KNOWLEDGE AND PRACTICES OF NURSES ON PROTECTIVE EQUIPMENTS USE IN SURGICAL DEPARTMENTS AT KIU-TEACHING HOSPITAL

A RESEARCH REPORT SUBMITTED TO UGANDA NURSES AND MIDWIVES BOARD

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DIPLOMA IN NURSING SCIENCES

BY

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ABSTRACT

Globally, surgical site infections had been estimated to have attributed to 22% of HAIs due to ineffective use of protective equipment’s at the health care settings. On the other hand, research also indicates that about 40% of PPE were used when not clinically indicated. This implies that most of the healthcare workers have poor knowledge and practice on PPE use yet it is one of the important measures in combating HAIs. The study with the objective to determine knowledge and practices of nurses toward PPE use was carried out at surgical department in KIU-TH, Ishaka municipality, Bushenyi district, in western Uganda. The study used a descriptive cross sectional design, quantitative approach and through convenient sampling, a total of 60 nurses were enrolled and assessed by two data collection tools; structured interview questionnaire to assess the knowledge on PPE use and nurses’ observation checklist for practices on PPE use. Of the 60 nurses selected, majority 40(67%) were female, 32(53%) had had additional training on PPE, 30(50%) had 2-5 years work experience and in ages, 28-37 years were the majority 24(40%). The average nurses’ knowledge on PPE use was good at 50(83%) and 40(67%) had satisfactory practices on PPE use. In spite of good nurses’ knowledge on PPE use at 50(83%), satisfactory practice performance is still low 40(67%). This means, nurses practice needs to be improve through; following the guideline in PPE use, strict supervision on nurses’ performance by hospital OHS committee, timely additional training by hospital management, Integration of PPE on to the nurses’ curriculum by MOH.
Knowledge And Practices of Surgical Departmental Nurses on PPE Use

AUTHORIZATION

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Date ………………………………………………………………………………………………
DEDICATION

This research work is dedicated to my almighty GOD who has enabled me to reach this far to him be the glory and to my daughter “Vanessa Lakey” who survived all the scandals of life in my absentia.
ACKNOWLEDGEMENT

I really thank GOD for the great upholding in this race; for sure he is GOD even in hardship. I would like to thank the School of Nursing Sciences Kampala International University- Western Campus for facilitating my research.

Special thank goes to Mr. Namara Gordon, my supervising tutor for his tireless work and constructive criticism during my research project. He analyzed, corrected and gave me direction on how to write my work. I appreciate his professional advice that enabled me organize sense out of this study.

I am greatly indebted to acknowledge my parent and my siblings, Brothers; Michael Kilama and Francis Okello, Sisters; Saidah Mungu, Nancy Daisy, Olympia Akumu, Florence and my mother Mrs. Mary Ochan, not forgetting my dear fiancée “Becky Oroma” and my daughter “Vanessa Lakey” for they have been a great pillar in my success.

Finally, thank goes to nursing school staff members and my fellow students especially Bazil, Amon K, Emma and Teko for all their support. Not forgetting the management and study participants of KIU-TH more especially the surgical departments for not only granting me the permission to carry out this research in the area, but also participating during data collection.
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LIST OF ACRONYMS AND ABBREVIATIONS

AHRQ……Agency for Health Research and Quality

ANSI……American National Standards Institute

CCOHSR…Canadian Center for Occupational Health and Safety Resource

CDC……Center of Disease Control and Prevention

EPPs …..Exposure Prone Procedures

EXT……Extension

HAI……Hospital Associated Infections

HBV……Hepatitis B Virus
Knowledge And Practices of Surgical Departmental Nurses on PPE Use

HOD……….Head of Department

ISHN……..Industrial Safety and Hygiene News

KIU-TH……Kampala International University Teaching Hospital

Km………….Kilo Meter

NHS……….National Health Service

NSC………..National Safety Council

OHS……….Occupational Health and Safety

OSHA………Occupational Safety and Health Administration

PPE………..Personal Protective Equipment

WHO………World Health Organization
OPERATIONAL DEFINITIONS

Knowledge: This refers to information and understanding that is used in everyday life; it enables people to cope effectively with daily tasks. Knowledge is acquired through learning, experience and self-reflection (Mouton, 2010:8).

Practice: refers to emphasizing a concern; by both thought and action; that is directed towards achieving some aim. It is dependent on the resources of time, skills and material goods (Lesser, Fontaine & Slusher, 2008:144).

Protective equipments: Are specialized clothing or equipment, worn by an employee for protection against infectious material or injuries (OHSA, 2015)

OSHA: (Occupational safety and health administration): is an agency of United State department of labour created by congress under the occupational safety and health Act, signed by President Richard M. Nixon, on 29th December 1970.

CDC: (Center for disease control and prevention): is federal agency under department of health and human service, founded on 1st July 1946 and the head quarter is in city of Atlanta, Georgia, United State of America, whose mission is to prevent and control spread of communicable diseases internationally.

WHO: Is a specialized agency of the United Nations, established in 1948 and headquarterd in Geneva, whose mission is to prevent the international spread of diseases, such as cholera, malaria, and poliomyelitis.
CHAPTER ONE: INTRODUCTION

1.0 Introduction.
This chapter deals with the background information of the study, problem statement, purpose of the study, study objectives, research questions, and study justification.

1.1 Background to the Study.
During healthcare services, protective equipments are used by nurses, patients and the care taker/visitors to control and prevent the risk of exposure to infectious material, injuries and any other aerosol like droplets of Mycobacterium tuberculosis. To improve the effectiveness of protective equipments use, all healthcare settings are to meet the standard of health care and safety regulations by providing at no cost the nurses with appropriate protective equipments, information/instruction and training on how to use them (Health and Safety Executive, 2010). Globally, use of protective equipment is often essential in prevention of all hospital associated infections and injuries during health care setting procedures. Nurses are mandated to be oriented with the protective equipment used in different hazardous conditions in their working environment as well as the proper procedures the employer has adopted to eliminate and minimize the risk of exposure (CDC, 2015). Nurses’ knowledge on standard precaution like appropriate use of personal protective equipment is essential in establishing and maintaining safe working conditions and habits which in turn help prevent hospital associated infections (CCOHSR, 2010). Globally, the overall incidence of HAIs has increased by 36% (Stone, 2009). Healthcare associated infections have been estimated to be in the millions, directly associated with 99,000 deaths and costing nearly $28 to $33 billion in excess health care costs each year (Scott, 2009). However appropriate use of protective equipment is
hoped to reduce the risk of healthcare associated infection and protects nurses (Lander, 2012).

In USA; Atlanta, Georgia study shows that some protective equipments were frequently used when were not clinically indicated; gloves being used more than 40% of the time when they were not indicated (Timothy, 2010). Yet surgical site infections prevention requires the health workers to have adequate knowledge in selection and proper practices on use of protective equipment basing on an assessment of the risk and suitability of the equipment for proposed use (CDC, 2012).

A study done on exposure risk when facial protection is not used, Blood splashes exposure was evaluated on the basis of location of splashed on face shields. 600 face shields were evaluated visually and by staining with leucomalachite green. Visual examination detected blood splashes contamination in 50.5 % and staining in 66.0%. Blood contamination was 36.6% in the orbital region, 37.8% in the para-orbital region and 57% in the mask region (Endo et al, 2009). Surgical site infections demands a combination of interventions which include knowledge, proper practice and compliance to personal protective equipment manuals in order for prevention and control of the spread of microorganisms (Carlet et al., 2012; El- Marsi and Oldfield, 2012; Santos et al., 2012).

In Uganda, hospital associated infections and injuries contribute to large percentage in morbidity and mortality among nurses and are still the common causes of delay of patients in the hospital. Despite all measures instituted in creation of awareness and behavior changes towards infection control precautions and employers willingness to provide PPE, there are increasing rates of hospital associated infections and injuries. So, understanding the level of knowledge and practice will enable a more efficient
The process of awareness creation and a programme could be tailored more appropriately to avert the increasing rates of hospital associated infection and injuries.

1.2 Problem Statement.

Globally, surgical site infections are the second most common type of HAIs. In the United States, Department of Surgery, Baylor College of Medicine reported that surgical site infections contribute to 22% of HAIs (Bebko et al., 2015). In sub-Saharan Africa, 4.7% people are infected with HIV/AIDS, and many people die every day due to AIDS (UNAIDS, 2013). And this implies; health workers worldwide are continuously exposed to HAIs due to inadequate knowledge and poor practice of PPE use to limit HAIs (Edward, 2014). Most time, Employers do strive to procure and provide PPE as required by legislation for employees, but PPE is not used effectively (Flora, 2012).

In Uganda and KIU in particular, a surgical site infection is uprising causing morbidity and mortality among nurses as well as the patients. HIV/AIDS being one of HAIs have a risen prevalence rate from 6.4% to 6.7%. Despite increasing rate of HAIs there is still a shortfall in proper PPE use by nurses (Hinkin et al. 2008). Hence; to meet the OHSA goal, there is need to study knowledge and practice of nurses at KIU-TH on use of PPE so as to lay strategies on how to control HAIs.

1.3 Purpose of the Study.

The overall objective of this research is to assess the knowledge and practice of nurses on the use of protective equipments in a surgical setting at Kampala International University Teaching Hospital (KIU-TH).
1.4 Specific Objectives.
To determine nurses’ knowledge on protective equipments use in surgical department at KIU-Teaching Hospital.
To examine practices of nurses on protective equipments use in relation to guideline of HAIs prevention and control in surgical department at KIU-Teaching Hospital.

1.5 Research Questions.
Do nurses in surgical departments at KIU-TH know how to use protective equipments appropriately?
Do nurses in surgical departments at KIU-TH practice protective equipments use as per the guideline of HAIs prevention and control?

1.6 Justification for the Study.
The threat of emerging HAIs has highlighted the need for knowledge and proper practice on use of protective equipments among nurses in order to protect both the nurses and patients. Personal protective equipment is a critical component in the hierarchy of controls used to protect nurses from infectious hazards (Holguin M, 2011). Inadequate knowledge and improper practices among nurses on PPE use does promote the risk of contagious disease and debilitating conditions (CDC, 2015). This study therefore intends to have the following significant;

Nursing education: The result from this study will improve the knowledge on PPE, as information generated will be utilized by MOH planners and KIU- Teaching hospital planners as well as KIU School of nursing administration, of which most of them are nurses, in designing strategies or policies on infection control as well as integrating the finding into nursing school curriculum.
Nursing Practice: The research generated information will help the managers in fostering for positive behavior change in utilization of infection control materials.

Nursing Research: The finding from this research will add on to existing knowledge on PPE and some of its literatures may be used by other future nurses who may have interest in a similar study. On the other hand, the research recommendation may be used as a basis for future research.
CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

In this chapter, the views of authors and findings of other researchers are presented where; Literature review reveals the research journey and how the current project is linked to prior research (De Vos et al 2011). The related literature has been organized under knowledge and practice of nurses on PPE use.

2.1 Preview of PPE use.

Globally, the demand for PPE was valued at $38.38 billion in 2015 and is expected to reach $68.69 billion by 2024, growing at a 6.7% rate from 2016 to 2024. According to OSHA, more than 40% of industries’ fatalities and accident are related to HAIs and this has resulted into rising awareness toward workers health and safety (ISHN, 2017).

On the other hand, PPE use vary from healthcare setting to healthcare setting worldwide, however all nurses tend to use PPE that meet the following requirements to be considered adequate; it should provide maximum comfort and minimum weight compatible with the protective efficiency, it should ensure adequate protection from the hazards to which the workers will be exposed. It should be durable, it should impose no restriction on essential movements or work or objections, it should have maximum attractiveness in appearance, and it should be constructed in accordance with acceptable standards for performance and for the materials (Joel, 2009). Additionally, PPE should be suited to the environment and; properly selected for the individual and task; readily available; clean and functional; correctly used when required and; maintained by appropriately trained staff in accordance with PPE maintenance and servicing program (Taylor, 2011).
2.2 Knowledge of Nurses on Personal Protective Equipments Use.

Globally, the awareness of protective equipment has grown very high making it to account for more than 20% of the total market revenue worldwide in 2015 (ISHN, 2016). This is so because of the increasing demand to combat Healthcare Associated Infections (HAIs) that had been estimated to be in the millions, directly associated with 99,000 deaths and costing nearly $28 to $33 billion in excess health care costs each year (AHRQ, 2011; Scott, 2009). As there is increasing HAIs, Nurses on the other hand should have adequate knowledge in selection and use of protective equipment since it is one of the important measures in reducing HAIs worldwide (CDC, 2015). In most developing countries PPE is often the only line of defense against HAIs and yet sometimes it is considered the most boring of all the facets of health and safety (Johnson et al 2009, Jabbar et al 2010).

Survey preliminary data by Sholihah taken from a report in the Emergency unit (IRD) and the Outpatient Unit (URJ) at Regional General Hospital Soetomo, 2000 found that the incidence of accidents is still high and likely to increase. The results of these studies showed that 75% of employees who were able to carry out the management of occupational safety and health at the hospital with the use of appropriate PPE, the remaining 25% of employees were not able to implement such management. Research at Haji Adam Malik Hospital showed that 49% of nurses did not know the proper selection and use of PPE (Yulia, 2009) and research in Salatiga Hospital identify 40% of nurses being responsible as well to the use of protective equipments (Haryanti, 2009). To perform proper selection of PPE, nurses are to select PPE of safe design and construction for the work to be performed and should be maintained in a sanitary and reliable condition and only those items of protective clothing and equipment that meet
NIOSH or ANSI standards should be procured and selected for use (OHSA regulation, 2016).

In Sudan, a study was done at governmental and private x-ray facilities in Khartoum State, on Sudanese radiographers. The result showed that 98% have good awareness to radiation hazards, 96% knows radiation safety, 90% are aware of radiation safety standards, and 100% knows importance of radiation safety. However, only 38% of them wear PPE during any imaging procedure and this explains why over the last three decades, at least 3000 patients have been affected by radiotherapy accidents (Holmberg, 2009). This indicates that, sometimes high level of knowledge may not transmit/influence practices. And In Tygerberg Hospital, a study was done on all the nurses working in the different modules indicated that; nurses still had inadequate knowledge regarding selection of PPE and the mean score of the nurses overall self-reported knowledge of PPE use was 87.5%. The results also showed that when patients are HIV positive, nurses intend to over use personal protective equipment (Brevidelli and Cianciarullo, 2009).

In Ratu Zalecha Hospital Martapura a study was done with a total sample of 95 nurses and it was found that knowledge can also be obtained through informal channels example, work experience, although about 25.3% nurses did not have good knowledge. This was possible because the respondent had forgotten about the material that had been learned during the training, given the age of the respondents generally above 30 years accounting to 46.4% (Notoadmodjo, 2012).

In Uganda, Ministry of Health reported that 20% of PPE have minute perforations. So Hand hygiene, coupled with the use of protective equipments, is a key component in minimizing the spread of disease and maintaining an infection-free environment.
(Aceng, 2013). Therefore nurses are expected to be trained/ educated about standard principles and the technique for selecting Personal Protective Equipment. (Pratt et al, 2009).

2.3 Practices of Nurses on Personal Protective Equipment Use.

Globally, the magnitude of personal protective equipment utilization was 82.4% (ISHN, 2016). Among the 35 million health workers worldwide, about 3 million experience percutaneous exposures to blood borne pathogens each year due to improper use of PPE; 2 million of those to HBV, 0.9 million to HCV and 170 000 to HIV. These injuries may result in 15 000 HCV, 70 000 HBV and 1000 HIV infections. More than 90% of these infections occur in developing countries (WHO, 2011). On the other hand, proper use of protective equipment has been shown to reduce the risk of exposure to blood and body fluids. It’s been observed that better practice of universal precautions when using PPE among HCWs was one of the correlates of good practice (Amruthavahini, 2011).

In Kiay, report in 2013 showed that an accident in the hospital setting account to 41% more than workers in other industries, often the case is pricked, sprains, lumbago, scratched / cuts, burns and infections due to less precaution taken when using PPE (NSC, 2016). Research of Joseph in 2007-2009 noted that, the number of accidents needle stick injury reaches 38-73% of total health care workers. One of the reasons it was found that at work they do not wear PPE such as gloves, correctly (Husnul, 2016). A review of needle stick injuries in Scotland suggested that 56% of injuries would ‘probably’ or ‘definitely’ have been prevented if a safety device had been used (NHS, 2013).
In the Pomeranian region of Poland, a study was conducted to evaluate self-reported compliance with personal protective equipment use among surgical nurses and factors associated with both compliance and non-compliance; the survey indicated that compliance with PPE varied considerably. Compliance was high for glove use (83%), but much lower for protective eyewear (9%). Only 5% of respondents routinely used gloves, masks, protective eyewear and gowns when in contact with potentially infective material. Adherence to PPE use was highest in the municipal hospitals and in the operating rooms. Significantly higher compliance was found among nurses with previous training in infection control or experience of caring for an HIV patient. The most commonly stated reasons for non-compliance were non-availability of PPE (37%), the conviction that the source patient was not infected (33%) and staff concern that following locally recommended practices actually interfered with providing good patient care (32%). They recommend wider implementation, evaluation and improvement of training in infection control, preferably combined with practical experience with HIV patients and easier access and improved comfort of PPE (McGrowder et al, 2010).

In Nigeria, a study conducted from Primary Health Centers in Nkanu West, Nkanu East, Awgu, Aninri, and Udi Local Government Areas from April 1, 2014 to September 30, 2014 indicates that compliance to practice of protective equipment use among the rural health workers in this study leaves much to be desired. Most respondents (89.3%) concluded that wearing of only gloves while conducting risky procedures on patients is the only way of preventing blood borne infection. Only a few would wear other protective materials such as gloves, apron, and eye goggle. Less than half of the respondents (46%) would wash hands before and after attending to a patient. This
practice negates the principles of Universal Precautions which emphasizes the wearing of self-protective devices and regular hand washing while caring for patients (Okeke et al, 2014).

Uganda being a developing country in Africa is being face by different form of out breaks and high rate of transmission of communicable diseases both in the hospital and community; with Marburg hemorrhagic fever up to a range of 24% to 88% (WHO, 2012). In order to minimize spread of disease and maintaining an infection-free environment, health worker need to be trained on the good practice of PPE use (Aceng, 2013). CDC on the other hand has addressed the concern of contamination of hands and clothing during removal of PPE by designing a protocol for the suggested removal of protective equipments as well as storage to be followed by all nurses (Siegel et al. 2009).
CHAPTER THREE: METHODOLOGY

3.1 Introduction.
This chapter described the study design and rationale, the study setting and rationale, study population, sample size determination, sampling procedures and rationale, inclusion criteria, exclusion criteria, definition of study variables, independent variables, dependent variable, research instruments, data collection procedure, data management, data analysis, ethical considerations, limitations of the study and dissemination of results.

3.2 Study Design and Rationale.
A cross-sectional descriptive study design employing Quantitative approach was used. Cross-sectional study design was important in the study because; it was suitable for estimating the proportion of all the variables under investigation, it also aided in data collection of variables at once or over a short period, it helped in data analysis data as it was able to measure prevalence for all factors under study (Sedgwick, 2014).

3.3 Study Setting and Rationale.
The study was conducted at KIU-Teaching Hospital, which is a private chattered teaching hospital with bed capacity of 390 patients and has approximately 104 employed nurses, located in Ishaka municipality (that had estimated population of 41,063 in 2014) in Igara County, Bushenyi district (covering a total land of 942.3km²) within Ankole sub region in western Uganda. KIU-TH is 75km (47miles), by road, northwest of Mbarara, in western Uganda, located 365km from Kampala city (AMECA, 2015). KIU-TH has different departments that offer different services like; medical, surgery, laboratory, child health, psychiatry, Obstetrics and gynecology
among others to the people of western Uganda. Outpatient department runs from Monday to Friday while inpatient department runs 24 hours from Monday to Monday and all those departments are being served by different nursing Cadre like; nursing assistants, certificate nurses, diploma nurses and bachelor nurses. KIU-TH was selected because it offers the surgical services of which, it was indicated that surgical attribute to 22% of HAIs (Bebko et al, 2015).

3.4. Study Population.

The study population consisted of all nurses, where respondents with different levels of qualification and years of experience serving different surgical departments at KIU-TH were asked and observed, both females and males.

3.4.1 Sample Size Determination.

Estimation of sample size was determined statistically using Daryle W.Morgan (1960) statistical method below:

\[ n = \frac{X^2 \cdot N \cdot P \cdot (1-P)}{d^2 \cdot (N-1) + X^2 \cdot P \cdot (1-P)} \]

Where; \( n \) = required sample size, \( X^2 \) = the table value of chi-square for 1 degree of freedom at the desired confidence level 1.96\(^2 \), \( N \) = the population size. \( P \) = the population proportion (assumed to be 0.5 since this would provide the maximum sample size). \( d \) = the degree of accuracy expressed as a proportion (0.05).

\[ n = \frac{(1.96)^2 \times 104 \times 0.5 \times (1-0.5)}{(0.05)^2 \times (104-1) + (1.96)^2 \times 0.5 \times (1-0.5)} \]

Where; \( n = 82 \) nurses but due to time constraint, 60 nurses were selected.
3.4.2 Sampling Procedure and Rationale.

Convenient sampling method was used. Convenient sampling is one of the non-probability sampling methods which involve drawing samples that are easily accessible and willing to participate in the study. It was preferred for this study because it gives time for nurses to carry on with their normal duty; this method is cheap, easy and time saving (Etikan et al, 2016).

3.4.3 Inclusion Criteria.

In order to assess knowledge and practices on use of protective equipments, the study only included qualified nurses who consented and extensor student nurses who were on duty at the time of data collection.

3.4.4 Exclusion Criteria.

Nurses who did not consent to the study, nurses who were too busy to attend to the study, and nurses who were sick were excluded from the study.

3.5 Definition of Study Variables:

Study variables are things that have a quantity and quality that varies. And can either be independent variables or dependent variables. Independent variables are the variables that are stable and unaffected by other variables one is trying to measure. On the other hand, dependant variable are those variable that depend on other factors that are measured (Karl and Wuensch, 2010).

3.5.1 Independent Variables.

Demographic factors (age, gender, work experience and level of education) were considered as the most distal determinants, which can affect knowledge distribution and practices on use of protective equipment.
3.5.2 Dependent Variables.

The dependent variable under study was the nurses’ knowledge and practice on PPE use in line with occupational health and safety administrative guideline on PPE use in healthcare setting.

3.6 Research Instruments.

Research instruments had two data collection tools: Part one was Structured Interviewed Questionnaire that had 5 questions for Demographic data and part two was also Structured Interviewed Questionnaire that had 15 questions with Agreement legend (strongly disagree, disagree, undecided, agree and strongly agree) which determined nurses’ knowledge on PPE use. Part three was Nurses’ performance Observational Checklist that had 10 areas with score legend (poor, Fair and Good) to assess nurses’ practice on PPE use.

3.7 Data Collection Procedure:

The targeted populations were reached after an introduction letter from the school of nursing had been issued to me. After obtaining individual consent, the participants were interviewed and observed basing on their accessibility till full sample size was realized. Following the data collection tools all observations were recorded processed and analyzed.

3.7.1 Data management.

Data was managed to maintain maximum level of confidentiality of information collected from each individual participant. Un-authorized personnel were not allowed to access the data except the researcher and the research assistants who were also first trained and supervised on data management skills in order to avoid any errors. Under
safe conditions, data were collected during day time to ensure safety during collection procedure.

3.7.2 Data Analysis.

Data generated was processed and analyzed using micro soft word 2010, micro soft excel, calculators and presented in descriptive forms of pie charts, tables percentages, graphs and texts.

3.8 Ethical Considerations.

Permission was obtained from Kampala International University School of Nursing Sciences and KIU-TH to carry out the study. Prospective participants were given explanation about the study and only those who consent and assent were included in the study and confidentiality was ensured, cultural beliefs and customs were respected.

3.9 Limitations of the Study.

The research work was conducted at the same time when I was doing my community hospital practice as well as reading books in preparation for state final exam. However this was overcome by proper duty allocation and utilization of time that was available. On the other hand, financial constraint was overcome by reduction of the sample size as well as utilization of the little fund sends to me from home and on weather changes problems like rainy and sunny day, umbrella was used as well as convenient time for data collection was allocated. The problems of outlier during data collection was overcome by proper reassurance and detailed explanation of the study purpose to the nurses.
3.10 Dissemination of Results.

Hard copy paper prints of research report are made available and were disseminated as follows;

To Uganda Nurses and Midwives Examination Board in partial fulfillment for the award of Diploma in Nursing Science,

One copy to the management of KIU Nursing School to be posted in Kampala International University Library,

A copy to Senior Principle Nursing Officer (SPNO) of KIU-TH in order to discuss findings and recommendations to entire KIU-TH nurses’ population,

And a copy can also be accessed from Oroma Collins the chief researcher.
CHAPTER FOUR: RESULTS FROM THE RESEARCH STUDY

4.0 Introduction.

In this chapter, the results of “Nurses’ Knowledge and Practices in Surgical Department at KIU-TH on PPE Use” are presented in form of tables, graphs and charts followed by a brief description of the tables, graphs or chart.

4.1 Description of the Sample.

A total of 60 nurses were interviewed and observed, the baseline Demographic characteristics used to describe the sample were age, gender, levels of qualification, work experiences and additional training.

Table 1: Age and Gender of Nurses in the Study: [Where n=60].

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Frequency (n)</th>
<th>Percentage of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28-37 Years</td>
<td>24</td>
<td>(40%)</td>
</tr>
<tr>
<td>18-27 Years</td>
<td>20</td>
<td>(33%)</td>
</tr>
<tr>
<td>38-47 Years</td>
<td>10</td>
<td>(17%)</td>
</tr>
<tr>
<td>48 and Above</td>
<td>06</td>
<td>(10%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Gender:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>40</td>
<td>(67%)</td>
</tr>
<tr>
<td>Male</td>
<td>20</td>
<td>(33%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>60</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 1 above shows that, the majority 24(40%) of nurses were aged 28-37 years and the minority 6(10%) were between 48 years and above. While on gender, the majority 40(67%) were female and the minority 20(33%) were male.
Table 2: Education Levels and Work Experience of Nurses: [Where n=60].

<table>
<thead>
<tr>
<th>Parameter of Sample</th>
<th>Frequency (n)</th>
<th>Percentage of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education Levels:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing Certificate</td>
<td>28</td>
<td>(47%)</td>
</tr>
<tr>
<td>Nursing Diploma</td>
<td>20</td>
<td>(33%)</td>
</tr>
<tr>
<td>Nursing Bachelor EXT.</td>
<td>08</td>
<td>(13%)</td>
</tr>
<tr>
<td>Nursing Assistants</td>
<td>04</td>
<td>(7%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>100%</strong></td>
</tr>
<tr>
<td><strong>Work Experience:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-5 Years</td>
<td>30</td>
<td>(50%)</td>
</tr>
<tr>
<td>Above 5 Years</td>
<td>20</td>
<td>(33%)</td>
</tr>
<tr>
<td>Less than 2 Years</td>
<td>10</td>
<td>(17%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

From Table 2 above, the majority 28(47%) of nurses had certificate while nursing assistants were the minority 4(7%).

Still on Table 2 above, the majority 30(50%) of nurses had work experience of 2-5 years while the minority 10(17%) were below 2 years of working experience.
Figure 01: A doughnut chart Showing Status of Additional Training on Protective Equipment use among the Nurses: [Where n=60].

Figure 1 above presents the participants’ additional training status on protective equipments of which, the majority of nurses 32(53%) received additional training while few nurses 28(47%) had not received additional training.

4.2 Knowledge of Nurses on Protective Equipments Use in Surgical Department at KIU-Teaching Hospital.

The parameters used to assess the nurses’ knowledge includes; effective use of PPE to avert HAIs, selection criteria in PPE used and technique required in using PPE. Answering was based on the Likert scale [Strongly disagree, Disagree, Neutral/undecided, Agree and strongly agree where;

- Strongly disagree plus (+) Disagree = Negative knowledge,
- Undecided/Neutral = Neutral knowledge,
- Agree plus (+) strongly agree =Positive Knowledge
Table 3: Level of Nurses’ Knowledge on Effective PPE used to avert Health care Associated Infections (HAIs): [Where n=60].

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Negative</th>
<th>Neutral</th>
<th>Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriateness of PPE to reduce HAIs</td>
<td>0(0%)</td>
<td>2(3%)</td>
<td>58(97%)</td>
</tr>
<tr>
<td>Use of disposable and non-disposable</td>
<td>0(0%)</td>
<td>4(7%)</td>
<td>56(93%)</td>
</tr>
<tr>
<td>Personal Protective equipments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPE decontamination process</td>
<td>0(0%)</td>
<td>6(10%)</td>
<td>54(90%)</td>
</tr>
<tr>
<td>Universal PPE utilization/consumption</td>
<td>0(0%)</td>
<td>8(13%)</td>
<td>52(87%)</td>
</tr>
<tr>
<td>PPE use for invasive procedures</td>
<td>0(0%)</td>
<td>10(17%)</td>
<td>50(83%)</td>
</tr>
<tr>
<td>Average Total Score</td>
<td>0(0%)</td>
<td>6(10%)</td>
<td>54(90%)</td>
</tr>
</tbody>
</table>

From table 3 above, Nurses’ knowledge on Appropriateness of PPE to reduce HAIs had the highest positive score 58(97%) while the lowest score 50(83%) was on PPE use for invasive procedures.

On the other hand, the highest average nurses’ knowledge score was positive 54(90%) followed by neutral knowledge 6(10%) and least was negative knowledge 0(0%).

Figure 2: A Bar graph Showing Level of Nurses’ Knowledge on PPE Selection Criteria: [Where n=60].
From figure 2 above, the highest positive knowledge 54(90%) on PPE selection criteria was on QN9 (Workplace risk analysis) while the lowest positive knowledge 46(77%) on QN8 (durability and fitness).

On the average nurses’ knowledge on PPE Selection Criteria, the highest 50(83%) score was positive knowledge followed by neutral knowledge 7(12%) and the least 3(5%) was negative knowledge.

Figure 3: A bar graph showing Level of Nurses’ Knowledge on Techniques for PPE use. [Where n=60].
From figure 3 above, hand hygiene had the highest 56(93%) positive knowledge score while the lowest positive score were on Torso Protection 44(73%) and Donning PPE 44(73%).

On the overall average nurses’ knowledge, the highest 47(78%) scores was positive knowledge followed by neutral knowledge 13(22%) and the least (0%) scores was on negative knowledge.

4.3 Practices of Nurses on PPE Use at Surgical Department at KIU-TH:

On nurses’ practice of protective equipments use, parameters considered here were; Hand hygiene performance, Technique/skill on donning PPE, Technique/skill on undonning PPE, Limitation of contamination, storage and PPPE use when indicated.
Figure 04: A bar graph showing level of nurses’ performance on hand hygiene during protective equipments use. [Where n=60].

From figure 04 above, the highest 44(73%) satisfactory performance on hand hygiene was after undonning of PPE and the least 40(67%) satisfactory performances was seen before donning of PPE.

On the other hand, the overall average nurses’ performance on hand hygiene before and after removal of PPE was satisfactory 42(70%) while unsatisfactory performance only account for 18(30%).
Figure 05: A bar graph Showing Level of Nurses’ Performance on Technique used in Protective Equipments. [Where n=60].

From figure 05 above, the highest 42(70%) satisfactory performance was seen among nurses during donning PPE while the least 39(65%) was for undonning technique.

On the other hand, the overall average nurses’ performance was satisfactory with 41(68%) score while unsatisfactory performance only account for 19(32%).
Figure 06: A bar graph showing Nurses’ Level of Contamination’s Limitation and Storage of Protective Equipments. [Where n=60].

From figure 06 above, Aseptic donning of PPE had the highest 48(80%) satisfactory performances while Decontamination of Reusable PPE had the lowest 36(60%) score.

On the overall nurses’ performance, the highest 42(70%) was satisfactory performance while unsatisfactory performance only account for 18(30%).
Figure 07: A pie chart showing Level of Nurses’ Performance on Indicated PPE Use. [Where n=60].

From figure 07 above, majority 42(70%) of nurses appropriately use both Hand protective and Foot Protective when indicated while minority 36(60%) of nurses use both Face Protective equipments and Torso protective well.

The overall average use of PPE was 39(65%) used when indicated while 21(35%) misused.
CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction.

This chapter presents detailed discussion of the findings, conclusion and recommendations about knowledge and practices of nurses in KIU-TH, surgical setting on PPE in relation to research objectives and answering research questions. The results are discussed in line with the research findings as presented in chapter four and also in comparison with other scholars’ findings from introduction and literature review.

5.1 DISCUSSION OF STUDY FINDINGS.

5.1.0 Demographic Data of the Samples

In this study, total sample of 60 nurses aged 18 years and above from KIU-TH were considered representatives and enrolled to the study by convenient sampling.

The majority 24(40%) of nurses were aged 28-37 years, while the minority 6(10%) were aged 48 and above. This indicates that nursing community is dominated by middle aged mature adults who can decide and make independent decisions. Whereas on gender of respondents, the majority of nurses were female with 40(67%) while male in the study were only 20(33%) of the total populations. Chronologically, nursing is known to be dominated by females. Never the less, this would serve as an advantage since females are always on the front in fostering PPE use to prevent HAIs.

Table 2 indicates that, the majority 28(47%) of nurses had certificate while nursing assistants were the minority 4(7%). At least majority 56(93%) of nurses had a formal education in nursing field recognized by the nursing council body. Inspite the level of education among nurses being high with 56(93%), Nurses are more likely to portray
poor knowledge and practices on PPE use yet health workers worldwide are continuously exposed to HAIs due to inadequate knowledge and poor practice of PPE use to limit HAIs (Edward, 2014). Yet in most developing countries, PPE is often the only line of defense against HAIs (Johnson et al 2009, Jabbar et al 2010).

Still on table 2, the majority 30(50%) of nurses had work experience of 2-5 years while the minority 10(17%) were below 2 years of working experience. The largest percentage of nurses had working experiences above 2 years due to recruitment program of the hospital. Work experiences can influence knowledge and practices of PPE use in the hospital setting (Notoadmodjo, 2012).

From figure 1, the majority of nurses 32(53%) received additional training while few nurses 28(47%) had not received additional training. Although the majority of nurses 32(53%) had received additional training on PPE, the minority group of nurses 28(47%) still needed to receive additional training on PPE too since it is recommended by CDC that everybody involved in providing care must be trained on the technique of PPE in order to provide safety to both nurses and patients in terms of preventing and controlling disease transmission (Pratt et al.2009). on the other hand nurses must receive training on elimination and minimizing the risk of exposure (CDC, 2015).

5.1.1 Nurses’ Knowledge on PPE Use in Surgical Department at KIU-TH:

According to the findings on Effective PPE used to avert HAIs in table 3, Nurses’ knowledge on Appropriateness of PPE to reduce HAIs had the highest positive score 58(97%) while the lowest score 50(83%) was on PPE use for invasive procedures. The highest average nurses’ knowledge score was positive 54(90%) on Effective PPE used to avert HAIs and this is similar with the study done by Haryanti (2009) indicating that,
75% of employees had the knowledge on effective PPE use to manage HAIs. Since, PPE is a critical component in the hierarchy of controls used to protect nurses from infectious hazards (Holguin, 2011), the minority 6(10%) group of nurses still need to fill the gap of effectiveness of PPE use by having collective effort on acquiring knowledge on appropriate PPE use to combat Healthcare Associated Infections.

According to the findings on nurses’ knowledge on PPE selection criteria in figure 2, the highest positive knowledge 54(90%) was on QN9 (Work place risk analysis) and the lowest positive knowledge 46(77%) was on QN8 (durability and fitness). On average nurses’ knowledge on PPE Selection Criteria, the highest 50(83%) score was positive knowledge and this result shows that; nurses have adequate knowledge in selection of PPE as it is one of the important measures in reducing HAIs worldwide (CDC, 2015). Inspite the fact that largest percentage of nurses knew how to select PPE in accordance with PPE selection criteria, the inadequate knowledge among the minority group (17%) can still affect the entire population of the hospital, therefore; more emphases is necessary to uplift the minority group nurses since it is indicated that, the incidence of HAIs had increased by 36% (Stone, 2009). In other words, nurses are recommended to use appropriate size PPE which are not too small or large in size in order to prevent contamination during service delivery (Joel, 2009). And only PPE of safe design and construction for the work that meet NIOSH or ANSI standards should be procured and selected for use (OHSA regulation, 2016). So all the nursing teams are expected to be trained/ educated about standard principles and the technique for selecting PPE to help them have adequate knowledge in PPE used so as to combat HAIs (Pratt et al, 2009).
According to the findings on nurses’ knowledge for the technique required when using PPE as shown by figure 3, the highest 47(78%) scores was positive knowledge followed by neutral knowledge 13(22%) and the least (0%) scores was on negative knowledge. These results although indicate positive awareness on PPE use, the 13(22%) neutral knowledge indicates gap that require improvement. The increasing demand to combat HAIs which had been estimated to be in the millions, being directly associated with 99,000 deaths and costing nearly $28 to $33 billion in excess health care costs each year (AHRQ, 2011; Scott, 2009) called for more effort by nurses to attain knowledge for PPE use (Haryanti, 2009) in order to reduce the impact of HAIs but not to misuse PPE when patients are HIV positive, hepatitis B and other communicable diseases (Brevidelli and Cianciarullo, 2009).

5.1.2 Practices of Nurses on PPE Use at Surgical Department at KIU-TH:

On nurses’ practice on protective equipments use, parameters considered here were; Hand hygiene performance, Technique/skill on donning PPE, Technique/skill on undonning PPE, Limitation of contamination, storage and PPPE use when indicated. Those factors are important to evaluate because Nurses might have knowledge about PPE but do not deem the use of it necessarily (Flora, 2012). Yet it has been shown that proper use of PPE has been shown to reduce the risk of exposure to blood and body fluids (Amruthavahini, 2011).

According to the findings on hand hygiene practice performance in figure 04, the overall average nurses’ practice performance before and after removal of PPE was satisfactory 42(70%) while unsatisfactory performance only account for 18(30%). This result doesn’t match with the study done in Nigeria where only 46% of nurses would
wash hands before and after using PPE (Okeke et al, 2014). Although the largest percentage of nurses’ performance on hand hygiene was satisfactory 42(70%), there is still need to put more effort to improve the general performance in order to minimize spread of disease and maintaining an infection-free environment during practice (Aceng, 2013). Additionally, better practice of universal precautions correlates good practice in combating HAIs (Amruthavahini, 2011).

According to the findings on practices of nurses for the technique/ skills of donning and un-donning PPE in figure 05, the highest 42(70%) satisfactory performance was seen among nurses during donning PPE while the least 39(65%) was for undonning technique. The overall average nurses’ performance was satisfactory with 41(68%) score while unsatisfactory performance only account for 19(32%). This result correlates with the study done in Kiay indicating that, nurses do not wear PPE correctly (Husnul, 2016). Although the majority of nurses had satisfactory technique performance, it has not reach the CDC standard designed protocol of donning and undonning PPE as put down being one of the measures in combating HAIs. This means, there is need for more effort to be put, because poorly followed technique used in wearing PPE by the health care providers, can expose their own tissues to potentially infectious material in turn also contaminate patients, by becoming a vector for the transmission of micro-organisms from nurses to patients.

According to the findings on Nurses’ Level of Contamination’s Limitation, decontamination and Storage of PPE in figure 6, the highest 48(80%) satisfactory performances was on Aseptic donning of PPE while Decontamination of Reusable PPE had the lowest 36(60%) score. On the overall nurses’ performance, the highest 42(70%) performance was satisfactory while unsatisfactory performance only account for
18(30%). This result agrees with the study done in Scotland indicating 56% needle stick injuries was ‘probably’ or ‘definitely’ had been due to poor limitation of contamination and storage safety of protective device (NHS, 2013). On the other hand, CDC has addressed the concern of contamination of hands and clothing during PPE use by designing a protocol to be followed when using PPE as well as storage (Siegel et al. 2009).

According to the findings on level of nurses’ performance for forms of PPE use in figure 07, the majority 42(70%) of nurses appropriately use both Hand protective and Foot Protective when indicated while minority 36(60%) of nurses use both Face Protective equipments and Torso protective. The overall average use of PPE was 39(65%) used when indicated while 21(35%) misused. Despite the fact that; largest percentage 39(65%) of PPE used is when indicated, the smallest percentage 21(35%) PPE used when not indicated result into increase magnitude of PPE utilization rate as reported by ISHN in 2016 to be 82.4%. This result correlates with a study done in the Pomeranian region of Poland, showing how other forms of PPE were frequently used than other (McGrowder et al, 2010).

5.2 Conclusions.

Demographically of the 60 nurses, the highest score was; aged 28-37 years 24(40%), females gender 40(67%), work experience of 2-5 years 30(50%) and received additional training 32(53%) which had some impact on nurses’ knowledge and practices toward PPE use.
On the other hand, Nurses’ Knowledge on PPE use was satisfactory with average of 50(83%) contributed by; 54(90%) Effective PPE use to avert HAIs, 50(83%) Selection criteria for PPE and 47(78%) PPE used Technique.

While on Nurses’ practice toward PPE use satisfactory with average performance of 40(67%) as attributed by percentage of; Hand hygiene 42(70%), Technique of PPE used 41(68%), Aseptic PPE use and storage 42(70%) and PPE used when indicated 39(65%).

Nurses’ practice is still low 40(67%) compared to nurses’ knowledge 50(85%).

5.3 Recommendations.

From this study finding, I recommend the following in order to improve on effectiveness of PPE use at the healthcare setting particularly in surgical departments;

5.3.1. To Ministry of Health (MOH):

i. The MOH planners need to design more strategies or policies on PPE use in the health care setting.

ii. The MOH planners should integrate protective equipments use in the nursing school curriculum.

iii. The MOH should carryout timely support supervision on PPE use in the healthcare setting.

5.3.2. To Hospital Management:

i. Hospital management should organize short course training that aims at improving knowledge and practice of nurses on PPE use at the healthcare setting.
Knowledge And Practices of Surgical Departmental Nurses on PPE Use

ii. Hospital management should avail all surgical departments with enough PPE logistic and standard PPE guideline chart as recommended by the CDC, OHSA, NHS and ANSI in order to avoid improvisation and poor practice at the health care setting.

iii. Hospital’s OHS committee need to perform routine survey to determine if nurses are following the guidelines put down by CDC, OHSA, NHS, ANSI agency on PPE use.

5.3.3. To Nurses:

i. Nurses should follow ethical principle of all nursing care like; Beneficence and non-malificience among others principle.

ii. Nurses need to practice standard PPE use in all nursing care in order to prevent HAIs.

iii. Nurses should endeavor to carry out routine risk exposure anticipation at the work place to help in appropriate selection of PPE.

iv. Nursing research should carry out more comprehensive research studies in order to develop more intervention that can improves PPE use in the health care setting. And the suggested areas for further studies include; Factors contributing to poor practice of PPE use among nurses at KIU-TH, as well as Knowledge of attendants on PPE use in caring for infectious patient.

5.4 Implications to Nursing Practice.

i. Nursing education: The information generated from the study can improve on knowledge since MOH planners and KIU- Teaching hospital planners as well as KIU School of nursing administration can utilized the finding to design
strategies or policies on PPE use as well as integrating it into nursing school curriculum.

ii. Nursing Practice: The research information generated would help the managers in fostering for positive behavior change in utilization of infection control materials.

iii. Nursing Research: The research findings and some of its literatures may be used by other future nurses who may have interest in a similar study.
References


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Knowledge And Practices of Surgical Departmental Nurses on PPE Use


Knowledge And Practices of Surgical Departmental Nurses on PPE Use


Karl and Wuensch L. (2010). Variables: Department of Psychology; East Carolina University.


Notoadmodjo S. (2012). Health Promotion and Health Behavior: Publisher Rineka Cipta, Jakarta.


Yulia & Haryanti (2009). *Nurses’ Use of PPE (glove and mask) for Prevention of Exposure*: Multidisciplinary research EPRA Journals.
APPENDICES

Appendix I: CONSENT FORM FOR NURSES.

I am Oroma Collins, a student of Kampala international university pursuing a diploma in nursing sciences. I am conducting a study on the nurses’ knowledge and practice on use of protective equipment in surgical setting at KIU-TH. I would like to ask you in order to obtain the information about the mentioned study above. This survey is anonymous and confidential. Your participation in this study is strictly voluntary and will in no way affect your relationship with your employers. To help protect confidentiality, I will be making use of identification code only on the data form and this form will be handled by myself and will be stored away. If there is any unclear information, you may ask for further clarification.

Declaration of the participant:

I have understood the purpose of the study and consent voluntarily to participate as a subject in this study. I also understand that the information to be provided will be confidential.

<table>
<thead>
<tr>
<th>Participant’s Initial</th>
<th>Date</th>
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<tbody>
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</table>

<table>
<thead>
<tr>
<th>Researcher’s Initial</th>
<th>Date</th>
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Appendix II: RESEARCH INSTRUMENTS/TOOLS
“Structured Interview Questionnaire”

Dear respondent;

The aim of this study is to assess the knowledge and practices of nurses on Personal Protective Equipments in surgical department. You are kindly requested to participate in this research by answering the structured Interview Questionnaire (To assess nurses' knowledge on use of protective equipments),

NOTE: No respondent’s name is needed.

Date.......................... Respondent’s number............... Name of the unit..................

(Please tick in the box the answer you feel is most appropriate.)

Part One: Demographic Data.

1. What is your gender?
   (a) Male     (b) Female

2. In what age category do you fall into?
   (a) Between 18-27  (b) Between 28-37
   (c) Between 38-47  (d) 48 and above

3. What is your level of qualification?
   (a) Nursing assistant  (b) Nursing Certificate
   (c) Nursing Diploma   (d) Bachelor in nursing
   (e) Other specify..............................................................

4. Years of experience/services?
   (a) < 2 years  (b) 2-5 years  (c) >5 years

5. Did you recived training on PPE?
   (a) Yes  (b) No

Part Two: Nurses’ Knowledge on Personal Protective Equipments (PPE) Use.
Statement leading to determining level of nurses’ knowledge on use of Personal protective equipments.

Please indicate your perception on each statement made below by ticking the appropriate agreement-box according to the agreement-legend supplied.

Agreement legend

1. Strongly disagree
2. Disagree
3. Undecided
4. Agree
5. Strongly agree

<table>
<thead>
<tr>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>(1) Effective PPE use reduces the risk of Hospital Associated Infections among the nurses, co-worker and patient.</td>
<td></td>
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<tr>
<td>(2) Use of disposable Personal protective equipments should be preferred to reusable Personal protective equipments in order to reduce Hospital Associated Infections.</td>
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<tr>
<td>(3) Health workers should not be the only people to use Personal protective equipments in prevention of Hospital Associated Infections event if Personal protective equipments are not enough.</td>
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<tr>
<td>(4) Delayed decontamination or reusable Personal protective equipments promotes increased rate of Hospital Associated Infections.</td>
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<tr>
<td>(5) Face protective equipments should not be used in invasive procedure only in order to avert HAIs.</td>
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<td>(6) Personal protective equipments used should be selected according to the standard that meets American National Standards Institute (ANSI).</td>
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</table>
(7) Personal protective equipments should be selected and used in all caring activities for all patient events if not soiled.

(8) Personal protective equipments selection factors like anticipation of exposure, durability and fitness of Personal protective equipments should be considered in Personal protective equipments use.

(9) Identification of exposure risk in the work place can improve Personal protective equipments selection and use among workers.

(10) Boots/appropriate shoes should be indicated in all invasive procedures.

(11) Hand hygiene combined with appropriate Personal protective equipments can limit the rate of HAIs transmission.

(12) Double gloving should be preferred for invasive surgical procedure.

(13) Two small gown tied up at the torso protect one the same way as one complete full gown during invasive procedure.

(14) Personal protective equipments donning requires sequential donning technique event if there is an emergency.

(15) Un-donning of Personal protective equipments sequent should be in a re-verse of Personal protective equipments donning event if it is not soiled.

Part one ended: Thank you very much for your response.

Part Three: Nurses’ Performance Observational Check List.
The aim of this study is to assess the knowledge and practices of nurses on PPE in surgical department.

NOTE: No respondent’s name is needed.

Date.......................... Respondent’s number.............. Name of the unit..................

| NURSES’ PRACTICES ON PROTECTIVE EQUIPMENTS USE. |
| Guide to examine nurses’ practices on use of PPE. |
| Agreement legend |
| 1. Poor |
| 2. Fair |
| 3. Good |

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<tr>
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<th>1</th>
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<tr>
<td>(1) Hand hygiene Performance before donning of Personal protective equipments (Hand washing, Hand disinfecting, Hand drying basing on duration and effectiveness).</td>
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<tr>
<td>(2) Technique performance in donning of Personal protective equipments (Follow sequent and skill of donning like double gloving in invasive procedure).</td>
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<td>(3) Limitation of contamination during donning. (Change of PPE if tone or soiled, avoids contact with other equipments).</td>
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<tr>
<td>(4) Limitation of contamination with Personal protective equipments during un-donning. (Ability to identify the clean or contaminated part of Personal protective equipments, avoids un necessary contact).</td>
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<tr>
<td>(5) Technique performance in un-donning of protective equipments (Follow sequent and skill of un-donning)</td>
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<td></td>
<td>Knowledge And Practices of Surgical Departmental Nurses on PPE Use</td>
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<td>---------------------------------------------------------------</td>
<td></td>
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<tr>
<td>(7)</td>
<td>Use of Apron, face masks, gaggle when indicated.</td>
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<tr>
<td>(8)</td>
<td>Use of appropriate shoe/gumboots (size, durability, hygiene).</td>
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<tr>
<td>(9)</td>
<td>Decontamination of reusable Personal protective equipments after procedure. (Duration of process, technique and skills)</td>
<td></td>
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<tr>
<td>(10)</td>
<td>Storage of available reusable Personal protective equipments after procedure.</td>
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</table>

*Part two ended.*
Appendix III: LETTER OF APPROVAL.

Office of the Dean - School of Nursing Sciences

TO WHOM IT MAY CONCERN

Dear Sir/Madam:

RE: OROMA COLLINS - DNS/E/1975/153/DU

The above mentioned is a student of Kampala International University – School of Nursing Sciences undertaking Diploma in Nursing Science and he is in his final academic year.

He is recommended to carry out his data collection as a partial fulfillment for the award of the Diploma in Nursing Science.

His topic is KNOWLEDGE AND PRACTICES OF NURSES ON PROTECTIVE EQUIPMENTS USED IN SURGICAL DEPARTMENTS AT KIU – TEACHING HOSPITAL

Any assistance rendered to him will be highly appreciated.

Thank you in advance for the positive response.

[Signature]

Sarah Akabugho
RESEARCH COORDINATOR

“Exploring the Heights”
APPENDIX IV: MAP OF UGANDA SHOWING BUSHENYI DISTRICT.
Location of Bushenyi district on the map of Uganda

Appendix V: MAP OF BUHENYI DISTRICT SHOWING KIU-TH.

Location of KIU-Teaching Hospital in Ishaka municipality, Bushenyi