KNOWLEDGE, ATTITUDE AND PRACTICE ON NOSOCOMIAL INFECTIONS AMONG MEDICAL STUDENTS AT KAMPALA INTERNATIONAL UNIVERSITY TEACHING HOSPITAL WESTERN CAMPUS IN JUNE 2018

BY

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A RESEARCH DISSERTATION SUBMITTED TO THE FACULTY OF CLINICAL MEDICINE AND DENTISTRY IN PARTIAL FULFILMENT FOR THE AWARD OF BACHELOR OF MEDICINE AND SURGERY AT KAMPALA INTERNATIONAL UNIVERSITY

SEPTEMBER, 2018

DECLARATION

I, **Abdalla Bahja Feiswal**, do hereby declare that this research dissertation is the product of my own efforts and to the best of my knowledge, has never been presented to any institution for any award or qualification whatsoever. Where the works of other people have been included, due acknowledgement to this has been made in accordance with the appropriate referencing and citations. The findings and the analysis that will result from this research project will be my original information.

Researcher …….

Signature ……...

Date ……...….

APPROVAL

This is to certify that this research dissertation has been prepared under my supervision and has never been presented anywhere for other purpose and is now ready for submission to faculty of clinical medicine and dentistry of Kampala international university for further consideration.

Supervisor: ……

Signed…….

Date……..……

DEDICATION

I dedicated this research to my Daddy Feiswal Abdalla and Mummy Rukia Imam for all their support and sacrifice rendered during my studies. They opened the doors of success to me.

May Allah bless them

ACKNOWLEDGEMENT

My special thanks go to my academic supervisor, Prof. Kaem for his interest in my work and all the advice during all the stages of preparation of this dissertation.

To all the academic staffs of Kampala international university western campus for their efforts and support during my studies.

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	**:**	Acquired Immune Deficiency Syndrome
BMS	**:**	Bachelor of Medicine and Surgery
DOS	**:**	Dos Operating System
Obs / Gyne	**:**	Gynecology/ Obstetrics
HAI	**:**	Hospital Acquired Infection
HPV	**:**	Human Papilloma Virus
HBV	**:**	Hepatitis B Virus
HCV	**:**	Herpes simplex virus Type C
HCWs	**:**	Health Care Workers
HIV	**:**	Human Immune Deficiency Virus
KAP	**:**	Knowledge Attitude and Practice
KIUTH	**:**	Kampala International University Teaching Hospital
MOH	**:**	Ministry of health
OR	**:**	Odds ratio
PEP	**:**	Post Exposer Prophylaxis
PPE	**:**	Personal Protective Equipment
RLS	**:**	Resource Limited Settings
SPSS	**:**	Statistical Package for Social Scientist
TB	**:**	Tuberculosis
US	**:**	United states
VCT	**:**	Voluntary Counselling and Testing
WHO	**:**	World Health Organization

OPERATIONAL DEFINITIONS

Nosocomial Infection: Any infection acquired during a patient's stay in a health care facility, becomes evident 48 hours or more after hospital admission or within 30 days of discharge following in-patient care(Bello et al., 2011)

ABSTRACT

Introduction: Nosocomial or those infections acquired in a hospital setting are a great cause of morbidity in our patients due to their easy transmissibility from a patient to another at times through the health care provider who does not practice appropriate infection control. Of more importance is the fact that, other than their prevalence going up, resistance to antibiotics has developed within the causative agents of these infections. Medical students, like other health staff, are in constant encounter with patients in the wards and thus may be at risk of getting infected themselves, or acting as a vehicle of spread of these infections throughout the ward. For this reason, this study is about the Knowledge Attitudes and Practice among medical students at KIU on nosocomial infections.

Background of the study: Hospital-associated infections or nosocomial infections are those infections acquired during the patient's stay in hospital. They form a major worldwide public health problem despite advances in our understanding and control of these infections. The best clinical care in the world can be worthless if patients pick up other infections while they are in the hospital. Hospital-associated infections also include occupational infections which occur in health care workers due to occupational hazard (Biberaj, Gega, & Bimi, 2014).

An infection is considered nosocomial if it becomes evident 48 hours or more after hospital admission or within 30 days of discharge following inpatient care (Bello et al., 2011).

Nosocomial infections increase patients' morbidity, mortality, length of hospital stays and treatment cost (Kaye et al., 2014). Standard precautions are designed to reduce the risk of acquiring occupational infection from both known and unexpected sources in the healthcare setting. Strict adherence by healthcare workers to standard infection control precautions may prevent a percentage of these risks. For that reason, healthcare workers should have adequate knowledge and practice about standard infection control precautions (Ogoina et al., 2015).

Objective: To assess knowledge Attitude and practice of medical students of KIUTH towards nosocomial infections.

Method: A questionnaire based cross sectional study design with a quantitative component was and that involved 292 medical students in their 3rd, 4th, and 5th years was utilized. A convenient random sampling technique was employed in recruiting the respondents.

Results: A total of 292 medical students took part in the study. The knowledge and attitudes of the respondents were found to be satisfactory but practice was not. HBV vaccination uptake the students was also very low.

Conclusion: Medical students of KIU, despite having excellent knowledge and good attitude towards nosocomial infections, the translation of this knowledge into practice leaves quite a lot to be desired. Their uptake of the HBV vaccine is very low the key factor being cost implications. More needs to be done in terms of educating the incoming and continuing clinical students on proper protocols pertaining prevention of nosocomial, and infections at large.

CHAPTER ONE

STUDY BACKGROUND

1.0: INTRODUCTION

Health is the level of functional or metabolic efficiency of a living being. Health is both responsibility as well as right. It is the responsibility of those with power and right of those without power. The promotion of health is social, and political as well as individual responsibility. Health does not mean the only physical well-being of the individual but also include social, emotional, spiritual and cultural well-being. This is a whole of life view and includes the cyclical concept of life-death-life (Ziebarth, 2016).

Hospital-associated infections or nosocomial infections are those infections acquired during the patient's stay in hospital. They form a major worldwide public health problem despite advances in our understanding and control of these infections. The best clinical care in the world can be worthless if patients pick up other infections while they are in the hospital. Hospital-associated infections also include occupational infections which occur in health care workers due to occupational hazard (Biberaj, Gega, & Bimi, 2014).

An infection is considered nosocomial if it becomes evident 48 hours or more after hospital admission or within 30 days of discharge following inpatient care (Bello et al., 2011).

Nosocomial infections increase patients' morbidity, mortality, length of hospital stay and treatment cost (Kaye et al., 2014).

Nosocomial infection refers to as a hospital acquired infections or simply hospital infections are infections occurring during staying 48 hours or longer, which resulted in the use of the 48-hour criterion in several epidemiological surveillance systems (El-Gohary & Al Jubouri, 2014).

Therefore, knowledge about the frequency and distribution of nosocomial infections is important to improve infection control measures as well as to develop effective preventive and curative strategies which, in turn, will help us in decreasing incidence, morbidity and mortality (Dasgupta, Das, Chawan, & Hazra, 2015).

Hospitals provide a favorable transmission path-way for the spread of nosocomial infections, owing partly to poor infection control practices among health workers on one hand and overcrowding of patients in most clinical settings on the other. The importance of hospital-acquired infections goes beyond its impact on morbidity and mortality figures in any country, and has profound economic implications. Prevention of health care-associated infections is the

duty of all health care workers. Infection control professionals require evidence-based educational content that facilitates reduction in nosocomial infections. Clinical and support staff in health care institutions are inundated with required training facilitated by accrediting bodies and institutional mandates (Biberaj et al 2014).

Standard precautions are designed to reduce the risk of acquiring occupational infection from both known and unexpected sources in the healthcare setting. Strict adherence by healthcare workers to standard infection control precautions may prevent a percentage of these risks. For that healthcare workers should have adequate knowledge and practice about standard infection control precautions (Ogoina et al., 2015)

1.1. PROBLEM STATEMENT

Nosocomial infections are infections acquired in the hospital or other health care facilities that were not present or incubating at the time of the client's admission. It is also referred to as hospital-acquired infections (HAIs). It includes those infections that become symptomatic after the client is discharged as well as infections among medical personnel. Most nosocomial infections are transmitted by health care personnel who fail to practice proper hand washing procedures or change gloves between client contacts (Yakob, Lamaro, & Henok, 2015).

A prevalence survey conducted under the auspices of WHO in 55 hospitals of 14 countries representing 4 WHO Regions (Europe, Eastern Mediterranean, South-East Asia and Western Pacific) showed an average of 8.7% of hospital patients had nosocomial infections. At any time, over 1.4 million people worldwide suffer from infectious complications acquired in hospital. The highest frequencies of nosocomial infections were reported from hospitals in the Eastern Mediterranean and South-East Asia Regions (11.8 and 10.0% respectively) (Ginawi et al., 2014).

Identifying existing infection control knowledge, attitudes, and practices (KAP) among health care workers (HCWs) is a key first step in developing a successful infection control program. In an effort to raise awareness and provide guidance in combating HAIs in resource limited settings (RLS), the World Health Organization (WHO) launched the Global Patient Safety Challenge.

1.2. STUDY OBJECTIVES

1.2.1. BROAD OBJECTIVE

To assess knowledge Attitude and practice of medical students of KIUTH towards nosocomial infections in January 2018.

1.2.2. SPECIFIC OBJECTIVES

1. To identify the level of medical students' knowledge at KIUTH towards standard precautions in January 2018.
2. To determine the attitude of medical students at KIUTH on prevention of nosocomial infections in January 2018.
3. To evaluate the practice of standard basic precautionary measures among medical students of KIUTH in the clinical setting in January 2018.
4. To identify associated factors of KAP towards standard precaution.

1.3.RESEARCH QUESTIONS

1. What is level of knowledge of medical students at KIUTH towards standard precaution?
2. What are the attitudes of medical students at KIUTH on prevention of nosocomial infection?
3. Do students at KIUTH practice standard basic precautionary measures in the clinical setting?

1.5. JUSTIFICATION OF THE STUDY

This study aimed to provide baseline information on knowledge level and practice on prevention of nosocomial infection of medical students. It will provide strong body of scientific knowledge which will ensure the highest standards of medical care and practice. This can be achieved through adherence to the evidence based guidelines for prevention of nosocomial infection ultimately improving patients‟ outcomes. Improved outcomes will shorten patient's length of stay, hospitalization as well as benefit the patient financially with decreased hospital costs. Hospitals also gain benefits as they are continually faced with the challenge of providing cost effective services to patients and communities. Again, future researchers will benefit from this study that, it will provide them the baseline facts needed to compare their study results as necessary though studies have been conducted; still there is poor KAP towards prevention of nosocomial infection in medical and nursing students who are in clinical attachment. this study will serve as the basis for policy makers in developing health education Programs which may

serve as interventions to reduce incidence of nosocomial infections. There is a need to work on the perception, attitude and utilization to reduce mortality and morbidity.

1.6. STUDY SCOPE

GEOGRAPHICAL SCOPE

Kampala International University Teaching & Research Hospital is located in the town of Ishaka, in Bushenyi District, Western Uganda, approximately 330 kilometers (210 mi), by road, southwest of Kampala, Uganda's largest city and capital. The coordinates are:0°32'19.0"S, 30°08'40.0"E (Latitude: -0.538611; Longitude:30.144444). It runs under a private/public partnership, but is government aided because it is a training facility. It has about 700 beds.

CONTENT SCOPE

The study deals with the knowledge, attitude and practice of medical students concerning nosocomial infections.

TIME SCOPE

The whole study was conducted from February 2018 October 2018, a period of one year. This was from proposal formulation to compilation of the final dissertation. The actual period of study conduction and data collection was in June 2018.

1.7. CONCEPTUAL FRAMEWORK

The conceptual framework adopted for the study was that hand washing, waste segregation, policy guidelines and safety injection practices were the independent variables, while infection prevention and control were the dependent variables.

Students' attitudes, monitoring and supervision with proper management and planning are the intervening variables.

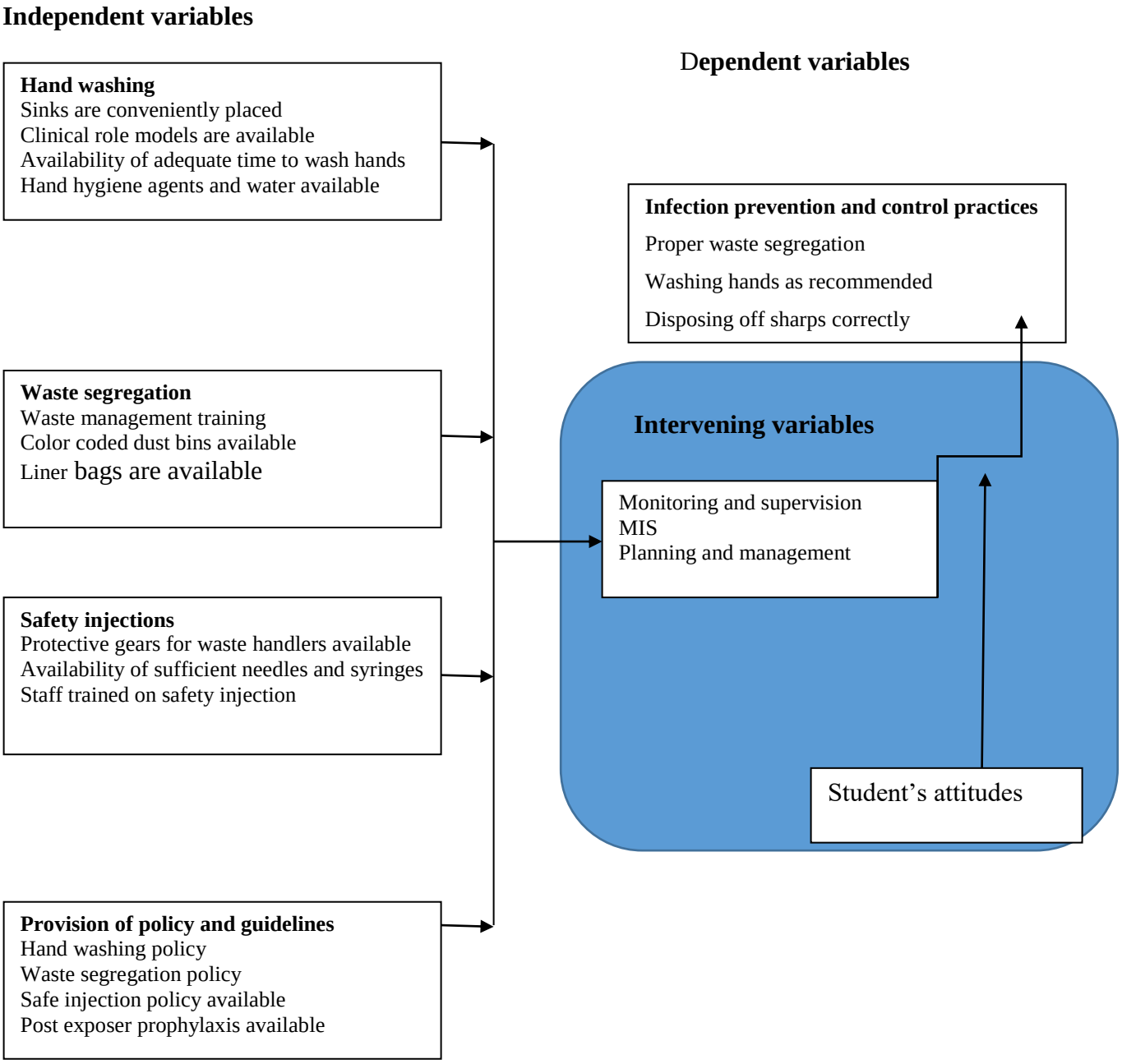


Figure 1: Conceptual Framework on Nosocomial Infections

CHAPTER TWO
LITERATURE REVIEW

2.0. INTRODUCTION

This chapter contains three sub sections on the related literature of knowledge, attitude and practices towards nosocomial infections.

2.1. KNOWLEDGE TOWARDS NOSOCOMIAL INFECTIONS

A study was conducted in Nepal to assess the knowledge, attitudes, and infection control practices among Nepalese health care workers (HCWs). The study comprised a questionnaire survey of 324 staff from acute care hospitals in Kathmandu, Nepal. A total of 158 doctors and 166 nurses participated, 27% of whom had received infection control training. Only 16%, 14%, and 0.3% of the respondents achieved maximum scores for knowledge, attitude, and practice items, respectively. Staff had good knowledge and positive attitude toward most aspects of infection control, although only half had heard of methicillin-resistant Staphylococcus aureus (Paudyal, Simkhada, & Bruce, 2008).

It demonstrates the responses of knowledge items about the general concepts of infection control and SPs, 18.3% and 51% did not recognize the goal of infection control and the precise definition of SPs respectively. Only 41.8% recognized that all patients are sources of infection and only 31.9% stated that all body fluids except sweat should be viewed as sources of infection (Amin et al., 2013).

A study conducted in India concerning KAP of needle stick injuries among dental students showed that out of the 120 students, 13 (11%) were not even aware that virus could be transmitted through infected needle. A significant proportion of the third year students i.e. 27 (67.5%) were not aware of correct method of disposal of disposable needles and syringes as against interns 17 (42.5%). Around 31 (26%) said that they would promote active bleeding at the site of injury and 37 (30%) said they would take post-exposure prophylaxis (Gambhir, Gill, Kapoor, Singh, & Singh, 2013).

A study conducted in Saudi Arabia on Standard Precautions and Infection Control, Medical Students' Knowledge and Behavior at a Saudi University: showed that out of the total of 251 students included, knowledge scores in all domains were considerably low, 67 (26.7%) students scored ≥ 24 (out of 41points) which was considered as an acceptable level of knowledge, 22.2% in 4th year, 20.5% in 5th year and 36.8% in 6th year. Sharp injuries, personal protective

equipment and health care of the providers showed the least knowledge scores. The main sources of knowledge were self- learning, and informal bed side practices The majority of students' believed that the current teaching and training are insufficient in providing them with the necessary knowledge and skills regarding standard precaution (Amin et al., 2013)

A study conducted in Nigeria assessing knowledge and compliance of health workers towards universal precaution showed that among 276 health workers Half (50%) of the respondents reported no knowledge of universal precautions; more than one third (37%) had average knowledge of universal precautions while 13% had good knowledge. Knowledge of universal precautions was highest among women than men, and among nurses (85.5%) compared with other health workers (IS & MO, 2012).

A study conducted in Nigeria Concerning the knowledge and practice of hand hygiene, this study revealed that 56.7% of the health workers knew that their hands had to be washed before and after patient care. However, compliance with hand hygiene was noticed in only 38.7% of the knowledgeable health workers. three (3%) did not wash their hands before or after taking care of patients (Bello et al., 2011)

2.2. ATTITUDE TOWARDS NOSOCOMIAL INFECTIONS

Clean Care is Safer Care campaign (Squeri, Genovese, Palamara, Trimarchi, & Fauci, 2016), is a WHO campaign whose cornerstone is to decrease HAIs through improving hand hygiene among healthcare workers. While the WHO campaign has outlined a guideline framework, hand hygiene adherence continues to be problematic even though it is a simple and highly effective measure to reduce HAIs. Among the standard precautions advocated, hand hygiene is considered, in itself, the most important one. Another important measure is the adequate use of gloves, whose purpose is to protect the HCWs, as well as the patient (Yakob et al., 2015).

While adherence to hand hygiene is poor in both developed and developing nations, barriers to implementation of a successful hand hygiene program may be different in resource limited settings (Schmitz et al., 2014).

The other factors that have been cited in literature include personnel and organizational attitude towards interventions like hand washing, cost containment and logistical barriers. The education regarding HAIs has a positive impact on retention of KAP in all categories of health workers to prevent infections (Tenna et al., 2013)

The attitudes of medical students towards their satisfaction with the current curricular content and the received training towards infection control and SPs. Of the included students 61.4% disagreed and strongly disagreed that the current curriculum provides them with enough information on infection control and SPs, 69.9% disagreed and strongly disagreed about the availability of extracurricular training and/or orientation sessions towards infection control and SPs at the college, 60.1% disagreed and strongly disagreed about the role of their tutors and faculty in providing them with necessary information on how to avoid health facilities related infections before their entrance into clinical training at hospitals, and almost 80% of the included students agreed or strongly agreed about their need to receive training and orientations towards infection control and SPs (Amin et al., 2013)

2.3. PRACTICE OF HAND HYGIENE

Cleansing heavily contaminated hands with an antiseptic before patient contact can reduce nosocomial transmission of contagious diseases (Goldberg, 2017). This evidence was provided for some 150 years ago (Mukwato, 2007).

Hand hygiene may be accomplished using an alcohol-based hand rub or soap and running water (Public Health Ontario-Regional Infection Control Networks). Keeping hands clean through improved hand hygiene is one of the most important steps we can take to avoid getting sick and spreading germs to others. Many diseases and conditions are spread by not washing hands with soap and clean, running water. If clean, running water is not accessible, as is common in many parts of the world, use soap and available water. If soap and water are unavailable, use an alcohol-based hand sanitizer that contains at least 60% alcohol to clean hands. On May 5, World Hand Hygiene Day is celebrated by the World Health Organization (WHO), CDC and other partners to encourage healthcare providers to promote and practice good hand hygiene measures to reduce the risk of infection among patients (Larson, Quiros, & Lin, 2007).

A study conducted in Sri-Lanka concerning practice of hand hygiene practices found that only 5.53% had good practices, while 26.9% had moderate practices and the majority (67%) had poor hand hygiene practices. Nursing students had better practices than medical students and the difference was statistically significant (Ariyaratne, Gunasekara, Weerasekara, & Kottahachchi, 2013).

CHAPTER THREE

METHODOLOGY

3.0.INTRODUCTION

This chapter deals with the different tools and methods used in population selection and sampling, study design, data handling, analysis and presentation plus all other determinants of study feasibility.

3.1. STUDY DESIGN

Questionnaire based cross sectional study design with quantitative component was utilized.

3.2. STUDY POPULATION

Third, Fourth and Fifth Year medical students at KIUTH in clinical rotation in the medical, surgical, pediatrics, obstetrics and gynecological wards.

3.2.1. INCLUSION CRITERIA

All medical students available during the data collection period and who consented were included in the study.

3.2.2. EXCLUSION CRITERIA

All medical students away from the study area during the material day, or who were available but failed to consent were excluded from taking part.

3.3. SAMPLE SIZE DETERMINATION

Using the formula (Fisher et al, 2006)

I.e. $N=Z^2PQ/D^2$:

Where N is the desired sample size

Z is the standard normal deviation taken as 2.0 at a confidence interval of 95%.

P is the prevalence of medical students who practiced prevention of HAIs = 50%

D is the degree of accuracy= 0.05.

Q= (1-P) which is the population without the desired characteristics.

$$\mathbf{N= \frac{2^2 x 0.5 \times (1-0.5)}{(0.05)^2}}$$

Therefore, 292 respondents were the minimum sample size required.

3.4. SAMPLING TECHNIQUE

Convenience random sampling technique was employed.

3.5. DATA COLLECTION METHOD

Information was collected by the use of a specifically tailored questionnaire that was administered by the researcher. The questionnaire captured data on:

1. Participants' socio-demographic characteristics.
2. Knowledge/awareness of standard precaution
3. Practices of hand hygiene, use of PPE, safe injection
4. Attitude towards standard precautions

3.5. Measures and Study variables:

3.5.1. Dependent/ Outcome Knowledge of standard precaution

1. Attitude of students towards standard precaution
2. Practice of students towards standard precaution (hand hygiene adherence, safe injection and sharp injury)

3.5.2. Independent/Exposure variables/socio-demographic characteristics

1. Age, days of clinical attachment, year of study, encounter religion, ethnicity, and number of patients.
2. Supply of personal protective devices, water supply and availability of antiseptics.
3. Perceived benefit and concerns on hand hygiene and the knowledge of blood borne pathogens/infection.
4. infection prevention Policy.
5. Perceived risk of infection for self and others.
6. Training on infection prevention.

3.6. DATA COLLECTION TOOLS AND PROCEDURE

A self-administered questionnaire was used which consisted of 5 parts; demographic information, assessment of knowledge, attitudes, practices and availability of facilities. Knowledge was assessed using 25 questions which included multiple choice and "yes" or "no" questions. Attitudes were measured using 10 questions where the respondents were given the option to select on a 0 to 4-point scale between agree, neutral and strongly agree and disagree. Practices and facilities were assessed in a similar way using 6 and 8 questions respectively.

A scoring system was used where 1 point was given for each correct response to knowledge, and practices. 0 will be given for incorrect knowledge and poor practices. Attitude was measured

using Likert-type scale questions. Attitude was measured by a scale from strongly agree to strongly disagree for each item, then each answer was scored from 0 to 4

A score of more than 80% was considered good, 60-79% moderate and less than 60% poor.

A higher total score indicated better KAP towards standard precaution; a score of ≤60 suggests that further evaluation of standard precaution and infection prevention strategies needed.

3.7. QUALITY CONTROL

The researcher d quality control through induction and training of the research assistant, who were selected based on their knowledge of the field and language. The questionnaire was also pre-tested before the primary study. The data collection instrument format developed in English by different individuals for its accuracy and desired results. The data collectors used structured self-administered questionnaire for medical students.

To evaluate the understandability and the applicability of the instruments pre-test data will be collected form 13 students for self-administered questionnaire.

Data collectors were organized in teams of two nurses. Measurements and responses were crosschecked for missed, irregularities, inconsistencies, and unlikely response based on which corrective measures were taken as required. To maintain the quality of the data and avoid any problem or suspicious data, the researcher and the supervisors crosschecked by recollection data from 5% of the study population.

3.8. DATA ANALYSIS

Each questionnaire was checked for completeness, missed values and unlikely responses and then manually cleaned up on such indications. Data was exported to SPSS version 18. Using double entry, the data was crosschecked for consistency and accuracy. Responses and observations given points and recorded to obtain means. Mean variations between medical students who participated on an in service training and who had not participated. To see the mean difference within and between groups‟ methods were employed to calculate p value. Frequencies of variables were determined using cross-tabbing, chi square test, odds ratio (OR) the presence of the association revealed and p value for statistical significance. To control the effect of confounding factors multiple logistic regression analysis was done. Recoding, transforming, and re-categorizing of variables done to compute some of the analysis. The qualitative data obtained from observation on hand hygiene, injection provision, medical waste

management; instrument processing and wearing of PPE was used to determine proportion. Then result synthesis, analysis and discussions were performed.

3.9. ETHICAL CONSIDERATIONS

Clearance was obtained from Kampala International University-Western Campus faculty of clinical medicine & dentistry. Written consent taken from each selected participant and head of the health facility to confirm willingness and those given the rights to do so. Confidentiality was ensured throughout the process. Before starting the interview process, collectors informed the study subjects about the purpose and significances of the survey to get the consent of the respondents.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS INTERPRETATION

4.0.INTRODUCTION

This chapter deals with the findings obtained from the study as pertains to respondent demographics, their knowledge, attitudes and practice concerning nosocomial infections and their prevention. A total of 292 questionnaires were distributed and the same number received for analysis giving a response rate of 100%.

4.1. DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

4.1.1. AGE

Table 1: Classification of respondents by age (N=292)

AGE CLUSTER (Years)	**FREQUENCY (Number)**	**PERCENTAGE (%)**
20 – 24	140	47.95
25 – 29	118	40.41
30 and above	34	11.64
TOTALS	**292**	**100**

From table 1 above, most of the respondents were below the age of thirty years. 140(47.95%) fell between 20 and 24 years, 118(40.41%) were between 25 and 29 years while only 34(11.64%) were 30 years and above.

4.1.2. SEX

Figure 2:Sex of respondents (N=292)

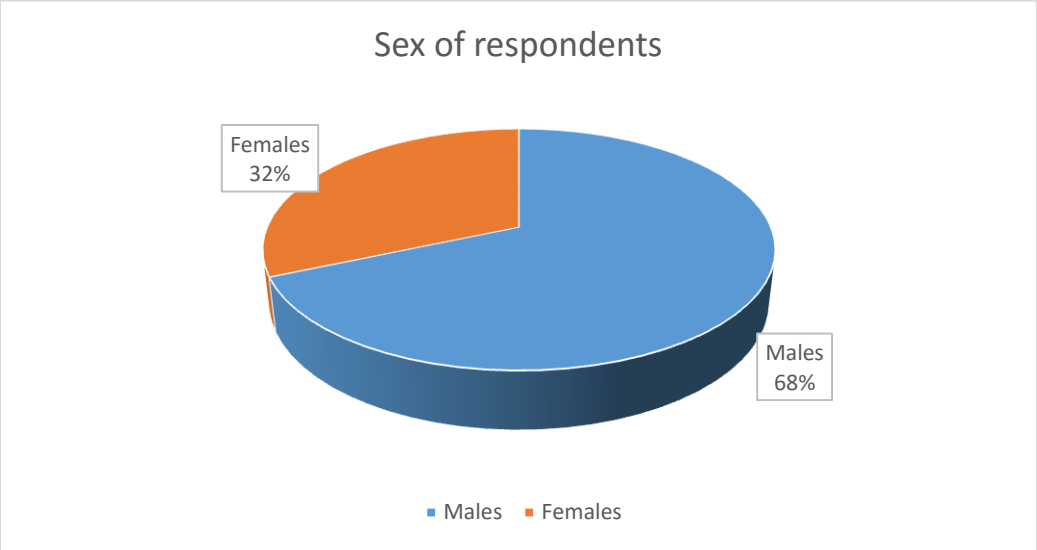
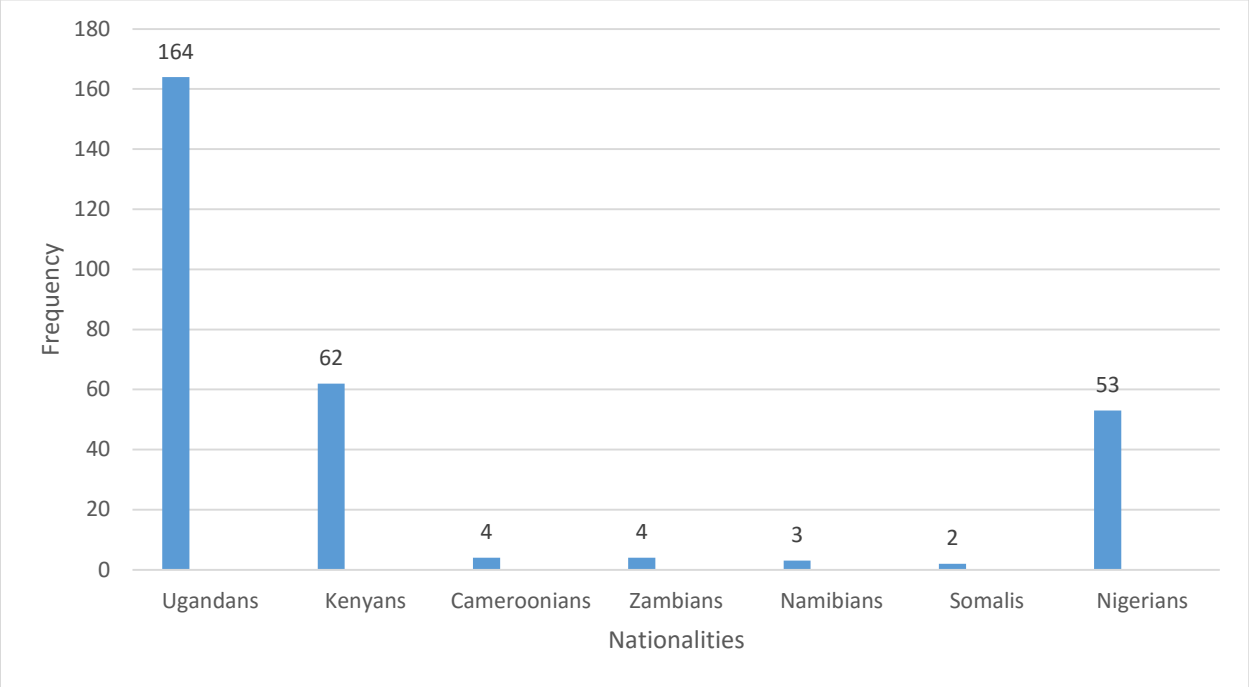


Figure 2 shows that most of those that took part in the study were males. There were 200(68%) males as compared to 92(32%) females.

4.1.3. NATIONALITY

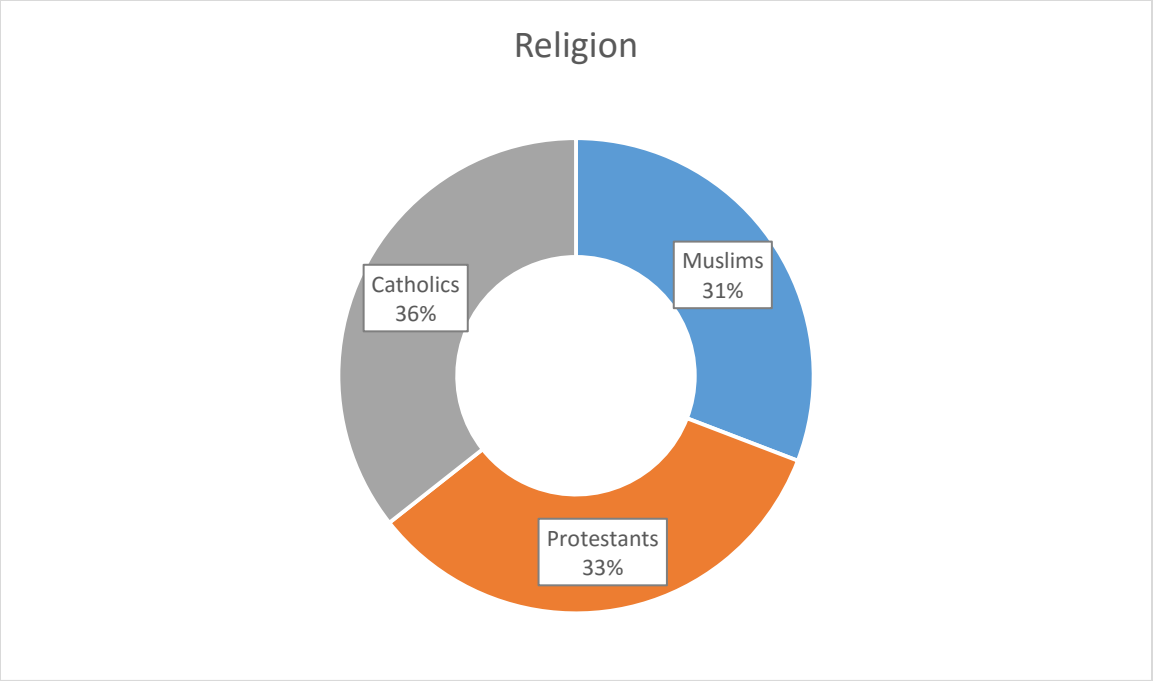
Figure 3: Grouping of respondents as per nationality (N=292)



Ugandans 164(56.16%) made the largest part of the respondents followed by Kenyans at 62(32.29%), Nigerians at 53(18.15%), Cameroonians 4(1.37%), Zambians 4(1.37%), Namibians 3(1.03%) and lastly 3(0.68%) Somalis.

4.1.4. RELIGION OF RESPONDENTS

Figure 4: Religious affiliations of respondents (N=292)



A majority of the respondents were Christians. There were 104(35.62%) Catholics, 98(33.56%) Protestants and 90(30.82%) Muslims.

4.1.5. YEAR OF STUDY OF RESPONDENTS

Table 2: Categorization of respondents per year of study (N=292)

YEAR OF STUDY	**FREQUENCY (Number)**	**PERCENTAGE (%)**
THIRD	122	41.78
FOURTH	98	33.56
FIFTH	72	24.66
TOTAL	**292**	**100**

As per table 2 above, 122 of the respondents were third years, 98 fourth years and 72 fifth years.

4.1.6. FULL CLINICAL ROTATIONS ALREADY DONE

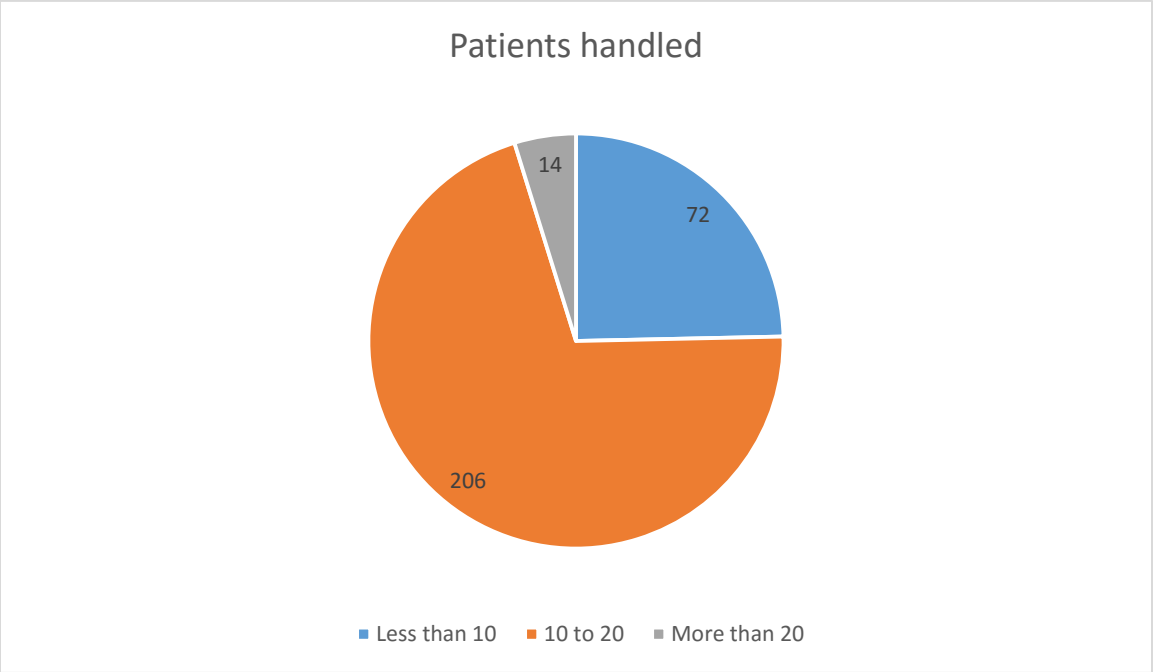
Table 3: Number of rotations already done by the respondents (N=292)

ROTATIONS DONE	FREQUENCY (Number)	PERCENTAGE (%)
One rotation	60	20.55
Two rotations	62	21.23
Three rotations	98	33.56
All four rotations	72	24.66
TOTAL	**292**	**100**

From table 3 above, we can see that the largest part (232 out of the total 292) had already done two or more clinical rotations and only 60 were done with one. This indicates that the majority had spent a good time with patients in the clinical setting.

4.1.7. AVERAGE NUMBER OF PATIENTS HANDLED IN A 30 DAY PERIOD

Figure 5: Frequency of student-patient contact in 30 days (N=292)



Within a 30-day period, most of the students had had ample contacts with patients. 70.55% had handled between 10 and 20 patients, 24.66% had handles less than ten, while only 4.80% had handled more than 20 patients.

4.2.RESPONDENTS' KNOWLEDGE & ATTITUDES CONCERNING NOSOCOMIAL INFECTIONS

All 292(100%) of the respondents interviewed knew what nosocomial infections were, gave the correct description and were aware of the standard precautionary measures against contraction, transmission and spread of the said nosocomial infections. Use of barriers such as gloves and PPEs, environmental control, proper handling, use and care of equipment and training on infection control were among the methods mentioned by the respondents as effective in nosocomial infection prevention and control. Furthermore, all the respondents cited having had some training on infection control be it during biomedical classes, clinical orientations, forums and seminars. All respondents agreed that all patients were potential sources of infection and a health care giver is supposed to wash hands between procedures.

4.2.1. DISEASES TRANSMISSIBLE THROUGH CONTAMINATED NEEDLES AND SHARPS

Of the six diseases that were listed, all the respondents stated that HBV, HCV, HIV/AIDS, Tetanus, and malaria were transmissible via contaminated needles and sharps but differed with the notion that TB could be transmitted this way. However, they were all in agreement that a suction catheter should be immediately disposed after only a single use.

4.2.2. SCENARIOS AND ITEMS THAT INCREASED HANDS COLONIZATION BY GERMS

The respondents were in total agreement that ornaments/jewelry and artificial nails increased the likelihood of germ colonization of hands but were torn on whether regular use of hand cream was a risk factor or not. 221 of them did not actually know, 40 thought it did while 31 disagreed. On the issue of when it was ideal to wash hands in the clinical setting, the respondents were in unanimous agreement that between patient encounters, before patient encounters, after removing gloves and touching items or environment around the patient were all appropriate times to wash hands.

4.3.RESPONDENTS' PRACTICE TOWARDS NOSOCOMIAL INFECTIONS

On the question on vaccination status against Hepatitis B virus, only 88(30.14%) stated that they had been vaccinated while the remaining had not been. The main reason cited by those who had not been vaccinated (204) was cost implications. Other reasons cited included fear of adverse reactions, vaccine inaccessibility/unavailability and some did not see the need of being

vaccinated (Table 4). Of those who had been vaccinated, only 54(61.36%) had received the full 3 doses of the vaccine while the remaining 34 had received one or two doses (Table 4).

Table 4: Vaccination status, dose completion & reasons for not being vaccinated.

	STATUS	**DOSE COMPLETION (N=88)**	**WHY NOT VACCINATED (N=204)**
VACCINATED V/S HBV (N = 292)	YES : 88(30.14%)	YES : 54(61.36%) NO : 34(38.64%)	
	NO : 204(69.86%)		Cost 184(90.20%) Adverse reactions: 12(5.88%) Inaccessibility 6(2.94%) No need 2(0.98%)
TOTAL	**292 (100%)**	**88 (100%)**	**204(100%)**

4.3.1. HAND WASHING IN VARIOUS CLINICAL SCENARIOS

The respondents were given different various scenarios in the clinical setting that were practical in their day to day encounter with patients and were asked to select the scenarios that necessitated them to hand wash. All 292(100%) of them said that they washed hands after removing gloves whereas only 80(27.40%) said that they washed hands between and before patient encounters while a mere 40(13.70%) said that they washed their hands whenever they had been in contact with any items or environment surrounding the patient. Of this last 40 respondents who said that they indeed washed their hands after interacting with items or environment around the patient, only 10(25%) affirmed doing so always, 20(50%) washed often and the remaining 10(25%) said that they do it but at times they just forget. All 292 of the respondents reported using alcohol based hand rub given its convenience in carrying in their lab coats and then washing with plain soap and water upon reaching their places of residence.

4.3.2. ITEMS THEY DISPOSED IN THE SAFETY BOX

The respondents mentioned needles, lancets, empty vials, used cotton swabs, dressing material, gloves and other contaminated materials as the various items that they disposed in the safety box.

4.3.3. AVAILABILITY OF CONSTANT SUPPLY OF WATER AND ALCOHOL SWABS

Despite agreeing that water and alcohol swabs were available at the facility, all stated that there are times that this was not so. They agreed that despite the alcohol dispensers having been installed strategically within the various wards, they have been quite a number of times that they have found them empty while needing to use them. Most stated having had to resort to carrying their own portable alcohol with them whenever they are in the wards.

4.3.4. BLOOD AND/OR BODY FLUIDS AND NEEDLE-PRICK ACCIDENTS

The respondents were asked if there ever was a time that patients' blood or body fluids had splashed on their unprotected eyes, open skin, mouth and/or nose. 38(13.01%) respondents had had such accidents happen to them in the past. The rest hadn't or could not remember such an accident. All of the victims of such accidents either washed with soap or washed with alcohol, iodine or chlorine. They then reported that the next step was to determine the patient's sero-status after which they took appropriate action depending on that information. None stated ever reporting to any supervisor about the accident and none volunteered information on ever having to use PEP. Of these 38, 8(21.05%) reported needle-prick injuries all of which occurred during recapping.

4.3.5. USE OF PERSONAL PROTECTIVE EQUIPMENT

All 292 of the respondents reported use of some form of PPE while in the clinical setting. All of them mentioned gloves, gown/lab coat, face mask, aprons, head covers and boots/shoes. All were quick to add, though, that face mask, boots, head covers and gowns were only worn in special circumstances such as theatre, intensive care unit and dental surgery clinics. None ever reported use of eye protection/goggles at any time. They all reported use of gloves on all patients when needed and not only HIV suspected or HIV positive cases.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0. INTRODUCTION

This chapter deals with discussion of study findings, conclusions arrived at and recommendations derived.

5.1. DISCUSSION

A total of 292 respondents took part in the study giving a response rate of 100%. The demographics of our study population were that of a mainly youthful age distribution, predominantly male (68%), Ugandan (56.16%) but being an International University, several other nationalities such as Nigerians, Kenyans, Cameroonians among others were also represented. Our population was mainly Christian (69.18%) while the rest were Muslims. On the year of study, third years (41.78%) and fourth years (33.56%) made the largest contribution of respondents. This would imply that their knowledge concerning nosocomial infections and prevention would still be fresh as was recently taught to them during microbiology and immunology in Biomedical classes or during the clinical orientation offered to all medical students moving over from Biomedical to clinical years.

All the respondents had fully completed at least one clinical rotation among the four, vis; Internal Medicine, Surgery, Pediatrics and Obstetrics and Gynecology. This would imply that all of them would have had ample time to interact with patients and were encountered with situations where prevention of nosocomial infections was needed. Of more importance is the fact that within the 30-day period prior to the conduction of the study, all of the respondents had interacted with patients; the majority having interacted with between 10 and 20 patients in their respective rotations.

The respondents' knowledge base and attitudes as far as nosocomial infections is concerned was impressive. All 292 knew what nosocomial infections were going ahead to offer the correct description and even going further to give the standard precautionary measures against nosocomial infections. This excellent knowledge level could be implied to be attributed to the various forms of training they have been receiving over the years e.g. biomedical classes and clinical orientation.

It comes as a great shock therefore, that this high degree of knowledge, awareness and positive attitudes seen has little translated into practice. For instance, HBV vaccination among the

respondents was very low at 30.14%. This means that only 88 of the total 292 had received vaccination against this highly contagious infection, especially in a hospital setting. To compound the problem, of these 88, only 54 had received the complete regimen of three doses. This means that only 18.49% of the respondents had achieved effective immunity against HBV.

In as far as handwashing and hospital waste disposal is concerned, practice still leaves much to be desired. Only 40(13.70%) practiced hand washing after coming into contact with items or environment surrounding the patient knowing very well that these are sources of germs that can be picked from one patient to the next and cause infection in a susceptible host. Their disposal of medical waste need some improvement for we see them dumping all waste in the safety box knowing that different specially designated bins exist for different type of medical waste.

Handling of blood and/or body fluids and needle stick injuries also need much improvement. Reporting of such accidents to the supervisor in charge is a key component of prevention of nosocomial and all infections in general, something the respondents seemed to overlook or omit.

It is not all gloom though, as their constant and proper use of PPEs is uplifting. For instance, the respondents' use of gloves on all patients when needed and not only on HIV suspected or HIV positive cases need to be applauded.

Despite much needing to be done as far as KAP of our study respondents concerning nosocomial infections, studies elsewhere have had worse results. Nepalese health workers, for instance, were found to be worse of. Only 16%, 14% and 0.3% of the respondents had high scores for knowledge, attitude and practice respectively (Paudyal et al., 2008). Our study respondents also unanimously (100%) agreed that that all patients are a source of infection as opposed to only 41.8% of health workers in (Amin et al., 2013) study among medical students. Saudi medical students were not better placed either. Their knowledge level was found to be far much lower than that of our study(Amin et al., 2013). The reports were similar among Nigerian health workers in 2012. 50% of them had no knowledge of universal precautions of infection control(Amoran & Onwube, 2013).

The poor practice as far as medical waste disposal is concerned was also seen among third year dental students in India back in 2013. 67.5% were not even aware of correct waste disposal methods for needles and sharps(Gambhir et al., 2013). On the side of handwashing, our study findings are far worse than the 43.30% of Nigerian health workers who did not know that their hands had to be washed before and after patient care and also, despite them having a lower

handwashing compliance (38.78%) (bello et al., 2011), the compliance in our study is far much lower.

5.2. CONCLUSION

Medical students of KIU, despite having excellent knowledge and good attitude towards nosocomial infections, the translation of this knowledge into practice leaves quite a lot to be desired. Their uptake of the HBV vaccine is very low the key factor being cost implications. More needs to be done in terms of educating the incoming and continuing clinical students on proper protocols pertaining prevention of nosocomial and infections at large.

5.3. RECOMMENDATIONS

5.3.1. To the Students

1. Translate their excellent knowledge and good attitude concerning nosocomial infections into good preventive practice.
2. Strive to get vaccinated against HBV since it is a highly contagious infection that quickly spreads especially in the clinical setting where patients can infect unimmunized health workers who further spread to other patients they get to serve.
3. Always strive to report to the appropriate supervisor in cases of accidents in the clinical setting involving sharps, blood and body fluids for the appropriate measures to be taken.

5.3.2. To KIU Hospital Administration

1. Ensure that the installed alcohol wash dispensers are always refilled and at no given time is there no clean water supply in the wards and taps are fully functional.
2. Facilitate full immunization of all clinical staff, students included, against HBV at a subsidized cost if not for free.

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APPENDIX ONE: CONSENT FORM

Dear Participant, I am **ABDALLA BAHJA FEISWAL**, a fifth year medical student at Kampala International University Western Campus conducting a research on knowledge attitude and practice about nosocomial infection among medical students at Kampala international university teaching hospital. I would hereby wish to assure you that the information you will provide will be accorded the confidentiality it deserves and will not be used for purposes other than those meant for this research. You have the right not to answer any questions you feel uncomfortable to and you are free to pull out of the study at any time you wish.

I have read and understood the research topic above on the planned study and the explanations given to me. I understand what I have been requested to do in respect to this study.

I have asked questions and clarifications that existed about the study and got satisfied with the answers. I have, after due consideration, willingly consented to take part in this study as explained.

Participant's signature …… Date ……...

Investigators name …… Signature ……

Date ……

APPENDIX TWO: STUDY QUESTIONNAIRE ON KNOWLEDGE ATTITUDE AND PRACTICE ABOUT NOSOCOMIAL INFECTION AMONG MEDICAL STUDENTS AT KAMPALA INTERNATIONAL UNIVERSITY TEACHING HOSPITAL BUSHENYI DISTRICT, UGANDA

SERIAL NO: …….

PART ONE: SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. AGE ……
2. SEX MALE ☐ FEMALE ☐
3. ETHNICITY

   Munyankole ☐ Muganda ☐ Muchiga ☐ Mutoro ☐

   Other (specify)

……...

4. RELIGION

   Orthodox ☐ Muslim ☐ Protestant ☐ Catholic ☐

   Other (specify)

……...

5. YEAR OF STUDY

   3rd year ☐ 4th year ☐ 5th year ☐

6. Which departments have you rotated in till now? (Circle all applicable)

A. Emergency department B. Surgery C. Obs/Gyne D. Pediatrics E. Internal Medicine.

7. Average number of patients you have handled in the last 30 days ……

PART TWO: KNOWLEDGE ABOUT NOSOCOMIAL INFECTION, STANDARD PRECAUTION AND HAND HYGIENE.

1. Do you know what is meant by nosocomial infections? YES ☐ NO ☐

   If yes to (1) above, could you describe what it means? …….....

   …….

   …….

2. Do you know anything on standard precautions? YES ☐ NO ☐

   If yes to (2) above, which components do you know? (Circle all applicable)

   A. Use of barriers (gloves, gown, cap and mask);

B. Care with devices, equipment and clothing used during care;

C. Environmental control (surface processing protocols and health service waste handling); adequate discarding of sharp instruments;

D. Patient's accommodation in accordance to requirement levels as an infection transmission source.

3. Have you had any training on infection prevention and control? YES ☐ NO ☐
4. Have been vaccinated against Hepatitis B virus? YES ☐ NO ☐

If no to (6) above, what are your reasons for not being vaccinated? ……..……

……

……

……

If yes to (6) above, what is your immunization status?

Completed 3 doses ☐ Not completed 3 doses. ☐

5. All patients are sources of infection regardless of their diagnoses.

TRUE ☐ FALSE ☐

6. Hand washing is indicated between tasks and procedures on the same patient.

TRUE ☐ FALSE ☐

7. Which of the following diseases can be transmitted through contaminated needles and sharps? (Tick yes, no or don't know for each item)

Hepatitis (HBV)	YES	☐	NO	☐	DON'T KNOW	☐
Hepatitis (HCV)	YES	☐	NO	☐	DON'T KNOW	☐
HIV /AIDS	YES	☐	NO	☐	DON'T KNOW	☐
Tetanus	YES	☐	NO	☐	DON'T KNOW	☐
Malaria	YES	☐	NO	☐	DON'T KNOW	☐
Tuberculosis	YES	☐	NO	☐	DON'T KNOW	☐

Others (specify) ……

8. When should a suction catheter be disposed of?

A. Immediately after one single use

B. Can be cleaned and used twice

C. Can be used without being cleaned

D. I don't know

9. Which of the following should be avoided because it is associated with increased likelihood of colonization of hands with harmful germs? (circle all applicable)
   A. Wearing jewelry
   B. Damaged skin
   C. Artificial fingernails
   D. Regular use of hand cream
10. When do you wash your hands? (circle all applicable)
   A. Hand washing between every patient encounter
   B. Before every patient encounter
   C. After gloves are worn off
   D. Touching every part of hospital environment

PART THREE: ATTITUDES TOWARDS NOSOCOMIAL INFECTION, STANDARD PRECAUTION AND HAND HYGIENE

15. Wearing gloves, mask, and protective eyewear are a HAIs control Measures?

A. Agree B. Strongly agree C. Disagree D. I don't know

16. How do you follow standard precautions?

A. Regularly B. Sometimes C. Never

17. Do you have infection prevention guidelines in your healthcare facility?

A. Yes B. No C. I Don't Know

18. The use of guidelines for HAIs control practices reduce the risk of infection.

A. Agree B. Strongly agree C. Disagree D. Neutral

19. Do you think the organizations HAI policies are practical in your setting?

A. Agree B. Strongly agree C. Disagree D. Neutral

20. Who do you think could be at risk of infection from your health facility waste?

A. Health Professionals

B. Supportive staff

C. The client / patient

D. The community

E. Children

Other (specify)----------

21. When do you think standard precautions should be observed?

A. At all times

B. In the operation

C. For HIV patients

D. At all times, for all patients

22. Health care associated organisms are commonly resistant to alcohol.

A. Agree B. Strongly Agree C. Disagree D. Strongly disagree E. I don't know.

23. In the absence of standard precautions, health care facilities can be the source of infection and epidemic diseases.

A. Agree B. strongly agree C. Disagree D. strongly disagree E. I don't know

24. Use of gloves for all patient care is a useful strategy for reducing risk of transmission of organism.

A. Agree B. strongly agree C. Disagree D. strongly disagree E. I don't know

25. What do you think the reasons for poor adherence to standard precautions are.

A. lack of facility B. shortage of time C. lack of awareness D. I don't know

E. other (specify) …….

……..

26. Do you think needles should be recapped?

A. Yes B. No C. I don't know

27. Why should one wash hands? (circle all applicable)

A. Hand washing between every patient encounter is necessary

B. Hand washing does affect clinical out come

C. Hand washing is necessary even when gloves are worn

D. Hand washing facilities are conveniently placed or well designed

E. Hand washing do not take too much time

F. Other (specify) ……...

PART FOUR: PRACTICE OF MEDICALS STUDENTS TOWARDS STANDARD PRECAUTION, INFECTION PREVENTION AND HAND HYGIENE

1. When do you wash your hands? (circle all applicable)

A. Hand washing between every patient encounter

B. Before every patient encounter

C. After gloves are worn off

D. Touching every part of hospital environment

E. Other (specify) …….

2. What do you dispose into the safety box? (circle all that apply)

A. Needles B. Lancet C. Empty vials D. Cotton pads E. Dressing materials

F. Latex gloves G. Other contaminated sharps

3. Is there a continuous water supply in the health facility? YES ☐ NO ☐
4. Is there alcohol swab / hand-wash in the room always? YES ☐ NO ☐
5. Have you ever had blood or body fluid splash into your eyes, open skin, mouth and/or nose?

   YES ☐ NO ☐ I DON'T KNOW ☐
6. If you are exposed to blood or body fluids what measures will you take? (tick on Yes, No or I don't know boxes as applicable)

Washing with soap and water	YES ☐	NO ☐	I DON'T KNOW ☐
Wash with alcohol, iodine, chlorine	YES ☐	NO ☐	I DON'T KNOW ☐
Applying pressure to stop bleeding	YES ☐	NO ☐	I DON'T KNOW ☐
Dress the wound	YES ☐	NO ☐	I DON'T KNOW ☐
Squeezing to extract more blood	YES ☐	NO ☐	I DON'T KNOW ☐
Take TAT Visiting VCT Seek PEP	YES ☐	NO ☐	I DON'T KNOW ☐
Report to the head person	YES ☐	NO ☐	I DON'T KNOW ☐

Other (specify) ……

7. Have you ever had a needle stick /sharp injury?

   YES ☐ NO ☐ I DON"T KNOW ☐

If yes to (7) above, how did you sustain the injury? (circle applicable)

A. During recapping

B. By sudden movement of the patient

C. During sharp collection

D. Other specify

8. Do you wear personal protective equipment? (Circle all applicable)

   A. Apron

B. Utility glove/ double glove

C. Head cover

D. Boots/ shoe

E. Eye protectors / goggle

F. Mask

G. Examination glove

H. Gown I.

Other (specify) ……...

9. When did you usually make use of gloves? (write Yes/ No/ not always against each)

A. For all people when needed

B. For only HIV Suspected cases

C. For only HIV Positive cases

D. For procedures which needs glove

Other specify……...

If no to (9) above, Why? (write Yes/ No/ or I don't know against all)

A. Difficult to work with

B. Not always necessary

C. Uncomfortable

D. Out of stock

Other specify, ……...

10. How often do you clean your hands after touching an environment/surface near the patient (for example, table wall or bed)? (circle most applicable)

A. Always B. Often C. Sometimes D. Never

11. Which method do you use to clean your hands at work? (write Yes/ No against applicable choice)

A. Plain soap and water

B. Anti-microbial

C. Alcohol based hand rub

D. Other specify

Do you have anything else you want to add, any question, clarification, concern etc.?

Otherwise, *THANK YOU.*

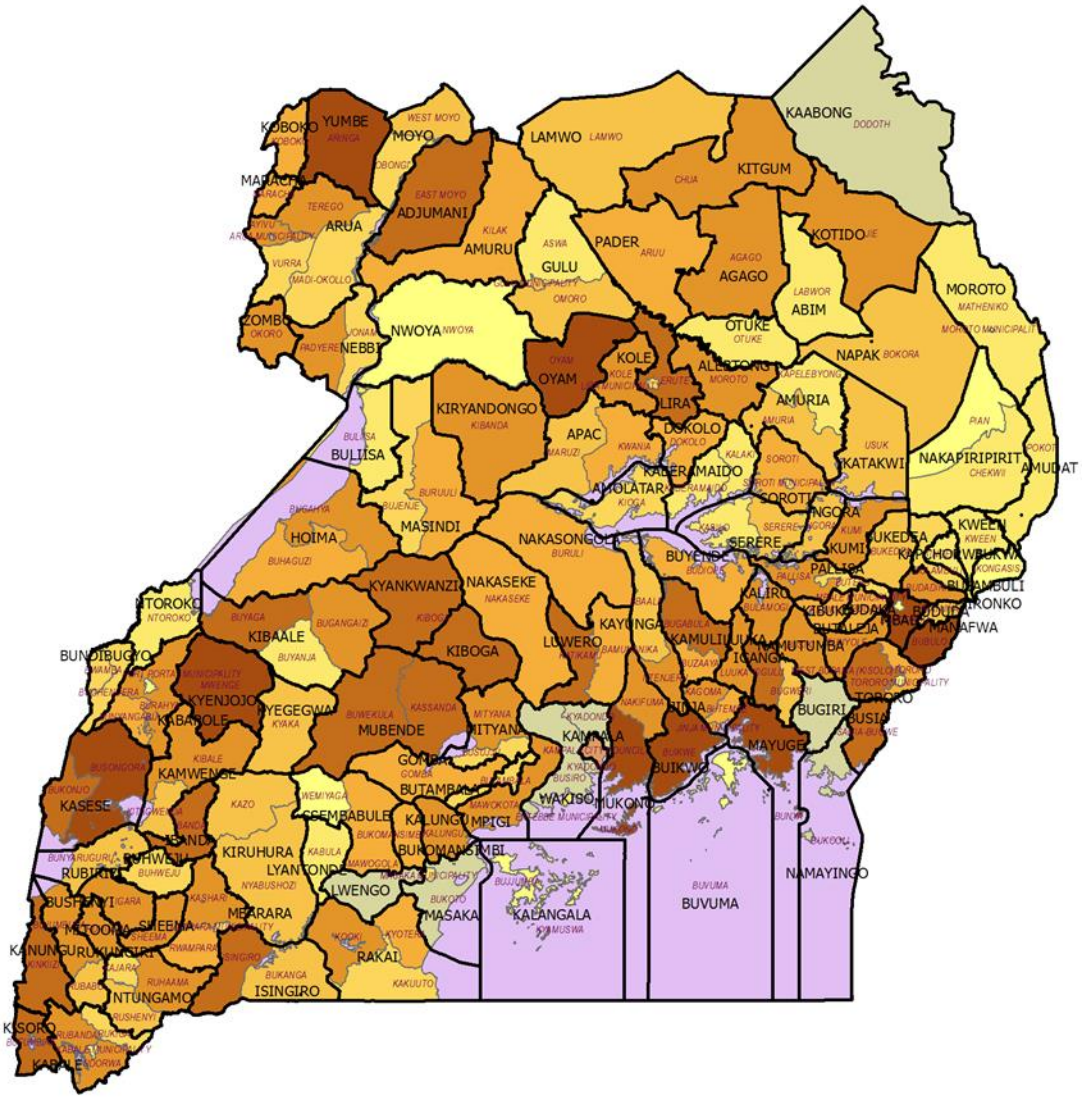
APPENDIX THREE: WORK PLAN

S/N	Activity	Months in the year 2018						
	Item	**Feb 2018**	**Mar 2018**	**Apr To May 2018**	**Jun 2018**	**Jul 2018**	**Aug To Sept 2018**	**Oct 2018**
1	Identification of the proposals							
2	Proposal writing and approval							
3	Data collection and analysis							
4	Report writing and binding							
5	Final report submission							

APPENDIX FOUR: BUDGET

S/N	Item	Quantity	Unit price	Total cost
1	**Stationary**			
A	Printing Paper Reams	2	15000	30,000
B	File Folders Pieces	2	3000	6,000
C	Flash disk	1	25,000	25,000
D	Pens	3	1000	3000
	Sub total			**64,000**
2	**Typing Services**			
A	Questionnaire	360	500/=	180,000
B	Proposal Copies	3	12,000/=	36,000
C	Report Copies	4	20,000/=	80,000
	Sub total			**296,000**
3	**Data Collection**			
A	Transport (To and from study area) Days	10 trips	3,000	30,000
B	Research Assistants	2	50,000	100000
C	Literature Search (Libraries, internet)		50,000	50,000
	Sub total			**180,000**
	Grand Total			**540,000**

APPENDIX FIVE: MAP OF UGANDA SHOWING THE VARIOUS DISTRICTS



APPENDIX SIX (a): POLITICAL MAP OF BUSHENYI DISTRICT

APPENDIX SIX (b): TOPOGRAPHICAL MAP OF BUSHENYI (RED STAR) WITH ITS NEIGHBOURS

APPENDIX SEVEN: MAP OF ISHAKA IN BUSHENYI DISTRICT