skills and knowledge among nurses, which negatively influenced adherence to SPs. These result in inaccurate assessment and the inability to make proper diagnosis, hence poor adherence by nurses.

The risk behaviours that were found as barriers to adherence to SPs among nurses in this study include cognitive aspects such as naivety, knowledge of patient's diagnosis, omissions, laziness and attitude. Behavioural characteristics

such as laziness, shortcuts during service delivery, hurrying and ignorance among nurses, were associated with the low level of adherence of SPs.

Inadequate provision of equipment and protective equipment, which hindered adherence to SPs in this study, was related to factors such as shortage of resources and use of uncomfortable PPE/materials. Shortage of resources cited by participants involved insufficient isolation facilities, shortage of PPE, faulty equipment and environment-related problems (e.g. availability of isolation room and distance to washing basins). Use of uncomfortable PPE/materials was found to be impeding on adherence to SPS, this included soaps that caused irritation and allergies, as well as the low-grade quality of such.

Another reason for low adherence to standard precautions supported by this study was challenging work conditions. The participants reported excessive workload, lack of time, patient traffic flow and a shortage of nurses as barriers to adhering to SPs. These factors often lead to omissions and exhaustion among nurses, resulting in low adherence to standard precautions.

The findings of the study do not support the unawareness of the importance of standard precautions as a reason for low adherence to SPs. None of the participants' responses was related to this reason, and they may have had different reasons for not citing the unawareness of the importance of standard precautions as a barrier to adherence to SPs. It was noted that most participants (86%; n=24) were experienced nurses, between 30 to 50 years+ of age, therefore they might be aware of standard precautions. Most participants felt that the level of adherence to standard precautions among nurses was satisfactory.

On measures of improving adherence to standard precautions, nurses recommended continuous education, regular audits, increasing numbers of staff and motivation. The participants added that there was a need for continuous reminders, continuous support visits, increasing numbers of nurses in busy wards and motivating units that are performing well to improve implementation of standard precautions.

5.3.3 Conclusion

Poor basic training, risk behaviours, inadequate provision of equipment and protective equipment and inappropriate work conditions are some of the reasons for low adherence to standard precautions among nurses. The study's findings did not support unawareness of the importance of standard precautions as a reason for low adherence, as none of the participants' responses related to this. Most participants felt that the level of adherence to standard precautions among nurses was satisfactory. The reasons for satisfactory adherence to standard precautions among nurses include the presence of policies and protocols in wards, supervision and inspection by Infection Prevention and control committee and nurses, introduction of "Best care always" bundles. Nurses in this study recommended continuous education, regular audits, motivation, increasing numbers continuous support visits and use of reminders to improve adherence to standard precautions.

Based on the findings of the study, regular supply of personal protective equipment, continuing in-service educational programmes, improved supervision, institutional strategies technical and management support are recommended in the area of standard precautions.

5.4 LIMITATIONS OF THE STUDY

Some of the limitations identified in this study were:
The study sample comprised of nurses from general, general surgery, medical, paediatrics and postnatal wards of an academic hospital therefore, generalisability of the findings was difficult, because nurses working in other wards may have different opinions on adherence to standard precautions.

The study was conducted in an academic hospital in Johannesburg, thus the findings cannot be generalised to other hospitals in Johannesburg; studies conducted in other areas might give different findings on this topic.
This study applied directed content analysis and even though measures, such as member checks and audits were put in place, trustworthiness could be compromised.

There were few male nurses in the sample therefore; it was difficult to predict any differences in opinions in relation to gender.

Other research methods, such as interview, could have generated different findings. An observational method could have determined the nurses' adherence to standard precautions, therefore studies with larger samples and mixed methodologies should be conducted.

The availability of the participants due shifts and leave, as well as returning responses, became a problem.

5.5 RECOMMENDATIONS

Despite all the limitations, the study is beneficial to both nursing and the healthcare system, as standard precautions are very important in preventing the transmission of infections in healthcare facilities. Therefore, based on the participants' recommendations and findings of the study, some suggestions and recommendations will be discussed on the next paragraphs.

5.5.1 The opinions of nurses on ways in which adherence might be improved.

The second objective of the study was to explore the opinions of nurses on ways in which adherence might be improved. On measures of improving adherence to standard precautions, participants recommended continuous education, regular audits, motivation, increasing numbers continuous support visits and use of reminders.

5.5.2 Suggestions to the Infection Prevention and Control (IPC) policies and practice.

As discussed in the previous chapters the third objective of the study was to make suggestions to the Infection Prevention and Control (IPC) policies and practice at the hospital. Therefore based on the findings of study, the researcher made the following suggestions:

Continuing professional development/education

Based on the study's findings, poor basic training and poor continuing educational opportunities were related to lack of skills and knowledge among nurses. This calls for continuing in-service educational programmes on standard precautions to update knowledge and practice of nurses. Health facility managers should provide training programmes for newly appointed nurses, and refresher courses and updates on new policies and protocols to all nurses.

Procurement and supplies

The participants indicated there was an insufficient supply of resources and use of uncomfortable PPE/materials. Therefore, the managers should ensure regular supply of Personal Protective Equipment, materials and other items required for implementing standard precautions. The hospital managers should also establish guidelines or regulations for procuring items such as proper soaps; for example, institutions should recommend purchasing soaps with listed ingredients on the product label, so nurses can avoid substances that have previously caused them

Institutional strategies to change risk behaviours

The findings have found that risk behaviours such as knowledge of patient's diagnosis and taking shortcuts during service delivery are barriers to adherence to SPs among nurses. Institutions should establish strategies aimed at changing such behaviours among nurses, including showing nurses the importance of adhering to standard precautions regardless of the patient's diagnosis. Moreover, strict supervision and disciplinary measures should be applied, where possible, to enhance adherence to SPs. The managers should also identify some admirable nurse mentor/preceptor who will influence the competence of new staff(Dorgham and Obied, 2016).

Management support

The participants reported excessive workload, lack of time, patient traffic flow and a shortage of nurses as barriers to adhering to standard precautions (SPs). These findings suggest that healthcare facility managers need to review or introduce the following management measures:

- Increase numbers of nurses to decrease workload.

- Establish and implement the clear responsibilities and authorities of nurses.
- Workload management method to ensure “a better balance between patient needs and nursing staff size and expertise”(van den Oetelaar *et al.*, 2016).
- Review of patients' admission systems (especially number of patients per ward).
- The use of the modern technologies and equipment, including new health information systems to capture information(Clarke and Donaldson, 2008).

5.5.2 Future Research Projects

Studies

As there are few studies on adherence to standard precautions in South Africa, more research is needed. More studies are also needed to examine strategies to address barriers found in this study. Large-scale studies on this topic will help to increase the generalisability of the study findings.

Unawareness of the importance of standard precautions

The findings of the study did not support unawareness of the importance of standard precautions as a reason for low adherence to SPs, as participants did not cite this. Therefore, the awareness of standard precautions among nurses needs further research.

5.6 CONCLUSION

The results of the study reaffirmed poor basic training, risk behaviours, inadequate provision of equipment and protective equipment and inappropriate work conditions as reasons for low adherence to standard precautions among nurses. Lack of skills and knowledge regarding standard precautions can lead to non-adherence. Behavioural characteristics, such as shortcuts, hurrying and ignorance, as well as cognitive aspects, such as naivety, knowledge of patient’s diagnosis and attitude, are associated with the low adherence to SPs. In addition, insufficient supply of resources, use of uncomfortable PPE/materials, excessive workload, lack of time, patient traffic flow and a shortage of nurses also contribute to non-adherence to standard precautions among nurses. The findings of the

study did not support unawareness of the importance of standard precautions as a reason for low adherence to SPs, as none of the participants' responses related to this. Participants may have different reasons for not citing the unawareness of the importance of standard precautions as a barrier to adherence to SPs. Most participants felt that the level of adherence to standard precautions among nurses was satisfactory. The reasons for satisfactory level of adherence to standard precautions among nurses include the presence of policies and protocols in wards, supervision and inspection by Infection Prevention and control committee and nurses, introduction of "Best care always" bundles

On measures of improving adherence to standard precautions, nurses recommended continuous education, regular audits, motivation, increasing numbers continuous support visits and use of reminders.

Based on the findings of the current study, it is recommended to ensure regular supply of personal protective equipment and continuing in-service educational programmes. Furthermore, there is a need to establish institutional strategies to change risk behaviours and provision of technical and management support in the area of standard precautions. Further research should be conducted to examine strategies to address barriers found in this study.

These findings will be of use to public sector hospital management in the implementation of standard precautions and in addressing barriers to adherence. The institution will be made aware of this findings and suggestions to improve their adherence.

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APPENDIX A: ETHICS CLEARANCE CERTIFICATE

R14/49 Mr Kenneth Mmereki

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M170520

NAME: (Principal Investigator)	Mr Kenneth Mmereki
DEPARTMENT:	Nursing Education
PROJECT TITLE:	The Opinions of Nurses regarding Low Adherence to Standard Precautions to Prevent Health Acquired Infections at an Academic Hospital
DATE CONSIDERED:	26/05/2017
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Mrs Barbara Hanrahan
APPROVED BY:	Professor P. Cleaton-Jones Chairperson, HREC (Medical)
DATE OF APPROVAL:	16/08/2017

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 10004,10th floor, Senate House/3rd floor, Phillip Tobias Building, Parktown, University of the Witwatersrand. I/We fully understand the conditions under which I am/we are authorised to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit to the Committee. **I agree to submit a yearly progress report**. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. in this case, the study was initially review May and will therefore be due in the month of May each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

APPENDIX B: APPROVAL OF RESEARCH TITLE

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172076

Reference: Mrs Sandra Benn
E-mail: sandra.benn@wits.ac.za

10 January 2018
Person No: 1446600
PAG

Mr K Mmereki
Wits Junction
Junction Avenue
Parktown
2193
South Africa

Dear Mr Mmereki

Master of Science in Nursing: Approval of Title

We have pleasure in advising that your proposal entitled *The opinions of nurses regarding low adherence to standard precautions to prevent healthcare acquired infections at an academic hospital* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

APPENDIX C: PERMISSION TO CONDUCT RESEARCH IN THE HOSPITAL



Office of the Nursing Director

21 August 2017

Mr. Kenneth Mmereki
University of the Witwatersrand
Department of Nursing Education
Faculty of the Health Sciences
NHRD REF : GP_2017RP44_195

Dear. Mr. Kenneth Mmereki

RE: "The opinions of nurses regarding low adherence to standard precautions to prevent Health acquired infections at an academic hospital "

Permission is granted for you to conduct the above recruitment activities as described in your request provided:

1. hospital will not in anyway incur or inherit costs as a result of the said study.
2. Your study shall not disrupt services at the study sites.
3. Strict confidentiality shall be observed at all times.
4. Informed consent shall be solicited from patients participating in your study.
5.

Please liaise with the Head of Department and Unit Manager or Sister in Charge to agree on the dates and time that would suit all parties.

Kindly forward this office with the results of your study on completion of the research.

Supported / not supported

Nursing Director
Date: 2017/08/21

Approved / not approved

Chief Executive Officer
23.08.2017

APPENDIX D: DATA COLLECTION TOOL

My opinions regarding low level of adherence to standard precautions to prevent health acquired infections among nurses

Demographic Data			
Age of participant 20 – 29 □ 30 – 39□ 40 – 49 □ 50 and above□	**Sex** Male □ Female□	**Qualification** Enrolled nurse□ Registered nurse□	**Ward** Medical □ General surgery □ General pediatrics□ Postnatal □

Please write freely answering the question below. (If necessary continue writing on the next page).

Question; please would you give your opinion regarding the low level of adherence to standard precautions for infection control among nurses?

APPENDIX E: PARTICIPANT INFORMATION SHEET

STUDY TITLE: **The Opinions of Nurses Regarding Low Adherence To Standard Precautions To Prevent Health Acquired Infections At An Academic Hospital**

INSTITUTION: the University of the Witwatersrand, Department of Nursing Education

Faculty of Health Sciences, 7 York Road Parktown, 2193

Dear Participant

My name is Kenneth Mmereki, I am a Masters in Nursing (Infection Control) student at the University of the Witwatersrand, Department of Nursing Education. The purpose of this study was to explore the opinions of nurses as to why there was a low adherence to standard precautions of infection control , ways in which adherence might be improved and to make some suggestions to the Infection Prevention and Control policies and practice at an academic hospital. The findings may help to address the issues that influence adherence to standard precautions of infection control among nurses.

You are kindly invited to take part in this research study. All Registered nurses (RNs) and enrolled nurses working in a postnatal ward, a general paediatric ward, a medical ward and a general surgical ward are invited to participate. Your responsibilities will involve (1) completion of narrative sketch where you write freely about your opinions on adherence to standard precautions of infection control among nurses. This study has been approved by the Wits University Human Research Ethics Committee. The permission to do the study was obtained from Gauteng Department of Health, CEO and the Director of Nursing Services of the hospital.

Your participation in this study is entirely voluntary and if you decide to participate there will be no payment or any form of reward. You may choose not participate in the study and there will be no penalty for that decision. If you decide to take part, any point of view expressed will be regarded as making meaningful contribution to adherence to standard precautions to prevent health acquired infections. You may

stop responding to questions at any time with no consequences to yourself. Moreover, there are no known/anticipated risks involved in taking part in this study.

All efforts will be made to keep your responses confidential. All information gathered (questionnaires) will be kept in a secure, lockable storage. Raw data will be accessed by the principal investigator and supervisor. The questionnaire comes with envelope to be returned to a box after your response. Written notes will be analysed through identification and reporting themes. It will also be organized, described and interpreted according to a template designed by previous researchers. Once data is analysed, a report will be written and submitted to the CEO of the hospital, Wits Nursing Department and may be published. The attached summary of the policy regarding standard precautions that should be taken by healthcare workers is just to remind you what these standard precautions are.

If you have any question or concerns or queries regarding this study, please contact;

Principal investigator: Kenneth Mmereki

Email; 1446600@students.wits.ac.za Cell: +27 605718583

Research supervisor: Barbara Hanrahan

Email; barbara.hanrahan@wits.ac.za Tel: +27 (0) 11 488 4275

Should you have any questions regarding the ethics in this study and your rights please contact;

Chairman of Ethics: Professor Peter Cleaton-Jones; Phone; 0117172301

Email: peter.cleaton-jones1@wits.ac.za

APPENDIX F: A SUMMARY OF STANDARD PRECAUTIONS FROM HOSPITAL INFECTION CONTROL POLICY

1. Hand hygiene

This involves;

Washing hands after touching secretions, excretion or body fluid and contaminated items, whether or not gloves are worn. Washing hands (when working with patients) immediately after gloves are removed between patients contact and after removing gloves and when indicated. Use antiseptic soap to wash hands when doing sterile procedure, when nursing an infectious patient and to prevent and to control an outbreak of infections.

2. Personal protective equipment (PPE)

Select PPE based on the assessment of risk: clean non-sterile gloves (intact) before touching excretions, secretions, body fluids and contaminated items

Plastic Aprons/ gowns; Plastic aprons may be substituted for gowns except for airborne or droplets precautions. (There are standards for storing gowns/aprons)

Wear mask and eye protection or a face shield to during procedures that are likely to generate splashes or sprays of blood, body fluids, excretions or secretions.

3. Respiratory hygiene

These involve standard airborne precautions.

In case of Active Pulmonary Tuberculosis the patient is placed in a private room and the door is kept closed. The apron/gown and masks are put on when entering the room.

4. Prevention of needle stick and injuries from sharp instruments

Needles and syringes must be disposed of as a single unit. Do not recap, bend or manipulate needle. All sharps container must be placed at a convenient area in each clinical area.

5. Environmental cleaning

Cover blood spill with paper to contain it and Disinfection of blood spills should be done with 1 % sodium hypochlorite and towel. The materials used should be disposed of in red plastic bag.

6. Linens

Contaminated linen should be handled, in a manner which avoids transfer of pathogens to other healthcare workers, patients and or the environment. The linen is placed into a yellow plastic bag and sealed when two thirds full .The sealed yellow plastic bag is placed in a canvas bag and tied with a string. The canvas bag should be labeled infections and ward number then chuted immediately.

7. Waste disposal

Medical waste should be placed into Red plastic, tied with care when two thirds full. The tied red plastic is placed into a clean red plastic tied with overhand knot and placed into a medical waste box/wheelbin.

Discard single use items properly.

8. Patient care equipment

Handle equipment soiled with blood, body fluids, \secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of pathogens to other patients or the environment.

Ensure that reusable equipment is used in care of another patient when it has been re-cleaned and reprocessed appropriately.