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KNOWLEDGE, ATTITUDE AND PRACTICES ON NOSOCOMIAL INFECTION PREVENTION AND CONTROL AMONGST HEALTH WORKERS IN MUBENDE REGIONAL REFERRALHOSPITAL, MUBENDE DISTRICT. A CROSS-SECTIONAL STUDY.

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ABSTRACT

Background

Nosocomial infection rates are still high and have rather steadily increased during the recent decade, this can be due to the carelessness of health workers, failure to observe and adopt standard operating procedures, and poor waste segregation and disposal. This study aims to assess the knowledge attitude and practices on nosocomial infection prevention and control among health workers in Mubende Regional Referral Hospital, Mubende district

Methodology

A descriptive cross-section study employing a quantitative method was used, where 50 participants were selected using a simple random sampling method, data was collected using semi-structured questionnaires, and results were entered into the computer data program and Microsoft Excel for frequency tables

Results

60% mentioned that blood-borne infections are the most commonly occurring born infections, and 78% of the respondents said patients were the most common sources of hospital-acquired infections to health workers. 80% of respondents thought working in a hospital exposes you to infection with 60% thinking that his /her family members may get infected through him because some infections can be obtained from contacts and 78% of respondents felt that using PPE is essential and it can prevent the occurrence of nosocomial infections 40% were washing hands before aseptic procedures, and the majority 80% after touching the patient environment, 60% of the respondents disposed of their medical wastes and biohazards wastes after segregation and 80% discarded there sharps in the safety box, and the least 4%in bins.

Conclusion

Health workers in this study had sufficient knowledge of infection prevention prevention, but their attitudes and implementations of safe practices were substandard. The healthcare healthcare workers' practices were unsatisfactory.

Recommendation

Health workers should be trained through continuous medical education, going for further training to improve their knowledge of nosocomial infection control in health facilities.

Keywords: *Infection, Nosocomial, Health Workers, Mubende Waste Segregation*
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Background to the study

Nosocomial infections (NI) also known as Health Care Associated Infections are infections that appear in health workers in a health care facility which was absent at the time of admission. These infections can occur during healthcare delivery for other illnesses or manifest soon after discharge, it has been estimated that the risk of healthcare-associated infection (is 2to20times higher in developing countries, and 10%of the health workers who work in hospitals in developed countries acquire these infections (Khan et al, 2017).

According to the Centers for Diseases Control (CDC), healthcare-associated infection (HCAI) is defined as the acquisition of infectious agent(s) or its toxin(s) that occurs within 48 hours of hospital admission, or up to 3 days after discharge or up to 30 days after the operation when someone was admitted for reasons other than infection (Alemu et al., 2020)

Globally, nosocomial infections are a major public health problem with 1 million health workers suffering from nosocomial infections. This mainly affects health workers and patients hospitalized for other conditions resulting in prolonged stay, with significantly higher morbidity and mortality in Africa. It accounts for 7% of developed countries and 10% of developing countries. Healthcare-associated infection density in adult intensive care units in developing countries was 47.9 per 1000 patient days (Khan et al, 2017).

In Europe, hospital-acquired infection accounted for 4.6-9.3% of infections. In high-income countries, 5% of health workers acquired hospital-acquired infections which can affect 9-37% of those who work in an intensive care unit.

In Africa, the prevalence of health-acquired infections among all hospital health workers is estimated to be 3% and 15%, but outbreaks are infrequently reported.

In the sub-Saharan region of Africa, the prevalence of nosocomial infections ranges from 2-49% with intensive care units having the highest rates ranging between 21.2-35.6% leading to expenditure, morbidity as well and mortality affecting body systems Body Systems affected include: integumentary system made up of the skin and soft tissue, genital-urinary system, respiratory system, cardiovascular system like blood stream as well as the central nervous system.

A study conducted in Kenya indicated that nosocomial infections range from 2.8% to 21.6% and are likely to be more frequent and serious in developing countries with possible risk factors like malnutrition, delayed presentation to referral centers, and multi-organ involvement.

In Uganda, nosocomial infections account for 17% prevalence resulting in high death rates in the country especially among doctors and nurses in the intensive care units. Nosocomial infections are attributed to bacteria. These bacteria include Staphylococcus aureus and Pseudomonas aeruginosa being most associated with surgical site infection accounting for 20-40% and 5-25% respectively and enterococci (Ogwang et al, 2022)

In Mubende district, currently, no research done about nosocomial infection prevention and control, though many

Health facilities try to follow the standard precautions which include hand washing, which is the key and others are, the use of gloves, and sanitizers whose purpose is to protect health care workers (HCWs)and patients as well.

Study objectives

General objective

To assess' knowledge attitudes and practices on nosocomial infection prevention and control among health workers in Mubende Regional Referral Hospital, Mubende district.

Specific objectives

- To find out the level of knowledge of health care workers regarding nosocomial infection prevention and control at Mubende Regional Referral Hospital, Mubende district
- To assess the attitude of health care providers towards nosocomial infection prevention and control at Mubende Regional Referral Hospital, Mubende district
- To evaluate practices of health care providers towards nosocomial infection prevention and control at Mubende Regional Referral Hospital, Mubende district

METHODOLOGY

Study design

The study was a descriptive cross-sectional study using the quantitative method. Data will be collected using a questionnaire in Mubende Regional Referral Hospital. The research was cross-sectional in that the researcher collected data at a single point in time.

Study area

The study was conducted on both outpatient and inpatient departments at Mubende Regional Referral Hospital, in 2023. Mubende district, MRRH is a government regional referral hospital located in the Central regions of Uganda about 144km from Kampala City. It has a bed capacity of approximately 500 beds and receives patients from mainly the southern and Eastern parts of Mubende, and patients from Kasambya Sub County, one of the biggest sub-counties of this district. The facility offers services that include outpatient department services, Inpatient department services, maternity services, laboratory services, immunization services, Art clinic services, and surgical services among others

Study population

These are health workers serving at Mubende Regional Referral Hospital. These know two languages which include Luganda and English, but commonly use Luganda as the means of communicating to patients. It included nurses, doctors, midwives, lab technicians, clinicians

Sample size determination

Sample size was calculated by formula as used by Kish Leislie (1965) . In a context where the target population is more than 10,000 the formula is

$n=Z^2pq/d^2$

n=desired sample size

Z=standard normal deviate (1.96) that corresponds to 95%confindence level.

P=the proportion in the target population estimated to have a particular characteristic .since there was no data on the level of infection prevention ,the researcher used a prevalence of 50%(0.5)to give maximum variability.

q=1.0-p

d= the degree of accuracy desired (0.05 was used in this case)

$n=((1.96)^2(0.5)(0.5))/(0.05)^2 =384$

In Mubende regional referral hospital where this study was carried out the target population is 50 which is less than 10,000 in this context the following formula was used .

$nf=n/(1+n/N)$

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nf= sample size when the total population is less than 10,000
N=estimated total population less than 10,000
n= estimate sample when the total population is more than 10,000
The number of health workers in Mubende regional referral hospital is 55
The sample size for a population more than 10,000 is 384.
Nf=384/(1+384/50)=384/7.7=50.The computed sample size is 50
So the number of respondents will be approximately to 50

Sampling technique

A simple random sampling method was employed in selecting respondents. This is because the respondents were selected at random by the researcher and the respondents had equal probability when the sample was selected directly from the sampling frame.

Sampling procedure

The procedure was a systematic sampling where the researcher picked health workers who work at Mubende Regional Referral Hospital. This method relied on arranging the target population according to some ordering scheme and then selecting health workers at regular intervals through that ordered lists of their names. However to avoid bias

the starting health workers have to be randomly chosen suppose the sample size is 50 from the population of 150 .150/50 =3 (interval)so everyone was chosen after 3th after starting from position.

Data collection method

Data was collected by interview method using questionnaires which is the conversation in which a researcher tries to get information from the interviewee and record it by himself/herself this method is good because it assumes that the respondent has the information

and that he is willing to give honest answers while the researcher is present. The type of interview will be structured / formal they are conducted in a standardized way the questions will be specified, and constructed in a pre-tested questionnaire form to establish its validity and reliability.

it will be face-to-face with health workers using a questionnaire which will enable the researcher to access knowledge, practice, and attitudes.

Data collection tools

Data collection tools included a semi-structured questionnaire, which is a set of questions to which respondents answer in writing and others by the researcher writing the answer down from the researcher. Respondents were asked about their demographic and socioeconomic information. The questionnaire included information regarding knowledge about nosocomial infection prevention and control such as to assess whether the respondents know what nosocomial infection prevention and control is. Those who report that they know were asked to indicate the source of information and define what nosocomial infections are and at least select 3 components of it. Again respondents were asked about their practice of nosocomial infection prevention and control and their attitude towards nosocomial infections This was designed based on study objectives, available information on demographic characteristics, and patterns of health workers at Mubende regional referral this is because are easy to administer to respondents scattered over a large area and its easy and quick to collect data

Data collection procedure

The researcher conducted health education and will approach individual health workers. She explained the purpose and the benefit of the study to her/him. If one accepted, she was asked to sign an informed consent form. A guided questionnaire was used to obtain details from the health workers. The questionnaire included information regarding knowledge about nosocomial infection such as to assess whether prevention and control the respondents know what nosocomial infection prevention control is. Those who report that they know were asked to indicate the source of information and, define select at least three components of nosocomial infection. Again respondents were asked about their practice on nosocomial infection prevention and control and their attitude towards nosocomial infection prevention and control.

Study Variables.

Independent Variables

These include the knowledge, attitude, and practices among health workers on nosocomial infections

Dependent Variables

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

Quality control

This describes how the quality of research was ensured. It included the following: pretesting of research tools, and training of research assistants. The questionnaires developed were pre-tested before data collection and where errors, given ample time for data collection were identified. And clear inclusion and exclusion criteria adherence to standard operating procedures.

Pre-testing

The researcher tested the questionnaire at Bbira Health Center III a week before going to Mubende Regional referral hospital or collected data between June 2023 to July 2023 to determine the prevalence and the associated risk factors of nosocomial infections among health workers.

Training of research assistants:

This was carried out before doing research like training one research assistant who was collecting data in case the researcher is absent at the facilities, and also training those who will interview respondents which ensures more quality

Giving ample time for data

Data collected between June to August 2023 was enough for data collection by the respondents

Inclusion and exclusion criteria

Inclusion

Any health worker working at Mubende Regional Referral Hospital regardless of qualifications and training in the data collection period was approached after consenting to participate in this study, included in study.

Exclusions

The study excluded health workers who don't work at Mubende Regional Referral, it also excluded those health workers at Mubende Regional Referral Hospital who refused to consent. Similarly, cleaners, patients, and other people who carry out administrative workers care caregivers to the patients who may agree to consent were excluded.

Standard operating procedure

This was done for example during an interview the researcher and respondents used to put on masks to prevent cross-infection and also used sanitizers, especially after the use of pens

Piloting the study

This was done at Mubende Regional Referral Hospital before the actual research to know if the area is available if the research can be done from the area and also if the study population is available this was done 2weeks before.

Data analysis and presentation

Data was recorded first through tallying, editing, and tabulating. The results were entered into the computer data program and soft Excel for frequency tables. It was then presented in the form of table pie charts and graphs to set the accuracy of the presentation of the results and answer the researcher.

Ethical considerations

The researcher first asked for permission from Medicare Health Professional's College administration which gave me an introductory letter to present to the Department of Research and Ethics Committee of Mubende Regional Referral Hospital seeking permission to carry out the research study from the facility.

Informed consent was sought from the health workers after being accepted to carry out the research at the facility and after consenting, they signed the consent form to show that were consented.

Privacy and confidentiality were ensured by making sure that the information collected does not contain an individual identity. All questionnaires were coded. To ensure confidentiality, the information collected will be kept under key and lock and only accessible to the researcher for use. Participants were interviewed separately from other clients to avoid breaches of privacy and confidentiality.

Informed consen**t,** Participation in this study was not in any way compulsory. Detailed information about the study was explained to the participants. After understanding all the details, informed consent forms were issued, and written consent was obtained.

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RESULTS

Demographic data of participants

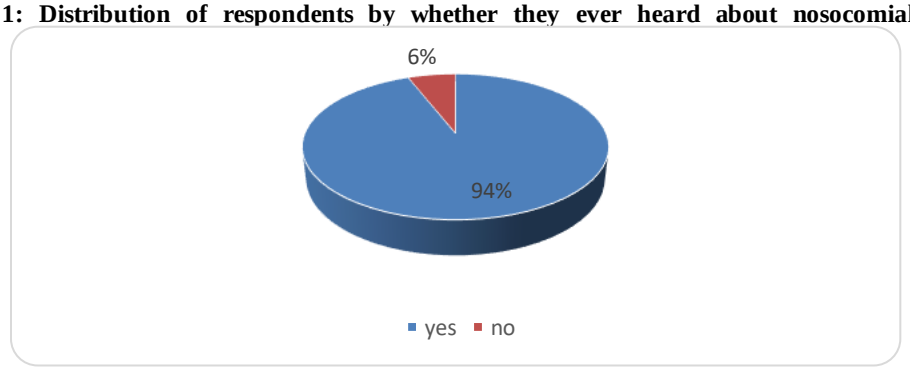
Table 1: Shows demographic characteristics of participants (n=50)

Variable	Response	Frequency	Percentage (%)
Sex	Male	12	24
	Female	38	76
Age (years)	20-29	25	50
	30-39	15	30
	40-49	7	14
	50 and above	3	6
Occupation	Nurse	16	32
	Nursing assistant	5	10
	Midwifes	8	16
	Clinical officers	6	12
	Medical officers	9	18
	Laboratory technicians	6	12
Level of education	Certificate	16	32
	Diploma	23	46
	Bachelor	11	22
Years of service	0-5	27	54
	6-10	17	34
	Above 10	6	12

Source: primary data

Table 1 shows that majority of the respondents 38 (76%) were female and minority 12(24%) were male. By age half of the respondents 25(50%) were within the 20-29 age bracket, and those in 30-39 were15 (30%) whereas the least 7(14%) were within the 40-49 age bracket and those with 50years and above were 3(6%). Majority of the respondents 16(32%) were nurse ,while the least were nursing assistant 5 (10%), midwives were 8(16%),clinical officers were 6(12%)while medical officers were 9 (18%) and laboratory technicians were 6(12%). Most of respondent 23(46%) had attained a diploma while a least 11(22%) respondents had attained a bachelor while others16 (32%) had a certificate. Most of the respondents had between0-5 years of service27 (54%) while least of the respondents 6(12%) had above 10 years of service and others were 17(34%) had 6-10 years in service.

Figure 1: Distribution of respondents by whether they ever heard about nosocomial infections (n=50)



Source: primary data

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Table 2: distribution of respondents about knowledge on the commonly occurring nosocomial infections and there source (n=50)

Variants	Response	Frequency	Percentage (%)
Which of following is are commonly occurring nosocomial infection?	Urinary tract infection	**10**	**20**
	Respiratory tract infection	**29**	**58**
	Surgical site infection	**25**	**50**
	Gastrointestinal infection	**06**	**12**
	Blood borne infection	**30**	**60**
	Skin and soft tissue infection	**16**	**32**
	Other	**1**	**2**
Which of the following most source of HAI to health worker?	**Patients**	**39**	**78**
	Whitecoats and nurse uniforms	**7**	**14**
	Mobile phone	**3**	**6**
	Fellow health workers	**1**	**2**

Source: primary data

Knowledge of health workers on nosocomial infection control

Knowledge of respondents about Nosocomial infections

From figure 1 shows that, Majority of the respondent had heard of nosocomial infection 47 (94%), while the least were 3(6%) who have not heard about it.

On commonly occurring nosocomial infection majority of the respondents suggested blood borne infections were the leading infection and these were 30(60%), followed by respiratory tract infections that is 29(58%), then surgical site infections were 25(50%), skin and soft tissue infections were 16(32%), followed by urinary tract infections who were10 (20%) and gastrointestinal infections who were 6(32%).Minority was 1 (2%) and this one said air borne infection, Majority of the respondents suggested that patients were most source of HAI to them and these were 39(78%). Followed by white coats and nurse's uniforms which were 7(14%) and 3 (6%) were suggesting mobile phones while the least 1(2%) mentioned that get them from health workers.

19(38%) of the respondents had heard about nosocomial infection from formal training. Majority had heard about them from fellow health workers and this were24 (48%) and those who heard it when at school were 6(12%) and others1 (2%) said that it was through reading text books

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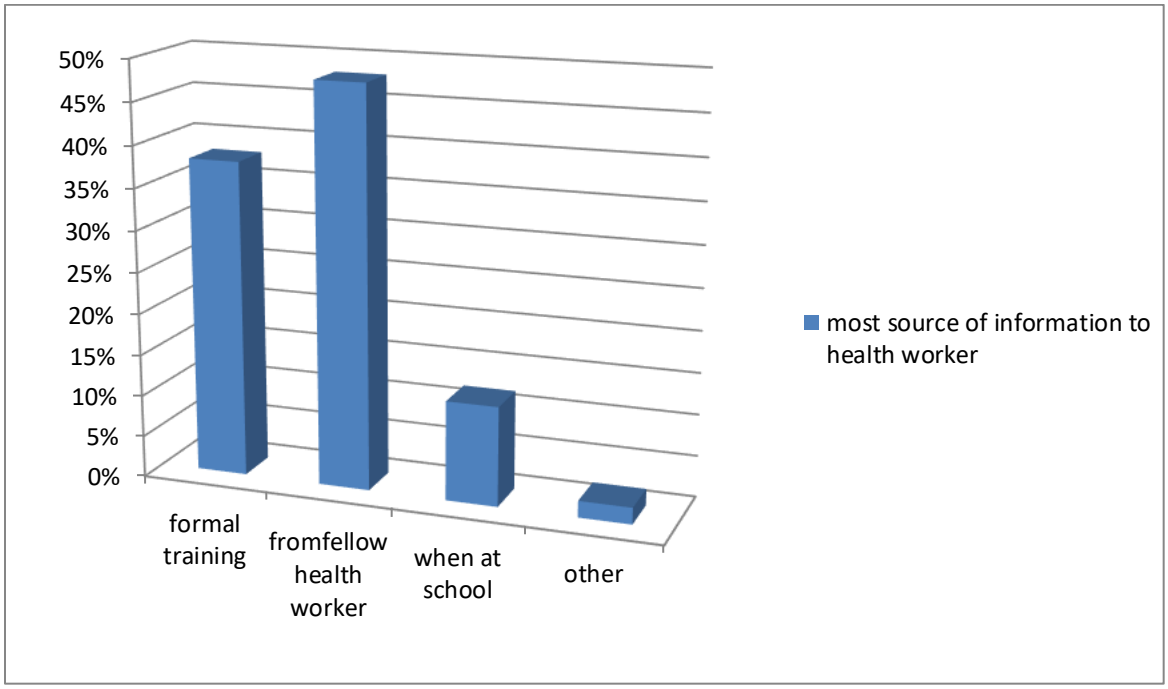
Figure 2: knowledge of the respondents about the most source of information to health workers (n=50)



Source: primary data

Table 3**: distribution of the health workers attitudes towards practices that reduce transmission of nosocomial infections (n=50)**

Variant	Response	Frequency	Percentage (%)
Do you think performing hand hygiene reduces transmission of infection?	Yes	45	90
	No	4	8
	I don't know	1	2
Do you think proper waste segregation according to WHO guidelines decrease infection?	Yes	42	84
	No	06	12
	I don't know	02	4

Source: primary data

Attitude of health workers towards nosocomial infection prevention and control

Majority of the health worker that is 45 (90%) agreed that performing hand hygiene reduces transmission of infections, 4(8%) did not agree with is and the minority that is 1 (2%) were not sure about it. Majority of the respondents 42(84%) agreed that proper waste segregation according to WHO guidelines decreases infection, 6(12%) said no to this and 2(4%) were not sure if this is the case.

Majority of respondents 39(78%) suggested that using PPE is essential, 6(12%) said its wastage of time, while 5(10%) of the respondents agreed that is uncomfortable. And among others was 1(2%) who said it is wastage of money.

Most of the respondents thought preventing cross infections one of the importance of using PPE, 3(6%) of respondents said using PPE is passing time just, 6(12%) suggested that is to keep body clean. And the remaining 1(2%) said that it is not important at all.

Many of the respondents thought that working in hospital exposes them to infections and these were 40(80%) while 10(20%)of them did not think that way , . most of the respondents with the reason of some infections can be obtained from contacts to answer why their family members could be affected through them ,28(56%)

suggested that some of these infections are air borne so they can be quickly transmitted ,22(44%) agreed that the spread is only if you don't maintain the standard operating procedures and also PPE, and the rest 2(4%) gave other reasons like when they are care less

Table 4: Attitudes of the respondents about PPE

VARIANT	RESPONSE	FREQUENCY	PERCENTAGE (%)
How do you feel about using PPE?	Wasting time	6	12
	Essential	39	78
	Uncomfortable	05	10
	Others	01	2
What do you think is the importance of using PPE?	To prevent cross infection	40	80
	To pass time	03	6
	To keep my body clean	6	12
	They are not important at all	1	2
	Others	0	0

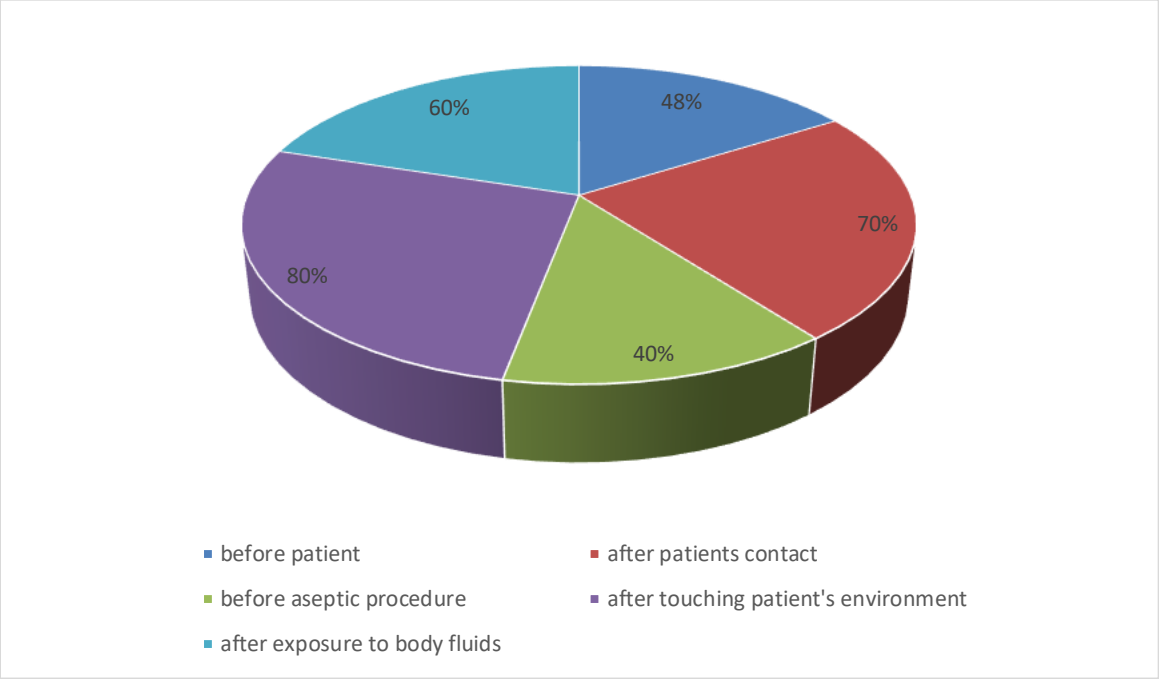
Source of data: primary source

Table 5: Attitude of health workers towards being infected from nosocomial infections with their family

Do you think working in hospital exposes you to infections	Yes	40	80
	No	10	20
Why do you think your family members may get infected through you?	Some infections can be obtained from contacts	30	60
	Some of these infections are air borne so they can be quickly transmitted	28	56
	If you don't maintain the standard operating procedures and also PPE	22	44
	Others	2	4

Source of data: primary source

Figure 3: Distribution of respondents about when the health workers wash hand prevent and control nosocomial infection.



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Source of data: primary source

Practice of health workers toward nosocomial infection prevention and control

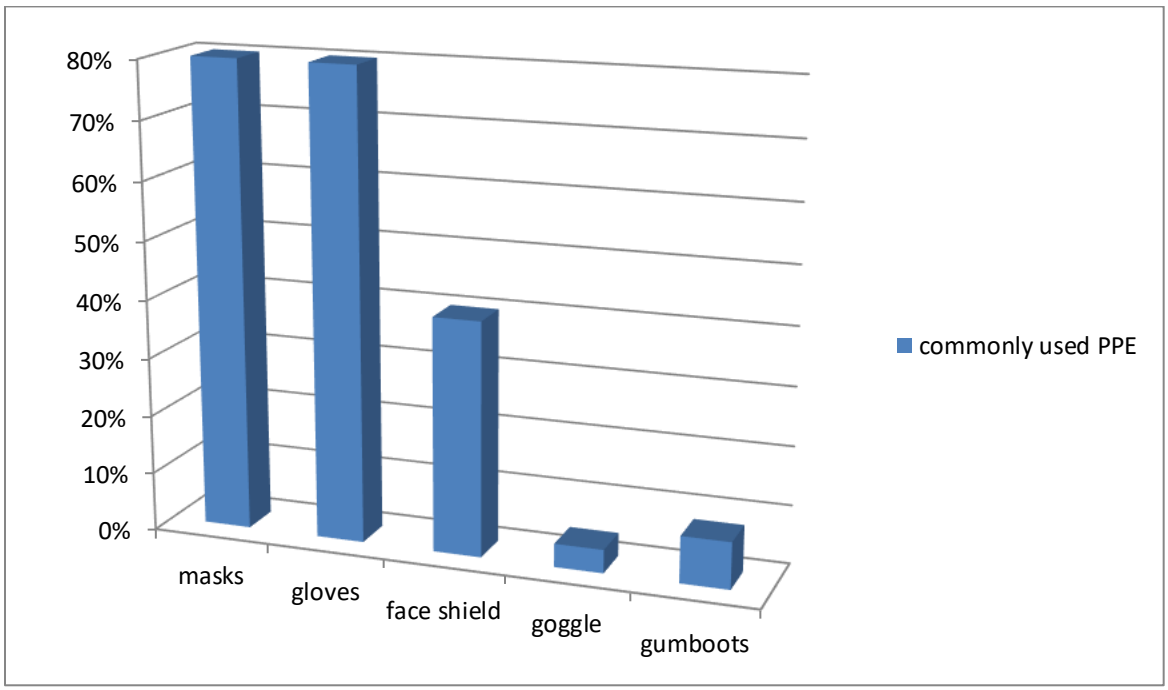
Majority of respondents 40(80%) said that they wash hands after touching patient's environment , followed by35(70%) wash them after patients contact ,30(60%) after exposure to body fluids ,24(48%) wash them before patients contacts and the least of them wash them before aseptic procedures and these are 20(40%).

Most of the respondents 30 (60%) got training about nosocomial infection prevention and control once every month. 10(20%) said never do they get such training.9 (18%) said the training every week and 1(2%) get it once every year.

The majority of respondents use masks and gloves and these are 40(80%) of the PPE used to prevent and control nosocomial infections. Those who used face shields were 20 (40%), and those who used goggles 2 (4%). And those that use gum boots 4 (8%) majority of the respondents30 (60%) always use PPE, 15 (30%) use them sometimes, 5(10%) Never use them.

More of the respondents dispose of medical wastes after segregation and in color code bins and these were 30(60%), 6(12%) of respondents said they use pits. And the least disposed them off in toilets2 (4%) Many of the respondents dispose of sharps by putting them in sharps 40(80%), those who recapped before discarding 8(16%) and those in bins were 2(4%).

Figure 4: distributions of respondents on commonly used PPE



Source of data: primary source

Table 6: practices of health workers towards disposing off medical wastes and sharps

VARIANTS	RESPONSE	FREQUENCY	PERCENTAGE (%)
How do you dispose of medical wastes and biohazard?	After segregation	30	60
	Colour codes bin	30	60
	In pits	6	12
	In toilets	2	4
How do you dispose of sharps?	Recapping before discard	08	16
	Putting in sharp	40	80
	In bin	02	4
	Others	0	0

Source of data : primary source

DISCUSSIONS

Knowledge of the health workers about nosocomial infection prevention and control

Data analysis and interpretation revealed the following major findings under this objective 94% of the health workers had heard about nosocomial infections and 6% who have not heard about it, these findings probably indicate that the majority have had nosocomial infections, probably because of continuous medical education, and 6% who have not heard about it because they are new in the working health field and others do not attend Continuous medical education, these findings slightly agree with Zahia Soleimani *et al*,2023 whose same study is in Iran, thus the health workers are knowledgeable.

Based on the study findings, it is revealed that 48% had heard of nosocomial infections from fellow health workers and these were the majority and the least 2% had heard it from other sources which included media and reading of textbooks These findings indicate that the majority had heard from fellow health workers through discussions as those with a long working experience could teach those who are new or have few years of working experience and these findings slightly disagree with Arinze- Onyia *et al*,2018 which showed that those who have heard about nosocomial infection from formal training .this shows that health worker was slightly knowledgeable on nosocomial infections.

Based on the study findings, it was shown that 60% of the respondents mentioned that blood-borne infections are the most commonly occurring, and lastly 2%who commented that they were airborne infections, these findings indicate that blood-borne infections are the most occurring nosocomial infections, followed by respiratory tract infections, then surgical site infections, urinary tract infections, be the

commonly occurring nosocomial infections This is a result of low knowledge of the health workers about the nosocomial infections, this means there has been an improvement of the health workers knowledge about nosocomial infections due to continuous medical training of them.

The study revealed that 78% of the respondents said patients were the most common source of hospital-acquired infections to health workers, and 2% said they get them from fellow workers. This indicates that patients are the most common source of nosocomial infections followed by white coats and nurses' uniforms, then mobile phones and lastly fellow health workers, this is because of limited protective gear for health workers when they are working on patients leading to the increased source of infections, this finding agrees with K Nag *et al*, 2018 similar study carried in tertiary care hospital of Tripura which showed that recognized source of acquired infections were mattresses and pillow were the most source of nosocomial infections, showing that the health workers were knowledgeable about the sources of nosocomial infections.

Based on study findings, revealed that 80% of respondents thought working in a hospital exposes you to infections, 20% did not agree with this, this shows that the majority of respondents agreed that working in the hospital exposes you to infections. This is due to occurrences of hospital-acquired infections among them, these findings agree with Nag *et al*,2018, whose study showed almost the same results and of these were willing to change in their working styles and this reveals how health workers are too willing to prevent their exposure to infection due to their working environment.

According to the study, data analysis and interpretation revealed that 84%of the respondents said that waste segregation according to WHO guidelines decreases infections while 12% said no to this, yet 4% were not sure if this was right, this finding indicates that the majority of the respondents thought that waste segregation according to the WHO guidelines decrease infection, they said it reduces transmission of infections and exposure to them. This finding agrees with Anna Ndapandula *et al*, 2016 whose study in Nambia showed that correct segregation of wastes is of utmost importance for preventing transmission and this shows that health workers showed a good attitude towards waste segregation

Attitudes of health workers towards nosocomial infection prevention and control

According to the study, data analysis and interpretation revealed that 90% of the respondents thought hand hygiene reduces transmission of infections, 8% did not agree to this and 2% said they don't know if this is correct, these findings indicate that the majority of the respondents think that performing hand hygiene reduces infections. This is because hand washing minimizes microorganisms, these findings agree with Paudel *et al*,2020 A study done in Nepal about hand washing. This confirms that more health workers were carrying out hand hygiene to prevent infections for themselves

The study findings show that 60% of the respondents thought that his /her family members may get infected through them because some infections can be obtained from contacts and this was the majority, while the least 4% commented that if they are careless they can transmit infection to them, this indicates that most of the respondents could infect their family members these results may be due to limited personal protective equipment and this agrees with the study by Nag *et al*,2018 which showed that believe that their family members may

get infected through them, this shows that more health workers knew the risks they paused to their family and this could increase willingness to protect self from infection to reduce transmission to their families,

According to the study, data analysis and interpretation revealed that 78% of respondents felt that using PPE is essential and these were the majority and 2% said it was a waste of money, difficult to put them on and they are uncomfortable, this findings show that the majority felt that using PPE is essential since it reduces hospital-

acquired infections and also for their safety, this finding agrees with Adil Abakhail *et al*, 2021, showed that the results were almost similar, this shows the willingness of the health workers on using PPE.

Based on the study findings, it revealed that 80% of the respondents thought it was important for them to use PPEand these were the majority, while 2% said it was not important at all. These findings showed that the majority of the respondents knew that PPEs were important since they reduce the spread of nosocomial infections in hospitals, this finding agrees with Zahia Soleimani *et*

al, 2023, a case study in Iran which had almost similar results This was a good attitude towards using PPE since most health workers suggested that it was important.

Practices of health workers about nosocomial infection prevention and control

Based on the study findings, a minority of the respondents that is its showed that 40% before aseptic procedures, and the majority 80% after touching the patient's environment. This finding indicates that the majority of respondents washed their hands after touching the patient's environment and the least was before touching patients, they don't carry infections with them and also for their safety and reducing contamination. The study findings revealed that 60% of the respondents disposed of their medical wastes and biohazard wastes after segregation. And dispose of them in color-coded bins and these were the majority while 4% disposed of them in toilets. These findings indicate that the majority of the respondents disposed of waste segregation guidelines to reduce the risks of nosocomial infection for them to be protected. According to the study, data analysis and interpretation revealed that the majority of respondents 80% used masks and gloves as PPEs, and the minority 4% were using goggles This indicated that most of the respondents were using gloves and masks because they were readily available. This agrees with the study by J. Kawuki *et al*, 2023 a study in Africa revealed closely related results to control COVID-19 an example of nosocomial infection

The findings of the study revealed that the majority of the respondents 80% discarded their sharps in the safety box, and the least 4% in bins. These findings indicate that the majority of the respondents knew the basics of waste segregation and this probably was a result of continuous training on waste segregation which was a good practice among them. They disagree with Hussein, *et al,20*17 who showed the opposite results, this was because these people were not taught the dangers which increased the number of health gastrointestinal infections, and others which includes airborne infections this is due to increase in needle pricks, blood and body fluid contact which causes blood-borne infections to be higher than the others, these findings disagree with Hailemariam *et al*,2019 and this showed VAP, UTI, and gastroenteritis to workers who recapped the needles

Conclusion

In conclusion, health workers in this study had sufficient knowledge of infection prevention, but their attitudes and implementations of safe practices were substandard. The health care workers' practices were unsatisfactory for the basic elements of the components like hand washing, wearing PPE, and discarding infections, which will at some point increases the chances of nosocomial infection, moreover, risk factor like., having continuous medical education, presences of PPEs working experience of health care workers are significantly associated with knowledge practice and attitude towards nosocomial infection preventions and control.

Most of the respondents used PPE like masks and gloves, carried out hand washing, especially after touching patients' environments and could dispose of medical wastes in color code bins after segregation .which were good practices in controlling and preventing nosocomial infection

Recommendation

The government of Uganda through the Ministry of health (MOH) should ensure that the is constant provision of PPE like masks, and gloves to enable the protections of health workers from cross infections and other risks that increases the spread of nosocomial infections

The administration Mubende Regional Referral Hospital to ensure that CME (continuous medical education) sessions and other training, as well as seminars, are conducted to act as constant reminders to avail all the necessary as well as updated information in regards to nosocomial infection control in a health facility.

Healthcare workers should be given the opportunity and necessary support to upgrade their education. They are advice to continue participating in formal training because it's only through this that they will be knowledgeable and have a good attitude and practices towards infection prevention and control.

The government of Uganda through the MOH with implementation by the health facility management team should provide every HCW with guidelines on IC measures and strictly supervise HCW to ensure compliance.

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ABBREVIATIONS AND ACCRONYMS

CDC: Center for disease control

HAI: Hospital Acquired Infections

HCA: Health Care Associated Infections

IC: Infection control

ICU: intensive care unit

KAP: Knowledge, attitude, practice

LMICs: low –and middle- income countries

MOH : Ministry of health

NI: Nosocomial Infections

PPE: Personal Protective Equipment

SP: Standard Precautions

UTI: Urinary tract infection

VAP: Ventilators associated pneumonia

WHO : World Health Organization

REFERENCE

1. Abalkhail, A., Mahmud, I., Alhumaydhi, F. A., Alslamah, T., Alwashmi, A. S., Vinnakota, D., & Kabir, R. (2021, December). Hand hygiene knowledge and perception among the healthcare workers during the COVID-19 pandemic in Qassim, Saudi Arabia: a cross-sectional survey. In *Healthcare* (Vol. 9, No. 12, p. 1627). Multidisciplinary Digital Publishing Institute.
2. Alemu, A. Y., Endalamaw, A., Belay, D. M., Mekonen, D. K., Birhan, B. M., & Bayih, W. A. (2020). Healthcare-associated infection and its determinants in Ethiopia: A systematic review and meta-analysis. *PloS one*, *15*(10), e0241073. https://doi.org/10.1371/journal.pone.0241073
3. Arinze-Onyia, S.U., Ndu, A.C., Aguwa, E.N., Modebe, I. &Nwamoh, U.N. (2018);*Knowledge and Practice of Standard Precautions by Health Workers in a Teriary Health Institution in Enugu, Nigeria*. Nigerian Journal of Clinical Practice, 21(2), 149- 155
4. Haifete, A. N., Justus, A. H., & Iita, H. (2016). Knowledge, attitude and practice of healthcare workers on waste segregation at two public training hospitals. *Eur J Pharm Med Res*, *3*(5), 674-689..
5. Hussein, S., Estifanos, W., Melese, E., & Moga, F. (2017). Knowledge, attitude and practice of infection prevention measures among health care workers in wolaitta sodo Otona teaching and referral hospital. *J Nurs Care*, *6*(416), 2167-1168
6. Ishwari Sharma Paudel , VivekGhosh , PurushottamAdhikari (2016); *Knowledge, Attitude and* Practice of nursing students on Hospital Acquired Infections in Western region of Nepal Correspondence *Journal of College of Medical Sciences-Nepal, Vol-12, No 3, July-Sept 016 ISSN: 2091-0657 (Print);* 2091-0673 (Online) Open Access.DOI: http:// dx.doi.org/10.3126/ jcmsn.v12i3.16012.
7. Kawuki, J., Chan, P. S. F., Fang, Y., Chen, S., Mo, P. K., & Wang, Z. (2023). Knowledge and Practice of Personal Protective Measures Against COVID-19 in Africa: Systematic Review. *JMIR Public Health and Surveillance*, *9*, e44051.
8. Khan, H. A., Baig, F. K., & Mehboob, R. (2017). Nosocomial infections: Epidemiology, prevention, control and surveillance. *Asian Pacific Journal of Tropical Biomedicine*, *7*(5), 478-482.
9. M. Ogwang, D. Paramatti, T. Molteni, E. Ochola, T. R. Okello, J. C. Ortiz , Salgado, A. Kayanja,C.Greco, D.Kizza, E.Gondoni, J.Okot, L. Praticò, V. GranataA. Filia, H. Kellar Ayugi, D.Greco (2013); *Prevalence of hospital-associated infections can be decreased effectively in developing countries*Journal of Hospital InfectionVolume 84, Issue 2, Pages 138-142
10. Nag, K., Datta, A., Karmakar, N., & Chakraborty, T. (2018). Knowledge, attitude and practice about hospital acquired infection among health care personnel in a tertiary care hospital of Tripura. *International Journal of Research in Medical Sciences, 6(10), 3303*. https://doi.org/10.18203/2320-6012.ijrms20184037
11. Nag, K., Datta, A., Karmakar, N., & Chakraborty, T. (2018). Knowledge, attitude and practice about hospital acquired infection among health care personnel in a tertiary care hospital of Tripura. *International Journal of Research in Medical Sciences*, *6*(10), 3303-3308.
12. Soleimani, Z., Mosadeghrad, A. M., Alighardashi, M., Azadnajafabad, S., Safari, M., Mokhtari, Z., ... & Mesdaghinia, A. (2023). Knowledge, attitude, and practice of nurse aids and service staff about nosocomial infection control: A case study in Iran. *Environmental Health Engineering And Management Journal*, *10*(3), 343-351.
13. Hailemariam, M., Bustos, T., Montgomery, B. *et al.* Evidence-based intervention sustainability strategies: a systematic review. *Implementation Sci* **14**, 57 (2019). https://doi.org/10.1186/s13012-019-0910-6

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