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**FACTORS INFLUENCING THE IMPLEMENTATION OF INFECTION PREVENTION
AND CONTROL MEASURES AT A PUBLIC HOSPITAL IN GAUTENG**

by

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DEDICATION

I dedicate this study to my parents, who have given me life in this world, my wife Pearl and my kids that I was away from several times trying to push the study. My inspiration, my mentor and my manager Ronel Du Preez, thank you for showing such leadership and support with trust that I can.

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ABSTRACT

The purpose of this study was to explore and describe the factors influencing the implementation of the infection prevention and control measures at a public hospital in Gauteng in order to develop strategies that will facilitate the implementation of such measures.

A qualitative, exploratory, descriptive and contextual research design was used to explore and describe the factors that influence the implementation of infection prevention and control measures at the hospital. Two focused group of professional nurses were done and 2 semi structured individual interviews with operational managers were conducted.

A focus group is a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs, and attitudes towards a service, concept or an idea. Questions were asked in an interactive group setting where participants were free to talk with other group members while on same time are answering the researcher question. The participants were in groups of 8 per session that lasted about 45 minutes.

A semi-structured individual interview is defined as an open interview, allowing new ideas to be brought up during the interview as a result of what the participants say from the open ended question raised to them. The operational managers were individually interviewed on separate occasions for about 45 minutes until data was saturated.

The study was conducted in two phases as follows:

Phase 1 focused on the exploration and description of the factors that influence the implementation of infection prevention and control measures at the public hospital in Gauteng and Phase 2 focused on the development of strategies that will facilitate the implementation of infection prevention and control measures at the public hospital.

A purposive sample was drawn from the population of operational managers and professional nurses who were willing to participate in the research. Data was collected by means of focus group interviews until data saturation was reached. Data analysis was done according to Tesch's protocol. Ethical principles were adhered to in

accordance with the principles of human rights by Dhai and McQuoid-Mason. To ensure trustworthiness, Lincoln and Guba's four criteria and strategies for ensuring trustworthiness, namely credibility, transferability, dependability and confirmability, were applied throughout the study.

Three major themes emerged, namely: ineffective management practices; challenges regarding knowledge and attitudes towards infection prevention and control measures and inadequate hospital infrastructure. The themes and their subthemes were described and integrated into relevant literature and strategies that will facilitate the implementation of infection prevention and control measures at the public hospital. Recommendations with regards to nursing practice, nursing education and nursing research, limitations of the study and conclusion are described in Chapter 4.



CHAPTER 1

BACKGROUND AND RATIONALE OF THE STUDY

1.1 BACKGROUND AND RATIONALE

The prevention of healthcare-associated infections has become an increasingly challenging issue globally. The World Health Organization, WHO (2013:491) views infection prevention and control as a critical issue since millions of patients develop hospital-acquired infections at the hands of health care providers in developed and developing countries.

Lewinsky (2011:776) drew focus to the importance of infection prevention and stated that this dates back to 1854 when Florence Nightingale observed and advocated that improving hygiene conditions would decrease the number of patient deaths. Her observations conveyed the belief that there is a clear relationship between the diseases killing patients and the filthy environment in which they lie and the air that they breathe. She improved these conditions by establishing a rational system for receiving and triaging and assisted in the prevention of cross contamination by insisting that clean cloth is used for each patient.

Her contribution has influenced hospital infection prevention and control programmes that serve to create the principles of hygiene, which has developed current practices such as the isolation of patients with antibiotic-resistant pathogens, avoidance of cross-contamination, ventilation of wards and medical waste, Lewinsky (2011:776).

Florence Nightingale championed the cause of improved hygiene and living conditions. She advocated that infection prevention and control measures need to be implemented with regard to cleanliness, hygiene and education and emphasized that there must be a relationship between knowledge and power to employ and implement the strategies so as to reduce infection and improve patient safety. Her efforts led to the introduction of the first infection control nurse, with the roles of education, intervention and evaluation of the practice of infection prevention and control being the primary focus, Lewinsky (2011:776).

Longenecker and Longenecker (2014:147) argued that the mission of the World Health Organization (WHO) Infection Prevention and Control in Health Care initiative is to assist hospitals in reducing dissemination of infections associated with health care by assisting with the assessment, planning, implementation and evaluation of national infection control policies. The ultimate goal is to assist institutions to endorse quality promotion of health care that is safe for patients, health care workers, others in the health care setting and the environment, and to accomplish these goals in a cost-effective manner.

According to Bohmer and Imison (2013: 2025), the purpose of infection prevention and control is to reduce the occurrence of infectious diseases that are usually caused by bacteria or viruses and can be spread by human-to-human contact, animal-to-human contact, human contact with an infected surface, airborne transmission through tiny droplets of infectious agents suspended in the air, and finally by such common vehicles as food or water.

Buregyeya, Nuwaha, Verver, Criel, Colebunders, Wanyenze, Kalyango, Katamba, and Mitchell (2013:360) highlighted that infections contracted in hospitals are also called nosocomial infections and they occur in many country wide hospitals and too many patients. They asserted that these infections result in increased time spent at the hospital and, in some cases, death.

Efstathiou, Papastavrou, Raftopoulos, Merkouris (2011:3) reported that infection control has become a formal discipline in many countries due to the spread of infections in hospitals. Because there is both the risk of health care providers acquiring infections themselves, and of them passing infections on to patients, the Centres for Disease Control and Prevention established guidelines for infection control procedures. In addition to hospitals, infection control is important in nursing homes, clinics, child care centres, and restaurants, as well as in the home.

Askarian and Assadian (2009:48) highlighted that the WHO had issued new guidelines for the proper maintenance and sterilization of dental equipment, hand hygiene for dentists and dental hygienists, dental radiology, medications, and oral surgery, environmental infection control, and standards for dental laboratories so as to enhance infection prevention and control measures.

Askarian and Assadian (2009: 48) informed that The Centres for Disease Control and Prevention (CDC) Data on the National Nosocomial Infection Surveillance system which was reported by CDC have documented the progressive increase in the prevalence of MRSA. The National Nosocomial Infection Surveillance (NNIS) system had documented an increase in the percent of nosocomial enterococcal infections. They reported that some issue had not received enough attention during the surveillance system in many hospitals. The importance of establishing local transmission patterns or surveillance system was seen as the first step to deal with outbreak of infections.

Efstathiou et al (2011: 3) alienated that most of a hospital-wide outbreak of nosocomial infection at one hospital revealed that employees who had chronic MRSA sinusitis were the source of the outbreak. They reported that failure to identify such an individual as a source had lead to poor control, despite implementation of other general control measures, such as isolating patients, use of recommended barrier precautions, and appropriate hand washing.

The study conducted by Gammon, Morgan-Samuel, and Gould (2008:157) found that antibiotic use at hospitals has changed dramatically during the past 10 to 15 years. The study revealed that the percentage of hospitalized patients who have received antibiotics increased dismally. Similar trends in antimicrobial use were reported to have occurred at many other hospitals. This was reported as the poor knowledge from the clinicians, who were prescribing drugs with no control, which might have lead to an outbreak of disease.

Pittet, Harbarth and Mourouga (2010:1304) highlighted that guidelines for improving the infection prevention and control at hospitals have also been published by the Infectious Diseases Society of America and the Society for Health Care Epidemiology of America. Implementation of guidelines was one of the several recommendations made to improve the use of antimicrobial agents. Many hospitals have adopted the Hospital Infection Control Practices Advisory Committee (HICPAC) guideline for reducing nosocomial infections at public hospitals. Education and training for dealing with the appropriate use of antimicrobial agents to reduce infections were recommended.

Pittet, Harbarth and Mourouga (2010:1305) informed that the guidelines on infection prevention and control required an improved infection prevention and control measures. This responsibility was designed to reduce resources costs and antimicrobial resistance. These guidelines were assisting on that infectious disease attending clinicians become more knowledgeable on managing an outbreak of disease and patient hospital stay. For this reason, hospitals were required to consider utilizing infection prevention and control measures, by forming a multidisciplinary antibiotic management team.

The studies of Mythri, Arun and Kashinath (2015:109) and Kermode, Jolley, Langham, Thomas, Holmes and Gifford (2005:27) highlighted that overall knowledge of infection control procedures was good among the health care workers of a government district hospital. However, the attitude, as well as practice, was very poor. Constant motivation was required to address these shortfalls and to improve the adherence to procedures. Improved compliance with recommended infection control measures is required for all health care personnel.

Khan, Shah, and Fatokun (2014:1281) informed that continuing education programmes and short-time training courses about cross infection and infection control procedures are suitable for students and assistants to upgrade as well as reinforce the practices. They recommended that measures have to be taken to motivate the seniors to organize and encourage continuous education as well as training programmes. An assessment of the knowledge, attitude and practice (KAP) of standard precautions by health care workers was reported as a prerequisite for initiating and implementing a successful infection prevention and control (IPAC) strategy at any health facility. They highlighted that some studies have shown that health care workers (HCW) display variable KAP of standard precautions according to their professional group and duration of professional experience, among other factors. Longer duration of professional experience, knowledge and training in standard precautions and high-risk perception have all been associated with improved compliance with standard precautions among health care workers.

Jackson, Lowton, Griffiths (2014: 400) informed that WHO had developed the guidelines following the outbreak of Ebola in Africa. The absence of facilities for prompt isolation of cases was seen as major issues. This was reported as due to the poor infrastructure. Strict protocols for infection prevention and control in health facilities were highlighted. The report showed that lack of knowledge and training and attitude by the community has caused lives of the people. It was reported that adherence to recommended protective measures and safe burials were critically dependent on a cooperative community, as such reduced cross infections.

Mathewos, Birhan, Kinfu, Boru, Tiruneh, Addis and Alemu (2013:508) reported that the health care workers that work in developing countries are at serious risk of infection from blood-borne pathogens like HIV, Hepatitis B and C viruses because of the high prevalence and increased occupational risk of these pathogens in the areas. Unsafe practices like the careless handling of contaminated needles, unnecessary injections on demand, reuse of inadequately sterilized needles, and improper disposal of hazardous waste can increase the potential risk of occupational transmission of these blood-borne pathogens. Different evidence showed that there is an information gap in the health care setups regarding personal protective equipment.

A study conducted by Dancer (2011:1473) indicated that only 22% of doctors identified all the three drugs that are recommended at that time a study conducted in Ethiopia showed that 83.9% of total health care workers had inadequate knowledge about personal protective equipment for HIV, and among the exposed respondents 81.6% did not use personal protective equipment, of whom 33.8% did not use personal protective equipment because of lack of information.

The South African National Department of Health 2009-2014 and Strategic Plan for 2009-2012 has developed the 10-Point Plan that has to influence the establishment of a quality management and accreditation body for improving the quality of health services. This was highlighted by the Quality of Health Care Policy of 2007 and the Infection and Prevention Control Policy of 2007. The Negotiated Service Delivery Agreement was that there must be improved life expectancy, improved mother and child health and survival, reduced impact of HIV/AIDS and tuberculosis, and improved health system effectiveness that will be focusing on:

- Re-engineering primary health care
- Improving quality in health service delivery
- Information
- Human Resources
- Finance and Financing
- Infrastructure and Technology
- National Health Insurance

The National Health Act, 61 of 2003, was amended to include the role of the Office of Health Care Standards Compliance (OHSC) as a quality assurance body mandated to assess all health establishments for compliance with the National Core Standards.

The Office must:

- (a) Advise the Minister on the development of norms and standards for the national health system and the review of such norms and standards;
- (b) Certify health establishments as compliant with prescribed norms and standards;
- (c) Ensure compliance with prescribed norms and standards by health establishments; and
- (d) Investigate complaints relating to the health system

Critical areas that must be improved upon by all facilities were identified as areas of major concern for the patients. Fast-track improvement by all facilities was required in values and attitudes of health care staff; cleanliness at health care facilities; waiting for times, patient and staff safety and security; infection prevention and control; and availability of medicines and supplies.

The infection prevention and control domain required that all hospitals have the following in place to monitor hospital-acquired:

- An IPC policy is available.
- A formal system is in place.
- Standard precaution measures are monitored and adhered to.
- Strict infection prevention measures are observed in critical areas.
- General waste management practices are in existence.

Ilder, Adams, Whitby and Clemens (2012:170) reported that the percentage of health care workers who comply with recommended hand washing practices has varied from 16% to 80%, with an average rate of compliance of 40%. They recommended that due to the increasing spread of resistant nosocomial, pathogens should serve as an impetus for hospitals to develop innovative methods to improve hand hygiene among health care workers. Preventing hospital-acquired infections (HAIs) the right engineering and the right equipment; attention to hygiene; training of health care providers and staff; and the cooperation and help of patients and their families and friends was found to minimise fatality rate. Washing hands, cleaning environments and sterilizing instruments were reported as the best ways to prevent HAIs.

Gammon et al. (2008:160) did a survey which was conducted of HCWs in healthcare facilities that identified a strong correlation between both environmental and organizational factors and self-reported compliance. They reported that by establishing a surveillance system for health care infections, identifying patients at high risk for infections, tailoring hospital care and patient education based on patient living conditions, and facilitating communication between different health care facilities will enhance infection control in health settings.

However, Chen, Liu, and Hwang (2011:452) alluded that following best practices were seen as not always being simple. Educating and encouraging health care workers, patients and visitors to wash their hands at the right time and consistently perform other hygiene practices was found to be the challenge. Studies have highlighted that the ever-changing characteristics of infectious agents and the increasing risk of infection associated with advances in medical care and increasingly vulnerable patients are major challenges. Despite all challenges, studies reported that some HAIs are preventable if infection prevention and control strategies are followed.

The Centres for Disease Control and Prevention in the United States carried out the Study on the Efficacy of Nosocomial Infection Control (SENIC) project to identify the most effective approaches to infection surveillance, prevention and control. A survey of Canadian hospitals with more than 80 beds reported in 2008 that hospitals carried out, on average, only two-thirds (68%) of the recommended surveillance activities based on SENIC project findings and only 64% of the recommended infection control activities.

In addition, only 23% had the recommended number of infection control professionals on staff. Mandatory standards, monitoring and public reporting are necessary to understand and tackle HAIs. Some current practices are inconsistent and uncoordinated, and more could be done to improve monitoring, addressing and reporting of HAIs in Canada. This resembles the most of South African hospital that did not have any infection control practitioner or a person assisting with the

Daily prevention and control of infectious agents is important everywhere in health care facilities according to infection prevention and control policy. Hospitals started to establish infection prevention and control programmes in the late 1950s. Initial concerns were with staphylococcal bacteria, and addressing them focused on identifying the infection and isolating patients. During the 1980s, infection prevention and control programmes expanded to long-term care facilities and the community. There are now aggressive efforts across various types of health care services in many countries to create networks and to uphold standards in infection prevention and control.

Pettit, Hugonnet, Habarth, Mouronga, Sauvan, Touveneau and Perneger (2005:1308) reported that transmission-based precautions are associated with isolation, as policy makers and clinicians make an assumption that the physical separation of a patient from a transmissible disease helps to interrupt the cycle of infection. Contact organisms whose primary mode of transmission is through contaminated hands were found to be because of the greatest use of isolation facilities.

Gammon et al. (2008:160) reported that despite that the prevention and management of healthcare-associated infections (HAI) has advanced greatly over the last decade due to legislative, regulatory and organizational incentives, these changes have not resolved the gap between evidence base and clinical practice, in terms of behavioural change. They found that interventions aimed to improve compliance with infection prevention and control (IPC) practices such as hand hygiene or antimicrobial stewardship have achieved varied success. These interventions focused on feedback mechanisms, reminders, 'champion' roles and financial incentives. Overall, these approaches were found to be tackling memory and knowledge without acknowledgment of rational decision making.

Liang; Wu and Chuang (2014:47) highlighted that the growing concern about the problem with non adherence has led to several initiatives, and available guidance and campaigns to prevent infections have grown rapidly. Much available guidance focuses upon specific actions that need to be taken to reduce infections. However, increasingly it is being recognised that infection control practices exist within complex clinical settings in large and complex organisations, and that more attention must be paid to the environmental, behavioural and organisational contexts in which care is delivered.

Guembe, Perez-Parra, Gomez, Cuenca, Padilla, Martin-Rabadan and Bouza (2010:2801) reported that management and organisational factors are important, although the framework for action was largely limited to a 'top down' framework between the management and department. Recent enquiries into infection outbreaks in England have highlighted failures of management and leadership at all levels in relation to infection control. Recent reviews have examined behavioural interventions, but wider aspects of organisation and management of care have not been widely considered. They found that health disparities in present-on-admission infections might be largely explained by potential lack of ambulatory care, socioeconomic factors, and co-morbidity.

Guembe et al. (2010:2804) informed that undergraduate nursing students have direct patient contact from an early stage in their training, so they should understand basic principles of infection prevention and control (IPC). Successful teaching in IPC has been shown to substantially change attitudes and perceptions among medical students, as well as the way in which they perform clinical tasks. Yet such data are not available for nursing students. The present study aimed to assess the knowledge and perception of undergraduate nursing students about IPC policies and procedures and to identify potential areas for improvement.

A study by Ogoina, Pondei, Adetunji, Chima, Isichei, and Gidado (2015:16-22) examined the proportion of hospitalizations or emergency care treatment caused by an infection in health and the infection rate at a national level by using OASIS data. These data demonstrate that infection is a serious problem in hospital settings, and infection rates varied between agencies. The variance in agency level rates may be caused by differences in infection control policies and practices.

Hussein (2011:11) reported that although the roles of the health care personnel are well specified, there is a gap in the improvement related to the implementation of infection prevention and control measures by professional nurses.

Pettit, Hugonnet, Habarth, Mouronga, Sauvan, Touveneau and Perneger (2005:1307) reported that nurse hand hygiene remains poor among health care workers despite the availability of resources. Several risk factors for non-compliance were identified, which include workload at the bedside of the patient and availability of resources.

Ider, Adams, Whitby and Clemens (2012:174) reported that poor hospital infection prevention and control knowledge among health care professionals was a barrier for the implementation of infection prevention and control measures. The office of quality compliance conducted audits on infection prevention and control at this specific hospital in 2013 and results showed a range of non-compliance to infection prevention and control measures. This was despite infection prevention and control policies and guidelines for implementation by operational managers and professional nurses being available.

The National Core Standards for Health Establishment in South Africa (NDOH (b) (2011:25) stipulates that operational managers in the wards are to implement the infection prevention and control measures to ensure that the quality care of patients is maintained. The national core standards for quality in health care consist of seven domains. The second domain, namely 'patient safety, clinical governance and clinical care' has six sub-domains. The sixth subdomain is 'infection prevention and control', which has a key quality standard articulated as 'An infection Prevention and Control Programme is in place to reduce health care-associated infections'. Some of the criteria to meet this standard stipulate that a qualified health care professional is responsible for infection prevention and control and that a formal system must be in place to monitor infection prevention and control measures to ensure that appropriate actions are taken to minimize these infections.

The National Infection Prevention and Control Policy and Strategy NDOH (a) (2007:28) highlight the roles and responsibility of all members on how to manage and sustain the infection prevention and control measures in health care services.

Studies done by Stein, Makarawo and Ahmad (2013:68) and Liu, Liang, Wu and Chuang (2014:46) investigated the knowledge and attitudes about infection prevention

and control (IPC) measures amongst health care personnel. The authors further reported that there were poor compliance and poor attitudes towards infection prevention and control (IPC) measures. The study also revealed that education levels, poor monitoring, limited knowledge and resources availability were among the factors that influenced the implementation of IPC measures. Knowledge and practices regarding IPC measures were found dominant in most studies related to infection prevention and control aspects in health care services.

Gammon et al. (2008:160), and Liu, Liang, Wu and Chuang (2014:46) reported that compliance with IPC measures was found to be suboptimal at a certain public hospital. It was evident that despite the availability of resources, compliance with IPC measures was varied with regards to health care workers. The observational study reported that despite the availability of policies on IPC management at the hospital, few policies were found to be applied.

Amoran et al. (2013:159) investigated the training, knowledge of infection prevention and control protocols and practices. The study found that staff knowledge of IPC measures was inadequate and those with knowledge had attained it through informal communication. A study by Gammon et al. (2008:163) found that IPC knowledge and practice between health care workers was lacking despite adequate provision for the safe IPC practices, which included material resources as well.

Ider, Adams, Whitby and Clemens (2012:174) investigated the effects of strategies that were put in place to evaluate the involvement of nurse managers in compliance to hand hygiene as one of the measures to improve IPC measures implementation. The study found that there was an improvement in compliance when the leadership performance was focused on the involvement of other staff in IPC matters. The study further demonstrated that social influence and enhanced leadership improved the compliance with IPC measures.

Liang, Wu and Chuang (2014:50) found that despite staff wearing gloves and washing their hands more often, they did not show any knowledge related to knowing when to wear such protective equipment. Ider, Adams, Whitby and Clemens (2012:174) further reported that hospital infections were reduced with correct nursing staff norms and the budget needed to have all IPC measures in places, such as staff and equipment.

In support of the above authors, Zingg, Holmes, Dettenkofer, Goetting, Secci, Clack, Allegranzi, Magiorakos and Pettit (2015:217) reported that key components for effective infection prevention and control programmes at the hospitals were the organisation of infection control processes, bed occupancy, staffing workload, availability of materials and equipment, education and training, behaviour change and management involvement.

Caldwell (2012:51) and Pittet et al. (2010:55) found that the implementation of infection prevention and control measures are more related to the behaviour of health care workers who do not implement these measures for varied reasons, while Jain, Mandelia and Jayaram (2012:68) concluded that there is a need for the improvement in the perception and practice of infection prevention and control measures among health care workers.

Xinhua (2011:90) reported that many nursing home illnesses resulted from poor infection prevention and control. Nearly 400 000 nursing home deaths each year reported in US nursing homes were attributed to the deficient implementation of infection prevention and control measures. Hussein (2011:10) reported that although the roles of the health care personnel are well specified, there was a gap in the improvements related to the implementation of infection prevention and control measures by professional nurses in hospitals.

Many studies have been conducted on nurses' perceptions regarding infection prevention compliance; however there is a gap on studies addressing the development of strategies to facilitate the implementation of infection prevention and control measures by operational managers and professional nurses at the public hospitals in Gauteng.

This study therefore seeks to develop strategies to facilitate the implementation of infection prevention and control measures by operational managers and professional nurses at this specific hospital as they are the personnel that have the responsibility for facilitating the implementation of these measures.

1.2 RESEARCH PROBLEM STATEMENT

The researcher works at a public hospital in Gauteng and has observed a lack of implementation of infection prevention and control measures and related policies at the hospital. The hospital incident reports showed increased outbreaks of nosocomial infections, and an inconsistent ordering of hand washing resources. A further observation was the inconsistent implementation of infection prevention and control development programmes like hand washing procedures and the wearing of protective clothing required for infection prevention and control at the hospital.

The Auditor General Report (AGR, 2012 report) and the Office of Health Standards Compliance (OHSC, 2013 report) both showed poor implementation of infection prevention and control measures at this hospital as well. The researcher observed that despite the protocols, policies and guidelines on infection prevention and control standards and measures being in place, and despite the statistics presented at quality improvement meetings on the high infection rates at the hospital, IPC measures were still not implemented.

The hospital also reported an outbreak of Klebsiella infections in the period between October and November 2013. The Health Minister (May 27, 2010) was reported having said, "We want to accept upfront that there is definitely a lapse in implementation of infection control measures. The lapse of infection control measures is a very good lesson and we are hoping that other hospitals have learned this lesson from a distance" (Health E news, 2010).

The above observations and such reports highlighted the need to research the factors influencing the implementation of infection prevention and control measures at this public hospital in order to develop strategies to facilitate the implementation of these measures at the hospital.

1.3 RESEARCH QUESTION

From the above description of the background, rationale and problem statement, the following research questions were raised:

- What are the factors influencing the implementation of infection prevention and control measures at this hospital?
- What can be done to facilitate the implementation of infection prevention and control measures at this hospital?

1.4 RESEARCH PURPOSE

The purpose of this study is to develop strategies to facilitate the implementation of infection prevention and control measures at a public hospital in Gauteng.

1.5 RESEARCH OBJECTIVES

- To explore and describe the factors influencing the implementation of the infection prevention and control measures at a public hospital in Gauteng.
- To develop strategies that will facilitate the implementation of the infection prevention and control measures at the hospital.

1.6 DEFINITION OF KEY CONCEPTS

1.6.1 Factors

The Oxford Thesaurus of English Dictionary (2006:334) defines factors as things that actively contribute to an accomplishment, result, or process.

In this study, factors will be those issues that actively assist to contribute to the implementation or non-implementation of the infection prevention and control measures at the public hospital in Gauteng.

1.6.2 Influence

The Oxford Thesaurus of English Dictionary (2006:479) defines influence as the capacity to have an effect on development or behaviour of someone or something. In this study, influence means the power to facilitate the implementation of the infection prevention and control measures.

1.6.3 Implementation

The Oxford Thesaurus of English Dictionary (2006:464) defines implementation as an application, carrying out, carrying through, performance and administration.

In this study, implementation refers to direct action of the operational managers in ensuring that infection prevention and control measures are carried out.

1.6.4 Infection prevention and control measures

The national infection and prevention and control strategy, Department of Health (b) (2007:6), defines infection prevention and control as measures, practices, protocols and procedures aimed at preventing and controlling infections and transmission of infections at health care facilities.

The Royal College of Nursing (RCN) (2013:1-12) defines infection prevention and control as measures to the prevention, identification and control of infection within a health care facility. In this study, the infection prevention and control measures means the efforts by operational managers to prevent and control infections in their work areas following the guidelines of the Department of Health.

1.6.5 Public hospitals

The Department of Health (c) Regulation R158 (1996:1-33) defines a public hospital as a hospital under the administration of the government or getting funds from the government. These are governmental entities that are created by the community or public that are authorized by law to deliver any services that might be reasonably expected to improve the health of the citizens of the country. In this study, a public hospital will mean the academic hospital where this research will take place.

1.7 RESEARCH DESIGN AND METHOD

1.7.1 Design

Burns and Grove (2005:211) define research design as the blueprint for conducting the study that maximizes the control over factors that could interfere with the validity of the findings. It is the framework wherein to seek the answers to research questions. A research design is used to form a systematic structure of a research project. The research design for this study is a qualitative, exploratory, descriptive and contextual research design.

This study allowed the researcher to explore and describe in depth the factors influencing the implementation of infection prevention and control measures at a public hospital in Gauteng in order to develop strategies that will facilitate the implementation of the infection prevention and control measures at the hospital.

1.7.2 Research method

Burns and Grove (2011:343) and Grove, Burns and Grey (2013:707) define research methods as the process or plans for conducting specific steps of the study which include the collection of information and data for the purpose of producing new knowledge or deepening the understanding of certain issues. The research methods for the study involve the population, sample and sampling method, data collection, data analysis, trustworthiness and ethical principles (Creswell, 2014:247).

The study was conducted in two phases as follows:

Phase 1 focused on the exploration and description of the factors that influence the implementation of infection prevention and control measures at the public hospital in Gauteng, and

Phase 2 focused on the development of strategies that will facilitate the implementation of infection prevention and control measures at the public hospital. The research findings obtained from the interviews from phase 1 were integrated into literature from which the strategies to facilitate the implementation of IPC measures were developed. The phenomenological research method is applied to this study as it attempts to understand people's perceptions, perspectives and understanding of particular situations (Burns & Grove, 2005:27).

1.7.2.1 Population

Burns and Grove (2011:342) refer to the population as an aggregate or totality of all participants that are of interest to the researcher and that meet the criteria for the study. The target population for this study is operational managers and professional nurses working at this public hospital in Gauteng. The population size was from different units of the whole hospital

1.7.2.2 Sample and sampling method

Burns and Grove (2009:42) define sample as a subset of the population that is selected for a particular study. Sampling is a process of selecting groups of people for conducting a study to obtain a sample representing the target group (Burns & Grove , 2013:351).

In this study, the sample was drawn from the population of operational managers, who are in charge of the wards and professional nurses working in various wards at this public hospital, using the purposive sampling method. The sample size of operational managers and professional nurses was determined by data saturation, which was reached at the second focus group.

1.7.2.3 Data collection

Burns and Grove (2005:733) defined data collection as a precise, systematic gathering of information relevant to the research purpose or specific questions of the study. Data was collected after voluntary consent was obtained through semi-structured individual interviews from the operational managers because the researcher aimed at getting personal, uninfluenced input from them, and from focus group interviews with professional nurses. The reason for the focus group was to allow a high level interaction among the professional nurses which would yield rich data from them. The interviews for both groups proceeded until data saturation was reached at the second focus group interview and second participant of semi structured individual interviews. Data saturation was reached when repetitive themes were emerging and no new concepts in response to the questions were forthcoming.

This study used triangulation in collecting data from the two sources, which are the semi structured individual and focus group interview, and the field notes, which provided a better understanding of the factors that influence the implementation of infection prevention and control measures at the hospital. The researcher conducted interviews of both groups using an audio recorder to record the interviews verbatim (Burns & Grove, 2011:397). Details of the above are described in Chapter 2.

1.7.3 Data analysis

Burns and Grove (2009:44) describe data analysis as a process that reduces, organises and gives meaning to data that has been collected. Tesch's descriptive method of data analysis in Creswell (2013:15) was used to analyse the data. Transcripts were read carefully to get the sense of the whole. Ideas were written down identifying the major themes and subthemes. This was done by both the researcher and independent coder simultaneously during the data collection process and thereafter. The researcher and the independent coder had a consensus discussion after the data analysis to agree on the identified themes and subthemes (Creswell, 2013:185).

1.7.4 Measures to ensure trustworthiness

Lincoln and Guba (2005:290) developed specific principles to maintain **trustworthiness**; these include: credibility, dependability, confirmability and transferability.

- **Credibility:** This refers to the strategy of prolonged engagement with participants, doing member checking and consensus discussions between the researcher and participants and independent coder. The researcher has undergone the one-year course in research methodology which provided the required knowledge to pursue the study. The research was promoted by two supervisors. The supervisor who is the study leader is a master's degree graduate in nursing management and currently pursuing PHD studies, while the co-supervisor is a PHD graduate. Both are experts in qualitative research.
- **Transferability:** This refers to the extent to which the findings from the data analysis can be transferred to other settings and depends on how thick a

description of the method the researcher has provided. The researcher provided enough descriptive data necessary to enable a prospective researcher interested in duplicating the study to reach the conclusion whether the possibility exists of transferring or replicating the study to other contexts .

- **Dependability:** This refers to the strategy that evaluates the quality of data in the qualitative study and such stability of data overtime. The thick description of the data collection methods, analysis and interpretation of the data provided dependability of the study. The independent coder with experience in qualitative research had consensus discussions with the researcher following data analysis to ensure that one could depend on the findings.
- **Confirmability:** Confirmability refers to the criterion against which neutrality is measured by confirmability audit, triangulation and keeping a reflexive journal. In this study, confirmability was ensured by the audit trail, triangulation of data sources and consensus discussions between the researcher and the independent coder, keeping all the records safe under lock and key for a period of two years after data publication and making audiotapes accessible only to the supervisors.

1.8 ETHICAL CONSIDERATIONS

Ethical principles were adhered to in accordance with principles of human rights by Dhai and McQuoid-Mason (2011:36) as follows:

The principle of respect for autonomy: The participants were informed of their rights to make their own decision about participating in the research. This was attained by informed consent (Annexure A and B) to participate in the research as well as the use of the audio recorder. The participants were informed of their rights to withdraw from the study at any time without fear of victimization.

The principle of beneficence: Beneficence means doing good for others and promoting their interests and wellbeing (Dhai & McQuoid-Mason, 2011:14-15). The researcher acted in the best interest of the participants. The participants were protected from discomfort and harm during the study (Burns & Grove, 2009:198). The research purpose is to benefit both the hospital and participant, whereby the strategies to

facilitate the implementation of infection prevention and control measures at the hospital were developed.

The principle of non-maleficence: According to Dhai and McQuoid-Mason (2011:14-15), non-maleficence is the principle of avoiding harm to the participants. The researcher assessed the risks and the benefits to determine the benefit-risk ratio. No harm to the participants was anticipated in this study. Instead, due to the strategies that were developed, there were benefits for the participants and the hospital. The participants were informed that they were free to withdraw from the study at any time without penalty.

The principle of justice: According to Dhai and McQuoid-Mason (2011:14-15), the principle of justice in health care refers to the distribution of justice and fair allocation of scarce health care resources. Care was taken to ensure that all participants were treated fairly and equally. This was fulfilled through openness and consultation with them in every step of the data collection process.

1.9 OUTCOME OF THE STUDY

The research results will assist in providing a better understanding of the factors that influence the implementation of infection prevention and control measures at the hospital. The development of strategies that will facilitate the implementation of infection prevention and control measures will also contribute to the compliance with IPC measures at the hospital.

1.10 ORGANISATION OF STUDY

Chapter One: Overview of the study

Chapter Two: Research design and methodology

Chapter Three: Description of findings and literature control

Chapter Four: Strategies to facilitate the implementation of IPC measures, limitations, recommendation and conclusion of the study

1.11 SUMMARY

This chapter introduced the topic, which addresses factors influencing the implementation of infection prevention and control measures at the public hospital in Gauteng and also provided an overview of the study. The background and rationale, research questions, research purpose and research objectives were introduced. The key concepts were defined, and the research design and method were briefly described, which entailed the population, sample and sampling method, data collection, data analysis and trustworthiness. The ethical considerations of the study were described in order to ensure that ethical principles were applied throughout the study. The organisation of the proposed chapters was presented. Chapter Two focuses on a detailed description of the research design and methodology of the study.



CHAPTER 2: RESEARCH DESIGN AND METHODOLOGY

2.1 INTRODUCTION

An overview and rationale of the factors influencing the implementation of infection prevention and control measures were presented in Chapter One. In this chapter the research design and method of the study, which includes the population, sample and sampling method, data collection and analysis, including trustworthiness, ethical considerations and the conclusion of the chapter, are described. The purpose of this is to provide a detailed description of the research design and method in order to highlight for the reader the direction in which the study will be conducted.

2.2 RESEARCH OBJECTIVES

The objectives of the research are:

- To explore and describe the factors influencing the implementation of the infection prevention and control measures at a public hospital in Gauteng Province; and
- To develop strategies that will facilitate the implementation of the infection prevention and control measures at the hospital.

2.3 RESEARCH DESIGN

Burns and Grove (2011:690) defines a research design as a blueprint for conducting a study with maximum control over factors that may interfere with the trustworthiness of the findings, while Parahoo (2014:164) describes a research design as a plan that describes how, when and where data will be collected and analysed.

A qualitative, exploratory, descriptive and contextual research design was used in this study. The research design allowed the researcher to explore and describe in depth the

factors influencing the implementation of infection prevention and control (IPC) measures at a public hospital in Gauteng.

2.3.1 Research strategy

The researcher selected appropriate research strategies that facilitated the answering of the research questions and achievement of the research objectives and generating of new knowledge on the phenomenon of the factors influencing the implementation of IPC measures at a public hospital in Gauteng. The research strategy for the study is presented under the following subheadings of the research design in line with De Vos, Strydom, Fouche and Delport (2011:95):

- Qualitative
- Exploratory
- Descriptive
- Contextual

2.3.1.1 Qualitative research

Burns and Grove (2011:701) describe the qualitative design as a systematic subjective approach used to describe life experiences and situations to give them meaning. Parahoo (2014:416) states that qualitative research focuses on the experiences of people as well as stressing the uniqueness of the individual. Holloway and Wheeler (2010:151) refers to qualitative research as a form of social enquiry that focuses on the way people interpret and make sense of their experience and the world in which they live. This research is qualitative in nature as it enabled the researcher to explore the factors influencing the implementation of infection prevention and control measures at the public hospital in Gauteng.

Researchers who use this approach adopt a person-centred holistic and humanistic perspective to understand human lived experiences without focusing on the specific concepts in order to achieve the emic perspective of being involved and immersed in the study. Holloway and Wheeler (2010:85) asserted that complete objectivity is impossible and qualitative methodology is not completely precise because human beings do not always act logically or predictably. For this reason the researcher applied

bracketing of thoughts and perceptions related to the phenomenon to enhance the intention of the study. Bracketing is described in this chapter.

2.3.1.2 Exploratory

Exploratory research is described as a means to establish the facts, gathering new data and then determine if there are interesting patterns in the data. The researcher departed from a position of ‘not knowing’ to gain the insight into the phenomenon (Burns& Grove 2011:396). In this study, the exploratory method was applied to explore the factors influencing the implementation of the IPC measures at the public hospital in Gauteng.

The insights gained during this exploration enabled the researcher to identify new meaning to the phenomenon through the exploration of relevant literature to develop the supporting strategies that will facilitate the implementation of the infection prevention and control measures at the hospital.

2.3.1.3 Descriptive research

According to Burns and Grove (2011:683), descriptive research is designed to provide a picture of a situation as it naturally happens. It may be used to justify current practice and make a judgment and also to develop theories. The aim of using the descriptive research design was to present an accurate portrayal of the characteristics of the individual in real-life situations for the purpose of discovering new meaning.

Descriptive studies provide a truthful description of the phenomenon making a claim about what participants' views and lived experiences really are. According to Burns and Grove (2011:546), the descriptive research method is central to phenomenological studies. This study was, therefore, descriptive in that the researcher provided a detailed description of what the operational managers and professional nurses affirmed to be the factors influencing the implementation of IPC measures at the public hospital. The obtained data was used to develop strategies to facilitate the implementation of IPC measures in phase 2 of the study, which will be described in Chapter 4.

2.3.1.4 Contextual

The context is significant in qualitative research. According to Holloway and Wheeler (2010:88), the context includes the 'environment and conditions in which the study takes place as well as the culture of the participants and location'. Streubert and Carpenter (2011:153) asserted that the contextual approach allows the researcher to explore the nurse's view, with the utmost respect for the individual nurse's perspective and their practice within their own environment. Within this contextual strategy, the study focused on the phenomenon because of its intrinsic immediate and contextual significance for the professional nurses and operational managers in their specific hospital.

Qualitative studies are always contextual because the data is applicable to a specific context. Polit and Beck (2013:267) assert that a context is the physical location and conditions in which data collection takes place in a study and further point out that data is collected in real-world naturalistic settings in contextual studies. This study was contextual in the sense that the researcher had to take into account the social knowledge, the environmental dynamics and experience of the participants in the specific public hospital in Gauteng.

2.4 RESEARCH METHODS

Burns and Grove (2011:343) defined research methods as the process to collect information and data for the purpose of producing new knowledge or deepening understanding of certain issues.

PHASE 1: Exploration and Description of the factors influencing the implementation of infection prevention and control measures at the public hospital in Gauteng.

The objective of the first phase was concerned with the exploration and description of the factors influencing the implementation of infection prevention and control measures at the public hospital in Gauteng Province. In this phase, the researcher aims to obtain much information possible about the participants' knowledge and experience of factors influencing the implementation of infection prevention and control measure.

In the exploration and description of the factors influencing the implementation of infection prevention and control measures at the public hospital in Gauteng, the following concepts were discussed:

Population and sampling

Data collection

Data analysis

Trustworthiness

Ethical considerations



2.4.1 Population and sampling

Parahoo (2014:79) defines population as 'the total number of units from which data can be collected', such as individuals, artefacts, events or organisations. Burns and Grove (2011:637) define population as an aggregate or totality of all participants that are of interest to the researcher and that meet the criteria for the study. In this research, the population was all operational managers and all professional nurses working in public hospitals in Gauteng.

Sample

Polit et al. (2006:151) define a sample as 'a proportion of a population'. Burns and Grove (2011:485) assert that sampling is the process of selecting the participants with whom to conduct the research. A carefully selected sample can provide data that is

representative of the population from which it is drawn, and therefore, a purposive sampling method was used in this study. Parahoo (2014:83) describes purposive sampling as 'a method of sampling where the researcher deliberately chooses who to include in the study based on their ability to provide necessary data'. The rationale for choosing this approach was that the researcher was seeking knowledge about the factors influencing implementation of infection prevention and control measures at the public hospital, which the participants would provide by virtue of their experience. In this study, only nurses who were eligible were purposively selected to participate in this study.

Sampling criteria

These are the characteristics that are essential for membership of a target population. The criteria are designed to make the population as homogeneous as possible or to control extraneous variables (Burns & Grove, 2011:417). The following inclusion criteria for participants were applied in the study:

- Participants should be operational managers and professional nurses.
- Participants should be working in the specific public hospital in Gauteng.
- Participants should be able to communicate in English as well as a local community language so that the independent coder and researcher are able to communicate clearly and meaningfully with the participants.
- The sample size was determined by a dense and richly saturated data (Burns & Grove 2011:419) since the research is a qualitative study.

2.5 DATA COLLECTION

Data collection is a precise, systematic method of gathering information that is relevant to the research purpose, or the specific objectives and questions of a study (Burns & Grove, 2009:43). Data was collected through in-depth individual interviews with the operational managers and from focus group interviews with professional nurses at the hospital until data saturation was reached. Data saturation was reached at the second focus group for professional nurses and the second operational manager on the in-depth individual interviews.

Data collection commenced after the following structures granted permission and ethical clearance:

- The UJ Faculty of Health Sciences Research Ethics Committee (Annexure A)
- The UJ Faculty of Health Sciences Higher Degrees committee approval (Annexure B)
- The public hospital ethics committee permission to conduct the study at the public hospital (Annexure C)

2.5.1 The role of the researcher

Following the approval and ethical clearance from all the above structures, the researcher proceeded with the research process as follows:

- The researcher had a briefing session with the participants before the actual interview session in order to build a rapport with them. The researcher introduced the topic with the explanation of the background and rationale, the purpose and objectives of the study.
- The participants were informed that the interviews would be audio-taped to ensure that their responses were captured verbatim and that voluntary consent was needed for these two processes (Annexure B and C). They were reminded that their participation was voluntary and that they were entitled to withdraw at any time without any repercussions or penalty.
- The researcher who was the interviewer arranged the scheduling of the interviews with those that had volunteered to take part in the research. The researcher ensured that the work schedule of the participants was not disrupted; therefore, interviews were scheduled in the off-duty schedules of the participants.
- A tentative time frame was established, allowing 30 to 45 minutes per individual interview, although the participants would be allowed more time to elaborate on their experiences should the need arise. The focus group interviews were scheduled for 45 to 60 minutes.
- The researcher assured the participants that they would only be identified numerically to ensure their anonymity and that all their responses would not be divulged to anyone; thus upholding the principle of confidentiality.

- The researcher arranged a private venue at the hospital for conducting the interviews. The principles of establishing a non-threatening environment that ensured an inviting atmosphere were adhered to. The principles included a well-ventilated/air-conditioned room with adequate lighting. The interview room was private and free of environmental noises, like a telephone and frequent disturbances by staff members. A “SILENCE. INTERVIEWS IN PROGRESS” sign was placed on the door.
- The researcher ensured that water was made available for the participants and general stationary was availed for making notes.
- The interviewer availed an audio-tape recorder and spare batteries and audio-tapes were available, as well a second audio-tape recorder to serve as a backup.
- The researcher displayed an attitude of respect and gave positive affirmation to ensure a good environment and created an environment that encouraged independence of expression.

The following research questions were posed to the participants:

- What are the factors that influence the implementation of infection prevention and control measures for you at this hospital?
- What can be done to facilitate the implementation of infection prevention and control measures at this hospital?

a) Focus group interviews

The researcher conducted focus group interviews with professional nurses at the hospital. Burns and Grove (2005:737) define focus groups as the groups that are designed to obtain participants' perceptions and views in a focused area and one that is permissive and non-threatening.

The aim of the focus group interviews was to allow for the involvement of more participants and for participants to speak freely in a homogenous group. The one focus group had eight participants while the other focus group had six participants.

b) In-depth individual interviews

Data was collected through in-depth individual interviews with the operational managers. This was done to allow the operational managers to express themselves from their own reality in terms of what they believed were the factors influencing the implementation of IPC measures at their hospital.

Data saturation was achieved at the second focus group for professional nurses and at the second operational manager for the individual interviews. This was when the researcher realized that there was a repetition of the same information with no new themes emerging.

Triangulation: Burns and Grove (2005:754) define triangulation as the use of different sources for data collection as well as field notes. This study used triangulation by collecting data from the two sources mentioned above as well as field notes. This provided a better understanding as well as credibility with regards to the findings on the factors influencing the implementation of infection prevention and control measures at the hospital, from data which was from operational managers and professional nurses.

Bracketing: Bias and subjectivity are aspects that the researcher must be conscious of in qualitative research. The researcher, therefore, adopted bracketing throughout the data collection phase to avoid bias while conducting the interviews. The process of bracketing is of importance in phenomenological research.

Creswell (2013:39) describes bracketing as a qualitative research technique of suspending or laying aside what is known about an experience being studied. In the bracketing process, the researcher acknowledges his previous experience but sets them aside for the duration of the study to see the object of study.

Bracketing has also been suggested to contribute to a more rigorous study and better trustworthiness (Tufford & Newman, 2010:81).

Conversely, Burns and Grove (2011:572) asserts that some researchers do not bracket, but identify beliefs, preconceptions and assumptions about the research topic and these are written down at the beginning of the study for self-reflection and external review.

Bracketing in this study was achieved through the following:

The researcher bracketed all predetermined thoughts and what was known about the factors influencing the implementation of infection prevention and control measures. The researcher wrote a narrative description of factors influencing the implementation of infection prevention and control measures at the public hospital. This was to express the researcher's thoughts and set them aside to maintain an open approach and enhance the intent of the study when interviewing the participants and analysing the findings.

c) Field notes

Field notes were essential to enable the researcher to make theoretical sense of the data (Burns & Grove, 2009:402) and to minimise the loss of data during the interviews. According to Holloway and Wheeler (2010:85) and Thorpe and Holt (2008:12), field notes are notes recorded in the form of writing during or after observation of specific phenomenon in the study.

The field researcher collected the notes to seek to get close to participants in order to understand their ways of life. The notes are one means employed by the researcher with the main objective of trying to understand the true perceptions and views of the participants being studied. They allow the researcher to access the participants and record what they observe in an unobtrusive manner. They are notes of observation or conversation taken during the conduction of research (Thorpe & Holt 2008:12).

Field notes covered the non-verbal cue observations that included body language, facial expressions, body posture, hand gestures, the tone of voice, repetitions, stammering, and emotions displayed by participants during the interviews. The interviews were not conducted in a structural form to allow spontaneous participation and, therefore, field notes were necessary to capture all responses that would enrich the data (Burns & Grove, 2011:498). Field notes were notes written based on things that the researcher heard, saw, experienced during the course of collecting or reflecting on data, which is essential in a qualitative study. The field notes aided the interviewer in remembering

and exploring the dynamics during the interviewing process. The field notes are captured in green in the description of findings in Chapter 3.

In addition to the recorded questions and answers, the researcher made notes that contained information such as the date, the participant in numerical form and a summary of the content of the interview, which would be supported by the verbatim transcripts.

2.5.2 Communication Techniques used in Data Collection Process

The following communication techniques were utilised by the researcher during the in-depth individual interviews and focus group interviews on gathering empirical data from the participants:

- Probing
- Paraphrasing
- Clarifying
- Summarising
- Minimal response



Probing: According to Burns & Grove (2011:394) and Nielsen (2008:134), probing refers to the interviewer's ability to help the study participants identify, explore and describe their opinions on factors influencing the implementation of infection prevention and control measures.

In this study, probing questions were asked to obtain in-depth information about the phenomenon under study. This had helped the participants to engage more constructively in the data collection phase. Participants were asked questions like 'Tell me more about that' to get more information on what the participants said.

Paraphrasing: Paraphrasing is a method of restating the participant's basic message, but using few words (Burns & Grove, 2011:105). This involved expressing the ideas in a few words from the participant's quotes and then connecting them to the proposed study. During the interview, the operational managers and professional nurses were asked questions about their stated information by quoting their statements to find ascertain if the researcher heard them correctly. The researcher kept on repeating and

asking, 'Is that what you said when you say...?' This assisted both the participant and researcher to understand one another.

Clarifying: Nielsen (2008:136) describes this as an attempt to find the meaning of the communicated message so as to ensure mutual understanding between the researcher and the participants.

In this study, the researcher followed questions during the interview to clarify such information. The researcher asked, 'Can you clarify what you mean when you say...?' for clarity.

Summarizing: According to Nielsen (2008:142), summarizing involves bringing together several ideas, opinions and feelings into one statement at the end of an interview. This was achieved by summarising all data collected during the interview session. Participants were asked, 'In short ... is that what you meant?'

Minimal response: Nielsen (2008:150) informs that this is maintained to make the participants feel less threatened. The researcher listened with interest and sensitivity rather than doing a lot of talking.

2.6 DATA ANALYSIS

According to Streubert and Carpenter (2011:241), data analysis is a description of what has been found from the interviews, observations and various notes. This is also a form of organising raw data and displaying the data in a manner that will provide answers to the research questions. Audio tapes from the individual, as well as focus group interviews, were transcribed verbatim by the interviewer who was the researcher in the study (see Annexure C)

Tesch's descriptive method of data analysis in Creswell (2013:186) was used to analyse data.

The following eight steps were followed by the researcher and the independent coder (a Ph.D. graduate with vast experience in qualitative data analysis):

- A sense of the whole was obtained by reading through the transcriptions carefully. Ideas that came to mind were jotted down.

- One interview was selected, for example, the shortest, top of the pile or most interesting, and worked through, asking, 'What is this about?' to find the underlying meaning of the information. Once again any thoughts that came to mind were jotted down in the margin.
- Once this process was completed, a list of all the topics was compiled. Similar topics were clustered together and put into columns that were arranged according to major and minor topics.
- This compiled list of topics was taken and the researcher returned to the data. The topics were abbreviated as codes and written next to the appropriate segments of the text. The researcher applied a preliminary organising scheme to establish whether new categories and codes emerged.
- The most descriptive wording for the topics was found and then categorised. The researcher then attempted to reduce the total list of categories by grouping together topics that strongly related to each other.
- A final decision on the abbreviations for each category and alphabetised codes was made.
- The data belonging to each category were assembled in one place and a preliminary analysis was performed.

Raw data, transcribed audio tapes of the interviews, and field notes were given to the independent coder, who was an experienced qualitative researcher. After the independent coder had analysed the data independently, a consensus meeting was convened between the researcher and independent coder. The purpose of the consensus meeting was for the researcher and the independent coder to discuss the identified themes and subthemes for consensus. The consensus discussion proved to be essential in establishing the credibility of the research findings.

2.7 DESCRIPTION OF FINDINGS AND LITERATURE CONTROL

The results of the findings from the data analysis were described with the integration of relevant literature and information obtained from similar studies to add more meaning to

the findings (Streubert & Carpenter, 2011:237).The description of findings is presented in Chapter 3 of the study.

2.8 PHASE 2: DEVELOPMENT OF STRATEGIES THAT WILL FACILITATE THE IMPLEMENTATION OF INFECTION PREVENTION AND CONTROL MEASURES AT THE PUBLIC HOSPITAL

The strategies were developed from the dense description of the findings with integrated literature. Muller et al. (2011:556) described a strategy as a plan of action that has clearly defined the objectives, prescribes resource allocation and activities for dealing with the environment and helping to achieve the goals of the organization. The developed strategies are presented in Chapter 4 of the study.

2.9 MEASURES TO ENSURE TRUSTWORTHINESS

Lincoln and Guba (2005:290) developed specific principles to maintain **trustworthiness**; these include credibility, dependability, confirmability and transferability.

Table 2.1 Strategies of trustworthiness

This study operationalized the strategies of trustworthiness, namely credibility, applicability, dependability and conformability. Each strategy is described in Table 2.1. Each of these strategies is then explained in more detail thereafter.

Strategy	Criteria	Applicability
Credibility	Prolonged engagement	<ul style="list-style-type: none"> • Building a trusting relationship with the participants by honouring anonymity, honesty and openness • Establishing rapport with the participants by engaging in interaction prior to the interview • Data saturation was obtained

	Reflection	<ul style="list-style-type: none"> • The use of field notes by the researcher • A consensus meeting was convened with independent coder
	Triangulation	By employing different methods of data collection: in-depth, semi-structured individual interviews, field notes and focus group interviews
	Authority of the researcher	<ul style="list-style-type: none"> • The researcher underwent a training programme in research methodology prior to his MCur degree. • There were two supervisors involved in this study: the supervisor holds a master's degree and the co-supervisor a doctoral degree in nursing. Both of the supervisors possess a vast knowledge and experience in qualitative research.
Transferability	Dense description	<ul style="list-style-type: none"> • Purposive sampling technique was used in this study. • The findings of the study were discussed in great depth with direct quotations from the participants. • The findings were integrated and substantiated by extensive literature.
Dependability	Code-recoding technique	<ul style="list-style-type: none"> • All the methodological domains of this study were described and discussed by the researcher.
Confirmability	Triangulation	By employing different methods of data collection: in-depth, semi-structured

		individual interviews, field notes and focus groups
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Credibility: This refers to the strategy of prolonged engagement with participants, doing member checking and consensus meeting between the researcher and participants (Lincoln & Guba 2005:290).

- The researcher has undergone the one-year training in research methodology and is promoted by two supervisors who are master's degree graduates. The study supervisor is currently pursuing the Ph.D. study while the co-supervisor is a Ph.D. graduate. Both are experts in qualitative research.
- Member checking was attained by asking the individual members to check the accuracy of collected data. This was done by having interviews with operational managers and focus groups with professional nurses on factors influencing the implementation of infection prevention and control measures at the public hospital.
- Prolonged engagement ensured that the participants understood the process of the research as well as to establish a relationship that was built on trust between the participants and the researcher. The interviews lasted between 30 to 60 minutes respectively. The researcher collected data until saturation occurred.
- Referential adequacy was captured by means of field notes (as discussed in the section describing data analysis) and tape recordings of all the in-depth, semi-structured, and focus group interviews.
- Triangulation is a strategy that was employed to enhance the credibility of the study.
- In this study, peer debriefing took place during discussions with supervisors since insights were discussed and problems presented. The participants' audio-tape recordings and transcripts of the interviews were made available to the supervisors in order to enable them to assess the interpretations from the direct quotations to further ensure credibility.

Transferability: This refers to the extent to which the findings from the data analysis can be transferred to other settings. It depends on how extensive a description of the method the researcher had provided. The researcher provided enough descriptive

data necessary to enable a prospective researcher interested in duplicating the study to reach the conclusion whether there is the possibility of a transfer.

Dependability: This refers to the strategy that evaluates the quality of data in the qualitative study and such stability of data over time. The extensive description of the method to be used in the data analysis of researcher reflexive notes during data collection of perceptions of operational managers and professional nurses had established dependability of the study. The independent coder with experience in qualitative research analyzed the data followed by a consensus meeting to ensure dependability of findings.

Triangulation (as discussed in the section on credibility) also enhanced dependability. Triangulation ensures that the weaknesses of one method of data collection were compensated for by the use of alternative data gathering methods. In this study, individual, in-depth, semi-structured interviews, focus group interviews and field notes were used as data collecting methods.

Confirmability: This refers to the objectivity or neutrality of the data (Lincoln and Guba (2005:290). Audio-taped and field notes were recorded during the interviews as a strategy to confirm the findings at that point and time. In this study, confirmability was further endorsed by the involvement of the independent coder.

The reflexing exercise assisted in bracketing the ideas that the researcher may have about the perceptions of operational managers and professional nurses on factors influencing the implementation of infection prevention and control measures.

2.10 ETHICAL CONSIDERATIONS

The researcher had a moral obligation to strictly consider the rights of the study participants who are expected to provide information related to the phenomenon being studied (Streubert & Carpenter, 2011:241). Conducting a study ethically starts with the identification of the study topic and continues through the publication of the study (Burns & Grove, 2011:176).

Ethical approvals and various consents were obtained before the involvement of participants. This is presented to the reader in this chapter, paragraph 2.6.

Ethical principles were adhered to in accordance with principles of human rights by Dhali & McQuoid-Mason (2011:36), being: anonymity, confidentiality, informed consent, privacy, beneficence, benefit-risk ratio, autonomy, non-maleficence, justice and dissemination of research results. They were all described in depth in Chapter 1 of this study.

The principle of respect for autonomy: The participants were informed of their rights as they were informed to make their own decision to participate in the research. This was attained by informed consent, whereby consent for the use of audiotape recorder was also obtained from participants. The participants were made aware of their rights to withdraw at any time from the research without fear of repercussions or penalty.

The principle of beneficence: The research purpose was to benefit both the hospital and participant, whereby the strategies identified will assist to facilitate the implementation of infection prevention and control measures.

The principle of non-maleficence: The participants' identities were protected by concealing the name of the participant and the hospital involved for anonymity and threats or risks that could occur from naming. No harm to the participants was anticipated in this study. Instead, there are benefits for the participants and the hospital from the strategies that are developed. The researcher is not anticipating any risk from the research since there is more benefit than risk.

The principle of justice: Care was taken to ensure that all participants are treated fairly and equally. This was fulfilled through openness and consultation with them in every step of data collection. Participants were informed of their right to withdraw at any time without any repercussions or penalties.

2.11 CONCLUSION

This chapter described in detail the research design and method of the study. The researcher chose a qualitative, explorative, descriptive and contextual approach in order to obtain in-depth information from the participants regarding the factors influencing the implementation of IPC measures at the public hospital in Gauteng. Measures to ensure trustworthiness and ethical principles were discussed in detail. Chapter 3 discusses the findings and literature control of the study in terms of themes and subthemes that emerged from the data collection.



CHAPTER 3

DESCRIPTION OF FINDINGS

3.1 INTRODUCTION

The purpose of this chapter is to describe the findings regarding the factors influencing the implementation of infection prevention and control (IPC) measures at a public hospital in Gauteng.

Participants were asked the following two central questions:

- What are the factors that influence the implementation of infection prevention and control measures for you at this hospital?
- What can be done to facilitate the implementation of infection prevention and control measures in this hospital?

The data will form the foundation for developing the strategies that will facilitate the implementation of the infection prevention and control measures.

This chapter will focus on findings presented according to the themes and subthemes that emerged from data analysis. The quotations from the participants will be presented in exact words to ensure that meanings are maintained.

Quotations from the participants are provided in *italics* and highlighted in “blue colour”. Field notes, where necessary, are incorporated in the quotations by means of “green colour” in order to give a transparent account of the intended meanings of the quotations.

3.2 DESCRIPTION OF FINDINGS AND LITERATURE CONTROL

Three (3) main themes with the subthemes emerged and are presented in Table 3.1.

The description of findings was integrated into the literature for credibility and support of the findings. One central theme emerged as follows: participants experienced the challenges related to infection prevention and control measures.

TABLE 3.1 FACTORS INFLUENCING THE IMPLEMENTATION OF INFECTION PREVENTION AND CONTROL MEASURES AT A PUBLIC HOSPITAL IN GAUTENG

CENTRAL THEME: PARTICIPANTS EXPERIENCED CHALLENGES RELATED TO THE IMPLEMENTATION OF THE INFECTION PREVENTION AND CONTROL MEASURES AT THE HOSPITAL	
MAIN THEME	SUBTHEMES
1. Ineffective management practices	1.1. Inadequate education and training on infection prevention and control measures 1.2. Inadequate human and material resources 1.3. Ineffective communication and support
2. Challenges regarding knowledge and attitudes towards infection prevention and control measures	2.1 Knowledge and attitude of management 2.2 Knowledge and attitude of general workers 2.3 Knowledge and attitude of health care personnel
3. Inadequate hospital infrastructure	3.1 Poor hospital maintenance 3.2 Structural challenges

Central theme: Participants experienced challenges related to the implementation of the infection prevention and control measures at the hospital. Aguinis (2013:79) defines a challenge as something that needs great mental or physical effort in order to be done successfully and that tests a person's ability while the Concise Oxford Dictionary (2009:188) defines a challenge as a test of ability. Participants in this study experienced challenges in the implementation of IPC measures due to ineffective management practices, challenges regarding knowledge and attitudes towards infection prevention and control measures, and inadequate hospital infrastructure.

3.2.1 Theme 1: Ineffective management practices

Since ineffective is the opposite of effective, the researcher had to find the meaning of “effective management practices” to get to the point of ineffective management practices.

Sullivan (2012:24) defined effectiveness as an outcome measure of the interventions that improve peoples’ health under ordinary circumstances and in ordinary settings, whereas the Oxford Paperback Dictionary and Thesaurus (2009:293) has defined ‘effective’ as the degree to which the objectives are achieved and the extent to which targeted problems are solved.

In the view of the above two definitions, the researcher can make an inference that the word ‘effective’ means that the outcome measures of interventions have to be met to achieve certain objectives.

However, Burton’s Legal Thesaurus (2007) defined ‘ineffective’ as inadequate, insufficient or incompetent to produce the results. Meanwhile, McConnell (2011:47) , Sullivan and Decker (2008:45) and Jooste (2010 :225-227) defined management as the function that coordinates the efforts of people to accomplish goals and objectives using available resources effectively and efficiently by planning, organizing, staffing, leading or directing and controlling an organization to accomplish the goal.

The Oxford Paperback Dictionary and Thesaurus (2009:729) defines ‘practices’ as a systematic series of actions taken in order to achieve a particular end. The researcher can, therefore, infer that ineffective management practices can be defined as the outcome measures of the systematic intervention taken to achieve certain objectives that were not coordinated sufficiently and, as a result, the outcomes were not met.

In this study, participants articulated that ineffective management practices in the form of inadequate education and training on infection and control measures, inadequate human and material resources and poor communication affected the implementation of infection prevention and control measures at the hospital

A participant said:

'There is a gap between management and us in relation to infection prevention and control issues.'

This is supported by Ider, Adams, Whithy and Clemens (2012:8) who in their study identified ineffective management process as a factor affecting the implementation of infection prevention and control measures. The authors asserted that the distance between employees and management at all levels affects their roles and responsibilities regarding the implementation of infection prevention and control measures.

Participants were further quoted as saying:

'Most of the time, the management comes only when there is bad situation in the wards in relation to infection prevention and control issues.'

'I think management believes things are fine down here, and while things are not fine in relation to IPC measures.'

Efstathiou, Papastavrou, Raftopoulos and Merkouris (2011:1) asserted that when there is an ineffective management practice, the management is not in touch with the issues at ground level, while Ider et al. (2012:8) further attested that the ineffective manager would only react towards situations related to implementation of infection and control measures rather than being proactive.

'Management demands us to comply with IPC policies that they do not adhere to.'

This finding is supported by Ider et al. (2012:8) who reported in their study that weak leadership at policy level has resulted in failure to implement national policy on infection prevention and control. The above quote is implying that the participants had an expectation that management should also adhere to the IPC policies of the hospital in line with Saini and Saini (2013:85), who assert that the unspoken word is a source of valuable data.

Participants articulated the gap between them and management as the management only being present when there are problems related to IPC measures, and what was concerning was that management was seen as not complying with IPC policies and yet expecting the personnel to comply.

When the participants were asked what should be done to facilitate the implementation of infection prevention and control measures, they said:

'Management must involve us in planning of infection control issues.'

'Management must listen to us in relation to issues related to infection prevention and control.'

The above quotations were supported by Ogoina (2015:16) who asserted that effective management practices of an institution entailed listening to employees' requests.

In South Africa, the role and responsibility of management in the infection prevention and control policy were identified in terms of the imperative of implementing the IPC policy. The National Infection Prevention and Control Policy and Strategy (NDOH (a); 2007:20) asserts that the management must ensure supervision of the implementation of infection prevention and control measures outlined in the policy. It further informs that the manager must participate actively in infection prevention and control measures by monitoring and ensuring adherence to such measures according to the policy (NDOH (a), 2007:20).

The vision of the National Core Standards for Health Establishment in South Africa (NDOH (b), 2011:32) is that a safe environment is availed to all patients by motivated staff and responsible leaders. Six priority areas were identified, including infection prevention and control. Management is mandated to implement measures outlined in this guideline. The guideline highlights what is expected of managers and supervisors regarding the implementation of the infection prevention and control measures.

The researcher is of the view that management involvement and supporting and listening to employees can enhance the implementation of infection prevention and control measures.

In conclusion, management must improve upon the involvement of employees and consideration of their suggestions on issues related to infection prevention and control measures of the wards.

Management needs to apply the effective management practices across their organisation for the implementation of infection prevention and control measures.

Subtheme 1.1: Inadequate education and training on infection prevention and control measures

According to Klopper and Mellish (2011:11), education is a form of learning in which the knowledge, skills, values, beliefs of people are transferred from one generation to next through training, teaching and research, whereas training is a task-oriented process aiming to produce a skilled, knowledgeable, useful and willing worker.

Participants in this study articulated inadequate education and training as the factor influencing the implementation of infection prevention and control measures.

This was evidenced by the following direct quotations from the participants:

'I think most of our cleaners never get in-service training on infection prevention and control issues.'

'Lack of in-service training to the new personnel on infection prevention and control.'

'OK, our cleaners do not know what to do and they did not get the in-service training on infection prevention and training.'

The above quotes are supported by Amoran and Onwube (2013:157) who have reported that having workers with inadequate knowledge and training influences the implementation of infection prevention and control measures. From their study they found that health workers who have been trained on infection control principles are more likely to implement the measures than those that are not trained, however, they also emphasize that behaviour played a bigger role than knowledge.

Gammon, Morgan-Samuel and Gould (2008:159) confirm that compliance with infection prevention and control measures does improve following a structured intervention, such

as educational training programmes. The authors further identified that health care workers are selective in their adherence to infection prevention and control measures since they comply with certain measures despite the training that is offered.

Clynes, Hourican, Kicullen, Lawrence, MacDermatton, O'Neill, Raftery and Stan (2010:8) evaluated the role that cleaners play in the prevention of health care-associated infections. The researchers noted that cleaners can minimize the incidence of hospital infections. Their study also identified that the cleaners' role in IPC tends to be underplayed because of their low status in health care facilities. The researcher notes that it is evident that proper supervision and education regarding how well cleaners must do their jobs outlines their roles and tasks to be performed as far as infection prevention and control measures are concerned, and this adds value to infection prevention and control.

The researcher provides the reader with the following legislative frameworks that are relevant to this study regarding education and training of employees with regard to infection prevention and control:

- The Skills Development Act No 97 (1998:20) articulates that the skills of workers must be improved by promoting education and training. This encourages employers to use the workplace as an active learning environment by providing employees with the opportunity to acquire new skills. Training on infection prevention and control measures are work-related skills that are supported by this act.
- The Adult Education and Training Act No 52 (2000:18) explains that basic adult education is a platform that can be used to train and develop a disadvantaged group of employees at their workplace. This was seen to provide optimal opportunity for adult learning on infection prevention and control measures, creating knowledge and development of such skills at the workplace.
- The Labour Relation Act No 66 (1995:150) informs that an individual skill has to be considered or developed before disputes are laid. It encourages the employer to be fair in the development and training of the employee for maximum performance. For the employee to perform and adhere to infection prevention and control measures, training must be offered. Training on infection prevention and control as a requirement during

orientation is informed by this act; failure to adhere to infection prevention and control measures is seen as enforceable in Chapter 8 of the same act.

- The Occupational Health and Safety Act No 85 (1993:10) articulates that it is the duty of the employer to provide information, training and supervision regarding the safety of the worker. The act also highlights that employees be made aware of such risky and hazardous working areas. Furthermore, the act emphasises that it is the employee's duty to adhere to safety standard practices. According to the act, the employee must have information with regard to infection prevention and control measures due to the high-risk factor.

- The National Infection Prevention and Control Policy and Strategy NDOH (a) (2007:28) asserts that the duty of the infection control unit is to train and develop the staff. It emphasises that the training of employees on IPC must be done during the orientation and as on-going in-service.

- The National Core Standards (NCS) for Health Establishments in South Africa (NDOH (b), 2011:38) asserts that the staff and patients must be educated on infection prevention and control measures. The NCS encourages the existence of a planned training programme for the development of employees and patients on IPC measures. The monitoring and evaluation of the programme are also highlighted.

The policy asserts that most of the cleaners are not educated on infection prevention and control during the appointment. This is supporting the assertions of participants as evidenced by the following direct quotations from participants:

'I think most of our cleaners have never got in-service training on cleaning the ward.'

'Lack of in-service training to the new personnel. They come here and they do not understand what is to be done.'

The National Infection Prevention and Control Policy and Strategy (NDoH (a), 2007:30) confirms that training of cleaners is largely neglected. The policy asserts that the cleaners need to be trained on infection prevention and control measures to minimise the infections in the wards. The policy also highlights that the cleaning must be done with regard to basic infection prevention and control measures.

When the researcher asked what must be done to facilitate the implementation of infection prevention and control measures, on inadequate training and education, the participants were of the opinion that it would be beneficial if every employee is in-service or trained on infection prevention control measures. All participants agreed that having such training would decrease non-compliance. This is evident from the following quotations:

'OK, because cleaners are new, they have to undergo the in-service training on all infection control-related issues.'

'If all of our general workers are in-serviced so that they know what to do.'

The training of the cleaners was seen as important since it would assist in the controlling of infections at the hospital. The National Infection Prevention and Control Policy and Strategy (NDOH (a), 2007:30) outlines the roles and responsibility of the unit that supervises the cleaning as part and effort to show how important cleaning clean environment is.

The researcher supports the policy on infection prevention and control (NDOH (a), 2007) in that training not only improves compliance to the prevention and control measures but also to monitoring and evaluation. The policy on infection prevention and control emphasises that monitoring of the implementation of such measures after training has a big influence on behaviour modification. This was also in support of what the participants said:

'I think theoretical must go hand in hand with practical; we should have in-service training and do it practically.'

'I mean we as nurses have to train general workers and still supervise them to prevent them doing wrong things.'

Participants are of the view that all employees have to be trained in infection prevention and control. Gamon et al. (2008:159) asserted that all health care practitioners must be trained in infection prevention and control measures.

A participant verbalised that all staff must be trained, as quoted:

'Training must be offered to all the staff of the hospital, including doctors.'

Guembe, Perez-Parra, Gomez, Cuenca, Padilla, Martin-Rabadan and Bouza (2010:2799) reported that education and training intervention on preventative measures significantly improves the health care workers' knowledge, but not the incidence of implementation. This was evidenced by a direct quote of a participant saying:

'I think the in-service training to every personnel will solve the problem.'

Guembe et al. (2010:2800) had also found that participants who have been trained before show that they need to be updated on new issues on infection prevention and training. Similar to participants that were interviewed, they verbalise that even when training has been offered, there is a need for retraining. This was evidenced by a direct quote of a participant saying:

'The cleaners must be retrained if training was ever done.'

However, other researchers do not agree that training only can improve the compliance to infection prevention and control. The study by Mortell (2012:1012) found that despite training offered to their participants, non-compliance was still evident among health care practitioners.

The above is also supported by Liu, Liang, Wu and Chuang (2014:48), who find that hand hygiene measures remain relatively low among nursing staff, despite the training offered.

Participants also raised problems with waste segregation due to inadequate education and training as a challenge. A participant said:

'The training of waste segregation must be included.'

The study done by Guembe et al. (2010:2800) finds that the educational gap with regard to waste management results in poor segregation of waste. They suggested that

all personnel must be trained on waste segregation and disposal. They suggested that policies must be implemented and have to be known by every staff member.

Participants articulated that inadequate training and education on infection prevention and control measures play a role in the implementation of such measures. They reiterated that the training must be sustained by retraining the trained personnel since there is new information about infection prevention and control.

In support of the above, a study done by Bohmer and Imison (2013:2023) emphasises that retraining of existing staff will assist with staff retention and the sustainability of the quality of the programme. Furthermore, they assert that employees and management will take note of the infection prevention and control measures through the quality improvement programmes and with the evaluation of the training needs.

The researcher is of the view that based on the participants' assertions, inadequate training and education has influenced the implementation of infection prevention and control measures at the hospital. The effect of the lack of training must be addressed to improve compliance with infection prevention and control measures. Training would adequately prepare personnel to function independently in the implementation of infection prevention and control measures. Bohmer et al. (2013:2021) find that trained personnel are more likely to participate in implementing the infection prevention and control measures, less likely to face difficulties and more likely to use interactive, as compared to those who do not receive training.

In conclusion, a training and development strategy to facilitate the implementation of infection prevention and control measures must be developed at this hospital.

Subtheme 1.2: Inadequate human and material resources

Muller, Bezuidenhout and Jooste (2011:235) defined resource management as the efficient and effective use or deployment of organizational resources when they are needed. The resources can include financial, human and material. These resources can include tangible resources such as equipment and labour as employees. Resources management can include ideas such as making sure that there are enough physical resources for the organisation.

Participants stated that they often come across situations that demand the use of resources to implement the infection prevention and control measures, but this was not possible due to a lack of resources. This is evident in the following direct quotes from participants:

'Another thing is the shortage of resources for infection prevention and control in the institution.'

'We do not have resources related to infection prevention and control.'

Equipment, human and products resources have been proven to improve compliance with infection prevention and control measures (Reed & Kemmerly, 2000:27).

Efstathiou et al. (2011:7) attested that to understand the importance of resources in infection prevention and control, the resources and related costs of interest include incremental costs that may be directly attributed to infection and that are not underlying diagnose during the admission. An increase in hospital-acquired infections can increase the financial burden and one can, therefore, infer that if finances are made available they can be used towards IPC measures.

Efstathiou et al. (2011:7), Ider et al. (2012:170), Amoran et al. (2013:156) and Gamon et al. (2008:157) have all raised the issue of resources as the factor influencing the implementation of infection prevention and control measures at hospitals. From all studies, a lack of material resources was found to be dominating the factors influencing the implementation of infection prevention and control measures.

The researcher is of the view that resources are more important in the day-to-day running of the infection prevention and control measures in organisations.

Material and human resources were identified by participants and will be discussed in detail below.

- **Material resources**

Muller et al. (2006:478) define material resources of an institution as assets in the form of material possession that assist in the day-to-day functioning of such an institution. In this study, material resources imply resources related to the management of infection

prevention and control measures such as gloves, paper hand towels, gowns, personal protective equipment and alcohol hand-rub solutions.

Participants verbalized the lack of material resources as a factor that influences the implementation of infection prevention and control measures. This was evidenced by the following direct quotes from participants:

'Mmmh, I am thinking of material resources. They are very challenging and it is difficult to get all resources in the ward....it is so frustrating...' Straight face, throwing hands up, with an angry face.

'Nurses do not have gloves.'

'There are no masks, no aprons and disposable gloves as we speak.'

'There is no N95 mask and aprons. We are expected to wear the protective Clothing, but it is not available.'

Ider et al. (2012:174), Efstathiou et al. (2011:6), Yuan et al. (2009:159), Ogoina et al. (2015:18) and Amoran et al. (2013:158) have reported that material resources influence the implementation of infection prevention and control measures.

Lack of protective equipment such as gloves, masks, and alcohol hand solution are some examples of the resources cited, which is supported by participants' quotations in this study.

A participant said:

'We end up misusing the current gloves because the other gloves do not fit at all.'

Efstathiou et al. (2011:10) reported that despite the aprons, gloves and masks being available, they did find that the materials might be of the wrong size or type.

Participants said:

'The paper towel is out of stock, how are we going to work?'

'Even the gowns for isolation are not available.'

'You know that D-Germ is used between patients, as much as you may find that at some point there is nothing to use.'

Buregyeya, Nuwaha, Verver, Criel, Colebunders, Wanyenze, Kalyango, Katamba and Mitchell (2013:9) reported that when resources such as gowns, alcohol hand solution and paper hand towel are unavailable, these factors influence the implementation of infection prevention and control measures.

It is of concern that while there is major awareness of IPC being a legislative imperative, resources are still not availed for personnel to implement IPC measures.

Participants were asked what must be done to facilitate the implementation of IPC measures in terms of resources.

A participant said:

'Supply us with proper resources.'

Amoran and Onwube (2013:156) reported that issues of lacking material resources required to ensure the safety of health care workers and to prevent the spread of infectious disease from patients to health workers are a crucial issue that needs urgent attention. The availability of resources and supplies to personnel was found to influence the implementation of infection prevention and control measures.

It is the researcher's view that since resources, material and human, are key to the facilitation of infection prevention and control practices, health care management should address these areas for improvement, for example ensuring that relevant resources are available to facilitate the implementation of IPC measures.

- **Procurement processes**

Jooste (2009:394) defined defines procurement processes as the acquisition of goods, services or works from external sources that are favourable, appropriate, and are at the best possible cost to meet the needs of the acquirer in terms of quality and quantity, time and location.

The above process must be done with transparency, accountability and effective financial management, whereby the accounting officer has to prevent fruitless and wasteful expenditure (Public Finance Management Act No.1 of 1999:21).

In this study, procurement processes will imply continuous purchasing of resources that are critical for infection prevention and control measures in a health care organisation.

Participants asserted that procurement processes affected the implementation of infection prevention and control measures. This was evidenced by the following:

'When we ask the supply chain for supplies, we are told that the supply of infection prevention and control items is out of stock.'

'The patients demand service from us; the supply chain is always out of stock.'

The above findings supported by Buregyeya et al. (2013:360) who identified that the role of procurement was seen as important and its management will relieve the burden on health care workers who are in need of such supplies related to infection prevention and control measures. They also find that procurement and supply chain management processes are found to be the factors influencing the implementation of infection prevention and control measures.

Other participants said:

'Sometimes they tell us that they are out of stock. So how can we function?'

'They always say we must order enough stock, but the ward does not have enough space.'

Efstathiou et al. (2011:9) support the above findings in that they reported that the procurement systems have to focus on a stock that has to be used by personnel; by the involvement of the end user regarding supplies that are on demand. They also find that

despite the availability of stock, personnel are unable to order enough stock because of limited storage areas.

When the participants were asked what can be done for procurement processes to facilitate the implementation of IPC measures, one participant said:

‘Supply chain must be held accountable for the stock that is always not there. This puts us at risk.’

Ogoina et al. (2015:16) recommend that to promote good infection prevention and control practices and mitigation of risk of such hospital-acquired infection, it is seen as necessary to institute policies that outline strategies ensuring that resources are made routinely available by holding to account such units that are not adhering to the processes.

The researcher is of the opinion that procurement processes should be reviewed and strategies developed to enhance procurement processes. End users must be involved in all supply meetings to ensure that supplies are made available. End users need to be trained on supply chain processes and stock management.

Gammon et al. (2008:159), Ider et al. (2012:170) and Brouwer et al. (2014:9) suggested that strategies be developed to reverse the stock supplies that are not there, and it is imperative that adequate equipment and utilities that are required to ensure infection prevention and control measures are availed.

- **Human resources**

Muller et al. (2006:235-297) define human resources as a trait that people bring to the workplace, for example, intelligence, aptitudes, commitment, tacit knowledge and skills and the ability to learn.

Human resources focus on the way staff members are placed and utilised, and the employees' involvement in decisions that affect their direct work environment, so as to

create an environment in which the employees feel safe and secure (Muller et al., 2006:235-297).

Participants said that the shortage and utilization of available human resources influence the implementation of infection prevention and control measures.

Participants said:

'Wards are full and when some staff members have to go and attend meetings, we end up taking shortcuts to complete procedures to the patients.'

'We are short staffed, and if some staff is off sick and there is in-service to attend, we end up not being able to attend such in-service on IPC.'

In support of the above quote, Buregyeya et al. (2013:360) assert that there are many tasks that already overstretch the staff. It was reported that inadequate human resources compromised the implementation of infection prevention and control measures due to health care workers not having time due to an increased workload.

Ider et al. (2012:170) further find that participants acknowledge that they are short staffed and this affects them to be able to complete certain tasks, like hand washing, between patients.

When the participants were asked about what can be done to facilitate the implementation of infection prevention and control measures related to human resources, one participant said:

'They must employ more nurses to assist us.'

Gammon et al. (2008:157) reported that a shortage of staff has devastating consequences in patient care. They suggested that issues concerning staff must be taken into consideration for effective infection prevention and control management.

The researcher is of the view that the shortage of staff at hospital wards can affect the implementation of infection prevention and control measures since the staff will not be able to attend in-service training.

In conclusion, Gammon et al. (2008:160) suggested that the issues of staffing norms in relation to infection prevention and control measures must be addressed.

Subtheme 1.3: Ineffective communication and support

Jooste (2009:207) asserted that ineffective communication occurs when there is a breakdown of communication between both parties and when both fail to deliver or process the received message. Furthermore, the author emphasises that ineffective communication is seen as a problem that is caused by certain barriers, like attitude, lack of knowledge of subject, assumptions, language barrier and structural problems in organisations.

In this study, the participants stated that ineffective communication caused by language barriers was a factor influencing the implementation of infection prevention and control measures.

This is evidenced by the following quotation:

'Yah, sometimes the language barrier is a concern. For example, when they present these issues of Ebola, there are different categories of staff. When the staff that attended workshop come back to the wards and are asked what they learnt, they say, ah... I did not learn a thing because they speak deep language.'

The above was supported by Jooste (2009:207) who elaborated on language barriers as the problem and cause of ineffective communication. The language was seen as the main challenge to convey messages in most organisations. For effective nursing management, the author asserted that managers must identify the major barriers to communication. Two-way communication is encouraged by the author as a way of allowing both parties to understand what has to be conveyed (Jooste, 2009:207).

This is also supported by Longenecker and Longenecker (2014:147) who also affirm that ineffective communication is a frequent challenge in organisations. They also found that one of the reasons why employees fail to take ownership of an initiative is that they do not fully understand what was said or required to be done. This is in line with the findings where participants were quoted as saying that the cleaners do not understand the language spoken in training sessions on IPC measures.

Robinson, Gorman, Slimmer and Yudkowsky (2010:206) find that ineffective communication is, in essence, miscommunication attributed to differences in languages, among other factors. This means that for effective communication to be accomplished there must be an atmosphere of mutual respect, support and confidence (Booyens, 2007:274).

Ong, Mcgrabi, Post, Morris, Westbrook, Wobeke, Calcroft and Coiera (2013:72) reported that ineffective communication of infection control requirements during transitions of care is the potential cause of non-compliance with infection prevention and control measures by health care personnel.

A participant said that management does not listen to them:

‘Our matrons come and say we did not wear the aprons and as such when we explain that there are no resources it is like they do not listen.’

Robinson et al. (2010:206) asserted that attitude contributes to ineffective communication. They have found that some participants feel humiliated since mutual respect is mostly not maintained between the professionals.

The above is supported by Jooste (2009:207) who identifies attitude as a barrier to ineffective communication. The author finds that attitude hinders how the employee effectively communicates in the organisation. The effective manager is seen as the manager without attitude who has the willingness to listen to employees’ problems and who will assist in solving them. For effective management in nursing, the author emphasizes that the platform should be created for employees to be able to access their managers during a crisis.

In this study, participants felt that management does not have time to communicate with them. The participants were quoted as saying:

'The other issue might be the way we communicate. We get information by surprise and this frustrates us.'

'Like we are not properly informed on what is happening about infection prevention and control policies.'

Robinson et al. (2010:206) reported that ambiguous communication is the major factor that influences implementation of infection prevention and control measures. They have found that management does not have time to communicate effectively and this frustrates the employees. This supports findings that time barriers have been found to be a problem influencing ineffective communication (Jooste, 2009:207)

When the participants were asked what must be done to improve communication, one participant said the following:

'If the language used covers all the categories, it will help to know if the information has been understood.'

Booyens (2007:274) posited that the best communication happens when both parties understand each other. The language, either verbal or non-verbal, that is displayed is seen as a tool to communicate within the organisation. The author finds that for effective communication to be accomplished there must be an atmosphere of mutual respect, support, confidence and correct language.

The author corroborates that managers must use the language that is known and understood by the receiver (nurses) for effective implementation of infection prevention and control measures.

The researcher is of the view that effective communication can improve the implementation of infection prevention and control measures.

In conclusion, Robinson et al. (2010:206) asserted that any change initiative that is expected to produce superior, ongoing communication between management (those responsible for leading change) and employees (those responsible for making changes) must be implemented.

- **Lack of support**

According to Sevick, Trauth and Goodman (2007:434) defined the word 'support' as means the provision of help, assistance, sustenance, encouragement or approval. The researcher can, therefore, infer that the participants were quoted as not having or getting enough help, encouragement or approval from management regarding factors influencing the implementation of IPC measures.

Lack of support was seen as the factor affecting the implementation of infection prevention and control measures. A participant said:

'Most of the time, the management come only when there is a bad situation. They do not come during time of many patients to see what has to be done regarding infection prevention and control measures.'

In support of the above, Griffiths, Renz and Raffety (2009:10) found that when employees have the support of management, the relationship between patient outcome and wellness of staff is improved. Their study also found that a lack of support was associated with unsuccessful action on infection prevention and control, and while the evidence on point is important, investigations into infection outbreaks illustrated that the infection control team experience difficulties in the efforts that cut across the operational unit and management level due to a lack of support.

Jooste (2009:207) confirmed that a lack of support from managers is seen as the key contributor to employees' disengagement in the workplace, as employees feel excluded from the organisational decision-making and planning process.

IPC Policy and Strategy NDOH (a) (2007:33) elaborated that there is a lack of support from management with regard to infection prevention and control issues. The policy

asserts that this compromises the adherence of infection prevention and control measures since the implementation has to be monitored by such managers. The policy emphasizes that management buy-in and support of nurses will improve the implementation of infection prevention and control measures.

Participants said:

'I think management believes things are fine down here while things are not, especially for infection control.'

The above is supported by Rubrich (2009:34) who finds that the organisation becomes effective when every person understands the reasons for infection prevention and control and its importance to their patients, the organisation and themselves. This common goal is seen to be creating a foundation for everyone to pull in the same direction once management has provided the proper support on infection prevention and control issues.

Enthusiastic managers or supervisors have been known to make major improvements in their area of control even without the support of management, but unfortunately, without the support of infection prevention and control issues sustainability is a problem (Rubrich 2009:30). Their study also reported that infection prevention and control entails day-to-day activities with adherence to the IPC measures when managers are supportive.

When the participants were asked about what must be done to facilitate the implementation of infection prevention and control measures, they (participants) articulated that if management can come and see the situation they are working in, this will improve their morale. A participant said:

'I think management must support us in relation to infection prevention and control.'

In relation to the above, Griffiths et al. (2009:8) mention the importance of the managerial support of the infection prevention and control programme. They emphasize that the problem of health care-associated infection cannot be solved by identifying best

infection control practices and issuing guidelines, but by positive factors like managerial support.

The researcher supports the idea that management should show support of the programme and the employees at ward level for effective infection prevention and control.

It is, therefore, important that effective action on infection prevention and control enjoys strategic consideration of wider care, which must include the consideration of the function of teams, employees and management at the hospital as much as the physical environment they operate in (Griffiths et al., 2009:7).

3.2.2. Theme 2: Challenges regarding knowledge and attitudes towards infection prevention and control measures

Burton's Legal Thesaurus (2007) defines 'challenge' as a contradiction, defiance, raising an objection, showing reluctance, being up against something, resistance, rejection, difference or disapproval.

Muller et al. (2006:151) defined the word "knowledge" as an understanding of or information about a subject that we get by experience or study either known by a person or people general. In this study, challenge will mean reluctance towards infection prevention and control measures

Hewstone (2011:59) defined the word 'attitude' as a learned predisposition to respond in a consistently favourable or unfavourable manner with regard to a given object. Attitude will mean a mindset towards infection prevention and control measures in this study.

Participants cited challenges regarding attitude and knowledge towards factors influencing the implementation of infection prevention and control measures as divided into management, general workers and health care workers, as stipulated in Table 3.1 above.

A participant said:

'If I remember well, attitude towards infection prevention and control measures is also the main challenge.'

'Sometimes people take advantage as health care personnel; I am not sure if the people are resistant to change towards infection prevention and control issues.'

Efstathiou et al. (2011:9), Ider et al. (2012:170), Ogoina et al. (2015:16), Amoran et al. (2013:156), Yuan et al. (2008:157) and Gammon et al. (2008:157) reported that knowledge and attitude towards infection prevention and control is a major challenge in hospital settings.

Furthermore, Ogoina et al. (2015:18) reported that a majority of staff had the knowledge of the infection prevention and control measures, but show that besides that knowledge, the majority do not know why they are not adhering to them.

When the participants were asked about what must be done, one participant said:

'This attitude towards infection prevention and control must be addressed.'

Ogoina et al. (2015:19) asserted that addressing employees' attitude towards infection prevention and control will assist with compliance. They report that knowledge addresses attitude. When employees have knowledge of infection prevention and control issues, their negative attitude is found to be reduced since are able to address the challenges affecting the implementation of infection prevention and control measures.

However, the researcher supports the fact that knowledge and attitude can be a challenge that affects the implementation of infection prevention and control measures and that it needs to be addressed.

In conclusion, Ogoina et al. (2015:22) asserted that for an effective strategy to address challenges regarding knowledge and attitude towards infection prevention and control, employees must be involved in planning to address their knowledge gap.

Participants identified the challenges regarding knowledge and attitude on infection prevention and control in three subthemes, namely the knowledge and attitude of management, the knowledge and attitude of general workers, and the knowledge and attitude of health care personnel, which will be discussed below.

Subtheme 2.1: Knowledge and attitude of management

Muller et al. (2006:218) defined management as the process of reaching organizational goals by working with and through people and other organizational resources; with the inclusion of planning, organizing, staffing, leading or directing, and controlling an organization.

In this study, management will mean an act or manner of managing, handling directing or controlling by executive personnel. Management also refers to senior nursing personnel that are in decision-making positions tasked with managing, directing and controlling the nursing services of the public hospital.

The participants have raised the concern that management shows certain attitudes towards them.

Participants said:

'The management demands us to comply with infection prevention and control policies that they don't adhere to them.'

In support of the above quote, Yuan et al. (2009:159) and Ogoina et al. (2015:19) found non-adherence to infection prevention and control measures and attitude by management as critical challenges that have affected the provision of infection prevention and control measures.

Cheu, Liu and Hwang (2011:450) asserted that management, being the leaders, are described as having an influence on others and creating an environment for achieving the goal of the organisation.

They also find that managerial behaviour is influential in pushing or limiting the team to accomplish their goal. The way management deals with issues is one of the main factors that will determine either if the employee adheres to infection prevention and control issues or not, on their request.

Participants felt that management does not listen to them. One participant said:

'Our matrons come and it is like they do not listen to us with regard to challenges related to infection prevention and control issues.'

Chen et al. (2011:450) noted that the latest capabilities will be triggered through managerial leadership, which will raise their work efficiency resulting in the needs of both being satisfied. Employees experienced a negative attitude from management.

This study highlights that management's negative attitude will always be reflected by the employees, who regard them as role models. It is asserted that employees feel frustrated when they are receiving such a negative attitude towards infection prevention and control measures from management.

Furthermore, Seiller and Veazie (2014:21) are of the opinion that many managers know that they have the power to walk around and check the implementation of infection prevention and control measures, but it is not the walking around that is important, it is the one-on-one conversations with employees on how they are adhering to and implementing such IPC measures that matter. They note that if managers do walk around in the wards and inform employees on what to do and point out shortcomings, this deflates rather than boosts the employees' states of mind, and as such employees feel that management has a negative attitude.

Participants felt that management does not recognise infection prevention and control issues. Another participant said:

'It will be only at such a time that the management will take infection prevention and control issues seriously... maybe it will be when one patient dies.'

Managers displayed attitude, as was cited by participants. Managers did not recognise the employees' abilities, and they were seen to be aloof and unable to motivate their employees.

When participants were asked about what must be done to facilitate the implementation of infection prevention and control measures, one participant said:

'Management must be knowledgeable about infection prevention and control policy; they must be trained like us.'

Ogoina et al. (2015:21) suggested that in order to promote good infection prevention and control practices, it is necessary for management to be knowledgeable and to improve on their leadership.

The researcher supports the fact that the attitude of management towards infection prevention and control issues needs to be addressed as it affects the implementation of IPC measures.

Management must be trained or undergo in-service training on infection prevention and control policy, and their role must be highlighted so as to influence their buy-in on supervision of the IPC programme.

Subtheme 2.2 Knowledge and attitude of general workers

Ogoina et al. (2015:16) study had found that the majority of general workers have previous knowledge about infection prevention and control. They also found that most of the general workers had agreed that they did have informal knowledge in relation to infection prevention and control.

Clynes et al. (2009:8) found that most general workers do not have enough knowledge of cleaning and most of the information needed in relation to infection prevention and control measures. Cleaners rely on the nurses in the ward when they are seeking direction about cleaning and IPC issues.

Yamazhan, Tashakan, Calik, Pullukcu, Sipahi and Ulusoy (2009:77) have done a similar study on the knowledge of general workers and find that despite educating the general workers, their knowledge remains low. They also find that there is no correlation between experience and knowledge level, and also that there is no relationship between education and knowledge level.

Participants said that general workers are showing a lack of knowledge in IPC measures. They were quoted saying:

'Our cleaners, cannot clean properly, I think they are not sure of what they are supposed to do.'

Ogoina et al. (2015:16) asserted that knowledge about infection prevention and control and a positive attitude have been shown among general workers who had prior training in infection prevention and control. They also find that attitude stands in relation to knowledge and unavailability of the direct working task.

Dancer (2011:1473) found that the responsibility or task of general workers are at times interrelated with nursing duties, and as such this causes confusion. They found that despite the fact that cleaning falls under general worker duties, there is at times a duplication of duties among the cleaners and nurses. This confusion of tasks leads to blaming, frustration and negative attitudes since they (general workers) feel they are always blamed for tasks that are sometimes not their responsibility.

One participant said:

'If you tell them here we do not work like this, or put the sign showing that you busy working here, they say, that is what you cannot tell me!'

Ogoina et al. (2015:17) asserted that general workers display an attitude when they lack knowledge in relation to infection prevention and control. Yamazhan et al. (2009:79) reported that there is a correlation between knowledge and the attitude of employees. They argued that if employees have knowledge about what they are doing they tend to show positive attitudes.

Participants were asked what must be done to facilitate the implementation of IPC measures and they said:

'General workers need to be orientated on infection prevention and control, they must be informed.'

Ogoina et al. (2015:22) and Yamazhan et al. (2009:80) attested that to influence positive attitude, the employee must be informed and oriented at workplace level with regard to infection prevention and control issues.

The National Infection Prevention and Control Policy and Strategy, NDOH (a) (2007:30) outlines the roles and responsibility of the unit that supervises the general workers as part and effort to show the importance of general workers. The policy highlights the fact that general workers need to be oriented and given information with regard to infection prevention and control measures.

Clynes et al. (2009:9) disputed that knowledge about infection prevention and control leads to a good attitude and they do not consider the link between knowledge and attitude a base for discussion.

The researcher is of the view that general workers' knowledge improvement in relation to infection prevention and control measures must be improved.

In conclusion, strengthening general workers' schedules, through highlighting risks to the patient, will improve knowledge related to infection prevention and control.

Subtheme 2.3: Knowledge and attitude of health care personnel

Health care personnel (HCP) include (but are not limited to): physicians, physician assistants, nurses, nursing assistant therapists, emergency medical service personnel, technicians, dentists, dental personnel, pharmacists, laboratory personnel, autopsy personnel, contractual staff not employed by the health care facility. This also includes students and trainees and all persons not directly involved in patient care, but potentially exposed to infectious agents that can be transmitted to and from health care workers and patients, e.g. clerical, food service, housekeeping, laundry, security, maintenance,

administrative and billing staff, and volunteer staff (Centres for Disease Control and Prevention, [CDC] 2014).

In this study, health care personnel will be defined as professionals working in this hospital.

According to the participants, doctors and nurses showed attitudes regarding the implementation of the infection prevention and control measures.

Participants said they have observed other nurses are not implementing the infection prevention and control measures.

'But at times, I have observed that when nurses are doing dressings, they do not adhere to infection prevention and control measures. And a person will say I thought I am doing it in passing, it is not a big deal.'

Khan, Shan, Ahmad and Fatokun (2014:1281) asserted that positive correlation between knowledge and attitude of health care personnel reaffirms the association between knowledge and attitudes, with compliance with infection prevention and control measures.

Contrary to the above, Mythri, Arun and Kashinath (2015:109) stated that their study showed generally poor adherence to infection prevention and control measures and that positive attitudes towards them do not necessarily ensure compliance with the infection prevention and control measures. This is similar to what Ogoina et al. (2015:18) reported, that although knowledge about infection prevention and control measures was high, the practice was not coherent with the knowledge.

However, Askarian and Assadian (2009:48) reported generally poor adherence to infection prevention and control measures among doctors. Their study also emphasized that only having knowledge of infection prevention and control measures and a positive attitude towards IPC does not ensure adherence to IPC policy.

Jackson, Lowton and Griffiths (2014:405) found that health care workers were keen to give a good impression and present themselves as knowledgeable. It was further reported by these authors that health care workers did not always conform to infection

prevention and control measures and policy and they were found rationalising their own behaviour and logically justified any deviations from policy.

Participants also showed that they are aware of the attitude they display towards management, as one participant quoted:

'I think people develop attitude when they realise that their demands are not met.'

Additionally, low compliance with infection prevention and control measures has been noted in those who reported a high level of conflict between providing patient care and the need to protect themselves. This was argued as appropriate when such behaviour is focusing on the patients. Employees were found to be developing attitudes when they have informed the management about the unavailability of resources that is needed for patient care, which they did not seem to attend to (Jackson et al., 2014:400-408).

Attitude prevails between the nurses as evident from direct quotations below:

'Most of the time you speak with nurses doing wrong things, eh.., they are not interested in listening...'

Other participants acknowledged that they have to be the role models and change their attitude towards IPC.

A participant said:

'To make sure that infection prevention and control measures are adhered to, it must start with us. Cleanliness, short nails so, it means we have these long nails that mean we are not understanding it or not practising it (IPC measures) correctly.'

Jackson et al. (2014:402) identified that role modelling and leading by example is in part influencing the behaviour of the health care personnel to display good or bad attitude. They also find that the display of the correct way of doing procedures is the basis of improving the practice, although concern is raised by their participants that incorrect display of bad attitude will do more harm than good. They find that the attitudes of other

personnel are more often than not taken as the norm and become part of routine practices. They also cite that when other personnel see the certain behaviour, they come to accept it as the norm.

Attitudes towards IPC measures implementation and negative attitudes that prevailed interpersonally are clearly articulated as factors that influence the implementation of IPC measures. This is a challenge for management that must be taken seriously if IPC measures are to be implemented.

Participants stated that they ignore infection prevention and control measures during nursing unit management. This was evidenced by the following quotation:

'In the nursing side, I will say in nursing unit management side we do not take infection control into perspective when we do delegation.'

Jackson et al. (2014:403) asserted that their participants understand their attitude because they know the reason for it and they are responding to a certain set of external circumstances that justified such attitudes. This logical justification was seen to be allowing the participants to rationalise their attitudes and continue to use it as if it is appropriate.

It was found that some health care personnel had a negative attitude and did not adhere to infection prevention and control (IPC) measures despite having resources. This participant was quoted as saying:

'Some health care workers tend to just throw needles anywhere.' (shaking head)

Jackson et al. (2014:403) reported that despite having knowledge of infection prevention and control measures or about the availability of resources, the compliance to infection prevention and control measures, with good practices, remain varied. Evidence suggests that this is affected by many factors, including perceptions of one's own practice and intention, motivation and peer pressure, which is regarded as attitude.

Participants stated that doctors have an attitude when they are advised on infection prevention and control measures.

'The doctors have been throwing the medical waste everywhere. I think besides the knowledge they have, they still lack how to dispose of waste, or maybe it's an attitude. Even if we try to talk with them, yeah, sometimes it is like you are talking to a deaf ear when they do not respond.'

'Even if you tell them that they must throw the gloves in the red plastic bag, they just throw gloves everywhere when they are not seen...'

Jackson et al. (2014:403) affirmed the participants' quotations by citing that doctors prefer autonomy in their practice. Exercising such autonomy is seen to result in disagreements to follow policies, as doctors consider themselves to be entitled to work independently. This is also viewed and highlighted in terms of how it creates barriers to interdisciplinary dialogue on shared responsibility, particularly related to IPC measures.

Shah, Castro-Sanchez, Charami, Drumright and Holmes (2015:128) reported that participants described instances where interprofessional barriers prevented them from engaging with factors influencing the implementation and compliance with infection prevention and control measures.

Participants articulated that the nurse is also resistant to change with regard to implementing the infection prevention and control measures.

A participant said:

'We as nurses, we also have an attitude of not wanting to comply with IPC measures in the wards. I am not sure if in that, people are resistant to changes or what.'

Jackson et al. (2014:403) asserted that the attitude of others is clearly identified as ignorant, as long as they do not perceive that as a risk. The attitudes in relation to compliance with infection prevention and control policy are identified as a major challenge for the implementation of IPC measures.

Another participant said that despite the available opportunities to attend infection prevention and control programmes, they do not attend at all. There is clearly a negative attitude towards these opportunities as well.

This is affirmed by a direct quotation from a participant who said:

'I am saying that during in-service, we bringing our own attitude. IPC meetings are held and people just do not attend at all.'

Jackson et al. (2014:403) reported that it is of importance and a form of a requirement that health care workers are informed on maintaining strict protocols regarding infection prevention and control procedures. They suggested that any attitude deemed inappropriate warrants further investigation and many require considerable examination and interpretation of the rationale behind it can be explained.

The researcher notes that accountability for not adhering to protocols is advocated if the implementation of IPC measures must be enforced.

A participant was asked about what must be done to facilitate positive attitudes towards the implementation of IPC measures, and said:

'I think infection prevention and control must be offered in every institution as a course.'

In support of the above findings, Jackson et al. (2014:403) recommend the introduction of basic infection control programmes to the curriculum of all medical and nursing institutions as well as other paramedical and technical staff training institutions that will have to work in health care areas.

In support of positive attitudes towards IPC measures, Jackson et al. (2014:403) reported that it is of importance and a form of a requirement that health care workers are informed about maintaining strict protocols regarding infection prevention and control procedures. They suggested that any attitude deemed inappropriate warrants further investigation and many require considerable examination and interpretation of the rationale behind it can be explained. The researcher notes that accountability for not adhering to protocols is advocated if the implementation of IPC measures must be enforced.

The researcher is of the view that health care personnel are there to protect the patients through implementation of infection prevention and control measures. Their knowledge and attitudes to IPC must form a foundation to facilitate such implementation so as to encourage quality patient care through implementing IPC measures.

In conclusion, health care personnel IPC knowledge needs to be reviewed so as to identify the challenges that influence their attitude towards infection prevention and control measures. Positive attitudes towards the implementation of IPC measures must be promoted among all health care workers.

3.2.3. Theme 3: Inadequate hospital infrastructure

The Department of Health and Welfare in terms of NDOH(c), Regulation 158 (1996:34) defined hospital infrastructure as any physical place at which health care services are provided to members of the public. The regulation highlights issues that are to be taken into consideration when a health care infrastructure is approved and built. Issues like isolation rooms, ventilation systems, hand basins for hand washing, and storage areas for resources must be catered for. Issues with regard to the size of the units must meet requirements, and sizes must be designed so that that they can be altered if needs arise.

Flodgren, Rojas-Reyes, Cole and Foxcroft (2012:46) defined hospital infrastructure as an underlying foundation or basic framework through which clinical care is delivered and supported.

In this study, infrastructure means the hospital wards where patient care is carried out. Despite much literature in relation to infection prevention and control, few studies have been done to assess infrastructure as a factor influencing the implementation of infection prevention and control measures.

Ider et al. (2012:170), Ogoina et al. (2015:20) and Gammon et al. (2008:163) reported that inadequate infrastructure is a factor that affects the implementation of infection prevention and control measures.

The participants articulated that inadequate hospital infrastructure was an obstacle in implementing infection prevention and control measures. Poor hospital maintenance and structural challenges were the subthemes that were identified and will be discussed below.

Subtheme 3.1: Poor hospital maintenance

Booyens (2007:116) defined hospital maintenance as keeping the hospital building repaired and environmentally user-friendly and enhancing its excellence in clinical practice.

Participants articulated that some of the infrastructure maintenance that was done are of poor quality. This was seen as a factor influencing the implementation of infection prevention and control measures. This was evidenced by the following quotations where the participants said:



'If now we can go to the patients' toilets, all toilets and basins are leaking, even when the people from facility management unit come and fix, after minutes, the pipes burst again.'

'In other areas of the ward we do not have basins, and some hand basins are down on the floor while other hand basins are not working.'

This is supported by Gammon et al. (2008:159) who reported that resources to improve infection prevention and control, like hand-washing basins, isolation rooms and toilets, are raised as the factors that influence the implementation of infection prevention and control measures.

Pest control was identified as another reason for inadequate hospital maintenance, and another participant was quoted as saying:

'There are lots of cockroaches. These are pests that carry dirt and they move all over and affect care negatively...'

Gammon et al. (2008:159) assert that poor maintenance of the hospital structure is reported to increase the risk of pests and some disease-forming organisms. They confirm that good maintenance of infrastructure does assist in managing emerging risks of such pests as they increase infection by cross contamination.

Participants were asked about what must be done to facilitate the implementation of infection prevention and control measures as related to infrastructure.

A participant said:

‘Facility management unit must be serious, they must fix and maintain the toilets and hand basins.’

Gammon et al. (2008:157) asserted that the best maintenance plan is when the team sits with the managers of units. They highlight the fact that maintenance must not be done when there is a crisis, but as scheduled. They recommended that facility maintenance must be planned and followed up as a project.

The researcher views hospital maintenance as an important factor to prevent infections. When the maintenance schedule is compiled it should address the structural dilapidation of hand basins and toilets that have been cited as maintenance issues affecting IPC measures.

The maintenance of the infrastructure must be adhered to as per regulations and hospital maintenance policy as it impacts on the implementation of IPC measures.

Subtheme 3.2: Structural challenges

De Neufville, Lee and Scholtes (2008:4) define ‘structure’ as an essential building facility that supports the service that has to be rendered at a certain time.

Booyens (2007:90) highlighted the fact that structural challenges are those hospital structures that are not patient centred, safe, effective, efficient, timeliness and equity. The structural challenges were not identified during the planning of the hospital as per Regulation 158 of 1996.

In this study, the structure will be used interchangeably with infrastructure, which will mean wards, isolation rooms and departments for patient care.

All participants articulated the hospital structure as a factor affecting the implementation of infection prevention and control measures. Participants said:

'Overcrowding, like each ward, is supposed to take forty patients, at the moment at surgery we are always above forty to fifty patients. Due to the overcrowding, we just attend to the patient sitting on the bench without following infection prevention and control measures.'

'Maybe to add on that, on the very same issue of overcrowding, there is a standard of infection control of distance between beds, we are not even complying with that because there is no space and we are unable to adhere to such principles.'

'So if the ward is overcrowded, other beds closes (obstructs) wash basins, how are we going to wash our hands. Even when we admit patients with TB, here is no way or possibility to isolate such cases because there is no space available to isolate them.'

Ider et al. (2012:170) and Gammon et al. (2008:157) articulated that during overcrowding, infection prevention and control measures are always compromised.

They further asserted that cross infection is not preventable as isolation and hand washing are not adhered to due to overcrowding. Overcrowding is found to be affecting the bed capacity of the wards, which limits the number of patients. During overcrowding, the study finds that sorting of infectious patients and non-infectious patients become a challenge.

Participants said:

'Inward 3 there is an isolation room that is not closed up to the ceiling. So if there is airborne case, it is rendered useless.'

'The cubicle is used as isolation because the ward is always full. The same isolation room is next to nurse's bay. So patients are spreading infection to nurses.'

'In this ward there is only 1 room for isolation and that room we isolate different patients at a given time. On top there (using hand gestures), it is open.'

Cole and Lai (2009:403) reported that studies on isolation facilities highlight the fact that there is limited evidence supporting the utility of isolation and/or cohort nursing, however, they highlighted that isolation is a need in basic nursing care with regard to infectious diseases. They report that the isolation rooms must conform with the type of disease that has to be isolated in such rooms. They also report that the infrastructure must be built to accommodate different kind of patients that have different diseases or conditions, so as to assist during the cohort of many patients in times of disease outbreak.

However, the National Infection Prevention and Control Policy & Strategy (NDoH (a), 2007:36) gives direction with regard to the isolation of infectious patients. This was aligned with the WHO (2007) guidelines on isolation procedure, whereby infrastructure is also highlighted. The isolation rooms are regarded as a must-have item due to infectious diseases and the need to control their spread.

The isolation rooms are differentiated, based on the kind of diseases for admission, such as airborne in tuberculosis. Such an isolation room is regarded as a closed structure that would reduce infections.

Participants said that structural challenges are affecting the storage of stock, as quoted"

'The structure is always a problem and gives us a headache on where to store that stock needed.'

'The ward is very small for everything. Every time we are always full. Doctors will just admit patients even if the ward is full.'

Gammon et al. (2008:162) corroborated that infrastructure affects the stock supply in the wards. The demand for stock and patient needs has been found compromised due to the unavailable and inadequate structure. The stock was found piled away from the work station, which has resulted in poor stock management and compromised infection prevention and control measures.

Participants were asked the second question about what can be done to improve implementation of infection prevention and control measures as far as structure was concerned, and they said:

'Management must adhere to bed occupancy of the ward, and must not just admit.'

'Doctors must talk with the management when admitting patients to minimise overcrowding.'

'We must also put reports of infections from the wards to inform the management on what challenges we meet with regard to infrastructure.'

'Isolation rooms must be closed on top.'

De Neufville et al. (2008:5) confirmed that hospital structure must meet the service it is supposed to render. The hospital structure is built in consideration of the number of patients or population it admits. The authors further affirm that if that is not adhered to there can be overcrowding, which can increase the risk of infection, outbreaks or disaster. The above authors highlighted that infrastructure must be used for the right purpose at all times.

The researcher is of the view that challenges with regard to structure affect the implementation of infection prevention and control measures seriously. Shortages of infrastructure, unavailability, structures that are not ready and fit for purpose are factors that influence implementation of IPC measures.

It is, therefore, important to address the booking system and attend to isolation rooms, to address the infectious patients' issues so that they are not mixed with non-infectious patients as per infection prevention and control policy requirement. This will assist in circumventing the structural issues that influence the implementation of IPC measures in this hospital.

Table: 3.2. Outline of the strategies that will facilitate the implementation of infection prevention and control measures

Themes and subthemes	Strategic objectives for the facilitation of the implementation of infection prevention and control measures
Ineffective management practices	Implement effective management practices to facilitate the implementation of IPC measures.
Inadequate education and training on infection prevention and control measures	Implement an education and training programme that clearly outlines the roles and task of every personnel member on infection prevention and control measures.
Inadequate human and material resources	Ensure the provision of adequate resources necessary for the implementation of IPC measures.
Procurement processes	Improve procurement processes to ensure adequate supplies required to facilitate the implementation of IPC measures.
Inadequate human resources	Ensure the provision of adequate human resources to facilitate IPC measures.
Ineffective communication	Implement effective communication processes to facilitate implementation of IPC measures.
Lack of support	Improve support and motivation by management and colleagues with regard to

	infection prevention and control measures.
Knowledge and attitude of management on infection prevention and control measures	Improve knowledge and attitude of management on infection prevention and control measures.
Knowledge and attitude of general workers on infection prevention and control measures	Improve knowledge and attitudes of general workers on IPC measures.
Knowledge and attitude of health care personnel on infection prevention and control measures	Improve the knowledge and attitudes of health care personnel on IPC measures.
Poor hospital maintenance	Improve hospital maintenance processes that will facilitate the implementation of IPC measures.
Structural challenges	Implement processes that will overcome the structural challenges as problems in IPC measures implementation.

3.3 CONCLUSION

Chapter 3 presented the findings and literature control on the factors influencing the implementation of infection prevention and control measures in this hospital, as highlighted in Table 3.1.

Professional nurses articulated challenges related to the factors influencing the implementation of IPC measures at the public hospital in Gauteng. The findings that were integrated into literature resulted in the development of strategies that will assist in facilitating the implementation of infection prevention and control measures.

An outline of the summary of key strategies that will facilitate the implementation of infection prevention and control measures is highlighted in Table 3.2 above. A detailed discussion of the strategies and their action plans, recommendations, limitations of the study and the conclusion are presented in Chapter 4.

CHAPTER 4

STRATEGIES, LIMITATIONS, RECOMMENDATIONS AND CONCLUSION

4.1 INTRODUCTION

This chapter focuses on the description of the strategies that will facilitate the implementation of infection prevention and control measures at a public hospital in Gauteng.

The strategies were described following the findings that were supported by literature control in Chapter 3. The limitations, recommendations and conclusion are also described in this chapter.

The participants were asked a second question that provided answers that were integrated into literature and subsequently enabled the researcher to develop and describe the strategies that will facilitate the implementation of infection prevention and control measures at the public hospital.

The presented strategies give answers to the second research question:

- What can be done to facilitate the implementation of infection prevention and control measures at this hospital?


The strategies that were developed were in accordance with the themes and subthemes as indicated in Chapter 3, Table 3.1 and Table 3.2. These strategies are presented in this chapter in Table 5.1. and from our phase two of our study.

4.2 PHASE 2: STRATEGIES TO FACILITATE THE IMPLEMENTATION OF INFECTION PREVENTION AND CONTROL MEASURES AT A PUBLIC HOSPITAL IN GAUTENG

Muller et al. (2011:569) define strategy as a plan of action that prescribes resources and activities allocated for helping the organisation to achieve the needed outcomes. The strategy entails strategic objectives that are key priority/performance areas having related action plans that will facilitate the implementation of IPC measures at the hospital (Muller et al., 2011:569).




Table 4.1: STRATEGIES TO FACILITATE THE IMPLEMENTATION OF INFECTION PREVENTION AND CONTROL MEASURES AT A PUBLIC HOSPITAL IN GAUTENG


THEMES AND SUBTHEMES	STRATEGIC OBJECTIVES	DETAILS OF STRATEGIC ACTIONS
4.1 Ineffective management practices	Implement effective management practices to facilitate the implementation of IPC measures. 	To improve management practices as follows: <ul style="list-style-type: none"> - Management must support and listen to the employees on issues related to IPC measures. - Management must involve the employee through active participation during planning. - Management must participate actively in IPC measures by monitoring and ensuring adherence. - Management is mandated to implement measures outlined in the National Core Standards guideline –

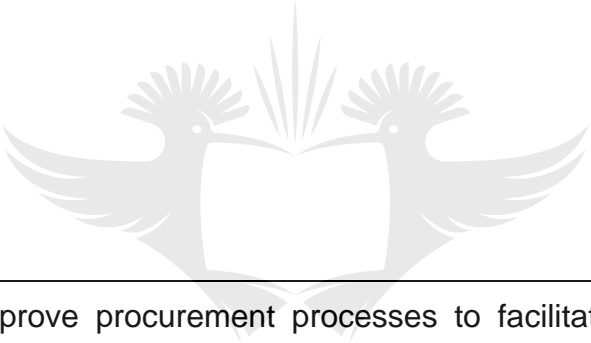



such as cleanliness, infection prevention and control, availability of resources and attitude management.

- Management must ensure supervision regarding IPC measures by applying effective management practices such as good communication, leading by example, effective delegation and staff development.
- Management must provide meaningful feedback to the staff to keep the staff abreast of information, so as to build trust.
- All levels of management must receive adequate training on all management skills.
- Management must be a role model to the staff so that positive attitude is displayed.

		<ul style="list-style-type: none"> - Management must improve on employee recognition.
<p>4.1.1 Inadequate education and training on infection prevention and control measures</p>	<p>Implement education and training programmes on IPC measures.</p> 	<ul style="list-style-type: none"> • To implement the education and training programmes on IPC measures, ensure the following: <ul style="list-style-type: none"> - Ensure in-service training on all IPC-related issues is done during orientation. - Outline roles and responsibility of every employee as per IPC policy in training programmes. - Training intervention on preventative measures to improve health care workers' knowledge must be on-going. - Update all employees on new issues related to IPC policies and legislation. - Training on waste management must be offered.


		<ul style="list-style-type: none"> - Encourage and supervise policy implementation on waste management. - Train doctors and all other health care personnel. - Retraining and refresher courses on infection prevention and control issues of all personnel, including management, must be offered. - Make posters and videos available for the development of staff.
<p>4.1.2 Inadequate human and material resources</p>	<p>Ensure the provision of adequate resources necessary for the implementation of IPC measures.</p>	<ul style="list-style-type: none"> • To improve on provision of adequate resources that are necessary for the implementation of IPC measures, the following is recommended: <ul style="list-style-type: none"> - Supply personnel with relevant resources that facilitate implementation of IPC measures. - Ensure adequate supplies and


		<p>structured ordering.</p> <ul style="list-style-type: none"> - Involve nursing personnel with the procurement of resources. - Improve on communication between the supply chain unit and nursing unit. - Order quality resources for infection prevention and control. - Procure quality resources.
<ul style="list-style-type: none"> • Procurement processes 	<p>Improve procurement processes to facilitate the implementation of IPC measures.</p>	<p>To improve procurement processes, ensure the following:</p> <ul style="list-style-type: none"> - Institute policies outlining strategies ensuring that resources are made available. - Hold the unit accountable that is not adhering to procurement processes. - Develop strategies to reverse stock supplies that are out of stock.

		<ul style="list-style-type: none"> - Avail adequate equipment and utilities required to ensure IPC measures.
Inadequate human resources	<p>Ensure the provision of adequate human resources to facilitate IPC measures.</p>  <p>UNIVERSITY OF JOHANNESBURG</p>	<ul style="list-style-type: none"> • To improve on human resources, ensure the following: <ul style="list-style-type: none"> - Employ more nurses to the wards to improve quality patient care. - Management must consider staff issues when planning. - Management must involve nurses' needs when planning.
Ineffective communication	<p>Implement effective communication to facilitate implementation of IPC measures.</p>	<ul style="list-style-type: none"> • To implement effective communication, the following strategic actions are recommended: <ul style="list-style-type: none"> - Improve communication between employees by showing respect, support and showing confidence in them.



- Management must improve on correct language that is understood by nurses.
- Improve listening skills of managers that will improve their managerial role.
- Improve on building the trust of nurses for better communication.
- Managers must delegate tasks to nurses directly and clearly.
- Managers must have good decision making by considering the situation before taking action.
- Management must improve on decision making to facilitate the service delivery.
- Management must have meetings with the nurses when the need arises.


		<ul style="list-style-type: none"> - The communication sent to nurses must always be specific as to what is needed to be done so as to avoid confusion and non-implementation.
Lack of support	<p>Improve support and motivation by management and colleagues with regard to infection prevention and control measures</p> 	<ul style="list-style-type: none"> • To improve support and motivation by management and colleagues, the following strategies are recommended: <ul style="list-style-type: none"> - Management must support the employee by having walked rounds in the wards so as to improve morale. - Management must consider the teams' functioning and the environment that employees operate in as a support system.
Knowledge and attitude of management on infection prevention and control measures	Improve knowledge and attitude of management on infection prevention and control measures	<ul style="list-style-type: none"> • Improve the knowledge and attitude of management on IPC measures by ensuring the following:


		<ul style="list-style-type: none"> - Management must be knowledgeable on IPC measures to improve leadership. - Management must be trained on IPC policy. - Knowledge and attitudes must be addressed. - Employees must be involved in planning to address their knowledge gap. - Address attitude towards IPC by improving knowledge. - Management must buy into the IPC programme.
<p>Knowledge and attitude of general workers on infection prevention and control measures</p>	<p>Improve knowledge and attitudes of general workers on IPC measures</p>	<ul style="list-style-type: none"> • The following were identified to improve the knowledge and attitude of general workers: <ul style="list-style-type: none"> - General workers must be informed and oriented at the workplace with



regard to IPC issues.

- Encourage adherence to roles and responsibility outlined in the IPC policy.
- Strengthen general workers' schedules of work through highlighting risks of infection to the patient.
- General workers must be informed of changes on infection prevention and control and cleaning.
- General workers must be skilled with information on cleaning.
- The cleaners must be valued for the job they are doing, to minimize negative attitude.
- Improved communication between nurses and general workers is important.

		<ul style="list-style-type: none"> - Nurses must lead and guide general workers on procedures and cleaning in the ward.
<p>Knowledge and attitude of health care personnel on infection prevention and control measures</p>	<p>Improve the knowledge and attitudes of health care personnel on IPC measures</p> 	<ul style="list-style-type: none"> • To improve the knowledge and attitude of health care personnel, the following actions are recommended: <ul style="list-style-type: none"> - Introduce IPC refresher courses for all health care personnel in the institution. - Monitor the implementation of IPC measures and address attitude as it is identified.
<p>Poor hospital maintenance</p>	<p>Improve on hospital maintenance processes that will facilitate the implementation of IPC measures.</p>	<ul style="list-style-type: none"> • Improve hospital maintenance through the following strategic actions: <ul style="list-style-type: none"> - Improvement to the maintenance plan must be adhered to. - Replace the broken hand basins.

		<ul style="list-style-type: none"> - Service the leaking toilets in the wards. - Install the toilets in the isolation rooms. - Close the top of the isolation room.
<p>Structural challenges</p>	<p>Implement processes that will overcome the structural challenges as problems in IPC measures.</p>  <p>The logo of the University of Johannesburg, featuring a stylized bird with wings spread above the text 'UNIVERSITY OF JOHANNESBURG'.</p>	<ul style="list-style-type: none"> • To overcome structural challenges, the following strategic actions are recommended: <ul style="list-style-type: none"> - Management must adhere to bed occupancy rate of the ward to avoid overcrowding that impacts on the implementation of infection prevention and control. - Communication between management and doctors before the admission of patients is important. - Build enough isolation rooms to avoid mixing patients.

4.3 EVALUATION OF THE RESEARCH

4.3.1 Introduction

The purpose of this chapter is to evaluate the entire study in order to ascertain whether the objectives of the study have been achieved. The recommendations with regard to strategies to facilitate the implementation of infection prevention and control measures in nursing education, practice and research will be described.

4.3.2 Problem statement

The hospital incident reports show an increased number of patients with sepsis at the hospital and the inconsistent ordering of hand-washing resources. A further observation is the inconsistent implementation of infection prevention and control development programmes, like hand-washing procedures and the wearing of protective clothing required for infection prevention and control.

The Auditor-General Report (2012) and the Office of Quality Compliance Report (2013) both showed the poor implementation of infection prevention and control measures at this hospital. The researcher has observed that despite the protocols, policies and guidelines regarding infection prevention and control practices being in place, and despite the statistics presented at meetings on high infection rates at the hospital, operational managers and professional nurses who are tasked with the implementation of these measures do not seem to take infection prevention and control measures as a critical issue at this hospital.

This highlighted the need to research the factors influencing the implementation of infection prevention and control measures at this public hospital in order to develop strategies to facilitate the implementation of these measures at the hospital.

The problem statement was related to the purpose and objectives of the study.

4.3.3 Purpose of the study

The purpose of this study was to develop strategies to facilitate the implementation of infection prevention and control measures at a public hospital in Gauteng.

Objectives

To explore and describe the factors influencing the implementation of the infection prevention and control measures at a public hospital in Gauteng.

To develop strategies that will facilitate the implementation of the infection prevention and control measures at the hospital.

The purpose and objectives of the study gave the direction that the research followed.

The researcher kept the purpose and objectives of the study in mind and with the developed strategies, the researcher is confident that the purpose and objectives of the study were achieved.

4.3.4 Research Design and Method

The research design for this study was a qualitative, exploratory, descriptive and contextual research design. The design was found to be appropriate to explore and describe the factors influencing the implementation of infection prevention and control measures. Based on what participants said, strategies that would influence the implementation of infection prevention and control measures were described and presented in this chapter.

4.3.5 Data Collection and Description

The focus of this phase was to explore and describe the factors influencing the implementation of infection prevention and control measures at a public hospital in Gauteng. Focus group interviews were conducted with professional nurses, as well as in-depth individual interviews with operational managers.

Data was analysed by the researcher and an independent coder, where after a consensus meeting regarding themes and subthemes, shown in Table 3.1, was agreed upon.

The findings were described with the support of the related literature. The completion of Chapter 3 informed the development of the strategies that will influence the implementation of infection prevention and control measures in this chapter. This gave the understanding that the purpose and objectives of the study have been achieved in addressing the research problem.

4.4 LIMITATIONS

The study has identified the following limitations:

Data collection was done at only one public hospital, however, sufficient data collected proved to be sufficient to answer the research question and to address the objectives of this study.

A collection of the data was difficult as it was not possible to get all the nurses together due to the off-duty schedule and unavailability of some participants.

The researcher works in the same hospital where the study was conducted. This could have affected participation by some potential participants. However, bracketing was done to establish the trustworthiness of the study and the participants were assured of autonomy, non-maleficence, and justice as described in Chapter 1 and 2.

4.5 RECOMMENDATIONS

The recommendations are based on the findings of the study. The findings of this study have highlighted the factors that influence the implementation of IPC measures at a public hospital in Gauteng. It is therefore recommended that the strategies described in this chapter be implemented at the hospital nursing practice, in nursing education, and nursing research.

4.5.1 Recommendations for nursing education

The following is recommended:

- Refresher course on IPC measures to be developed and implemented for nurses
- Introduction of IPC training as a module within the institutions for all staff to attend
- Training of the management on IPC measures
- Training of the general workers (cleaning staff) on basic IPC measures
- Education and training that clearly outline the roles and task of every personnel member on infection prevention and control measures
- Infection prevention and control presented as a full module in the undergraduate and postgraduate curriculum of nursing education institutes

4.5.2 Recommendations for nursing practice

- Nursing management must make IPC a strategic priority and drive a zero-tolerance agenda for the non-implementation of IPC measures at their hospital.
- Nurse managers must be empowered on the IPC policy and implementation of the same.
- Nursing management must implement the developed strategies to facilitate the implementation of IPC measures.
- Nursing management must create an awareness of the need for compliance with IPC measures and the related legal framework governing IPC measures.

4.5.3 Research

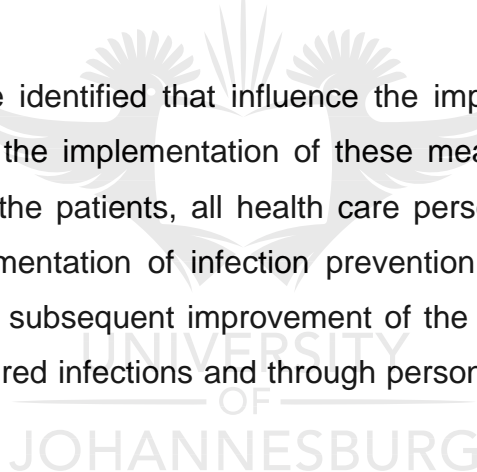
- The study was conducted at a public hospital in Gauteng. It is recommended that the study is replicated at other public hospitals as well as private hospitals.
- Further research should be conducted on the compliance with the implemented strategies on the IPC measures on a quantitative research design.
- Research on the role of infrastructure in infection prevention and control is required.
- Research on doctors' perceptions of their role in infection prevention and control should be conducted.

4.6 CONCLUSION

This study focused on the factors that influence the implementation of infection prevention and control measures at a public hospital in Gauteng. The research problem, purpose, objectives and question of the study were stated in order to direct the research study. A qualitative, explorative, descriptive and contextual research design was outlined. Qualitative data coding analysis according to Tesch was used, as described in Creswell (Creswell 2009:186). Trustworthiness of the study was ensured by using criteria for establishing the trustworthiness of qualitative data (Lincoln & Guba, 1985:316).

Ethical considerations were applied throughout the study to protect the human rights of participants. Relevant literature was integrated into the findings from which strategies to facilitate the implementation of IPC measures were described.

As many factors were identified that influence the implementation of IPC measures, strategies to facilitate the implementation of these measures were developed. These strategies will benefit the patients, all health care personnel and management at this hospital as the implementation of infection prevention and control measures will be enhanced through the subsequent improvement of the quality of patient care, through reduced hospital-acquired infections and through personnel that are conscious of these strategies.



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FACULTY OF HEALTH SCIENCES
ACADEMIC ETHICS COMMITTEE

AEC01-34-2014

24 May 2014

TO WHOM IT MAY CONCERN:

STUDENT: **MAGADZE, TA**
STUDENT NUMBER: **920415625**

TITLE OF RESEARCH PROJECT: **Factors influencing the implementation of infection prevention and control measures in a public hospital in Gauteng**

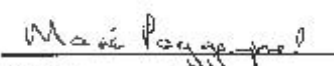
DEPARTMENT OR PROGRAMME: **MCUR Nursing Management**

SUPERVISOR: **Ms H Ally** CO-SUPERVISOR: **Ms A Makhene**

The Faculty Academic Ethics Committee has scrutinised your research proposal and confirm that it complies with the approved ethical standards of the Faculty of Health Sciences; University of Johannesburg.

The AEC would like to extend their best wishes to you with your postgraduate studies.

Yours sincerely,


Prof M Poggenpoel
Chair: Faculty of Health Sciences AEC



UNIVERSITY
OF
JOHANNESBURG

FACULTY OF HEALTH SCIENCES

HIGHER DEGREES COMMITTEE

HDC01-33- 2014
24 May 2014

TO WHOM IT MAY CONCERN:

STUDENT: **MAGADZE, TA**
STUDENT NUMBER: **920415825**

TITLE OF RESEARCH PROJECT: **Factors influencing the implementation of infection prevention and control measures in a public hospital in Gauteng**

DEPARTMENT OR PROGRAMME: **MCUR Nursing Management**

SUPERVISOR: **Ms H Ally** **CO-SUPERVISOR:** **Ms A Makhene**

The Faculty Higher Degrees Committee has scrutinised your research proposal and concluded that it complies with the approved research standards of the Faculty of Health Sciences; University of Johannesburg.

The HDC would like to extend their best wishes to you with your postgraduate studies.

Yours sincerely,

Prof Y Coopoo
Chair: Faculty of Health Sciences HDC



GAUTENG PROVINCE
REPUBLIC OF SOUTH AFRICA



Office of the Director Clinical Services
Enquiries : Dr. P. Shembe
Tel : (012) 529 3880
Fax : (012) 560 0099
P.shembe@agpcr.gov.za

To : Mr. T.A. Magadze
University of Johannesburg
4/8 Airport Road
0001

Date : 10 June 2014

PERMISSION TO CONDUCT RESEARCH

The [redacted] Hospital hereby grants you permission to conduct research on "factors influencing the implementation of Infection prevention and control measures at [redacted]"

This permission is granted subject to the following conditions:

- That you obtain Ethical Clearance from the Human Research Ethics Committee of the relevant University
- That the Hospital incurs no cost in the course of your research
- That access to the staff and patients at the [redacted] Hospital will not interrupt the daily provision of services.
- That prior to conducting the research you will liaise with the supervisors of the relevant sections to introduce yourself (with this letter) and to make arrangements with them in a manner that is convenient to the sections.

Yours sincerely

DR. P. SHEMBE
DIRECTOR: CLINICAL SERVICES

Consent letter to conduct research: Ethical committee

478 Airport Road
Doornpoort
Pretoria
20 October 2013

The Research Committee and Hospital management

Re: Consent to conduct research

I, Thizwilondi Ananias Magadze, employed at [REDACTED] Hospital am currently registered as a MCur Degree in Nursing Management at the University of Johannesburg. The programme requires me to complete a research study to explore the “factors influencing the implementation of infection prevention and control measures in a public hospital in Gauteng”. The study is done under the supervision of Mrs. H Ally and Mrs. A Makhene, both from the University of Johannesburg.

The purpose of the study is to explore and describe the factors influencing the implementation of infection prevention and control in a public hospital in Gauteng in order to develop strategies that will facilitate the implementation of the infection prevention and control measures in this hospital.

I hereby request permission to interview operational managers and professional nurses in the hospital. The interviews be done over approximately 45-60 minutes and strict ethical principles will be adhered to. These interviews will also be audio tape recorded with your permission (**Annexure A, C**) for accuracy and to ensure that the data is transcribed verbatim. The names of the participants and the hospital will be omitted during all interviews and during data reporting.

The information related to the study will only be accessible to the researcher and the supervisors of this study. An expert interviewer will be recruited to ensure objectivity and

rule out bias. The venue, date and time will be agreed upon between the interviewer and participant. All data will be stored in a secure cupboard for two years and will be destroyed after publication of the study. Participation in this study is voluntary and the participants have the right to withdraw at any stage during the research if you wish to do so. The findings of the research will be made available on request to both the participants and hospital. Should you have any queries about the study please feel free to contact me on 0726436543 from Monday to Friday between 8h00 and 16h00.

There will be no risks or discomforts to the participants during study, instead hospital will benefit from the developed strategies as they will facilitate the implementation of the infection prevention and control measures. The research will benefit the professional nurses, colleagues, hospital management and department through implementation of infection prevention and control measures. The research will also assist with the develop strategies that will facilitate the implementation to infection prevention and control measures at a hospital.

I am trusting that my request will be considered.

Yours faithfully,

Thizwilondi Ananias Magadze

Date

Supervisor:

Mrs. H. Ally (0837157142)

Co-Supervisor:

Mrs. A Makhene (0768991989)

Approval by:

Hospital Representative

Dear Prospective Participant

Invitation to participate in a research study

I, Thizwilondi Ananias Magadze, am currently registered as a Mcur student at the University of Johannesburg majoring in Nursing Management. The title of the study is

“factors influencing the implementation of infection prevention and control measures in a

public hospital in Gauteng”. I invite you to participate in this research study. The study

is done under the supervision of Mrs. H. Ally and Mrs. A. Makhene both from the University of Johannesburg.

The purpose of the study is to explore and describe the factors influencing the implementation of infection prevention and control measures in a public hospital in Gauteng in order to develop guidelines that will facilitate the implementation of the infection prevention and control measures in this hospital.

In order to develop these strategies I request your consent to participate in the study. In Depth individual interviews for Operational Managers and Focus group interview for professional nurses will be conducted over approximately 45-60 minutes. Strict ethical principles will be adhered to. These interviews will also be Audio tape recorded with your permission for accuracy and to ensure that the data is transcribed verbatim. Anonymity will be maintained during all discussions related to the study and the information related to the study will only be accessible to the researcher and the supervisors of this study. An expert interviewer will be recruited to ensure objectivity and to maintain partiality. The venue, date and time when the interview will be conducted will be agreed upon between you and the interviewer. All data will be stored in a secure cupboard for two years and will be destroyed after publication of the study. Your participation in this study is voluntary. You have the right to withdraw at any stage during the research if you wish to do so. The research findings will be made available to you on your request. Should you have any queries about the study please feel free to contact me on 0726436543 from Monday to Friday between 8h00 and 16h00.

There will be no risks or discomforts to you in sharing your experiences, instead you will benefit from the developed strategies as they will facilitate the implementation of the infection prevention and control measures in the hospital.

Thank you for your participation, your time and input is highly valued.

Yours faithfully,

Thizwilondi Ananias Magadze (Student)

Date: _____

Participant signature: _____

Supervisor: _____

Mrs. H. Ally (0837157142)

Co-Supervisor: _____

Mrs. A. Makhene (0768991989)



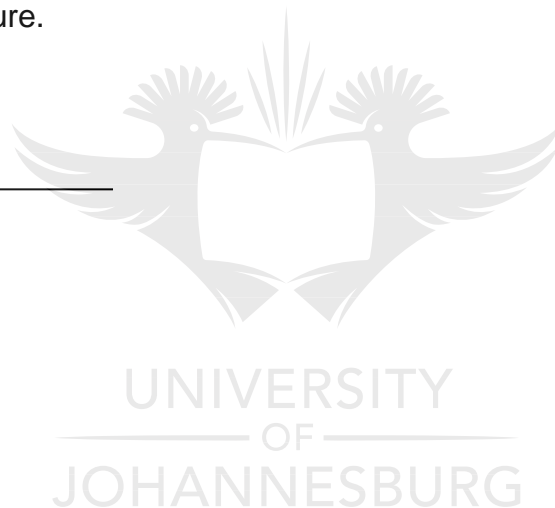
Consent to participate in research

I _____ hereby agree to participate in the research study on factors influencing the implementation of infection prevention and control measures in a public hospital in Gauteng.

I understand that my participation is entirely voluntary, I will be treated fairly, that anonymity and confidentiality will be maintained, my privacy protected and that I may withdraw my participation at any stage of the research.

Participant's signature.

Date: _____



Consent to the use of an Audio recorder

I _____ hereby agree to a recorded interview.

Participant's signature.

Date: _____



Sample of transcribed data.

Focus group and Individual interview

Date: 11.09.2014

Number of participants = 6

Participants' code: participant 1 – P1

 Participant 2- P2

 Participant 3 - P3

 Participant 4- P4

 Participant 5- P5

 Participant 6- P6

INTERVIEWER CODE - I

I	<i>Thank you all for coming and everyone must feel free to say anything that comes to mind. There is no who have to feel ashamed or think what the other is saying is wrong because all said will be taken into consideration. My question to you all is “tell me the factors that influence the implementation of infection prevention and control measures in this hospital”.</i>
P1	I think one is knowledge. Yah, knowledge in the sense that if people can be empowered on what is the importance of infection control, they easily brought into culture of observing infection prevention and control issues. That's what I think
I	<i>Can you elaborate more when you say knowledge</i>
P1	People are..., may be they are not involved. People are not empowered.
I	<i>What do you mean empowered? Can you elaborate?</i>
1	The flow of information, maybe, eh.., they are not interested or system doesn't allow them work harder towards prevention.
I	<i>Can we say more when you say “interested”</i>
P2	They have anxiety, the fear of ...you know...mmmhh, because when introduced some other of things, people feel a bit of resistance, because they have fear, and some don't see the necessity.
P1	I would like to go back to empowerment, knowledge as I said, i think in terms of why things need to be done, then you will automatically have interest in particular situation. An example is , now... , you see all categories of nurses are involved in issues of preparedness of Ebola. Every time they comeback from information sharing sessions, then they realise, yoh (hands gesture) , it means its important to wear the protective clothing, so they realize that people need to be informed to realize the fatality of this things and they start with safety measures. Because at times when people hear things, they tend to do different ways, but if they realize how important , they follow it, they tend like to adhere to standard precaution. But at times i have observed when doing dressing they don't adhere and ask self why. And a person will say i thought i am doing it and passing, it's no big deal. That's why I'm bringing this issue of knowledge
I	<i>Thank you for such input, any other factors you may think of?</i>
P3	Yah, sometimes like, the language barrier is a concern. For example when they present these issues of Ebola, there are different categories of staff. When the staff who attended come back to the wards and asked what did they heard, they say, ah... i didn't hear a thing because they speak deep language.
I	<i>Did I hear you well when you say language barrier is a concern?</i>
P3	If the language used covers all the categories, like if no mixing of group can be done during information sharing, it will help to know if the information has been understood

P4	Consistency is other thing that I think , because if we talk of something now, and don't follow it up, it is taken as if it's done, so, eh...,well , must be consistence to talk about it more so that everyone don't relax.
<i>I</i>	<i>What else</i>
P1	Another things is the shortage of resources in the institutions
<i>I</i>	<i>Can you elaborate more on that please</i>
P1	Let me say I order, I want to be prepared in case I don't have this thing like now but I'm preparing myself, you order, something is not there , you do follow up , it's still not there. I will say like protective gown, you don't have, here you have instance, an infection in the ward, and you end up not adhering to the principles of infection control because you don't have the resources. at times there are non availability of resources, maybe they have got minimal of something for now, let's say you patient isolated when we do ...doing preparedness and don't have enough resources, you exhaust what you have and still have the patient, request from relevant stakeholders, your team will come and say, you have told us that we must not go into that room without relevant protective clothing. Then what is happening to us? Because of not having attire to use, we end up not adhering.
<i>I</i>	<i>On an issue of non availability of resources, can we go deep into that</i>
P1	Ok, on the unavailability of resources, to me like I said, as a team player, it also has got negative impact. people are looking at me as operational manager some you give them information, documentation and they know how to adhere and they are fine, they start to comply and here is the situation there is no resources, to enforce the practice for them to adhere is like big is, is like you come to them and say....guys....this is the last resources, I have tried from other offices but I cannot win. We start to improvise. To me is like we gave information of adherence and while they focusing on that we come and change again to say because you don't have this, improvise. To me is to give latitude platform to say even in time you don't have protective clothing, you can attend to such case without following infection control measures. Because there was situation where you said we can do without, even you come and say, guys, its nursing, they will say, you the one who came and say we can do it without following such measures.
<i>I</i>	<i>You are saying you are the role player or role model, can you elaborate on that.</i>
P1	Like if I say, this is how things need to be done they need to be seen done by me. I must lead the practice and they must copy
<i>I</i>	<i>Any other factors that influence the infection prevention and control measures in this hospital.</i>
P5	To realise that infection control must start with us. Cleanliness, short nails so, it means we have this long nails that means we are not understanding it or not practicing it correctly. When we understand that infection control start with us, it will be better.
<i>I</i>	<i>What do you mean when you say "us"</i>
P5	Us means nurses. Knowing that we the one taking care of patients we need to prevent infections, before it goes to patients it must be us. We can't educate patients to cut nails when we can't do the same.
<i>I</i>	<i>Reminding everyone that we talking of factors that influence the infection prevention and control measures in this hospital. Any other factors?</i>
P4	I think population. I think we are uncontrollable, the patients....what's is that word (thinking while smiling)...overcrowding...yah... we are always having overcrowding there in the wards and as such we are unable to control infection
<i>I</i>	<i>How do overcrowding affect the implementation of infection prevention and control measures</i>
P6	Overcrowding like each ward supposes to take forty patients, is it? At the moment at surgery we are always above forty to fifty patients. Then there will be five beds, I mean each cubicle supposed to have ten beds, whereas now they added extra five bed. Is it they say, I mean we are unable to control infections because there is no space? When discharging patient there must be cleaning of bed, locker and everything unfortunately we will never do that because of time, since other patients are waiting for the bed. Due to over populated, we just take patient sitting on the bench without cleaning because of overcrowding.
<i>I</i>	<i>If I heard you well, there was statement that say "they said" who said what....can you elaborate</i>
P6	There was a meeting attended on infection control and they say each cubicle after every four beds there must be hand washing basin, in between we use D Germ. At the fourth patient we wash. So if overcrowded other beds closes basins, how we going to wash. Even when we admit patient with TB, there is no way or possible to isolate such case because there is no space available.
P1	Maybe to add on that, very same issue of overcrowding, there is standard of infection control of distance between beds, we are not even complying about that, because there is no space and we won't be able to adhere to such principles other thing like she was saying. Maybe it's a point on its own. When ward is full and other patients are lying on the stretcher, you can quickly disinfect the bed to accommodate the patient. This can go back to knowledge given to other people. The transition of general workers where they have to report to nursing, their job description looks like

	they were not thoroughly involved on planning it. It needs me again to sit down with cleaners and give information on how to disinfect the bed. Its like you want to come in and teach them something they never being taught. As a results they were not adhering to disinfection of beds when patient is discharged
<i>I</i>	<i>That is good information. Any other factors</i>
P2	I don't know how to put it, but the categorizing of disease. They mix patients. There are patients from surgery who are mixed with TB patients.
P3	From ward 3 there is an isolation room that is not closed up to the ceiling. So if there is airborne case, it rendered useless. the structure is a challenge....eish
<i>I</i>	<i>Can we elaborate more on structural issue</i>
P5	The cubicle is used as isolation because the ward is always full. The same isolation room is next to nurse's bay. The patient still has to walk from here to last cubicle for toilet and bathroom. So they sharing
<i>I</i>	<i>Okay, I hear you , any other factors</i>
P3	Again there is this sharp containers bracket. The lid does not fit the container. It's like other is bigger than the other.
<i>I</i>	<i>How do the sharp containers brackets lid not fitting be as factors influencing infection prevention and control measures? Can I get clarity here</i>
P3	The containers are for waste segregation and need us to comply. To avoid needle pricks and wastage, the lid must, i mean fit properly. Some when disposing they tend to just throw the needle anywhere because is just like open bucket. Not safe at all (shaking head).
P1	In nursing side I will say in administration side we don't take infection control into perspective when we do delegation. Because it's only that time where there is a case where we think of infection and then no delegated personnel. I don't want to associate delegation with shortage of staff, because i will be lying.
<i>I</i>	<i>Thank you for the active participation on first question, this brings us to the last question which is as follows:, tell me what can be done to facilitate the implementation of infection prevention and control measures in this hospital</i>
P3	If all general workers of us are in-service so that they know what to do.
<i>I</i>	<i>Can you explain on that please</i>
P3	So that they know, let's say when serving soft porridge and floor is not cleaned. if in serviced
<i>I</i>	<i>What else</i>
	I think theoretical must go hand in hand with practical, we should have in service training and do it practical. We must not say short nails to patients when us are long one
P2	Me ,I want to say the serving of food by kitchen, when busy doing bed making, the food trolley is delivered .so it's better if kitchen come into planning to know when to serve meal
<i>I</i>	<i>Can I follow that issue of theoretical practical, I heard the word "we". Who are we</i>
P2	I mean we as nurses to train general workers to be trained by us to prevent them doing wrong things.
P1	Training must be offered to all staff of hospital including doctors
<i>I</i>	<i>Any other issues that we think</i>
P1	On issues of, maybe, not done in the nursing way, there must be work program of cleaners on certain time. They just work the way they want
<i>I</i>	<i>Thank you for that, any other</i>
P4	There is a team working at night working only in high care. If every ward has general workers working in all ward, that will keep ward clean
<i>I</i>	<i>Are we saying there is no cleaners in other wards at night</i>
P6	Yes. We depend to those high care wards .
P1	Maybe there must be delegated person in the ward and visibility of infection control team. Because sometimes in the wards we are relaxing and if the team just come we can just realize how important is issues of infection control. It would be like policing us. That in the ward will help us by reminding us that we adhere to infection control measures. This delegation will also help during the report writing because I can pin point which personnel is not adhering.
P3	We must also put reports of infections from wards like when we do absenteeism to the matrons or daily report to give information on what challenges.
P3	For overcrowding, I don't know how we work in this hospital, is like we just admit. Even if the beds are full. If management adhere to bed occupancy of ward will help. And if the Doctor stop to mix different cases of patient.
P1	I would like to differ there...mixing of patients is done by us, nurses not Doctors. The management has brought this as measures during contingency plan.
P4	The other issue is long stay of patient in the ward. Some patient staying for 2 month without operation while Doctors say they doing investigations.

I	<i>That might be not good for the ward, what do you think</i>
P1	Yes, it also impact on the resources we have because they need to be taken care of.

INDIVIDUAL INTERVIEW sample

Individual interview3

Number of participant(s):1

Participants code: I3P1 (individual interview 3 participant 1)

INTERVIEWER I

I	<i>Can you tell me the factors that influence the implementation of IPC measure in this hospital?</i>
I3P1	Ok, our cleaners they don't have job description. They don't know what to do and then even the in-service, they don't get the in-service training. If you tell them here we don't do this, or put the sign that you busy working here and place is wet, they say that's what you cant tell me.
I	<i>Can you explain more on that?</i>
I3P1	That is undermining. I think if we can get in-service training and the job description and the details of what is their job because some of them are not of practise.
I	<i>If i hear you well, if they get job description, can you elaborate more on that.</i>
I3 P1	Somebody has to teach them, because they just take the bucket and the mop that is full of mud and mop here, toilet and everywhere is one mop. Even when the water is dirty they cant change the water. So if somebody supervisor can come and show them what to do.
I	<i>Can you elaborate more</i>
I3P1	Ehh, I think superior is the management. But mine , i want to talk of the unit that is always that is always full. Some patients are coughing others are having different conditions. Like in our out patients each out-patients and in -patient come to our place. If they are ehh , if there are in-patient and out-patient we have overcrowding and then , some time somebody has infectious diseases, from the ward or from home, not that we will be aware. Let me give example of TB some can come, hmmm , is it not that TB is a droplet infection he can cough not knowing that he is having TB. We are having that problem of overcrowding . we cannot just isolate because we don't have good structure
I	<i>Any other factor s that you thinking of?</i>
I3P1	We do not have resources,
I	<i>Can you explain what you mean about resources/</i>

I3P1	Nurses don't have gloves
I	<i>Can you explain what do u mean when you say they don't have gloves</i>
I3P1	Isn't that sometimes they tell us are out of stock. So how can you function uhm and even linen
I	<i>Any other factors?</i>
I3P1	Proper dressing rooms with lots of patients the accumulation of micro organism in that area are lots. The infrastructure are not conducive of the practise
I	<i>Can you elaborate more on that</i>
I3P1	Because we don't have proper space for this patients , hence it is insufficient. We don't have the place for isolation, yah, we don't have the isolation area let me say that. And then we don't have proper dressing rooms for aseptic technique. Is it that we want is to do the correct thing, i mean, like what he said
I	<i>any other factors</i>
I3P1	And even human resource. For example we having different committees in our hospitals , like infection control committees. And we short staffed, and some other are sick and there is in-service to attend, we end up not able to attend such in-service because we running short. And then it maybe we can have more staff, we can add more people to can attend such in-service in order to give in-service to other staff on what is expected from us
I	<i>If i hear you well you say human resource, can you elaborate more on that</i>
I3P1	Yes some other things in this unit need staff to do it. For example, hand washing soap. You order it they say there is no soap, its out of stock. The paper towel is out stock, how are we going, i mean, we put soap , no paper towel and no D Germ, and then there is new contractor who came and put soap and no paper towel
I	<i>Any other factors you can think of</i>
I3P1	And sometimes we get shortage of sharp containers
I	<i>Can you elaborate more on that</i>
I3P1	Hmmm, if they are full , we can discard the waste, we can get the new one, since when we order they say its out of stock
I	<i>What else are factors that influence the implementation of infection prevention and control measures in this hospital</i>
I3P1	Even the gowns for isolation, is it we have to wear gowns, caps, musk and aprons.
I	<i>Can you elaborate more on gowns</i>
I3P1	Gowns are not there. Even if they are there we are to wear one gown constantly because it cannot be changed since there is no other thing.
I	<i>What must be done to facilitate the implementation of infection prevention and control measures in this hospital</i>
I3P2	The cleaners must undergo in-service training mostly on the use of Biocide. They don't know how to mix it during cleaning up of infectious place
I3P1	And the supply of resources . this is our main problem all over the areas
I	<i>What do you mean about supply of resources</i>
I3P1	The resources , if are available assist us to comply
I	<i>Any other thing that can be done to assist the implementation</i>
I3P1	I think they are all now. What do you think
I3P1	Yah, hmm, that's all that I think