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KNOWLEDGE AND PRACTICES OF PREVENTION AND CONTROL OF NEEDLE STICK INJURIES AMONG NURSES AND MEDICAL OFFICERS AT WAKISO HEALTH CENTER IV, A CROSS-SECTIONAL STUDY.

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ABSTRACT

Background

Healthcare workers are at a high risk of accidental needle stick injuries because many are unaware or fail to adhere to set guidelines on infection control, which may often result in injury and blood-borne infections. The purpose of this study was, therefore, to assess the knowledge and practices of prevention and control of needle stick injuries among nurses and medical officers at Wakiso Health Center IV, Wakiso District.

Methodology

A cross-sectional study design was used to collect quantitative data using a semi-structured questionnaire. Participants were picked to participate randomly using a simple random sampling method, from which 30 participants enrolled and consented to take part in the study.

Results

Results from the data collection showed a response rate of 100%, and the results showed most participants were in the age groups of 18-45 years. 83.3% of nurses and medical officers were aware that blood-borne infections can be transmitted by needle-stick injuries. 93.3% had heard of needle stick injuries among health workers. 70% were of the impression that syringes and needles should be discarded in a sharp box being used. 60% of the injuries had occurred due to poor disposal of sharps, while 23.3% were due to poor organization in the areas of work.

Conclusion

In conclusion, this research revealed that most healthcare workers had adequate knowledge about the preventive measures and associated risks of needle-stick injuries. However, practices needed to be improved.

Recommendation

I, therefore, recommend that continuous onsite training should be done for the prevention and reporting of needle stick injuries. I also further recommend better management of healthcare workers who have sustained needle injuries.

Keywords: *Needle stick injuries, Wakiso Health Center IV, Knowledge and Practices, Nurses*.
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BACKGROUND OF THE STUDY

A needle stick injury (NSI) is a penetrating or cut wound in the skin caused by a needle in the healthcare setting. Healthcare workers (HCWs) are at risk of accidental NSIs and sharp injuries because of the nature of their work. The World Health Organization defines safe injection as one that is given using appropriate equipment and does not harm the recipient, does not expose the provider to any avoidable risks, and does not result in waste that is dangerous for other people (World Health Organisation, 2016). Injections are among the most frequently used medical equipment, with an estimated 20 billion injections administered each year worldwide. Student nurses were highly at risk of unsafe injection practices since they were very involved in practices like immunization, drawing blood, assisting in surgeries, and helping in deliveries (Anita, Priyanka, Joyti, & Damodar, 2014).

Globally, 3 million sharp injuries were estimated to occur among health workers in a medical setting every year (Elisa, Lydia, Jacob, Doreck, & Rebecca, 2023). It is among the most serious hazards among health workers, with more than two million occurring annually, and (90%) of these cases occur in developing countries (Bouya et al., 2020). According to the Centres for Disease Control and Prevention (CDC) and European Agency for Safety and Health at Work (EU-OSHA) reports, there were more than 385,000 and 1,000,000 NSIs cases annually among hospital

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HCWs in the United States and Europe, respectively (CDC, 2019).

In Africa, 3 million health workers get needle stick injuries per year, of these, the highest number was made up of nurses. Study findings revealed that nurses who had working experience of 10 years and above were six times at a higher risk of sustaining needle stick injuries than those who had working experience of 5 years and below, nurses who never used protective gear properly, and those who did not follow infection prevention procedure guidelines well sustained more injuries (Awoke & Hadgu, 2018). A systematic review and meta-analysis study done in Ethiopia revealed that the 12-month prevalence of NSIs among HCWs was between 13% and 55% (Teshiwal, Kasaw, & Mekonnem, 2019).

In East Africa, a study in Kenya revealed that 51.4% of health workers were recapping needles after injections (Mweu et al., 2015). A study done in Kenya revealed that only 36% of facilities had adequate infection control items, which included sharp boxes, color-coded waste bins and liners, gloves, adequate running water, and soap.

In Uganda, a study done by Odongokara et al. 2022 on the prevalence of occupational exposure to HIV among health workers in northern Uganda indicated that (27.7%) of health workers were exposed to NSI, this was related to Uganda facing difficulties in addressing NSIs prevention measures in its health system. Another study done in Tororo (Okello, 2017) indicated that health workers inwards sustained the highest number of needle stick injuries (44.90%), while those working in laboratories had the lowest percentage (4.08%) of needle stick injuries (NSI). The general prevalence of needle stick injuries in Tororo General Hospital was (39.84%), and this prevalence was high. The purpose of this study was, therefore, to assess the knowledge and practices of prevention and control of needle stick injuries among nurses and medical officers at Wakiso Health Center IV, Wakiso District.

METHODOLOGY

Study design and rationale

A cross-sectional design was used, which utilized quantitative methods of data collection. This research study design was preferred because the data collection was done once without following up with respondents.

Study setting and rationale

Wakiso Health Center IV is a public hospital in Wakiso Town Council, Busiro County Wakiso district, central Uganda. Wakiso Health Center IV offers inpatient and outpatient services. This area was preferred for the study because it had an adequate number of health workers who are at risk of exposure to needle stick injuries, therefore making it a suitable study area. The research was focused on nurses and medical officers working at Wakiso Health Centre IV.

Study population

The study targeted nurses and medical officers of Wakiso Health Centre IV.

Sampling procedure

A simple random sampling method was used. On each day of data collection, papers labeled "YES" or "NO" were put in a box and shaken. The eligible respondent was a health worker who picked the paper with the label "YES" and was asked to consent to be enrolled in the study. The process of random sampling was repeated until the desired sample size of 30 nurses and medical officers was reached during the three days of data collection.

Inclusion criteria

This study included nurses and medical officers of any age, gender, English literates, and Ugandans working at Wakiso Health Centre IV, Wakiso District, after having consented at the time of data collection to participate in the study.

Exclusion criteria

This study excluded nurses and medical officers working at Wakiso Health Centre IV who were busy or not available during the time of data collection and those who didn't consent to be part of the study.

Definition of variables

Independent variables

The independent variables of this were;

Knowledge and practices towards prevention of needle stick injuries

Dependent variable

The dependent variable was the prevention of needle stick injuries among nurses and medical officers.

Research instruments

Data was collected using a structured questionnaire consisting of both open and closed-ended questions designed in the English language for easy understanding by respondents. The questions were divided into sections to assess the knowledge and practices of prevention of needle stick injuries among nurses and medical officers.

Data collection procedure

After the research had been approved, an introductory letter was obtained from the school research committee, which was then presented to the administrator of Wakiso Health Centre IV, who then approved the research to be conducted at the facility. The researcher explained the purpose of the study, and then consent was sought from each participant. A questionnaire was given to each participant who fulfilled the criteria for participation in the study. For confidentiality and anonymity, serial numbers were used instead of names, and

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the questionnaires were kept in a locked cupboard and the key kept by the researcher.

Data management

During data collection, each filled questionnaire was checked for completeness and accuracy before the participants left the area of study. Filled questionnaires were kept properly in a locker for confidentiality and safety.

Data analysis

The data collected was analyzed using Microsoft Excel, which was then presented as tables, pie charts, and bar graphs in Microsoft Word.

Ethical consideration

An introductory letter was obtained from the research committee of Mild May after approval of the proposal. The letter was then presented to the administrator of Wakiso Health Centre IV, seeking permission to carry out the study. When permission was granted to go on with the study, participants were briefed about the study, making sure they understood what type of information would be required from them by going through the questionnaire with them. They were also informed that they had to consent before participating in the study and could pull out of the study at any time during data collection. Confidentiality was ensured during data collection by using serial numbers for each respondent instead of names. Later, the questionnaires were kept in a locked cupboard, and the key was kept by the researcher.

Informed consent

The purpose and objectives of the study were explained to the participants, and they understood and voluntarily consented to participate in the study.

RESULTS

Table 1: Showing the distribution of Socio-demographic characteristics of the respondents

Characteristics	Categories	Frequency n=30	Percentage (%)
Gender	Male	13	43.3
	Female	17	56.7
Age group (years)	18-25	8	26.7
	26-35	10	33.3
	36-45	7	23.3
	46-55	3	10
	Above 55	2	6.7
Education level	Certificate level	9	30
	Diploma level	14	46.7
	Bachelor's level	6	20
	Masters level	1	3.3

N= 30 Source: Primary data (2024)

From Table 1, 17 (56.7%) were females and the least 13 (43.3%) were males. The majority, 10 (33.3%) of the participants, were in the age group of 26- 35 years, 8 (26.7%), and the smallest age group, 2 (6.7%) of the health workers were between above 55 years of age. Most, 14 (46.7%), had attained Certificate education, the least 1 (3.3%) attained up to master's level.

Knowledge towards prevention of needle stick injuries among nurses and medical officers

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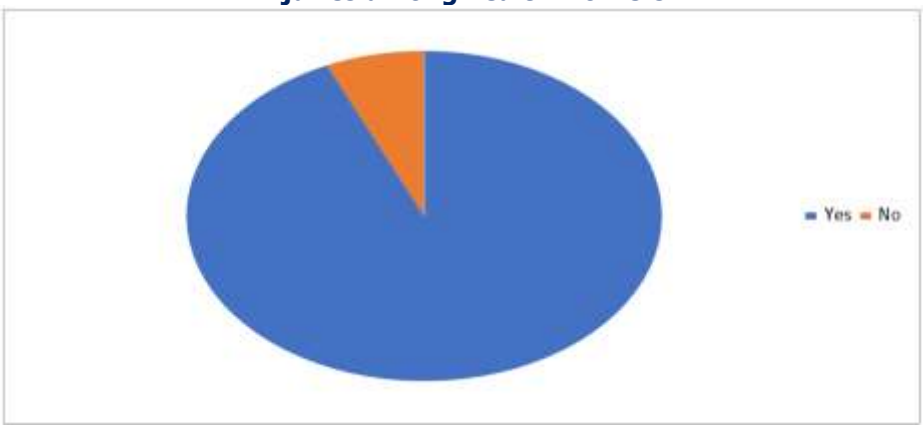
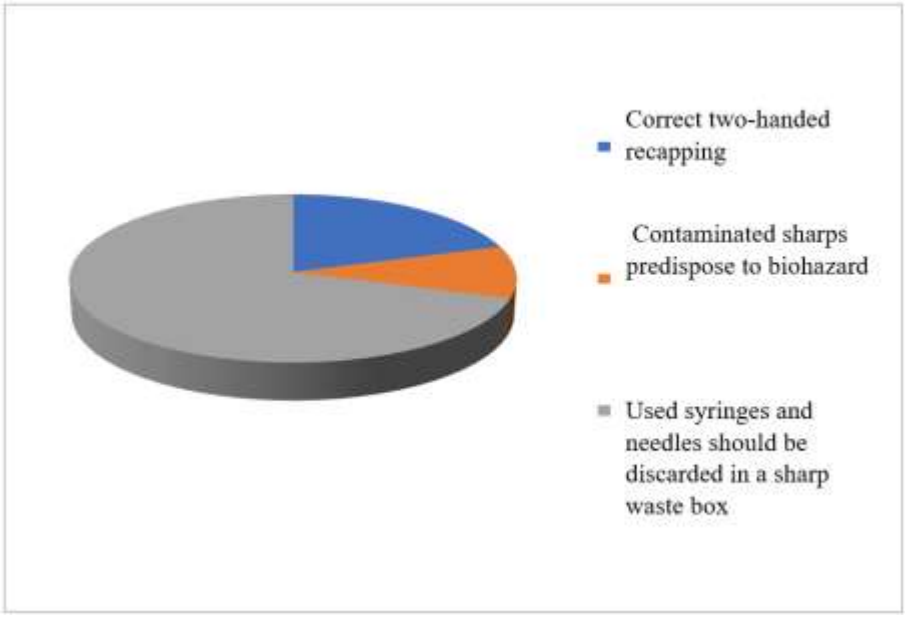
Figure 1: A pie chart showing whether respondents have ever heard of needle stick injuries among health workers



N= 30 Source: Primary data 2024)

From Figure 1, the majority, 28 (93.3%), had heard about needle stick injuries among health workers, and only 2 (6.7%) had never heard about needle stick injuries among health workers.

Figure 2: Distribution of respondents according to information known about the prevention of needle stick injuries. n=30



N= 30 Source: Primary data 2024)

From Figure 2, 21 (70%) respondents knew that used syringes and needles should be discarded in a sharp waste box, 6 (20%) respondents knew correct two-handed recapping, and 3(10%) knew contaminated sharps predisposed to biohazards.

Practices towards prevention of needle stick injuries among nurses and medical officers.

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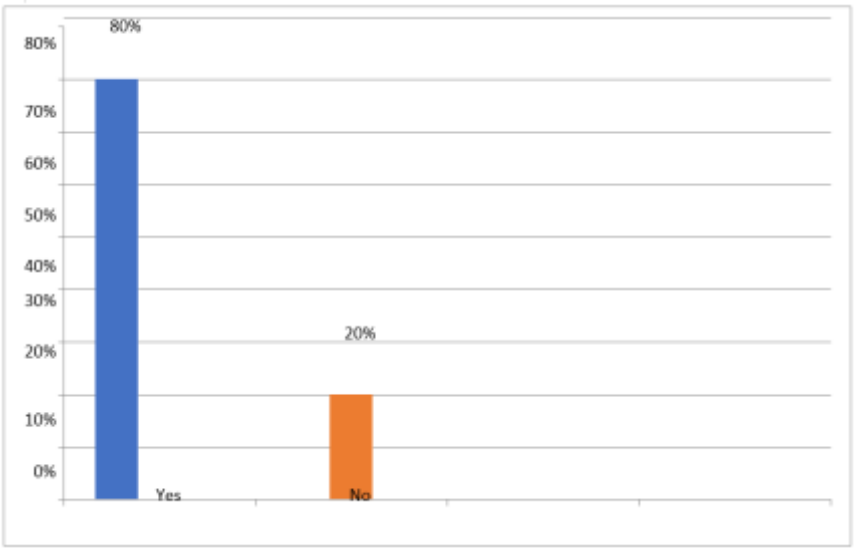
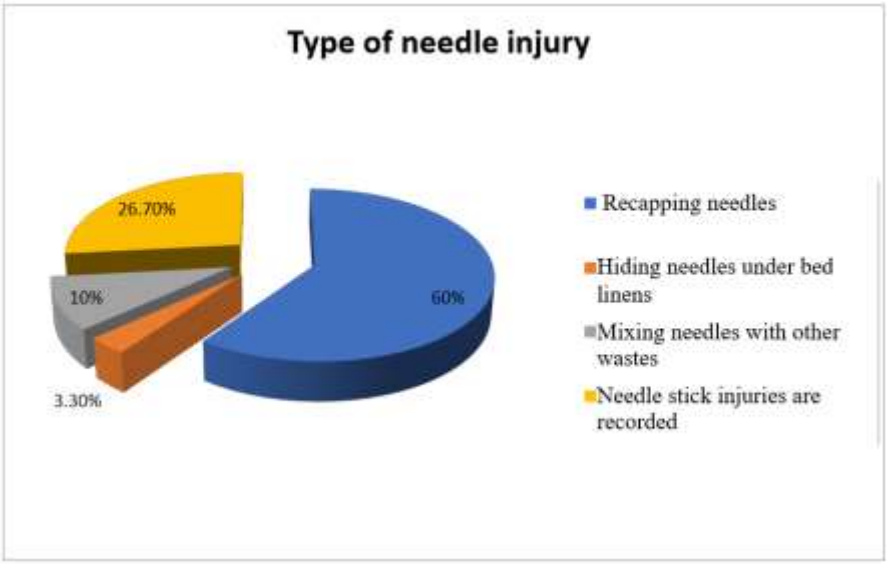
Figure 3: A bar graph showing whether respondents practice preventive measures for needle stick injuries. n=30



N= 30 Source: Primary data 2024)

From Figure 3, 24 (80%) respondents practiced preventive measures for needle stick injuries, while 6 (20%) respondents didn't.

Figure 4: Distribution of respondents according to the type of needle stick injury preventive measures they practiced n=30



N= 30 Source: Primary data 2024)

From Figure 4, 18 (60%) responded about a few disposal items like lack of safety boxes when asked why they did not practice preventive measures against needle stick injury, 7 (23.3%) of the respondents said poor organization in the areas of work, 2 (6.7%) said lack of training and the 3 (10%) responded other reason.

DISCUSSION

Socio-demographic characteristics of the respondents

Among the respondents 17(56.7%) were female and 13(43.3%) were male. Results showed that females

predominated among healthcare workers with needle-stick injuries. The female predominance in our study could be explained by the fact that the vast majority of nursing staff in the hospital are female. These findings are similar to the study done in Ethiopia, where nurses were found to be the major occupational group (Gessessew & Kashsu, 2009). The high incidence of needle stick injuries among nurses could be attributed to the fact that they are regularly involved in patient care and management, which usually requires the use of needles.

Healthcare workers of the age group 26 to 35 years in the study had the highest rate of injuries. The high rate of needle-stick injuries among healthcare workers in this age group years was possibly due to limited professional experience and the fact that young healthcare workers tended to be lax in their work and were more likely to ignore guidelines put in place to reduce incidents of needle stick injuries.

The lower incidence of needle stick injuries in health workers who had attained a higher education could be a result of longer exposure to safe practices achieved from many years of education. It was thus likely that people who reported achieving bachelor's and master's education were taken to easily access medical services and were thus not prone to needle stick injuries.

Knowledge towards prevention of needle stick injuries among nurses and medical officers

On the question of whether respondents had ever heard of needle stick injuries, the majority, 28 (93.3%), had heard about needle stick injuries among health workers. This was because the majority of the respondents had attained medical education and had enough experience in handling highly infectious wastes. From the findings, the majority of 25 (83.3%) of the respondents knew diseases transmitted through dirty needles and sharp instruments like HIV, Hepatitis B, Hepatitis C, and Tetanus as the consequences faced by needle stick injuries. The response rate of the survey was high. On average, 97.2% of healthcare workers were aware that HBV, HCV, and HIV could be transmitted through needle stick injuries. This was higher than the study done in India only.

50.2% of HCWs gave correct answers regarding disease transmission through needle sticks and sharp injury, and 95.5 % of the participants were aware of the Universal Precaution principles, this was consistent with the study conducted in India five years ago by Shah et al. (2021).

Practices towards prevention of needle stick injuries among nurses and medical officers.

From the above findings, 18 (60%) practiced recapping needles as the type of needle stick injury preventive measure, and at least 1 (3.3%) recorded needle stick injuries. This was due to inadequate medical supplies, especially safety boxes for sharps disposal, lack of appropriate waste disposal training, and poor organization in the areas of work. This high rate could be due to a lack of knowledge and negligence of the healthcare workers to the occupational Safety standard, which says recapping of needles has been strictly prohibited.

From the above findings, 17 (56.7%) of the respondents wore protective gear like gloves as a practice to prevent hazards related to needle stick injuries, and at least 13 (43.3%) washed hands with soap. There was a low rate of reporting of needle-stick injuries in this study, 26.7%, which was consistent with previous reports (Wilburn & Eijkemans, 2004). Unreported needle-stick injuries were a serious problem and prevented injured healthcare workers from receiving PEP against HIV. According to some studies, 40%-75% of (Wilburn & Eijkemans, 2004) all needle-stick injuries and splash exposures were unreported. The low rate of reporting in this study was attributed to a lack of knowledge of appropriate procedures after injury and a perceived low risk of transmission. Our hospital needed to develop occupational and safety departments and standard processes for reporting needle-stick injuries as well as continuous surveillance.

Conclusion

This survey revealed that the knowledge of healthcare workers about the risks associated with needle-stick injuries and the use of preventive measures was adequate. However, they are still at risk of needle-stick and other sharps injuries, which result from the recapping of used needles and medical manipulation.

Recommendation

Raising awareness among healthcare workers, continuous training, and also improving reporting systems will ensure more protection and early use of post-exposure prophylaxis.

Acknowledgment

I would like to thank the school administration, my supervisor, the in charge of Wakiso Health Center IV, and the entire staff for participating in the research.

I would also like to thank the administration of Mild May Uganda School of Nursing and Midwifery for the service and support rendered to me as a student and for the tireless effort and guidance rendered to me during the research period.

My family members for the advice offered during the research period. May the Almighty God reward your input.

List of abbreviations

CDC:	Centers for Disease Control and Prevention
HBV:	Hepatitis B Virus
HCW:	Health Care Workers
HIV:	Human immunodeficiency virus
MOH:	Ministry of Health

NSI: Needle Stick injuries
UNICEF: United Nations Children's fund
UNMEB: Uganda Nurses and Midwives Examinations Board
WHO: World Health Organization

Source of funding
The study was not funded

Conflict of interest
No conflict of interest was declared

Author contributions
MP designed the study, conducted data collection, and cleaned and analyzed data. NH supervised all stages of the research.

Data availability
Data available upon request

Author Biography
MUSANA PATRICIA, a student at Mildmay Uganda School of Nursing and Midwifery
NANSEREKO HASIFA a tutor at Mildmay Uganda School of Nursing and Midwifery

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