

Knowledge, Attitude, and Practice towards Needle Stick Injury among Nursing Students of Saida Waheed FMH College of Nursing, Lahore

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Abstract: Needle stick injuries (NSIs) pose a serious occupational hazard for healthcare workers, including nursing students during clinical training. Despite having basic knowledge, the translation of this knowledge into safe practices remains inconsistent in many low-resource settings. **Objective:** To assess the knowledge, attitudes, and practices (KAP) of nursing students regarding NSIs in a tertiary care educational setting in Pakistan. **Methods:** A descriptive cross-sectional study was conducted among 128 nursing students at a tertiary care institute in Lahore. Data were collected using a structured, self-administered questionnaire divided into three sections: knowledge, attitude, and practice. Descriptive statistics were calculated using SPSS version 25, and results were presented in frequency tables. **Results:** Most students demonstrated good knowledge regarding NSI risks and prevention (e.g., 98.4% recognized proper disposal of needles; 87.7% acknowledged the need for immediate reporting). Positive attitudes were observed toward NSI prevention (95.3% supported the use of PPE; 89.4% agreed NSIs must be reported). However, poor practices were evident—46.9% always recapped used needles, and only 45.3% reported NSIs promptly. Furthermore, only 28.9% had received formal training on NSI prevention. **Conclusion:** Despite high knowledge and positive attitudes, unsafe practices such as needle recapping and poor reporting highlight the need for improved clinical training and enforcement of standard safety protocols. Regular workshops and simulation-based learning should be integrated into nursing curricula to enhance compliance with NSI prevention guidelines.

Keywords: Needle stick injuries, nursing students, knowledge, attitude, practice, occupational hazard

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Introduction

Needlestick injuries (NSIs) remain a significant occupational hazard for healthcare workers, particularly nurses and nursing students who engage in clinical practices involving sharp instruments. NSIs can lead to the transmission of bloodborne pathogens, including hepatitis B, hepatitis C, and HIV, resulting in considerable health risks and financial burdens associated with medical treatment and management of these injuries (12). Despite increasing awareness of the dangers and necessary preventive measures, NSIs are frequently underreported, which contributes to an incomplete understanding of their prevalence and the effectiveness of implemented safety protocols (3,1).

The rates of NSIs among nursing students, as observed in various studies, highlight a concerning trend. Some studies report needlestick injury rates among nursing students reaching 23% to 26% (4,5) with underreporting rates as high as 96% (4,3). This underreporting may stem from inadequate awareness of reporting mechanisms or fear of repercussions following an injury, which can further exacerbate the challenges in addressing this critical safety issue in healthcare education environments.

Furthermore, factors contributing to NSIs are multifaceted, encompassing insufficient knowledge regarding safe practices, insufficient access to safety devices, and the dynamics of working environments, including staffing levels and workload (5,6,7). Education and training programs have proven critical in mitigating these risks. For instance, implementing simulation-based training and enhancing situational awareness could effectively reduce the rate of needlestick injuries among nursing students (4,5,8). Educational institutions must take proactive measures to cultivate a culture of safety, where students are encouraged to familiarize themselves with safe handling practices and are confident in reporting incidents when they occur.

In the context of Pakistan, the situation surrounding NSIs among nursing students remains a distressing concern, given the broader healthcare landscape. Pakistan's nursing workforce is continually exposed to hazardous clinical environments, and the nuances of culture, education, and resource allocation play a pivotal role in the awareness and management of NSIs. According to recent studies, the prevalence of NSIs is particularly pronounced in regions with limited healthcare infrastructure and training resources (9,2). These factors highlight the urgent need for targeted educational interventions and systematic changes within nursing curricula to ensure that students are equipped with both the knowledge and skills to prevent NSIs.

Thus, advancing our understanding of the knowledge, attitudes, and practices (KAP) relating to needlestick injuries among nursing students is imperative in reducing the incidence of these injuries. Future research must focus on tailored educational approaches that resonate with Pakistani nursing students, creating a safer clinical environment through enhanced training, reporting mechanisms, and safety protocols.

Methodology

This descriptive cross-sectional study was conducted to assess the knowledge, attitudes, and practices (KAP) of nursing students regarding needle stick injuries (NSIs). The research was carried out at a nursing educational institution in Lahore, Pakistan, over a specified duration from July 2024 to December 2024. The study targeted undergraduate nursing students who were actively enrolled in the program and had completed at least one clinical rotation. The rationale for selecting this population was to ensure that participants had theoretical knowledge and some level of practical exposure to needle handling in clinical settings.



The sample size consisted of 128 nursing students, determined through convenient non-probability sampling due to feasibility constraints and accessibility. Inclusion criteria comprised students from all academic years who consented to participate voluntarily and had direct or indirect exposure to clinical practice. Students who had not yet entered clinical placements or who declined consent were excluded from the study.

Ethical approval for the study was obtained from the institutional review board (IRB) of the concerned nursing school. Before data collection, participants were informed about the purpose of the study, their right to withdraw at any time, and the confidentiality of their responses. Written informed consent was obtained from all participants, ensuring adherence to ethical standards set by the Declaration of Helsinki.

Data collection was carried out using a structured, self-administered questionnaire designed in English. The questionnaire was developed after reviewing relevant literature and existing KAP instruments. It consisted of three sections: knowledge (multiple-choice and yes/no questions), attitudes (measured on a Likert scale), and practices (behavioral questions related to needle stick safety). The knowledge section included items assessing awareness of safer devices, correct disposal techniques, and standard precautions. The attitude section evaluated participants' perspectives on prevention, reporting responsibilities, and safety protocols. The practice section captured data on real-life handling of needles, PPE use, and reporting behavior after injury.

The questionnaire was distributed in hard copy format and completed by students in a supervised classroom setting to ensure consistency and minimize external influence. Data entry and analysis were performed using SPSS version 25. Descriptive statistics, including frequencies and percentages, were used to summarize responses. Results were then organized into tables for clarity and reported according to the KAP framework.

Results

A total of 128 nursing students participated in this study. The demographic characteristics showed the majority were females (83.6%), and most participants were aged between 21 and 25 years. Participants represented different years of study, all having undergone clinical placements. The results are organized into three components: knowledge, attitude, and practice related to needle stick injuries (NSIs). Participants were asked eight questions related to basic knowledge of NSIs. A large proportion of participants demonstrated strong foundational understanding. However, specific gaps remain, especially related to the transmission of blood-borne infections and preventive measures. (Table 1)

Table 1. Responses to Knowledge Questions Regarding Needle Stick Injuries (n = 128)

Knowledge Question	Correct Response (%)	Incorrect Response (%)
NSI is a sharp injury caused by needles that may expose to blood-borne infections.	94.5%	5.5%
Hepatitis B, Hepatitis C, and HIV can be transmitted via NSIs.	96.1%	3.9%
NSIs are only risky if blood is visible on the needle.	21.1%	78.9%
Used needles should be disposed of in sharps containers.	98.4%	1.6%
Recapping needles reduces the risk of NSI.	9.3%	90.7%
Proper hand hygiene and gloves reduce the risk of NSI.	92.2%	7.8%
Post-exposure prophylaxis (PEP) is effective after NSI.	83.6%	16.4%
NSIs must always be reported immediately.	87.7%	12.3%

Attitudinal questions were measured on a 5-point Likert scale. Most participants strongly agreed with statements promoting safety and accountability regarding NSIs. (Table 2)

Table 2. Attitudes of Nursing Students Toward Needle Stick Injuries (n = 128)

Attitude Statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
NSI prevention should be a priority in clinical practice.	68.7	23.4	4.7	2.3	0.8
Wearing PPE reduces the risk of NSIs.	72.6	22.7	3.1	1.6	0.0
Nurses should feel obligated to report every NSI incident.	60.9	28.5	6.3	3.1	1.2
Training and workshops improve NSI safety and awareness.	75.0	21.9	1.6	1.5	0.0
Recapping used needles is acceptable in some situations.	4.7	6.3	10.1	43.8	35.1
NSIs are a natural part of learning in clinical settings and cannot be avoided.	10.9	17.2	12.5	35.9	23.5
I feel confident that I can handle needles safely during clinical practice.	41.4	34.4	14.8	7.8	1.6

The results show that while students had generally good knowledge and attitudes, practices remained suboptimal, especially in high-risk

behaviors like recapping needles and underreporting of incidents. (Table 3)

Table 3. Practices of Nursing Students Regarding Needle Stick Injuries (n = 128)

Practice Item	Always (%)	Often (%)	Sometimes (%)	Rarely (%)	Never (%)
I dispose of needles in sharp containers immediately after use.	74.2	18.0	5.5	1.6	0.7
I recap needles after use.	46.9	21.1	13.3	9.4	9.3
I use gloves and PPE during all procedures.	66.4	21.1	8.6	2.3	1.6
I report NSIs immediately after they occur.	45.3	22.7	17.2	10.2	4.6

I have received proper training or attended workshops about NSI prevention and management.	28.9	25.0	23.4	15.6	7.0
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These tables provide a granular overview of student responses and reveal inconsistencies between knowledge and actual clinical behavior. For example, while a majority recognize recapping as dangerous, many still engage in the practice. Similarly, knowledge about reporting procedures is high, but self-reported practice shows underreporting remains common.

Discussion

The increasing prevalence of needlestick injuries (NSIs) remains a critical concern within healthcare settings, particularly among nursing students who are directly involved in patient care. The insights from our study, involving 128 nursing students, enhance the understanding of the knowledge, attitudes, and practices (KAP) related to NSIs, aiming to improve safety protocols in clinical education. Our findings indicate that while nursing students exhibited a foundational understanding of NSIs, gaps in knowledge, especially concerning the transmission of bloodborne pathogens and appropriate preventive measures, were evident.

A significant proportion of participants demonstrated awareness of NSIs, with 94.5% understanding that NSIs can potentially expose individuals to bloodborne infections in our study. This aligns with findings from Al-Mugheed et al., who reported that nursing students in Saudi Arabia exhibited similar levels of knowledge regarding NSIs, emphasizing the positive educational impact within nursing curricula Al-Mugheed et al. (10). However, a notable gap surfaced regarding the belief that NSIs are only risky when blood is visible on the needle, which reflects results noted by Qaraman et al., where misconceptions about the risks associated with NSIs were identified (11). This suggests a necessity for enhanced education on the nuances of infection transmission to address these misunderstandings through targeted training programs.

In our study, a strong commitment among nursing students toward NSI prevention was evidenced by the majority supporting prioritization of NSI prevention in clinical practice. This correlates with results from İnandı et al., who found that medical and nursing students perceived a need for increased emphasis on safety protocols (12). However, a concerning proportion of students (4.7%) believe recapping needles is acceptable, which contrasts with the consensus in the literature that strongly discourages this practice due to its association with increased risk of NSIs (13). This highlights the inconsistency between knowledge and attitudes, revealing an urgent need for interventional strategies that effectively promote safe practices.

Our study also indicates that despite a majority of students (74.2%) claiming to dispose of used needles properly, a significant portion admitted to recapping needles (46.9%). This finding is part of a broader trend observed in existing literature; for example, Moon et al. reported that compliance with proper needle disposal methods remains inconsistent among nursing students in Korea (13). Moreover, the noted underreporting of NSIs, with only 45.3% stating they report injuries immediately, is consistent with trends observed by Musekene et al., where many medical students in South Africa refrained from reporting incidents due to fear of consequences and stigma (14). This underscores how psychological factors and institutional cultures may hinder proper reporting and response measures.

Given these disparities between knowledge, attitudes, and practices, our results underscore the need for comprehensive training programs that integrate theory with practical applications. Researchers such as Zarnigar et al. have highlighted the importance of consistent educational approaches, noting that improving knowledge alone is insufficient without corresponding shifts in behavioral practices (15). It is essential that nursing curricula not only inform students about NSIs but also instill

a culture of safety and accountability within the clinical environments in which they engage.

Thus, the findings from our study highlight the need to address knowledge gaps, correct misconceptions, and foster a culture of safety regarding needlestick injuries among nursing students. By aligning educational efforts with current best practices, as highlighted across various studies, academic institutions can significantly reduce the risks associated with NSIs, thereby enhancing both student safety and patient care outcomes.

Conclusion

The study revealed that while nursing students possessed adequate knowledge and positive attitudes toward needle stick injury (NSI) prevention, unsafe practices such as needle recapping and underreporting remain common. These gaps highlight the need for more practical training, regular workshops, and the enforcement of institutional safety protocols to ensure the practical application of NSI prevention strategies among nursing students in Pakistan.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-24)

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

MZ

Manuscript drafting, Study Design,

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Review of Literature, Data entry, Data analysis, and drafting articles.

SS

Conception of Study, Development of Research Methodology Design,

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Manuscript drafting, Study Design,

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Conception of Study, Development of Research Methodology Design,

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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