

KNOWLEDGE, ATTITUDES, AND PRACTICES OF HEALTH WORKERS TOWARDS NOSOCOMIAL INFECTION PREVENTION AT NSAMBYA POLICE HEALTH CENTRE IV, KAMPALA DISTRICT. A CROSS-SECTIONAL STUDY.

Phiona Asasiira*, Hasifa Nasereko, Immaculate Prosperia Naggulu

School of Nursing and Midwifery, Mildmay Institute of Health Sciences.

Abstract

Introduction:

Purpose of the study: The study aimed to determine the study knowledge, attitude, and practice of health workers toward nosocomial infection prevention at Nsambya Police Health Centre IV, Kampala District.

Methodology:

The study was descriptive and cross-sectional in design, employing quantitative data collection methods where an interviewer-guided semi-structured questionnaire was used as a data collection tool. The study included 50 respondents who were adolescents living in Nsambya parish, Kampala District. Data was analyzed electronically by the use of Microsoft word excel version 2013.

Results of Study:

The study showed results that 84, % HCWs knew that use of PPEs decreases the risk of Nosocomial infection. The study found that there are insufficient PPEs in the hospital hence affecting the good practices towards infection prevention by HCWs.

Conclusion:

Therefore, monitoring the level of knowledge in infection prevention will help to work on the gaps so that the rate of HAIs can be reduced.

Recommendation:

The government should provide Nsambya Police Health Centre IV with the requirements or equipment required in the prevention of hospital-acquired infections for example personal protective equipment to the health care workers.

Keywords: Knowledge, attitudes, practices, Nosocomial infection, health workers, Submitted: 2023-04-16 Accepted: 2023-07-24

1. BACKGROUND OF THE STUDY.

Nosocomial infections also referred to as Healthcare-Associated Infections (HAI), are

infection(s) acquired during the process of receiving health care that was not present during the time of admission (Gidado, et al. 2015). They may occur in different areas of healthcare delivery, such as in hospitals, long-term care facilities, and ambulatory settings, and may also

* Corresponding author.

Email address: fionaasasira@gmail.com (Phiona Asasiira)

appear after discharge (Droubi, et al. 2014). HAIs also include occupational infections that may affect staff (Droubi, et al. 2014). The types of nosocomial infections include; Central Line-Associated Bloodstream Infections (CLABSI), Catheter-Associated Urinary Tract Infections (CAUTI), Surgical site infections (SSI), Ventilator-associated pneumonia (VAP) (Gidado, et al. 2015), non-ventilator-associated hospital-acquired pneumonia (NV-HAP), gastrointestinal infections, other primary bloodstream infections not associated with central catheter use, and other urinary tract infections not associated with catheter use (Gidado, et al. 2015). HAIs occur in all settings of care, including hospitals, surgical centers, ambulatory clinics, and long-term care facilities such as nursing homes and rehabilitation facilities (American Nurses Association, 2023).

Globally, it is estimated that nosocomial infections account for an estimated 107 million infections and 990,000 associated deaths each year (WHO, 2016). 20% of all healthcare-acquired infections are urinary tract infections, 34% are surgical site infections, 15% are pneumonia (lung infections), and 14% are bloodstream infections (WHO, 2016). In Africa, the prevalence of nosocomial infections among all hospital in-patients is estimated to be between 10% and 25%, but outbreaks are infrequently reported (Mehtar, et al., 2017). Failure to detect and, or report outbreaks can increase the risk of ongoing infections and recurrent outbreaks (Mehtar, et al., 2017). In Sub-Saharan Africa, the prevalence of nosocomial infections among all hospital inpatients is estimated to be between 15% and 29%, though outbreaks are infrequently reported in developing countries (Thompson, et al. 2016).

In East Africa, it is estimated that the prevalence of nosocomial infections among in-patients ranges from 25% to 59% however over 70% of cases are commonly observed in immune-compromised patients, and surgical patients (Thompson, et al. 2016). In Uganda, the prevalence of nosocomial infections was 55%, majority of cases of nosocomial infections were a result of surgical site infections, 32% of all healthcare-acquired infections are urinary tract infections,

13% are bloodstream infections (Kagirita, et al., 2015). WHO Patient Safety is actively working towards establishing effective ways of improving global health care and saving lives lost to healthcare-associated infections (Michael Zachary Korzen, 2016). Within WHO Patient Safety, the Clean Care is Safer Care program is aimed at reducing healthcare-associated infections globally and has placed improving hand hygiene practices at the core of achieving this (Michael Zachary Korzen, 2016). Nosocomial infections complicate the treatment of the majority of inpatients leading to poor prognosis, and financial burden (Sanjuan-Quiles, et al. 2014). Healthcare workers play a vital role in the prevention of nosocomial infections by upholding the principles of infection prevention and control in healthcare facilities (Sanjuan-Quiles, et al. 2014). There is a need for health workers to have adequate knowledge, positive attitudes, and good practices towards nosocomial infections, this will result in a reduction of nosocomial infections among admitted patients (WHO, 2016). Therefore the researchers aim at identifying the knowledge attitudes and practices of health workers toward nosocomial infection prevention at Nsambya Police Health Centre IV, Kampala District.

1.1. Purpose of the study.

The study aimed to determine the study knowledge, attitude, and practice of health workers toward nosocomial infection prevention at Nsambya Police Health Centre IV, Kampala District.

1.2. Specific objectives.

- To assess the knowledge of health workers regarding nosocomial infection prevention at Nsambya Police Health Centre IV, Kampala District.
- To find out the attitudes of health workers towards nosocomial infection prevention at Nsambya Police Health Centre IV, Kampala District.
- To assess the practices of health workers towards nosocomial infection prevention at

Nsambya Police Health Center IV, Kampala District.

2. METHODOLOGY.

2.1. *Study Design and rationale.*

The researcher used a descriptive quantitative cross-sectional design. Quantitative methods of data collection were employed and produced objectives that were communicated through statistics and numbers.

2.2. *Study setting and rationale.*

The study was conducted at Nsambya Police Health Centre IV in all units. It is a public health facility, founded by the KCCA under the Ministry of Health and general care in the Health Center is free, all categories of patients are attended to like labor ward, immunization, antenatal ward, outpatient ward, laboratory ward dental clinical. The hospital is located 2 km from Kampala on Gaba Road in Nsambya town. It offers both curative and preventive services to both Policemen and civilians. The study setting is selected because it is within the reach of the researcher's area of operation and is where the investigator has noted the research problem.

2.3. *Study Population and Rationale.*

The study included Ugandan male and female aged 20-60 years health workers working at Nsambya Police Health Centre IV including nurses, doctors, and laboratory technicians, who had consented at the time of data collection. The target population of 50 respondents was considered because the subject content under investigation directly applied to them for academics.

2.4. *Sample Size Determination.*

Sample size refers to the number of observations or replicates to include in a statistical sample. Using the Button's formula to calculate sample size,

$$S = QR/O$$

Where; S = sample size

Q = number of health care workers interviewed per day

R = maximum number of days for data collection

O = maximum time the interviewer spends on each respondent in hours.

$$S = 10 \times 1$$

S = 50 Respondents were the sample size used.

2.5. *Sampling Procedure.*

Random sampling method was used because of the limited number of midwives, nurses, doctors, and laboratory technicians per duty at the health facility hence for the researcher to give questionnaires to those who were available. The process involved tracing midwives, nurses, doctors, and laboratory technicians at their respective units and those that were found during the data collection period and were given questionnaires following the inclusion criteria.

2.6. *Inclusion Criteria.*

Ugandan male and female aged 20-60 years who had consented to participate in the study with a certificate in medical course to bachelors level in Nursing, medicine, and laboratory technology professions.

2.7. *Definition of variables.*

2.7.1. *Independent Variable.*

The independent variable of the study was knowledge, attitudes, and practices.

2.7.2. *Dependent variables.*

The dependent variable of the study was the prevention of nosocomial infections among health workers.

2.8. *Research Instruments.*

A structured questionnaire was piloted before being used in the study. They were written in the most simplified English that was understood easily. The researcher piloted the questionnaire before using it in the study. This Questionnaire was pretested among 5 health workers working at Nsambya Police Health Centre IV which in turn helped the researcher to assess the accuracy and reliability of the tool before its application in the study.

2.9. Data collection Procedure.

Data collection procedures began with the researcher explaining the procedure to the respondents and then those who were willing to participate voluntarily signed a consent form. Following consent, the researcher administered the Questionnaires. Then all Questionnaires were collected for analysis within a week.

2.10. Data management.

Data was collected in raw form and was edited, coded, and reviewed daily for accuracy, consistency, and completeness and this was done immediately before the respondent disappeared. The Questionnaires were stored under lock and key only accessible to the researcher and were to be destroyed after three years of report submission. Analyzed data on the flash and the computer was protected from access by using a personal password. (Gatrude et al., 2021)

2.11. Data analysis.

The collected data was manually, analyzed and tallied, the results were processed using Microsoft Word and Excel programs. These were processed and presented in the form of frequency tables, figures, pie charts, graphs, and narratives. (Gatrude. et at., 2021)

2.12. Ethical Consideration.

Ethical approval was obtained from the research supervisor, permission was sought and granted from the principal of Mildmay Institute of Health Science by obtaining an introductory letter, the letter was presented to the research committee of Nsambya Police Health Centre IV for permission and introduced the researcher to the in charge of Nsambya Police Health Centre IV.

3. DATA ANALYSIS AND PRESENTATION.

3.1. Socio-demographic data of the respondents.

Table 1 shows that the majority of the researcher's respondents 20(40%) were between the

age of 20-24, it was the age group readily available for the researcher and showed interest in the research being conducted and so participated in its results. The majority of the respondents were female 27(54%) while 23(46%) men took part in the research. Regarding the marital status of the respondents, the majority were single 29(58%), the minority of the respondents 14% were married and no respondent was divorced. Regarding occupation, the majority of the respondents were nurses 12(24%) who were easily accessible to the researcher, and the minority of the respondents were midwives 2(4%). Among these HCWs, 14(28%) had been working for less than a year, 21(42%) had experience of between 1-5 years, 8(16%) had been working for 6-10 years and 7(14%) had been working for more than 10 years.

3.2. Knowledge of respondents towards infection prevention.

Figure 1 shows that, out of the 50 respondents, 41(82%) of them acknowledged having had about infection prevention and standard precautions. 9(18%) had not heard about infection prevention.

Figure 2 indicates that out of the 50 respondents, 47(94%) were aware that HCAs can be transmitted through medical equipment but 3(6%) were not aware of this, 49(98%) knew that HCAs can be transmitted through blood and body fluids but 1(2%) where not aware of this and 45(90%) knew the mechanisms bacteria and viruses spread through but 5(10%) where not aware of this. While 44/50 (88%) received training in hand hygiene and standard precautions.

Table 2 shows that of people with working experience of 1 – 5 years 19(90.5%) knew about infection prevention, followed by those of working experience of more than 10 years 6(85.7%), who are followed by those working experience of less than 1year 11(78.6%) and finally those with working experience of less than 6 – 10 years 5(62.5%).

Table 1: Shows the distribution of respondents according to their socio-demographic characteristics

Variable	Category	Frequency	n=	Percentage (%)
		50		
Age	15-19	1		2
	20-24	20		40
	25-29	5		10
	30-34	10		20
	35 and above	14		28
Gender	Male	23		46
	Female	27		54
Marital status	Single	29		58
	Married	14		28
	Divorce	0		0
	Separated	7		14
	Doctor	5		10
Occupation	Nurse	12		24
	Laboratory technician	4		8
	Clinical officer	8		16
	Midwife	2		4
	Other	19		38
Working experience (Years)	Less than 1	14		28
	5-Jan	21		42
	10-Jun	8		16
	More than 10	7		14

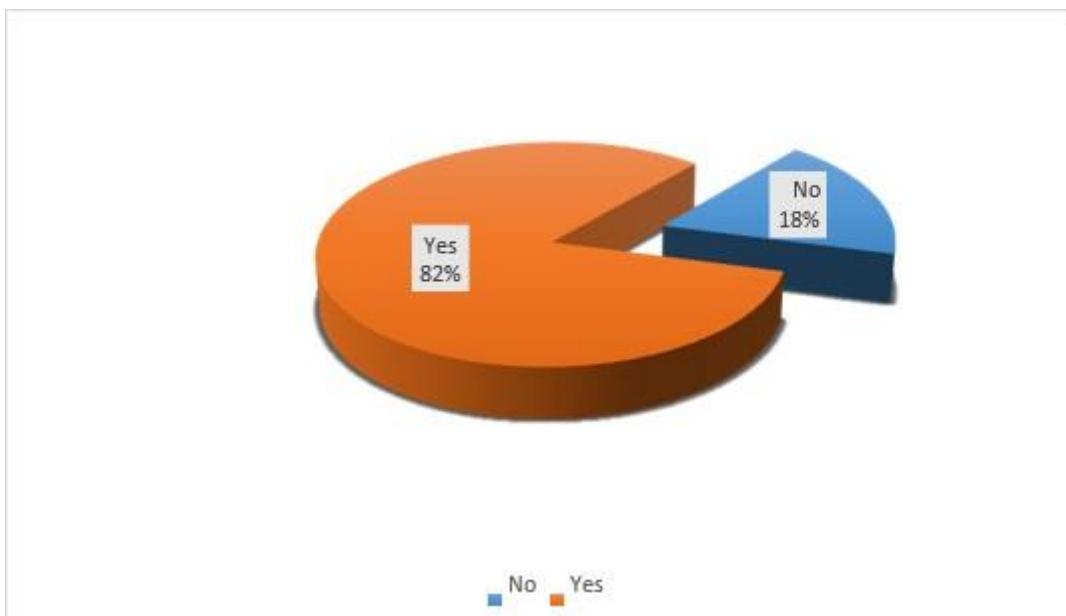


Figure 1: A pie chart showing respondents who have ever had about infection prevention. (n = 50)

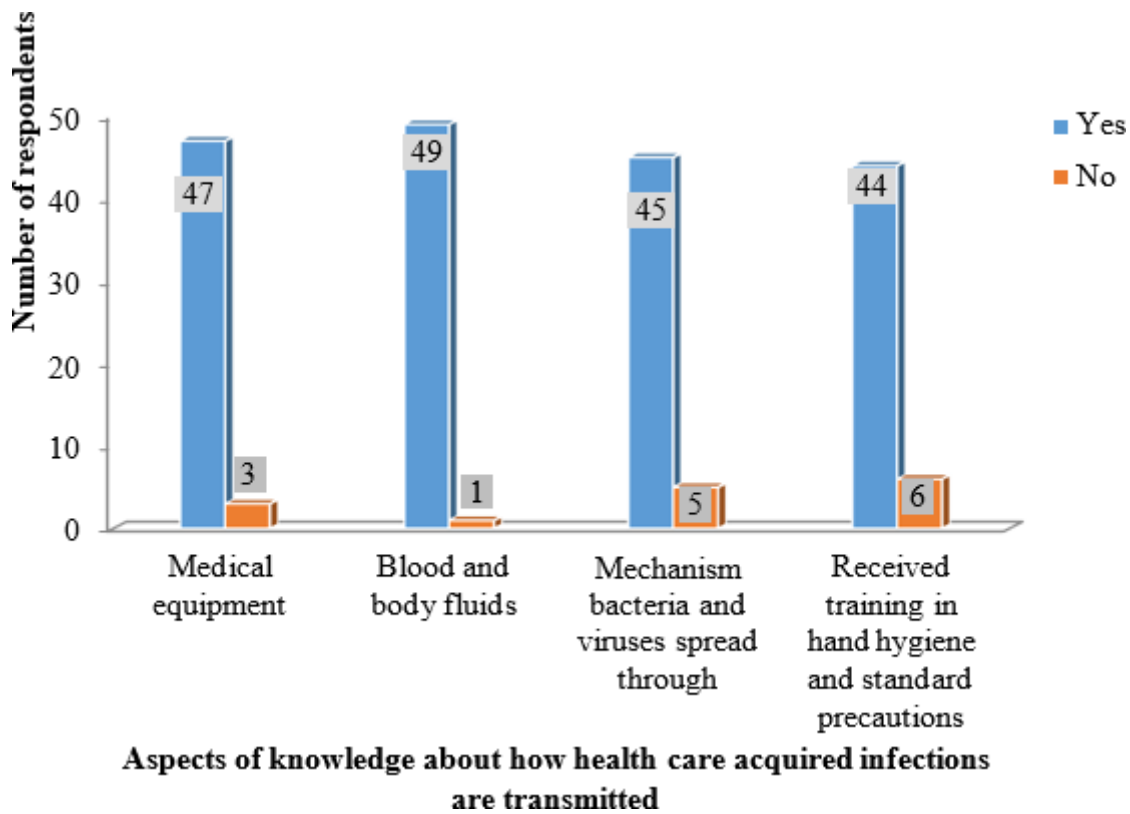


Figure 2: A bar graph showing the major aspects of knowledge about how healthcare-acquired infections can be transmitted.

Table 2: Relationship between knowledge about infection prevention and the experience of the health care workers.

		Working experience of the respondents (Years)				Total
		Less than 1	1 - 5	6 - 10	More than 10	
Know about infection prevention	Yes	11	19	5	6	41
	No	3	2	3	1	9
Total		14	21	8	7	50

3.3. Attitudes of health care workers towards infection prevention.

According to Table 3, 31(62%) agreed, 13(26%) said sometimes and 6(12%) disagreed with feeling comfortable asking every patient if they have any symptoms of infection due to contamination. 27(54%), 14(28%) and 9(18%) of the respondents agreed, said sometimes, and disagreed respectively on PPE protecting HCWs from infection. 15(30%), 6(12%), and 29(58%) of the respondents agreed, said sometimes, and disagreed

respectively on believing needles should be re-capped after use. 36(72%), 12(24%) and 2(4%) of the respondents agreed, said sometimes, and disagreed respectively that the absence of universal precaution hospital facilities can be the source of infection. 45(90%), and 5(10%) of the respondents agreed, said sometimes respectively, and non-disagreed about believing that separating active TB patients from other patients is an effective strategy for transmission of TB.

Table 3: A table showing major aspects of attitudes of health care workers towards infection prevention (n= 50)

Variable	Agree(%)	Intermediate(%)	Disagree(%)
Feel comfortable asking every patient if they have any symptoms of infection	31(62%)	13(26%)	6(12%)
Believe PPE protects HCWs from infection	27(54%)	14(28%)	9(18%)
Believe needles should be recapped after use	15(30%)	6(12%)	29(58%)
The absence of universal precautions in hospital facilities can be the source of infection	36(72%)	12(24%)	2(4%)
Believe separating active TB patients from other patients is an effective strategy for the transmission of TB	45(90%)	5(10%)	0(0%)

3.4. Practices carried out by healthcare workers towards infection prevention.

Figure 3 shows that out of the 50 respondents, 43(86%) wash hands after taking a sample from a patient, 6(12%) said sometimes while 1(2%) said they don't wash their hands after taking the sample. 44(88%) wash their hands immediately when they come into contact with blood, body fluids, or contaminated items, 4(8%) said they sometimes do while 2(4%) said they don't. 27(54%) wear goggles to protect their eyes during procedures that generate a spray of blood or body fluids, 13(26%) said they sometimes wear the goggles and 10(20%) said they don't need to wear the goggles to protect their eyes during procedures that generate a spray of blood and body fluids.

Figure 4:

According to Figure 4, out of the 50 respondents, 43(86%) reported having never had a needle stick injury before while 7(14%) reported having had a needle stick injury during work at the hospital.

4. DISCUSSIONS.

4.1. Knowledge of health workers on infection prevention.

This study (figure 1) has shown that 41(82%) of the respondents had heard about infection prevention which shows relatively good knowledge about infection prevention and these findings are in line with a study done in India (Kermode &

Jolly, et al, 2016), which showed that 95.16% had heard about infection prevention. According to the current study (figure 2), 44(88%) of the respondents received training in hand hygiene and standard precautions, this shows that many of the health workers have moderately good knowledge regarding the transmission of infections and this is in line with (Ghebrehinet, et al., 2016) who assessed knowledge, attitude, and practice of hand hygiene among nursing and medical students in a tertiary care hospital in Puducherry, India. The study revealed that of the 140 participants, 85% of medical and 76% of nursing students had moderate knowledge of hand hygiene. In this study out of the 50 respondents, on the assessment of the knowledge of the HCWs on how HCAs can be transmitted, 47(94%) were aware that infections can be transmitted through medical equipment, 49(98%) were aware that infections can be transmitted through blood and body fluids and 45(90%) knew the mechanisms through which bacteria and viruses spread. This indicated very good knowledge of the transmission of infections as shown by the respondents. This is higher compared to the study on the perception and prevalence of work-related health hazards among healthcare workers in public health facilities in southern India. (Kermode & Jolly, et al, 2016) The study showed results that (76.3%) HCWs knew that a patient's awareness about the transmission of microorganisms decreases the risk of hospital-acquired infection (Ibrahim, & Elshafie,

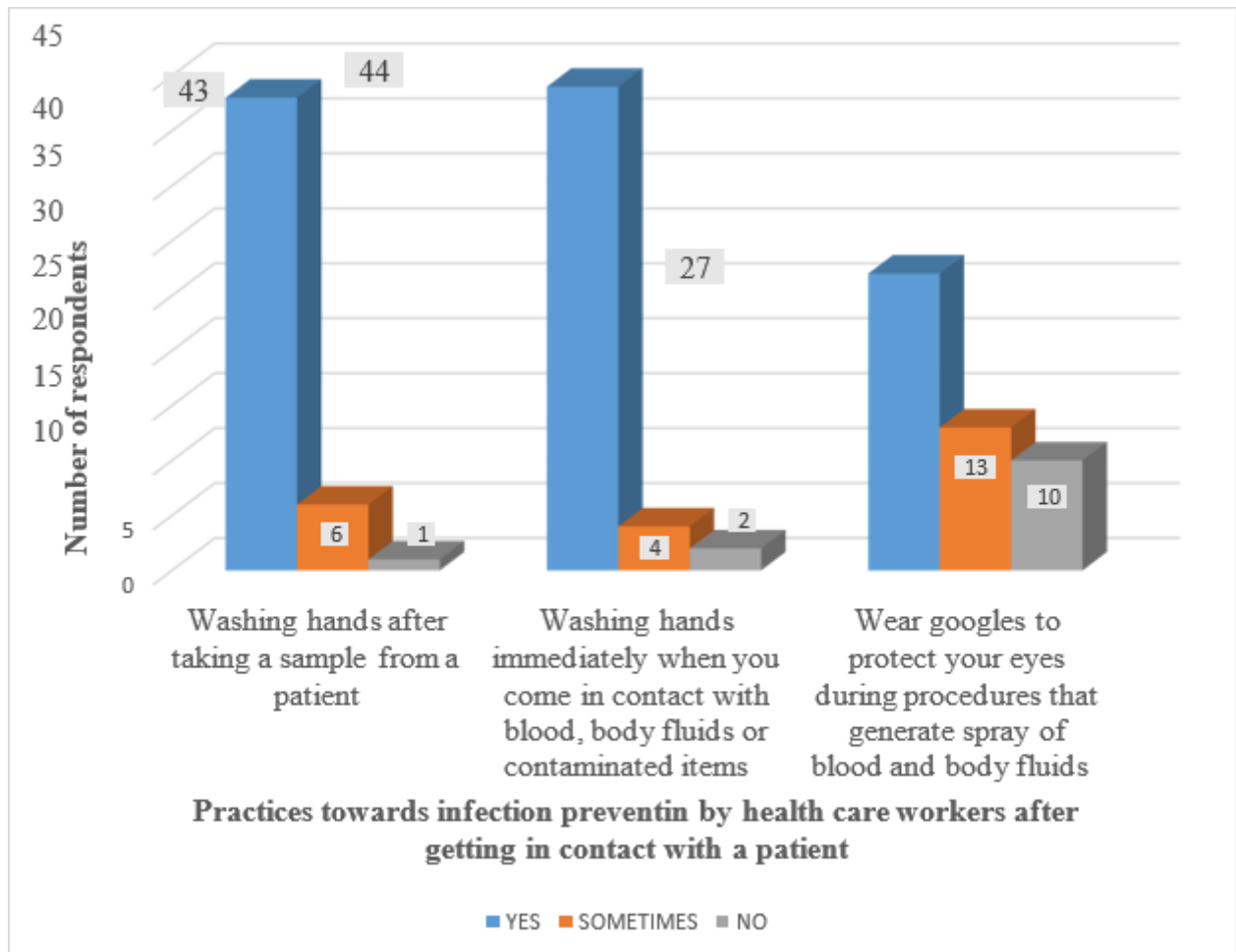


Figure 3: A bar graph showing practices towards infection prevention by healthcare workers after getting in contact with a patient.

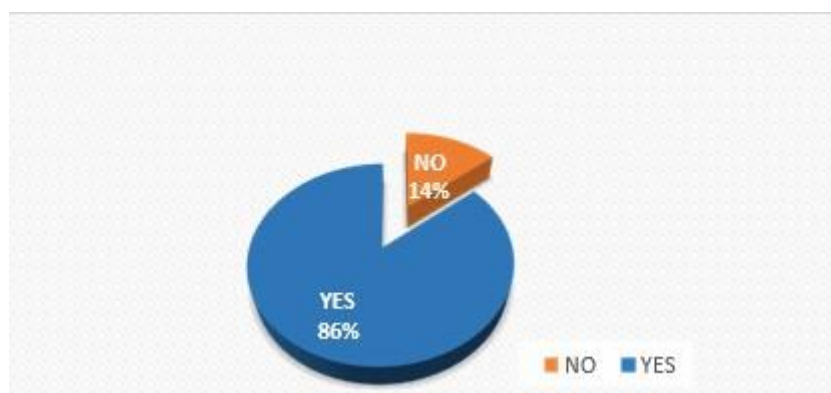


Figure 4: A pie chart showing whether a healthcare professional has ever had a needle stick injury before.

et al,2016)

4.2. *The attitude of healthcare workers towards infection prevention.*

In this study, on the attitude of HCWs on whether PPE protects them from infections, 27(54%) had a positive attitude towards PPE for their protection from HCAIs, 14(28%) were neutral on the matter and 9(18%) disagreed, this indicated moderately low positive attitude regarding the use of PPE by the HCWs majorly because of the lack of enough protective gear in the hospitals and this study is in line with a study done in Ethiopia by (Hussen, et al.,2017) where 50.2% agreed or had a positive attitude regarding the importance of using PPE in practice. Only 31(62%) feel comfortable asking every patient if they have any symptoms of infection which would lead to easy transmission of infections to the HCWs this is a poor attitude and needs to be improved by educating or providing appropriate training to the health care workers because even in this study 36(72%) believe the absence of universal precaution hospital facilities can be the source of infection which shows that knowledge of the HCWs should be improved to help improve on their attitude also regarding infection prevention in the hospital. Recapping of used needles after use and before disposal is not allowed in practice because of the danger of HCWs pricking themselves and can be a source of infection. A study to determine the knowledge and practices of infection control among healthcare workers in a tertiary referral center in North-Western Nigeria was conducted (Iliyasu, et al., 2016), the study showed that 31.3% of doctors and 17.3% of nurses recap needles after using most of the time hence posing a risk of infection transmission. However, the current study shows that only 29(46%) of the participants indicated that needles should not be recapped after use and before disposal, indicating that the participants had a poor attitude towards sharp disposal. In this study 45(90%) of the respondents believe that separating active TB patients from other patients is an effective strategy for the transmission of TB, which indicates a good attitude towards the prevention

of TB transmission, However, more than 75% of sampled HCWs indicated that N95 respirators were not routinely available, and there was limited or no ability to isolate patients with proven or suspected TB. This inability to separate suspected (and known) TB patients from susceptible populations is a major concern for countries with high HIV and TB prevalence rates.

4.3. *The practice carried out by healthcare workers towards infection prevention.*

In general, HCWs displayed appreciably good practices towards infection prevention, with 78.5% of participants having good practices to prevent hospital-acquired infections and contamination. Over 43(86%) of the participants responded that they washed their hands with soap and water after taking a sample and 44(88%) reported having washed their hands immediately when they came into contact with blood, body fluids, or contaminated items. When asked if goggles are always worn during procedures that generate blood or body fluids, only 27(54%) of HCWs said they practice this. This is due to the lack of available supplies, which was also found out when conducting the questionnaire as many respondents commented on not being able to obtain such supplies. This problem is also similar to a study conducted in Nigeria, and it suggests a huge barrier to infection prevention in the healthcare setting (Ogoina, et al., 2015). In this study, only 7(14%) of the respondents reported having had a needle stick injury during work at the hospital which is far less than the occurrence of needle stick injuries according to the study in India by Arasi, At et al. (2015), Among HCWs reporting needle stick injury, 70.5% had at least one in the previous three months. In another study by Lee, they observed that the majority of occupational-acquired blood-borne diseases by HCWs were a result of needle stick injuries (Nwankwo, et al., 2018).

5. CONCLUSION.

Monitoring the level of knowledge in infection prevention will help to work on the gaps so that

the rate of HAIs can be reduced. The objectives of the study were to assess the knowledge, attitude, and practices of healthcare workers towards infection prevention. The majority of healthcare workers' knowledge and practices toward infection prevention at Nsambya Police Health Center iv were good and safe enough but the attitude of healthcare workers towards infection control was moderately low, this poor attitude by the HCWs harms the practices carried out on infection prevention for example only 27(54%) of the respondents had a positive attitude towards the use of PPE in infection prevention which would increase the incidence of infections. Variables such as receiving formal training have an association with infection prevention practice, and work experience and job title have a significant association with infection prevention practice. The study showed that some of the health care workers had good practices towards infection prevention depending on the variable of hand hygiene which matched well with the high percentage 41(82%) of the respondents who had knowledge obtained from receiving training in hand hygiene and standard precautions, this indicated that many nosocomial infections were transmitted from one patient to another by way of health care workers who do not routinely observe simple hospital hygiene measures like hand washing. Also, only 7(14%) of the respondents reported having had a need stick injury during practice at the hospital, this represented a good practice but also needed intervention to be reduced. The study found out there is insufficient PPE in the hospital hence affecting the good practices towards infection prevention by the HCWsI assume that the data in this study is imperative in convincing hospital management to advance in maintaining a the safe working environment for HCWs and changes in infection control measures must be a top priority for hospital administrators and leaders in the Ministry of Health.

6. RECOMMENDATIONS.

Nsambya Police Health Centre IV management should encourage healthcare workers to apply written guidelines on the use of personal protec-

tive equipment and Nsambya Police Health Centre IV healthcare workers should apply written guidelines toward infection prevention and control measures responsibly.

The heads of each department (ward) should follow health care workers closely and should take appropriate measure against HCWs who fails to practice as per guidelines and protocol. Should monitor and supervise health care workers towards infection prevention practice with the routine services through the provision of training and preparing and introducing health care workers to infection prevention guidelines, protocol, rules, regulations, and opportunities to promote the desired team spirit at all health facilities levels are recommended.

Nsambya Police Health Centre IV should provide adequate personal protective equipment and look after or maintain adequate waste disposal systems to prevent the occurrence of healthcare-acquired infections in hospitals.

The government should provide Nsambya Police Health Centre IV with the requirements or equipment required in the prevention of hospital-acquired infections for example personal protective equipment for the health care workers.

7. ACKNOWLEDGEMENT.

I take the honor to thank the almighty God for the gift of life and knowledge he has bestowed on me and for always being there watching over me and giving me the urge to move forward.

8. LIST OF ABBREVIATIONS.

EPA: Environmental Protection Agency
HACs: Health-acquired conditions
PPE: Personal Protective Equipment
MOH: Ministry of Health
NMS: National Medical Stores
WHO: World Health Organization
HCAIs: Health Care-Associated Infections
HCWs: Health Care Workers
TB: Tuberculosis
HIV/AIDS: Human immune Virus/ Acquired Immune Deficiency Syndrome

EVD: Ebola Viral Disease

SARS: Severe Acute Respiratory Syndrome

HH: Hand Hygiene

PIDAC: Provincial Infectious Diseases Advisory Committee

NHS: National Health Service

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Post graduate Diploma In Medical Education (PGME- Makerere)
Bachelor's Science in Nursing (Aga Khan University)

Author biography

Hasifa Nasereko Masters Science in Health Professions Education(MScHPE- Makerere)