BINDURA UNIVERSITY OF SCIENCE
EDUCATION

KNOWLEDGE AND PRACTICE OF NURSES ON INFECTION CONTROL AND STERILE TECHNIQUE
PRINCIPLES

BY

B1026001

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE BACHELOR OF
SCIENCE NURSING EDUCATION HONOURS

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Abstract

As nosocomial infection increase, it is essential that nurses and heath policy makers have an understanding of the importance of infection control principles. The study utilized Florence Nightingale’s Environmental theory as the backbone of the research. The theory describes the importance of infection control measures such as damp dusting, use of personal protective equipment and sterile technique during procedures. A descriptive research design was used and random sampling method was used to select the participants. A total of fifty nurses from Bindura Provincial Hospital participated in the study. A structured questionnaire was used to collect tables, pie charts, graphs and narration to present data. The findings showed that 4 (6%) of the respondents had poor knowledge and 14 (28%) had excellent knowledge. The study revealed that, 21 (42%) of the respondents did not utilize the infection control manual, either because they did not know about it 12 (24%) or it was not available 9 (18%). The research findings also indicated that the attendance of infection control workshops was associated with one’s professional status and number of years in the profession. Fifteen (30%) seniors nurses including sisters in charge attended more infection control workshops as compared to 1 (2%) of junior nurses. Recommendations were that there is need by policy makers to provide in service education of infection control principles on regular basis to all nurses so that they are kept up to date with current knowledge. There is also need for hospital administrators to provide enough resources such as detergents and enough nurses for proper infection control practices.
Approval Form

The undersigned certify that they have read and recommend Bindura University of Science Education for acceptance, a research project entitled:

A research was done on knowledge and practices on infection control among nurses based at Bindura Hospital.

I. To be completed by student.

I certify that this dissertation meets the preparation guidelines as presented in the Faculty Guide and Instructions for typing dissertations

_______________________     ________________
Signature of student       Date

II. To be completed by supervisor.

This dissertation is suitable for submission to the Faculty. This dissertation should be checked for conformity with Faculty guidelines.

_______________________     ________________
Signature of Supervisor     Date

III. To be completed by Chair of Department.

I certify to the best of my knowledge that the required procedures have been followed and the preparation criteria has been met for this dissertation.

_______________________     ________________
Signature of Chairman       Date
Acknowledgement

Firstly I would like to thank my heavenly father for his strength and guidance. My greatest appreciation to Mr. T Chipfuva my supervisor for guidance as well as the knowledge I gained in the research process.

Thanks to Bindura Hospital senior and junior staff who shared their knowledge, without them the study would have been impossible.

I would also like to thank my husband for his motivation, support and love throughout the study as well as my colleagues and friends for their support. Finally, I would like to thank Mr. Steve for proof reading and editing this research. God bless them all.
Dedication

I dedicate this study to my husband Felix and sons, Tadiwanashe and Tadisashe Shayamano for their unwavering support.
Declaration

I declare that a research study on knowledge and practices on infection control among nurses was done with specific reference to Bindura Hospital. The study is my own presentation and it has not been submitted before for any Degree programmed or examination in any University. The source the research has quoted have been indicated and verified as complete reference.

Name: Petronella Shayamano

Date: .......................

Signature .......................
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CHAPTER ONE

INTRODUCTION

Nurses play an important role in health delivery service in Zimbabwe. Their role is one critical in prevention of infection spread. Nurses are at the fore front of patient care hence facilitating the spread of infection. This is particularly so for junior nurses who are doing most of the work in the wards because of acute shortage of experienced qualified nurses in the country. The nurses may do the work hurriedly and in the process, fail to follow correct measures of preventing infection, thereby putting the patient at risk of acquiring infection. In view of this the study sought to find out the knowledge of nurses on infection control measures and importance of sterile technique practice in the hospital. This chapter sets to examine background of the study, problem statement, purpose, objectives, research questions, significance of the study, delimitation or scope of the study and definition of key terms used in the study.

Background of the study

The nursing profession was validated by Florence Nightingale (1820-1910), the world’s first nursing theorist. She identified the concept of a nurse as a skilled worker and demonstrated that the hospital environment, as well as cleanliness had an ultimate effect on the patient (Fortunato, 2000:18). Since then, the hospital environment which include the theatre, wards as well as the nursing personnel’s attention to sterility, has played an important role in the reduction of nosocomial infections. The hospital environment provides exposure to a variety of organisms and therefore the patient is at risk of nosocomial infections.

However, the issue of nosocomial infection continues to be one of the most important public health problems in many countries throughout the old. These infections remain one of the most common complications affecting hospitalized patients and results in morbidity, mortality and
additional costs. It is well recognized that the risk of transmission of pathogens when providing medical care and the reduction in the rates of incidence of nosocomial infection can be kept low through appropriate standardized infection control measures.

The burden of nosocomial infections has seen to be substantial in developed countries where it affects 5-15% of hospitalized patients in regular ward and in as many as 50% or more in intensive care units (World Health Organization). In developing countries, mostly African countries, the magnitude of the problem is high due to overcrowding and understaffing in hospitals. This also leads to inadequate infection control practices. Lack of infection control policies, guideline and trained professionals also add to the extent of the problem. The most common nosocomial infections in Africa are urinary tract infections, surgical site infections, hospital acquired pneumonia and health care associated septicaemia. (1st African Conference on Infection Prevention control 2009). The World Health Organization (2008), estimate that in 50%-10% of patients, they acquired one or more infection in health facilities, the risk being 2-10 times higher in developing countries.

Zimbabwe is also facing a huge burden of nosocomial infections as revealed in the Herald of 30 January 2013. Ministry of Health, the ageing nursing population and the out-migration of middle level and experience nurses in the Clinical areas and high exposure units led to the lack of mentorship and supervision to team members as they execute their duties thereby resulting in nosocomial infection. He added on that long back nurses religiously washed their hands properly between patients regardless of the number of patients to be seen. they also mentioned that nosocomial infections had an impact of extended hospital stay hence increased costs of care and the present state of Zimbabwean facilities do not promote high standard of care that ensure adequate infection control practice.

Lack of resources and poor infection control practices is seen as major cause of nosocomial infections at Bindura Provincial hospital. The current nurse patient ratio per shift is 1 as to 30 patents on average which is far much above the normal ratio of 1 nurse as to 4 patients. Due to the situation the nurses fail to deliver proper infection control measures hence existence of nosocomial infections (Infection Control Bindura Hospital).
The researcher therefore finds it beneficial to conduct a study to determine the knowledge of nurses at Bindura Hospital on infection control and sterile technique principles of reduction of nosocomial infections.

Problem statement

Fifteen percent (15%) of hospital admissions acquire nosocomial infection and the susceptibility to infection has been associated with the use of invasive devices and negligent infection control practice which contribute to the necessity of implementing control measures. (Creedon, 2005). In January 2013 swabs were taken from Bindura Provincial Hospital theatre and surgical ward including bathroom tubs, for laboratory examination. After 48 hours of incubation methicillin resistant staphylococcus Aureus, Clostrium Difficile and Enterococci were obtained. These microorganisms show presence of infection (Infection Control Bindura Hospital). The period of September to December 2012 a total of female patients were admitted in the female ward. One thousand two hundred and ninety four patients were admitted for more than 48 hours and were admitted for more than 48 hours and 14 (1.08%) of the patients contacted nosocomial infections. In male ward the total admission was 4604 with 1553 patients admitted for more than 48 hours and 6 of them contacted nosocomial infections, children’s ward had only 3 patients with nosocomial infections out of 1247 patients who were admitted for more than 48 hours. It is important to note that maternity had no record of nosocomial infections but intensive care unit recorded the highest nosocomial infections of 50 (27.62) out of the 181 patients admitted for more than 48 hours (Bindura Hospital infection Control).

Owing to the information mentioned above, the need arises to undertake research, to determine whether the nurse at Bindura hospital have adequate knowledge regarding infection control and sterile technique principles inorder to prevent nosocomial infection. Some of the sterile technique principles are not being carried out during procedure like dressings, infections, catheterisation and canulation. New employees and students due to staff shortage are not getting enough mentorship on infection control. The infection prevention and control policies and
guidelines manual is kept in custody of the sister in charge making it impossible for other nurses to access it. In addition, there are no in-service training of the nurses to update them on infection control. Infection control guidelines should be accessible by everyone so that the principles are well implemented to prevent nosocomial infections. In-service training on infection control also keeps the nurses well knowledgeable about current principles and guidelines hence, prevention of nosocomial infection.

The researcher therefore has noted that there is an increase in the rate of nosocomial infections at Bindura Provincial Hospital leading to prolonged hospitalization of patients. The researcher will conduct a study to determine whether the nurses at the hospital have knowledge on infection control and sterile technique inorder to prevent nosocomial infections.

Purpose of the study

The purpose of the study is to determine the knowledge of nurses on infection control and sterile technique principles in reduction of nosocomial infections.

Objectives

- To determine the level of nurse knowledge regarding infection control practice the prevention of nosocomial infections.
- To determine the factors that influence nurses’ compliance with good infection control practice.

Researcher questions

i. What is the nurses’ level of knowledge regarding infection control practice in the prevention of nosocomial infections?
ii. What are the factors that influence nurses’ compliance with good infection control practice?
Significance of the study

The study is going to yield some benefits which are analyzed as follows;

Policy Makers - The ministry will be able to address some concern raise and draw up programmes for nurses which will help in awareness of infection control thereby reducing nosocomial infections. The stations in the table represent different ward in the hospital and rows highlighted in the table represent the ward with highest nosocomial infection rate. These wards admit surgical patients meaning that some of the patients came to the hospital for a surgical procedure that had to be done.

School of nursing - the school will find the researcher useful as they will add information to existing body of knowledge.

Limitations

The researcher encountered a number of limitations which included the sample size which was too small and only one site was used for the research, thereby limiting the generalisability of the research findings. More so, some of the participants were not cooperative which negatively influenced the research findings. Financial constraints in terms of the cost of stationary were also a limitation.

Delimitation

The study is going to focus on nurses aged twenty to fifty five. It is going to be conducted at Bindura Provincial Hospital.
Definition of terms

The researcher find sit beneficial to define some concepts and terms that are key elements to the discussions that will follow.

Knowledge – understanding of, or information about a subject, which has been obtained by experience or study, which either in a person’s mind or possessed by people (Cambridge University 2006:693).

For the purpose of this study knowledge refer to what the nurses at Bindura hospital know about infection control and sterile technique principles.

Infection – invasion and multiplication of micro-organisms in body tissues.

Nosocomial infections – These are infections acquired during hospitalization that are not present or incubating at the time of hospital admission (Smeltzer and Barer, 2000:1870).

Infection control – The policies and procedures of a hospital or other health facility to minimize the risk of spreading nosocomial or community acquired infections to patients or members of the staff.

Guidelines - for the purpose of the study guidelines refer to a guide that needs to be implemented by the nursing personnel to present nosocomial infections within the hospital.

Sterile technique – these are methods by which contamination with microorganisms is prevented to maintain sterility throughout the surgical procedure thereby preventing infection (Fortinato, 2000:22).

Summary

This chapter covers the background information, theoretical framework, problem statement, purpose of the study, research question, significance of the study, delimitation/ scope of the study and definition of terms.
CHAPTER TWO

LITERATURE REVIEW

Introduction
This chapter will focus on the work which was done by other researchers in as far as infection control and nosocomial infections are concerned. It analyses principles of infection control and their relevance in reduction of nosocomial infections. The link between proper infection control practice and reduction of nosocomial infection will be explored.

Overview of infection control and sterile technique principles
Infection control is an important aspect in any healthcare set up. Osman 2000 highlights that it is the responsibility of every nurse to understand the meaning of sterile technique principles and in cooperate them into everyday practice. According to the World Health Organization Infection prevention and control policy 2001, the principles of sterile technique can be grouped into four distinct interventions that is hand hygiene, use of personal protective equipment, use and disposal of sharps and education of healthcare personnel.

The World Health Organization infection control guidelines (2001) emphasizes on thorough hand washing must be done before patients before during and after handling patients or when in contact with any contaminated items, with soap or antimicrobial agent under running water. Before every surgical procedure a five minutes hands and arms scrub must be done. Hand washing should be practiced before and after gloves as well as on arrival and when leaving work. The World Health Organization infection control guidelines recommend the following disinfectants, plain and liquid soap, and antiseptic with alcohol, chlorhexidine and povidone iodine
Use of protective personal equipment is also a principle in the guidelines. Three types of gloves have been mentioned that is sterile surgical, examination and utility gloves. Gloves are said to be worn as an additional measure not as a substitute for hand washing. Changing of gloves during procedures is recommended to prevent cross contamination (World Health Infection Prevention and Control policy, 2001.)

According to the World Health Organization Infection Prevention and Control policy, the third principle is of disposal of sharps. Sharps shall not be recapped by hand but hand scoop method may be used. Sharps shall be disposed immediately after use by user in designated puncture-resistant containers located in the area where the items are used.

The World Health Organization infection control guidelines, recommends training of health personnel on implementation of the infection control policies, orientation and in service training programme for new employees as well as ongoing in-service training for existing personnel.

Literature review

In 2007, Askarian from the department of medicine at Shiraz medical school in Iran had a study on knowledge, practice and attitude among Iranian nurses regarding infection control revealed that 91 % of the nurses reported that they needed additional in-service training on infection control particularly standard precautions. However, questions regarding hand washing elicited a greater percentage of correct answers.

Another study was also conducted in Iran at Ahvaz hospital in 2002 by Birgani to determine nurses’ knowledge and practice in relation to nosocomial infection control, results showed that 36 % of the nurses had good knowledge, 52 %had moderate knowledge and 12 % had weak knowledge about infection control and sterile technique principles. The questions asked included proper disposal of sharps, practice of aseptic technique during surgical procedures and hand washing. More knowledge on infection control is therefore required to lower the rate of nosocomial infections in hospitals.
In 2000, Had of department of medicine at Theodor Bilharz Research Institute in Egypt had a study to assess the knowledge of infection control among Egyptian nurses using a questionnaire to ask on simple protective measures such as hand washing, recapping of syringes after use and awareness of Hepatitis B and C viruses’ prevention and control revealed that the overall knowledge was below 80% which reflected that nurses really need to be educated on infection control.

Lebrague et al (2012) conducted a study on nurses’ knowledge and practice of sterile technique principles, asking questions regarding the extend of practice of sterile technique. These questions included wearing protective equipment such as masks, scrubbing, gownining, gloving, checking for sterility and observation of sterile fields. It was found that a mean of 57.14% had excellent knowledge, 38.09% had very good knowledge and 4.76% good knowledge. They also identified sound knowledge on standard precautions and principles as one of the factors impacting infection control practice. However, the findings showed that the more knowledgeable the nurses are, the more skillful they are in practice of sterile technique. This therefore reinforce the importance of continuing education among nurses to keep them updated with new trends and developments of infection control and sterile technique principles in order to become increasingly efficient and effective at preventing nosocomial infections.

Malan in (2008) conducted a study at Nelson Mandela University in South Africa on nurses knowledge of infection control and sterile technique principles which revealed that 100% of participants indicated there was an infection control programme in place at their hospitals but four of the participants were not familiar with the contents of infection control protocol. Eight nine percent therefore, were familiar with the contents whilst 11% were not. She also asked questions regarding attendance of workshops on infection control, 49% of the participants stated that they had never attended the workshops, 29% had attended one workshop in a period of more than two years. According to Fry and Fry (2007), it is likely that newer and more intense efforts to improve outcomes from nosocomial infections will continue and therefore it is necessary for nurse to gain knowledge about these practices so that improved techniques can be applied in efficient and effective ways.
Smith (2009) reported the factors which impede nurses on infection control practice, whereby 77% indicated that they lacked knowledge on infection control practice, 46% lacked of time to deliver proper infection control due to low nurse patient ratio was a factor, 47% indicated lack of equipment whilst 23% indicated forgetfulness as a factor. Furthermore, Dyer (2010) in his study on Egyptian nurses practice of infection control also highlighted lack of resources as a factor impeding nurses in proper infection control practice. He found out that most nosocomial infections in Egyptian hospitals result from lack of resources.

Swanson (2002) indicated that lack of knowledge is a major factor that impedes in proper infection control practice. He found that most of the nurses have no adequate input on infection control principles. He further suggests that nurses should get some in service training on the principles.

Clark (2011) asserts that nurses have so many factors that impede them from proper practice of infection control principles. In her study on infection control problems and solutions, she found that 36% of the nurses had problems in forgetting to practice sterile technique principles and 44% lacked knowledge on infection control principles.

Conceptual framework

Research should be conducted in conjunction with a theoretical or conceptual framework because that helps to expand the scientific body of knowledge in a discipline, (Merriam et al 1984). This study utilised Florence Nightingale theory on infection control (1854). The theory provides an explanation as to why it is important to carry out infection control measures such as damp dusting, use of sterile technique during procedures and use of personal protective equipment. Nightingale was the first nurse to identify the relationship between nursing and infection control (Kamisky, 2004). The conditions in the hospitals were deplorable hence her observations led her to believe that improving hygiene conditions would decrease the number of deaths. Kamisky (2004) believed that Nightingale “championed the cause of improved hygiene, food and living conditions for hospitalised soldiers. She attacked the hospital conditions and called for basic public health, infection control measures, cleanliness, hygiene and education.
about importance of infection control. Lawrence, chairperson of the infection control nurses association (ICNA) believed that Nightingale was probably the first infection control nurse without actually realising it (Elliot, 2000). Today nurses are key players in the fight to ensure the survival of infection control practices. This can be achieved through observing proper infection control and sterile technique principles as well as continuous education on infection control through in-service training and induction courses

Summary

This chapter looked at the recommended World Organization infection control and prevention principles such as for hand washing and disposal of sharps. The chapter also found out that nurses lacked knowledge on infection control principles. It was also found that nurses do not only lack knowledge but there are some factors which impede them from practicing proper infection control principles. The impeding factors identified are lack of time, lack of equipment, forgetfulness and lack of resources. The research was guided by Florence nightingale’s environmental theory.
CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

Research methods incorporate all procedures that have been used, are currently being used or may be used in the future to pursue knowledge (Burns and Groove, 2009). This chapter focuses on the research design, setting, sampling plan, sample size, sampling procedure, variables, development of research study instrument, data collection plan, ethical considerations and data analysis.

Research design

The research design of a study spells out the basic strategies that researchers adopt to answer their questions and test their hypotheses. The purpose of a design is to guide the researcher in planning and implementing the study in a way that is likely to achieve the intended goal. Kernger, (2006), highlights that a research design is a plan and structure of investigation so conceived as to obtain answers to research questions. This study is going to use the descriptive research design. The purpose of the study is to determine the knowledge and practice of nurses on infection control and sterile technique principles. The researcher will distribute questionnaires with structured questions and open ended questions to the nurses which they will complete. The researcher is going to use Florence Nightingale’s environmental theory as a guide as it contains elements on infection control principles and maintenance of a clean hospital environment.

The setting

Bindura Provincial Hospital will be used for the study. The participants will be selected from the female, male, children and maternity wards including theatre at the hospital.
The sampling plan

Sampling plan is the process by which a portion of the population is selected to represent the entire population of interest. It describes the strategies used to obtain the sample of the study (Burns and Groove, 2006). A sample is a subset of a population selected to participate in a research study. The researcher is going to use simple random sampling method to select the research subjects. The target population will comprise of Registered General Nurses working in different wards at Bindura Provincial Hospital.

The sample

A sample size is the number of subjects required in a sample. Burns and Groove, (2006) stated that the larger the sample, the more representative it is of the population and the smaller the sampling error. A sample of 50 subjects will be recruited for the study.

The sampling procedure

The selection will be done using the duty roster in each ward and number them to assign each one a number in the list. All the nurses with odd numbers will be selected for the study. The researcher will distribute questionnaires to nurses in the wards.

Data collection procedure

Permission will be sought from the relevant authorities such as the medical superintendent of Bindura Provincial Hospital where the study will be conducted and the Department of Health Sciences at Bindura University. The questionnaires will be in English. An informed consent will be sought verbally after explaining the purpose of the study to the study subjects. The nurses will be given questionnaires with questions to respond in writing.
The inclusion criteria will include all Registered General Nurses working in the wards. The exclusion criteria will include all the matrons and those in the school of nursing.

Research instruments

An instrument is a device or technique that the investigator uses to collect data (Polit and Hungler, 1997). Questionnaires were developed from relevant literature to obtain data for the quantitative design.

The researcher used the questionnaire as an instrument to collect data. The questionnaire was self administered and consisted of sections where the participants would tick the appropriate answer and also a section where they will fill in the appropriate answer.

Burns and Groove, (2009), defines a questionnaire as a printed self report form designed to elicit information that can be obtained from a subject’s written responses. There are quite a number of reasons why the researcher chose the questionnaire as an instrument for data collection.

Questionnaires when self completed allows for privacy as respondents can answer questions alone.

Beri (2000) argues that a self administered questionnaire allows the respondent to take option of deciding when he or she wishes to participate at the time and speed they want. A questionnaire is quicker to administer is a cheap instrument when intending to reach a number of people. They also have an advantage that they can be answered anonymously meaning that sensitive and personal questions are much more likely to be answered truthfully.

Each questionnaire has three sections. Section A: Demographic data, Section B will comprise of nurses’ knowledge of infection control and then Section C the practice of sterile technique principles. The instrument will be tested at Shashi hospital in Bindura which has a similar clientele and operations as Bindura Provincial Hospital to ensure reliability.
Validity of the questionnaire

Content validity

According to Polit and Hungler (1997), content validity is the degree to which items in the research instrument represent the context of the research study.

The researcher however, will ensure content validity of the questionnaire by formulating it basing on the literature gathered on infection control, infection control guidelines and sterile technique principles.

Face validity

Face validity is concerned with the superficial appearance of the measurement procedure. According to Polit and Hungler (1997) face validity refers to whether the instrument looks or appears as if it is measuring the appropriate construct.

The questionnaire will be structured in a logical order all the relevant information to match the objectives of the study.

Reliability

The questionnaire will be in consistent with the research topic and questions asked will be in consistency with objectives of the study. The reliability of the questionnaire will ensured by conducting a pilot study.

Pilot study

A pilot study is defined as a smaller version of a proposed study to be conducted to refine the research methodology, Van Ort (1981) in Burns and Grove (2006).
A preliminary study will be done in order to evaluate the feasibility of the study. It will also be
done to determine the factors such as time costs and statistical variability in an attempt to predict
the appropriate sample size and make improvements on the design prior to performance of a full
scale research. A sample of 5 nurses will used for the pilot study. The nurses will be recruited in
the female ward at Bindura Provincial Hospital. By so doing, the researcher will become familiar
with the study instrument and correct any feasible problems before the major study. Possible data
analysis procedures will be tested in the study.

Ethical considerations

Ethics refers to a system of moral values that is concerned with the degree to which research
problems adhere to legal, social and professional obligations to the participants, (Polit and
Hungler 1997). The right to privacy, anonymity and confidentiality, informed consent and right
not to be harmed will now are discussed.

Right to privacy

The researcher will assure the participants that no identification will be needed and thereby
according privacy. More so during the study only the researcher and the supervisor had access to
the information that had been gathered from the participants and therefore privacy is guaranteed.

Right to anonymity and confidentiality

Participants have right to remain anonymous. According to Mouton (2006), anonymity refers to
the principle that participant’s identity is kept secret, whereas the principle of confidentiality
refers to the information that has been obtained from the participants. Polit and Hungler (1997)
state that anonymity refers to the protection of the participant in a study such that even the
researcher cannot link him or her with the provided information. They added on by referring
confidentiality to the protection of participants in the study such that their individual identities are not linked to the provided information and will never be publicly divulged.

In the study, the participants will be assured that the information gathered from them will be kept confidential. The confidentiality will be explained to the participants at the time of distributing questionnaires. The researcher also going to make it clear to the participants that only the researcher and the supervisor had access to the information gathered. Ensuring that no identity information will be recorded on the questionnaire guarantees anonymity.

Right to informed consent

In the study, the researcher will give the participants an introductory letter. Participants will be informed that whenever they decide to withdrawal their participation, they are free to do so without fear of reprisal. The researcher will obtain voluntary consent of the participants beforehand.

Right not to be harmed

Mouton (2006) emphasized that the researcher must not expose the participants to any risk of personal harm.

In this study, questionnaires shall only used for data collection. To avoid harming the participants emotionally, the anonymity rule will strictly enforced, no personal questions shall be asked and no identification information will appear on the questionnaire.

Data analysis plan

Data analysis is conducted to reduce, organize and give meaning to data (Burns and Grove, 2006). Raw data will be checked for clarity, completeness and then edited and coded to facilitate entering into the computer. Statistical Package for Social sciences (SPSS, PC) will be used to the data. Descriptive statistics such as frequencies, means, modes, range, and standard deviation will
be used to analyse the demographic data, knowledge and the practice of infection control and sterile technique principles.

Summary

The chapter has outlined the research methodology, data collection instrument used, the validity and reliability of the instrument, sample and sampling procedure, pilot study and the ethical considerations. However, the next chapter is going to be on the data analysis.
CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

Introduction

This chapter focuses on data presentation of results of the research on determination of knowledge and practices of infection control among nurses. The results are presented in tables, graphs and pie charts for easy interpretation.

Demographic data

This section is on demographic data that is the age, sex, status within the nursing profession, years in the profession as well as the highest academic qualification attained by the respondents.

Age

Table 4:1 shows that 4(8%) of the respondents were in the age category of 20 – 25 years, 24(48%) were in the age category of 26-35 years, 18(36%) were in the category of 36-45 years and 4(8%) in the category of 46-55 years.
Table 4.1 Age of the respondents

(N=50)

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-25</td>
<td>4</td>
<td>8.0</td>
</tr>
<tr>
<td>26-35</td>
<td>24</td>
<td>48.0</td>
</tr>
<tr>
<td>36-45</td>
<td>18</td>
<td>36.0</td>
</tr>
<tr>
<td>46-55</td>
<td>4</td>
<td>8.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Sex

Table 4.2 shows that 30(60%) of the respondents were females and 20(40%) were males.

Table 4.2: Sex of the respondents

(N=50)

<table>
<thead>
<tr>
<th>Sex</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>30</td>
<td>60.0</td>
</tr>
<tr>
<td>Male</td>
<td>20</td>
<td>40.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Professional status

Figure 1 shows that 6(12%) of the respondents were sisters in charge, 13(26%) were junior nurses and 31(62%) were senior nurses.

Figure 4:1 Professional status of respondents
Figure 4: 2 Years in nursing profession

Figure 2 shows that 11(22%) of the respondents have been in the profession for a period of 1-2 years, 18(36%) a period of 3-10 years and 21(42%) a period of more than 10 years.

Highest academic qualifications

Figure 3 shows that 20(40%) of the respondents had a diploma as the highest academic qualification, 23(46%) had a post basic diploma, 5(10%) had a BSc Degree and 2(4%) had a masters degree.
Figure 4.3: Highest academic qualifications

Table 3 shows that 4(8%) of the respondents had poor knowledge level of infection control principles, 7(14%) had fair knowledge, 25(50%) had good knowledge and 14(28%) had excellent knowledge of infection control principles.

Total knowledge scores

Table 3 shows that 4(8%) of the respondents had poor knowledge level of infection control principles, 7(14%) had fair knowledge, 25(50%) had good knowledge and 14(28%) had excellent knowledge of infection control principles.
Table 4.3 Total knowledge scores

(N = 50)

<table>
<thead>
<tr>
<th>Knowledge level</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor knowledge</td>
<td>4</td>
<td>8.0</td>
</tr>
<tr>
<td>Fair knowledge</td>
<td>7</td>
<td>14.0</td>
</tr>
<tr>
<td>Good knowledge</td>
<td>25</td>
<td>50.0</td>
</tr>
<tr>
<td>Excellent knowledge</td>
<td>14</td>
<td>28.0</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Frequency of damp dusting

Table 4 shows that 18 (36%) of the respondents practiced damp dusting only once a day and 32 (64%) practiced damp dusting more than once a day.

Table 4.4: frequencies of damp dusting

(N = 50)

<table>
<thead>
<tr>
<th>No of times per day</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18</td>
<td>36</td>
</tr>
<tr>
<td>More than 1</td>
<td>32</td>
<td>64</td>
</tr>
</tbody>
</table>
Attendance of infection control workshops

Figure 3 shows that 34 (68%) of the respondents had never attended any infection control workshop and 16 (32%) had attended the workshop.

Presence of infection control guideline manual

Table 5 shows that 12(24%) of the respondents did not know whether an infection control guideline manual is available in their ward, 9(18%) indicated that they did not have and 29(58%) indicated that they had the manual in their ward.
Table 4.5: Presence of infection control guideline manual

(N = 50)

<table>
<thead>
<tr>
<th>Presence of infection control guideline manual</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not know</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Yes</td>
<td>29</td>
<td>58</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Presence of infection control nurse

Table 6 shows that 5(10%) of the respondents indicated that they did not know if they had an infection control nurse at the hospital, 5(10%) indicated they did not have and 40(80%) indicated that they had.

Table 4.6: Presence of infection control nurse

(N = 50)

<table>
<thead>
<tr>
<th>Presence of infection control nurse</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not know</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Yes</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>
Input from infection control nurse

Table 7 shows that 27 (54%) of the respondents never received input from the infection control nurse, 20 (40%) received input sometimes and 3(6%) received input most of the time.

Table 4.7: Input from infection control nurse

(N = 50)

<table>
<thead>
<tr>
<th>Input</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>27</td>
<td>54</td>
</tr>
<tr>
<td>Sometimes</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Most of time</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Presence of factors impeding infection control practice

Table 4.8 shows that all the respondents had factors that impeded them from practicing proper infection control.

Table 4.8: Presence of factors impeding infection control practice

(N = 50)

<table>
<thead>
<tr>
<th>Presence of factors</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Yes</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>
Factors impeding proper infection control practice

Table 5 shows that 12(24%) of the respondents indicated lack of knowledge as a factor that impeded them from proper infection control practice, 13(26%) indicated lack of time, 8(16%) indicated lack of equipment, 5(10%) indicated forgetfulness as a factor and 12(24%) indicated lack of resources as a factor impeding them.

Table 4.9: Factors impeding proper infection control practice

(N = 50)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of knowledge</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Lack of time</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>Lack of equipment</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Forgetfulness</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Lack of resources</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Association between professional status and knowledge of infection control

Table 6 shows that 6(12%) of the sisters in charge had good knowledge on infection control, 6(12%) junior nurses had fair knowledge, 5(10%) had good knowledge, only 1(2%) had excellent knowledge and 1(2%) of the senior nurses had fair knowledge, 14(28%) had good knowledge and 13(26%) had excellent knowledge. There was a significance level value (p-value) of 0.001 (p<0.05).
Table 4.10: Association between professional status and knowledge

(N = 50)

<table>
<thead>
<tr>
<th>Professional status</th>
<th>Total knowledge scores</th>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Excellent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sister in charge</td>
<td></td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Junior nurse</td>
<td></td>
<td>1</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Senior nurse</td>
<td></td>
<td>3</td>
<td>1</td>
<td>14</td>
<td>13</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4</td>
<td>7</td>
<td>25</td>
<td>14</td>
<td>50</td>
</tr>
</tbody>
</table>

*P = 0.001 (P<0.05)

Association between years in nursing profession and knowledge of infection control

Table 7 shows that 6(12%) of the nurses who had been in the profession for a period between 1-2 years had fair knowledge, 4(8%) had good knowledge, 1(2%) of nurses between 3-10 years had fair knowledge, 7(14%) had good knowledge, 8(16%) had excellent knowledge and 14(28%) of the nurses above 10 years had good knowledge whilst 6(12%) had excellent knowledge on infection control. There was a significance level value (p-value) of 0.001 (p<0.05).

Table 4.11: Association between years in nursing profession and knowledge on infection control

(N = 50)

<table>
<thead>
<tr>
<th>Years in profession</th>
<th>Total knowledge</th>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Excellent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 years</td>
<td></td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>3 – 10 years</td>
<td></td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Above 10 years</td>
<td></td>
<td>1</td>
<td>0</td>
<td>14</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4</td>
<td>7</td>
<td>25</td>
<td>14</td>
<td>50</td>
</tr>
</tbody>
</table>

*P = 0.001 (P<0.05)
Association between status and attendance of infection control workshop

Table 8 shows that 5(83%) of the sisters in charge had attended infection control workshops, 1(8%) of the junior nurses had attended and 10(32%) of the senior nurses had attended the workshop. There was a significance level value (p-value) of 0.001 (p<0.05).

Table 4.12 Association between status and attendance of infection control workshops

(N = 50)

<table>
<thead>
<tr>
<th>Professional status</th>
<th>Attendance of infection control workshops</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td>Total</td>
</tr>
<tr>
<td>Sister in charge</td>
<td>1</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Junior nurse</td>
<td>12</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Senior nurse</td>
<td>21</td>
<td>10</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>16</td>
<td>50</td>
</tr>
</tbody>
</table>

*P = 0.001 (P<0.05)

Association between years in profession and attendance of infection control workshops

Table 9 shows that 4(22%) of the nurses who had been in the profession for 3-10 years had attended an infection control workshop and 12(57%) with above 10 years in profession had attended the workshop. There was a significance level value (p-value) of 0.001 (p<0.05).
Table 4.13: Association between years in profession and attendance of infection control workshops.

(N = 50)

<table>
<thead>
<tr>
<th>Year in profession</th>
<th>Attendance of infection control workshops</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td>Total</td>
</tr>
<tr>
<td>1 – 2 years</td>
<td>11</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>3 – 10 years</td>
<td>14</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>Above 10 years</td>
<td>9</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>16</td>
<td>50</td>
</tr>
</tbody>
</table>

*P = 0.001 (P<0.05)

Summary

The results obtained from the study showed that some of the nurses lacked knowledge on infection control and that there were some barriers which impeded them from practicing proper infection control principles. The barriers included lack of time due to low nurse patient ratio (26%), lack of equipment (16%), lack of resources (24%) and forgetfulness to carry infection control procedures (10%). The results showed that there is an association between several variables and knowledge which include status in profession, number of years in profession and attendance of infection control workshops.
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The main thrust of this chapter is to discuss the results of the research on determining the nurses’ knowledge and practice of infection control. The chapter will give summary, implementations, recommendations based on the findings and conclusions.

Discussion

Results indicate that 4(6%) of the respondents had poor knowledge of infection control and sterile technique principles, whilst 7(14%) of the respondents had fair knowledge, 25(50%) of the respondents had good knowledge, 14(28%) of the respondents had excellent knowledge. The results show that there is generally good knowledge which is consistent with Birgani (2002) who found that 36% of the nurses had good knowledge, 52% had moderate knowledge and 12% had weak knowledge about infection control and sterile technique principles.

Furthermore, it was indicated from the study that there were factors that impeded nurses from proper infection control practice. Twelve (24%) of the respondents indicated lack of knowledge as a factor, 13(26%) of the respondents indicated lack of time, 8(16%) of the respondents indicated lack of equipment, 5(10%) of the respondents indicated forgetfulness as a factor and 12(24%) indicated lack of resources. This concurs with Smith (2009), who found out that 77% of the nurses at Calgary lacked knowledge on infection control practice, 46% lack time to deliver proper infection control due to low patient ratio, 47% indicated lack of equipment whilst 23% indicated forgetfulness. To add on, Clark (2011) also indicated that 36% of the nurses had problems in forgetting to carry out infection control principles. She also indicated that 44% of the nurses lacked knowledge on infection control principles. Swanson (2002) also indicated that
lack of knowledge is one of the most impeding factors in the practice of proper infection control principles.

There was quite a large number 5 (10%) who did not know that there was an infection control nurse and another 5 (10%) reported that there was no infection control nurse. Furthermore, 27(54%) of the respondents did not get input from the infection control nurse, with 20(40%) reporting that they sometimes get it. Additionally, 21(42%) of the respondents did not utilize the infection control manual, either because they did not know about it 12(24%) or it was not available 9 (18%). The results are in contrast with Malan who indicated that 89 % were familiar with contents whilst only 11% were not. Therefore the infection control nurse should periodically teach the nurses in practice often and the infection control manual should be present in each ward. The nurses should be inducted on the use and importance of the manual.

More so, the research findings indicated that knowledge on infection control is influenced by different variables. There is an association between the professional status and knowledge on infection control. The findings also indicated that knowledge is also associated with the number of years which a nurse has been in the profession as indicated by the significance level (p=0.001):(p<0.05) where nurses who were above 3 years in the profession had more knowledge as compared to those who had less than 3 years. To add on, the research findings also indicated that the attendance of infection control workshops was associated with one’s professional status as indicated by the significance level (p=0.001): (p<0.05) and number of years in the profession. 15(30%) senior nurses including sisters in charge attended more infection control workshops as compared to 1 (2%) of junior nurses. This is in consistence with Malan (2008) who indicated that 49 % had never attended infection control workshop and 29 % had attended only one workshop in a period of more than two years. It is expected that these seniors would give feedback to the junior nurses but this is not the case. The results also show that there was poor arrangement of these workshops as a nurse spent more than 2 years without having an infection control workshop. The researcher therefore noted that there is need for workshops to be planned periodically to equip the nurses with knowledge. This supports Swanson (2002) who suggested that nurses should get in service training to gain knowledge.
Implications to Nursing Education

- The findings of this study are going to help in nursing education in that the designers of the nursing education curriculum will include more information on infection control so that the students will gain appreciation of infection control.
- In service education will be provided on infection control on regular basis as a measure to reinforce the knowledge of nurses on infection control.

Implications to Nursing Practice

- The study will be of much significance to the nursing practice as the policy makers will make sure infection control policy manuals are made available to every nurse.
- Resources such as disinfectants will be made available for the nurses to practice proper infection control.
- There is also going to be an improvement on the nurse patient ratio through recruitment of more nurses thus addressing the reason of nurses lacking enough time to practice proper infection control principles.

Implication to nursing research

- The research findings are going to provide basis for other researchers who would want to carry out further research on infection control principles.

Recommendations

In light of the above discussions it can be recommended that

- There is need by policy makers to provide in service education on infection control principles on regular basis to all nurses so that they are kept up to date with current knowledge.
There is need for hospital administrators to provide enough resources such as detergents and enough nurses for proper infection control practice.

Summary

The purpose of the study was to find out level of knowledge and practice of infection control among nurses. A sample size of 50 nurses comprising of 6 sisters in charge, 31 senior nurses and 13 junior nurses was used to gather the relevant information. The general findings revealed that positive indicators of nurses’ knowledge and practice are professional status, attendance of infection control workshops and availability of infection control guide manual.

Conclusion

In conclusion, the study has found out that majority of junior nurses lack knowledge of infection control principles. There also factors that have been identified that impede nurses from proper infection control practice which included, lack of knowledge, forgetfulness, lack of time and lack of resources.
References

Askaran, M. (2007). Study on Knowledge, Attitude and Practice of Infection Control of Iranian Nurses Regarding Infection Control; Shiraz Medical School, Iran.

Birgani, A.G. (2002). Study to Determine Nurses’ Knowledge In Relation To Nosocomial Infection Control, Iran.


Herald, 30 January 2013


Smith J, Study on factors impeding nurses on infection control practice, University of Calgary.


Appendix 1: Research Questionnaire

My name is Petronella Shayamano; I am doing a BSc (Honours) Degree in Nursing Education at Bindura University of Science Education. I am doing a research on knowledge and practices on infection control among nurses. I therefore ask for your participation through completing the questionnaire in the research. The information gathered is going to be private and confidential that is, it is going to be used for academic purposes only.

Section A

Tick the most appropriate answer

1. Age in years

2. Sex
   a) Male
   b) Female

3. Status within the nursing profession
   a) Sister in charge
   b) Junior nurse
   c) Senior nurse

4. Years in the nursing profession

5. Highest academic qualification
   a) Diploma
   b) Post basic
   c) BSc Degree
   d) Masters degree
Section B: Knowledge of infection control and sterile technique principles

6. How much time does it take to scrub for a surgical procedure? ..............................................................

7. Name the personal protective equipment used for infection control
   a) .............................................................................................................................................
   b) .............................................................................................................................................
   c) .............................................................................................................................................

8. Hand washing should be done before and after patient care
   a) Yes  □
   b) No  □
   c) Do not know  □

9. Wearing gloves eliminates the need to wash hands
   a) Yes
   b) No
   c) Do not know

10. Sharps should never be recapped by hand
    a) Yes
    b) No
    c) Do not know

11. Sharps should be disposed immediately after use by the user
    a) Yes
    b) No
c) Do not know

12. Which chemicals are used for disinfection?
   a) ........................................................................................................
   b) ........................................................................................................
   c) ........................................................................................................

Section C: practice of sterile technique principles

13. How often do you do dump dusting.............................................................

13. Which disinfectants do you use for dump dusting
   a) ........................................................................................................
   b) ........................................................................................................
   c) ........................................................................................................

14. Do you have running water for hand washing
   Yes ☐
   No ☐

15. Have you attended infection control workshops (in-service training)?
   a) Yes ☐
   b) No ☐

16. If Yes to question 16 above, how many workshops have you attended......................

17. Do you have an infection control guideline manual in your ward?
   a) Yes ☐
   b) No
   c) Do not know if we have any

19. Does the hospital have an Infection Control Nurse to manage infection control activities of the hospital?
   a) Yes
b) No

c) Do not know

20. If yes to question 19 above, how often do you meet and get input on infection control from the infection control nurse?
   a) Most of the time
   b) Sometimes
   c) Never

21. Are sterile packs readily available for use in your department?
   a) Yes
   b) No

22. Are there any factors that impede you in practicing proper infection control principles?
   a) Yes
   b) No

23. If Yes to Question 20 above, what are the factors that impede you in practicing proper infection control principles?
   a) Lack knowledge on infection control practice
      i) Yes
      ii) No
   b) Lack of time to deliver proper infection control due to low nurse patient ratio
      i) Yes
      ii) No
   c) Lack of equipment
      i) Yes
      ii) No
   d) Forgetfulness to carry infection control procedures
      i) Yes
      ii) No
   e) Other factors,
      specify..................................................................................................................
      ..................................................................................................................