Needle-stick Incidents among Nurses: Knowledge, attitude, and practices in the workplace

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Abstract

This cross-sectional study assessed the knowledge, attitudes, and practices of nurses regarding needle-stick injuries (NSIs) in a public hospital in Kuala Lumpur, Malaysia. The majority of nurses exhibited good awareness of NSIs and related infections. Concerns about NSIs and sharps disposal containers were common among nurses. Most nurses practiced safe handling and disposal of needles but had room for improvement in consistent glove usage and adherence to post-exposure prophylaxis. Targeted interventions and educational programs are needed to enhance knowledge, attitudes, and practices, ensuring better workplace safety for healthcare workers and reducing the risk of blood-borne pathogen transmission.

Keywords: Knowledge, attitude and practices: nurses; needle-stick injury

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1.0 Introduction

Needle-stick injuries (NSIs) pose a significant occupational hazard to healthcare workers, particularly nurses, as they can result in the accidental puncture of the skin by needles and potential exposure to contaminated blood and body fluids, thereby increasing the risk of blood-borne pathogen transmission (Ibekwe & Adam, 2014; Prevention, 2011). Nurses, due to their close proximity to infected patients and frequent exposure to contaminated body fluids, are at a higher risk of NSIs compared to other healthcare workers (Memish et al., 2015; Yunihastuti et al., 2020). Previous studies have highlighted that nurses who possess better knowledge, attitudes, and practices regarding NSIs can contribute to minimizing the occurrence of such incidents (Madhavan et al., 2019). However, despite nurses' generally high levels of knowledge, NSI cases continue to persist at concerning levels, necessitating an evaluation of their knowledge, attitudes, and practices within the workplace (Bhargava et al., 2013; Dafaalla, 2016).

The objective of this study is to examine the levels of knowledge, attitudes, and practices of nurses concerning NSIs in the workplace through a cross-sectional study. By conducting this research, we aim to gain a comprehensive understanding of the current state of nurses' awareness and behaviours regarding NSIs. Specifically, we seek to assess their knowledge regarding the prevention and management of NSIs, explore their attitudes towards NSI prevention measures, and evaluate their adherence to safe practices in handling needles and sharps.

Through the findings of this study, we aim to identify potential gaps in knowledge, highlight areas for improvement in attitudes, and identify specific practices that require attention and reinforcement. This research will provide valuable insights into the current situation and help inform the development of targeted interventions and educational programs aimed at reducing the incidence of NSIs among nurses. Ultimately, by enhancing nurses' knowledge, promoting positive attitudes, and reinforcing safe practices, we strive to improve workplace safety, protect the well-being of healthcare workers, and mitigate the risk of blood-borne pathogen transmission through NSIs.

2.0 Literature Review

Needle-stick injuries (NSIs) are a significant concern for healthcare workers worldwide, with nurses facing a higher risk of such incidents (Jahangiri et al., 2016). Understanding the factors that contribute to NSIs, including nurses' knowledge, attitudes, and practices, is crucial in preventing these incidents.

Knowledge plays a critical role in preventing NSIs among nurses (Ghulam Gilanie, 2022). Nurses acquire knowledge about NSI prevention during their education and regularly apply this knowledge in their routine work practices (Hayati & Zainuddin, 2020; Ishak et al., 2019). Knowledge about NSIs is vital for nurses as it enables them to understand the risks associated with these injuries and take appropriate preventive measures. Researchers have found that nurses with higher levels of knowledge regarding NSIs have a reduced incidence of such injuries in the workplace (Hamzah & Mahmood,

2017). Adequate knowledge empowers nurses to adopt preventive strategies, such as using personal protective equipment, safe handling of sharps, and proper disposal of contaminated needles, reducing the risk of NSIs (Rampal et al., 2010).

However, it is important to note that knowledge alone may not be sufficient in preventing NSIs, as demonstrated by the findings of Syakirah et al., (2018), who reported that student nurses with superior knowledge of NSIs experienced more incidents. Having a positive attitude towards infection control measures and a strong commitment to patient and healthcare worker safety are essential. Nurses who exhibit a positive attitude are more likely to engage in behaviours such as proper wound washing, incident reporting, and adherence to prophylactic medication therapy (Khraisat et al., 2015; Rampal et al., 2010). Attitudes shape nurses' perception of risks and influence their motivation to adopt safe practices consistently.

Nurses generally exhibit a positive attitude towards NSI prevention and engage in practices such as incident reporting, wound washing, and prophylactic drug therapy (Khraisat et al., 2015; Madhavan et al., 2019). However, Bibi, (2021) emphasized the importance of aligning knowledge with practice, as nurses with little understanding of NSIs tend to have poor preventive practices. Therefore, assessing nurses' practices in preventing NSIs is crucial to identify areas that require improvement (Bibi, 2021).

In addition to knowledge and attitude, the implementation of safe practices is essential in preventing NSIs among nurses. Nurses who have a good understanding of NSI prevention measures and positive attitudes are more likely to implement safe practices consistently (Bibi, 2021). Adhering to universal precautions, such as wearing gloves during procedures, promptly discarding used needles, and avoiding recapping, are examples of safe practices that can mitigate the risk of NSIs (Rampal et al., 2010). Nurses who consistently practice these precautions contribute to a safer working environment for themselves and their colleagues.

Research has shown that nurses' KAP levels significantly impact the occurrence of NSIs. Nurses with higher levels of knowledge, positive attitudes, and good practices have lower rates of NSIs compared to those with lower levels (Madhavan et al., 2019). However, it is important to note that even when nurses possess a high level of KAP, the frequency of NSIs can still remain high, emphasizing the need for ongoing education, training, and reinforcement of safe practices (Dafaalla, 2016). Thus, the findings of this study will contribute to enhancing nurses' knowledge and practices related to NSI prevention, ultimately promoting a safer work environment and reducing the risk of NSIs (Berhan et al., 2021; Fadhli et al., 2018; Ishak et al., 2019; Jahangiri et al., 2016; Yunihastuti et al., 2020).

3.0 Methodology

3.1 Design and Sample

From May to August 2022, a quantitative cross-sectional study was conducted among nurses in a public hospital in Kuala Lumpur, Malaysia. The target population consisted of

nurses working in the medical ward. Convenience sampling was utilized to select participants who had more than three months of working experience and were willing to participate as respondents. Nurses in top management positions and those working during office hours were excluded from the study. The sample size was determined using Raosoft Inc.'s sample size calculator, estimating a minimum representative sample of 208 nurses, with a 5% error margin, a 95% confidence level, and a 50% response distribution, based on a total population of 450 nurses.

3.2 Research Tool, Data Collection, and Data Analysis

A self-administered questionnaire on Needle-Stick Injuries (NSI) was used for data collection. The questionnaire was based on Dafaalla, (2016) KAP NSI questionnaire, modified to include questions on nurses' NSI practices according to government hospital policies, NSI guidelines, and previous literature (Alsabaani et al., 2022; Bazie, 2020; Dafaalla, 2016). The reliability of the questionnaire was assessed using Cronbach's alpha, yielding values of 0.802 for KAP and 0.813 for Practices. Bloom's cut-off approach categorized nurses' KAP levels as good (80% or higher), moderate (60%–79%), or low (below 60%) (Chand et al., 2022). Content validation was performed by three experts in occupational health. Data analysis was conducted using the Statistical Package for Social Science (SPSS), version 27. Descriptive statistics were employed to analyse socio-demographic data and KAP NSI.

3.3 Ethical Considerations

Ethical approvals were obtained from the institutional ethics committee (500-FSK-PT.23/4), the Medical Research and Ethics Committee (MREC) – NMRR ID-22-00827-URK (IIR), and the Hospital Directors. Informed consent was obtained from all participants prior to their involvement in the study.

4.0 Results

4.1 Socio-demographic

Table 1 provides an overview of the socio-demographic characteristics of the 208 study participants. The majority of participants were female (82.7%) and below the age of 30 (66.3%). About half of the nurses reported having more than five years of work experience (50.5%). A significant proportion held a diploma (92.3%) and had completed hepatitis B vaccination (96.6%). Nearly all participants were familiar with hospital policies/guidelines (98.1%) and obtained their knowledge about needle-stick injuries (NSI) from the hospital (54.3%). Many had attended NSI-related courses (63.9%) and consistently wore gloves when handling needles. The median needle usage per week was 50.00 (IQR = 76). Lastly, 5.3% (n=11) of participants experienced a needle-stick injury in the previous year.

Table 1: Socio-demographic of the participants (n=208)

Variables	n (%)
Age	
Below 30years	138 (66.3)
Above 30years	70 (33.7)
Gender	
Male	36 (17.3)
Female	172 (82.7)
Experiences	
Below five years	103 (49.5)
Above five years	105 (50.5)
Education level	
Diploma	192 (92.3)
Post-basic	16 (7.7)
Hepatitis B vaccination status	
Not completely/Not vaccination	7 (3.4)
Fully vaccinated	201 (96.6)
Know Policy Hospital/Guideline NSI	
No	4 (1.9)
Yes	204 (98.1)
Primary sources of information NSI	
College/university	22 (10.6)
Hospital	113 (54.3)
Mass media/electronic media	2 (1.0)
CME/CNE/Course	71 (34.1)
Attend courses related to Guideline and Policy Hospital	
No	75 (36.1)
Yes	133 (63.9)
Always wear gloves when handling needles at workplaces	
Rarely	3 (1.4)
Sometimes	22 (10.6)
Most of the time	45 (21.6)
Always	138 (66.4)
Use needles per week, min-max 7-140	**50.00 (76)
Frequency of contaminated NSI per year	
Never	197 (94.7)
One and more	11 (5.3)

Note: **Median (IQR)

4.2 Practice when exposed to NSI

Table 2 shows the practices of 11 nurses (13.3%) who experienced needle-stick injuries (NSIs) with contaminated needles. Most nurses followed hospital policies, such as informing their supervisor (n=11, 100%), adhering to guidelines (n=11, 100%), and receiving post-exposure prophylaxis (PEP) within 72 hours (n=3, 100%). However, hand hygiene practices varied, with some nurses uncertain about using water alone (54.55%) or water and soap (45.45%). Negligence (n=10, 90.91%) and instrument usage (n=5, 45.46%)

contributed to NSIs, and only 54.55% reported using gloves (n=6). These findings highlight areas for improvement in consistent adherence to proper practices following NSIs.

Table 2: Practice when exposed to NSI (n=11)

Variables	n (%)
Where was it	
Ward	8 (72.73)
Outside from hospital	3 (27.27)
Immediate action was	
Washed your hand with soap and water	5 (45.45)
Washed your hand with water only	6 (54.55)
Report supervisor	
No	-
Yes	11 (100)
Follow policy	
No	-
Yes	11 (100)
NSI caused by	
Myself	10 (90.91)
From patient	1 (9.09)
The procedure was	
Blood sampling	1 (9.09)
Giving the injection	10 (90.91)
The NSI happened	
During usage	5 (45.46)
During recapping	3 (27.27)
During disposal	3 (27.27)
Wear gloves	
No	5 (45.45)
Yes	6 (54.55)
Had NSI from HIV positive	
No	8 (72.73)
Yes	3 (27.27)
Receive PEP after NSI from HIV positive	
Received for 28 days	3 (100)
Received for less than 28 days	-
Receive PEP after NSI from HIV positive	
Within the first 72 hours	3 (100)
After the first 72 hours	-

Table 2: continue…

…continue

4.3 Knowledge towards NSI

Table 3 indicate that the majority of nurses exhibited a good level of awareness regarding NSI and related infections. A significant proportion (53.8%) of respondents were familiar with Post-Exposure Prophylaxis (PEP), a preventive treatment for potential blood-borne pathogen exposure. While 33.7% had some knowledge of PEP, 12.5% were unaware of it. Nurses demonstrated accurate understanding of infection transmission, with high recognition rates for hepatitis B virus (96.2%), hepatitis C virus (89.9%), and HIV/AIDS

(93.3%) as blood-transmitted pathogens. However, there were variations in immediate actions following needle-stick incidents, as only 53.8% mentioned washing hands with soap and water. Additionally, 68.8% recognized the need for direct viral testing with HCV RNA PCR at six weeks, and 72.1% acknowledged the importance of HCV antibody testing at 4-6 months.

Table 3: Knowledge among nurses toward NSI (n=208)

No	Question	N (%)		
		1	2	3
1	Heard about the term PEP	26 (12.5)	70 (33.7)	112 (53.8)
2	Is there an occupational health service in the hospital.	6 (2.9)	11 (5.3)	191 (91.8)
3	Hepatitis B virus infection can be transmitted by blood	1 (0.5)	7 (3.4)	200 (96.2)
4	Hepatitis C virus infection can be transmitted by blood	10 (4.8)	11 (5.3)	187 (89.9)
5	HIV\AIDS infection can be transmitted by blood?	6 (2.9)	8 (3.8)	194 (93.3)
5	HIV\AIDS infection can be transmitted by blood?	6 (2.9)	8 (3.8)	194 (93.3)
6	Immediate action for needle-stick: Wash with soap and water?	68 (32.7)	28 (13.5)	112 (53.8)
7	Immediate action for needle-stick : Wash with water?	26 (12.5)	36 (17.3)	146 (70.2)
8	Immediate action for needle-stick : Wash with antiseptic?	111 (53.4)	37 (12.8)	60 (28.8)
9	HCV needle-stick : Direct viral testing at six weeks	23 (11.1)	42 (20.2)	143 (68.8)
10	HCV needle-stick: HCV antibody testing at 4-6 months	21 (10.1)	37 (17.8)	150 (72.1)

Notes: 1=No, 2=I don't know, and 3=Yes

4.4 Attitude toward NSI

Table 4 reveals nurses' attitudes towards needle-stick injuries. The majority of respondents expressed concerns about experiencing such injuries, with 66.8% reporting high levels of worry, 26.4% indicating moderate levels of concern, and only 6.3% reporting low levels of concern. Sharps disposal containers were a significant concern, with 49.5% of nurses voicing apprehensions about the risk of injuries due to infrequent container changes. Additionally, 39.9% of nurses agreed that patient care takes precedence over healthcare worker safety, while 21.6% disagreed. Regarding reporting practices, 65.4% believed that all sharps' injuries should be reported immediately, while 32.2% had a neutral stance and 2.4% did not consider reporting necessary.

Table 4: Attitude among nurses toward NSI (n=208)

No	Question	1	2	3	4	5
1	I am worried about having a needle stick injury	-	1 (0.5)	13 (6.3)	55 (26.4)	139 (66.8)
2	Because sharps disposal containers are not changed often enough where I work, I am concerned about getting a sharps injury	15 (7.2)	26 (12.5)	22 (10.6)	42 (20.2)	103 (49.5)
3	Patient care is more important than the safety of healthcare workers.	83 (39.9)	46 (22.1)	27 (13.0)	7 (34.4)	45 (21.6)

4	All sharps' injuries at work should be reported immediately.	-	-	5 (2.4)	67 (32.2)	136 (65.4)
5	Is needle stick injury preventable?	-	2 (1.0)	4 (1.9)	34 (16.3)	168 (80.8)

Notes:1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and, and 5 = Strongly agree

4.5 Practice when exposed to NSI

Table 5 illustrates nurses' practices regarding NSIs. The majority demonstrate good practices, with 86.0% (n=179) handling sharp objects cautiously and 83.2% (n=173) using sharp bins during injections. Reporting NSI cases (n=155, 74.5%) and prompt disposal of contaminated needles (n=184, 88.5%) are common practices. Over half consistently wear gloves (n=111, 53.4%), while a small percentage rarely or never use them (n=7, 3.4%). Post-exposure prophylaxis after an NSI from an HIV+ patient is received by 42.3% (n=88). Emphasizing higher adherence to this treatment is important.

Table 5: Practices among Nurses toward NSI (n=208)

Question	N (%)				
	1	2	3	4	5
Do you handle sharp things with caution?	1 (0.5)	1 (0.5)	2 (1.0)	25 (12.0)	179 (86.0)
Do you use gloves when dealing with needles?	5 (2.4)	2 (1.0)	39 (18.7)	51 (24.5)	111 (53.4)
Do you use sharp bin for injection procedure such phlebotomy procedure?	-	3 (1.4)	6 (2.9)	26 (12.5)	173 (83.2)
Do you discarded the needle contaminated immediately after use?	-	-	7 (3.3)	17 (8.2)	184 (88.5)
Do you report NSI immediately to your supervisor?	7 (3.3)	1 (0.5)	12 (5.8)	33 (15.9)	155 (74.5)
Do you receive post exposure prophylaxis after NSI from HIV+ patient?	35 (16.8)	9 (4.4)	41 (19.7)	35 (16.8)	88 (42.3)

Notes:1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Most of the times and 5 = Always

5.0 Discussion

5.1 Nurses' NSI Experiences

This study involved 11 nurses who experienced NSIs, primarily through injections (n=10, 90.91%). Most incidents occurred in the hospital (n=8, 72.73%), contrasting with other studies where blood-taking procedures were the main cause (Sharma et al., 2018; A et al., 2014; Azman et al., 2020). NSI rates were lower in this study (5.3%) compared to nurses in Dessie town, Northeast Ethiopia (34.5%) (Kebede & Gerensea, 2018), in Amman, Jordan (36.7%) (Saadeh et al., 2020) and Jordan (26.2%) (Suliman et al., 2017).

In terms of adherence to hospital policy, all affected nurses in this study diligently reported NSI incidents to their supervisors (n=11, 100%). Consequently, they were not at risk of blood-borne pathogens (BBPs), including HIV (n=3, 27.27%), and received timely

prophylaxis medication for a duration of 28 days (n=3, 100%) within the recommended timeframe of 72 hours (n=3, 100%). This study's findings contrast with those of Dafaalla, (2016), who reported that only 34% of NSI incidents were reported to supervisors, thereby increasing the risk of BBP transmission, particularly HIV, as 82.4% of affected individuals did not receive antiretroviral and 33.3% received treatment after the recommended 72-hour window.

However, concerning hand hygiene practices, over half of the respondents did not comply with the Ministry of Health Malaysia's guidelines (Guideline on Occupational Exposure, 2019). Specifically, 54.55% of nurses merely washed their hands with water, while the remaining 45.55% correctly washed their hands with soap. This disparity may stem from respondents adhering to hospital policy, which instructed them to wash their hands with water alone. Consequently, there is confusion among respondents regarding whether they should use soap or water for handwashing.

Moving forward, there is a pressing need to enhance NSI prevention practices, as only 54.55% of nurses reported using gloves, 90.91% experienced NSIs due to negligence, and 27.27% continued to recap needles. Needle recapping, negligent needle use, and lack of glove usage are significant contributing factors to occupational accidents, but targeted interventions can effectively reduce the likelihood of future NSIs (Occupational Exposure Guidelines, 2019). For instance, recapping needles has been identified as a significant contributor to NSI incidents (Bazie, 2020; Sharma et al., 2018). Moreover, failure to wear gloves increases the risk of contracting BBPs, particularly Hepatitis B, which can infect 30% of its hosts and remain viable in dried blood for up to seven days (Bezerra et al., 2022).

5.2 Nurse' knowledge toward NSIs

The study findings revealed that the majority of nurses in the medical ward had a high level of knowledge concerning NSIs and their prevention. Only a small percentage of nurses (16.35%) were identified as needing improvement in their knowledge, indicating that the overall knowledge level among the nursing population was quite good. This suggests that nurses in the study had a solid understanding of NSI prevention (Bhargava et al., 2013).

In terms of awareness about Post-Exposure Prophylaxis (PEP), 53.8% of nurses reported having heard about it, indicating a moderate level of knowledge. This finding aligns with a study by Amare et al. (2018), which also reported a moderate level of knowledge among healthcare workers regarding PEP. It suggests that while there is some awareness of PEP, there is room for improvement in terms of promoting knowledge about this important preventive measure.

The study also found that the majority of nurses correctly identified the transmission routes of blood-borne infections. Specifically, they recognized that hepatitis B virus (96.1%), hepatitis C virus (89.9%), and HIV/AIDS (93.3%) can be transmitted through blood. These findings are consistent with previous research conducted by amare et al., (2018) and Dafaalla, (2016), which demonstrated high levels of knowledge among healthcare workers regarding the transmission routes of these infections. It indicates that

nurses in the study had a strong understanding of the risks associated with blood-borne infections.

However, the study revealed some deviations from recommended guidelines in terms of immediate actions after a NSI incident. While 53.8% of nurses mentioned washing their hands with soap and water, a substantial proportion opted for water alone (70.2%) or an antiseptic solution (28.8%). The findings of this study revealed that the prevalence of handwashing with soap was lower in comparison to the study conducted by Madhavan et al., (2019) in Kerala, India, where the reported rate was 55.6%. Similarly, another study by Alsabaani et al., (2022) in Abha City, Saudi Arabia, reported a higher prevalence of handwashing with soap at 76.9%. This highlights the need to address misconceptions regarding hand hygiene practices after needle-stick incidents and emphasize the importance of following the recommended guidelines, which advocate for the use of soap and water or an antiseptic solution (Guideline on Occupational Exposure, 2019).

In terms of knowledge about testing procedures for HCV infections following needle-stick injuries, a significant percentage of nurses recognized the need for direct viral testing with HCV RNA PCR viral load at six weeks (68.8%) and HCV antibody testing at 4-6 months (72.1%). This demonstrates a reasonable level of knowledge among nurses regarding the recommended testing procedures for HCV infections (amare et al., 2018). The findings of this study are more favourable compared to the findings of a study conducted by Alsabaani et al., (2022) on 786 healthcare workers in Abha City, Saudi Arabia, which found that only 58.5% of the participants knew the timing of HCV antibody testing.

5.3 Nurse Attitudes toward NSIs

One significant observation is that a considerable proportion of nurses expressed concerns about experiencing NSIs, as indicated by the high percentage of participants agreeing or strongly agreeing with the statement "I am worried about having an NSI. This finding is consistent with previous studies by (Hamzah & Mahmood, 2017), where healthcare workers, including nurses, also reported a positive attitude towards NSI incidents. The similarity in findings suggests a common awareness among healthcare professionals regarding the potential risks and apprehensions associated with NSIs (Abuduxike et al., 2021).

Additionally, the attitudes of nurses towards sharps disposal practices revealed a noteworthy insight. A substantial number of nurses reported concerns about the frequency of changing sharps disposal containers, with a significant percentage agreeing or strongly agreeing with the statement "Because sharps disposal containers are not changed often enough where I work, I am concerned about getting a sharps injury". This finding highlights a potential gap in sharps disposal practices within healthcare facilities (Bazie, 2020) and aligns with the results of a previous study by Hayati & Zainuddin, (2020), which emphasized the importance of proper training and adherence to universal precautions in promoting a positive attitude and high level of practice among nurses.

Moreover, the attitudes of nurses towards patient care and the safety of healthcare workers were explored. While a considerable percentage of nurses disagreed or strongly

disagreed with the statement "Patient care is more important than the safety of HCWs," a smaller percentage agreed or strongly agreed. This finding suggests a variation in attitudes among nurses regarding the prioritization of patient care and healthcare worker safety. Similar findings were reported in a study by Dafaalla, (2016) and Alsabaani et al., (2022), where a significant proportion of participants had positive attitudes towards NSI incidents but varied in their perception of the balance between patient care and healthcare worker safety .

Furthermore, the importance of reporting sharps injuries promptly was highlighted, with a substantial majority of nurses agreeing or strongly agreeing with the statement "All sharps' injuries at work should be reported immediately". This finding aligns with previous studies, such as the study by Saadeh et al., (2020) and Pervaiz et al., (2018), which emphasized the significance of nurses' positive attitudes towards universal adherence to NSI precautions and the timely reporting of incidents.

5.4 Nurse practices toward NSIs

The study findings provide insights into the practices of nurses regarding sharp object handling, glove usage, utilization of sharp bins, disposal of contaminated needles, and reporting incidents of NSIs. A majority of nurses (86.0%) consistently demonstrated caution when handling sharp objects, showing a high level of awareness and adherence to safety measures. This aligns with previous research conducted in Malaysia, which also emphasized the careful approach of nurses during injections (Wahab et al., 2019). However, it is worth noting that doctors in Malaysia have a higher incidence of NSIs due to their inadequate expertise in handling sharp instruments, despite their understanding of NSIs (Ishak et al., 2019).

Regarding glove usage during needle procedures, a significant proportion of nurses (53.4%) consistently used gloves, which is essential in preventing NSIs and reducing the risk of blood-borne pathogen exposure (*Guideline on Occupational Exposure*, 2019; Motaarefi et al., 2016). However, some nurses reported infrequent glove usage, indicating the need for improvement (Bazie, 2020; Motaarefi et al., 2016). Previous studies have stressed the importance of consistent glove usage among healthcare workers (Kebede & Gerensea, 2018), emphasizing the necessity of continuous education and awareness programs to promote adherence to proper glove usage protocols.

The study found that a majority of nurses (83.2%) used sharp bins for proper disposal of sharps during injection procedures, indicating a positive practice (Bazie, 2020; Motaarefi et al., 2016). Proper disposal of contaminated sharps is crucial in preventing accidental needle-sticks and potential exposure to blood-borne pathogens. Previous studies have highlighted the significance of using sharps containers for safe disposal, emphasizing the responsibility of healthcare facilities in providing adequate resources for proper disposal (Berhan et al., 2021).

Moreover, a high percentage of nurses (88.5%) promptly discarded contaminated needles after use, minimizing the risk of accidental NSIs and blood-borne pathogen transmission (Occupational Exposure Guidelines, 2019). This practice aligns with recommended guidelines for NSI prevention. However, it is concerning that a lower

percentage of nurses (34%) reported NSI incidents to their supervisors, potentially hindering their access to appropriate treatment and prophylaxis (Dafaalla, 2016). Effective communication channels and a supportive reporting system are necessary to ensure timely management of NSIs (Aziz, 2017).

In terms of reporting NSI incidents to supervisors, the majority of nurses (74.5%) reported always informing their supervisors. Prompt reporting allows for timely management and follow-up, including post-exposure prophylaxis if needed. However, previous studies have reported lower rates of NSI reporting among healthcare workers, emphasizing the need for interventions to enhance reporting practices and ensure comprehensive support and care for affected individuals (Dafaalla, 2016).

6.0 Conclusion and recommendation

In conclusion, this study aimed to assess the levels of knowledge, attitudes, and practices of nurses regarding NSIs in the workplace. The findings provide valuable insights into the current state of nurses' awareness and behaviours related to NSIs. The results indicate that nurses generally possess a good level of knowledge regarding NSIs and related infections such as hepatitis B, hepatitis C, and HIV/AIDS. However, there are some variations in immediate actions following needle-stick incidents, indicating a need for further education and reinforcement of best practices.

Nurses demonstrate positive attitudes toward NSI prevention, with the majority expressing concerns about experiencing NSIs and recognizing the importance of reporting incidents. However, there is room for improvement in terms of the perception that patient care takes precedence over healthcare worker safety, highlighting the need for a balanced approach that prioritizes both. In terms of practices, nurses generally adhere to safe practices such as cautious handling of sharp objects, using sharp bins during injections, and prompt disposal of contaminated needles. However, there is a need for increased consistency in wearing gloves when dealing with needles, as a small percentage of nurses reported rarely or never using gloves.

Based on these findings, it is evident that while nurses possess a good level of knowledge and exhibit positive attitudes toward NSI prevention, there are areas that require attention and improvement. Targeted interventions and educational programs should focus on reinforcing best practices, addressing variations in immediate actions following NSIs, and promoting consistent use of personal protective equipment such as gloves.

One limitation of this study is that the findings may be influenced by the specific characteristics of the sample population. Since the study focuses on a specific group of nurses from a particular setting or region, the results may not be generalizable to the broader nursing population or applicable to different healthcare settings. Questionnaires rely on self-reporting, which introduces the potential for response bias. Participants may provide socially desirable responses or overestimate their knowledge and adherence to safe practices. Additionally, the questionnaire may not capture the full complexity of nurses'

experiences and behaviours related to NSIs, as it relies on predetermined questions and response options. This limitation suggests that the findings should be interpreted with caution, and future studies could consider incorporating other methods, such as observations or interviews, to provide a more comprehensive understanding of nurses' knowledge, attitudes, and practices regarding NSIs.

Last and not least, the authors declare no conflict of interest in conducting and reporting the research. The study was conducted independently without any influence or financial support from any organization or entity that could potentially create a conflict of interest.

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Article Contribution to Related Field of Study

This article makes a noteworthy contribution to the field of study by enhancing our understanding of needle-stick injuries (NSIs) among healthcare professionals, particularly nurses. Its main focus is to provide a comprehensive analysis of nurses' knowledge, attitudes, and behaviours regarding NSIs in their work environment. Through the utilization of a cross-sectional study and examination of data gathered from a sample of nurses, the article illuminates' specific areas where nurses' awareness, perceptions, and practices related to NSIs can be improved.

Authors Declaration

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