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PREVALENCE AND RISK FACTORS RELATED TO NEEDLE STICK INJURIES AMONG NURSING STUDENTS AT GOVERNMENT MIANGUL ABDUL HAQ JAHANZEB KIDNEY HOSPITAL MANGLOR SWAT, PAKISTAN

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Abstract

Introduction: *Needle stick injuries are the most common occupational threat to healthcare professional. Nursing students are the most vulnerable population for needle stick injuries among nurses and other healthcare workers. Objectives: This study aims to find out the prevalence of NSI among nursing students as well as to identify the risk factors related to NSI. Methodology: Cross sectional survey approach is used in this study while data was collected via convenient sampling from 102 Generic BSN students who perform their clinical duties. Results: According to our findings 68.63% (70) participants have experienced NSIs, 40 of them were injured due to hurrying. 50.00% injuries were related to syringe needles and 42.86% of them were because of recapping needles. 57.14% people did not report their injuries. Conclusion: Based on our findings, the most common object of injury in this study is syringe needle that is due to recapping used syringes while speedy work is the most common worker related cause.*

INTRODUCTION

A needle stick injury (NSI) occurs when a needle or sharp object penetrates or cuts the skin in a healthcare setting.(Alsabaani et al., 2022).

The majority of research on needle stick injuries (NSI) focuses on nurses, physicians, and other healthcare professionals, but nursing students performing clinical duties are also at high risk. (Prasuna et al., 2015).

The World Health Organization (WHO) estimates that up to 2 million health professionals globally are exposed to infectious agents annually, with NSIs playing a key role in the transmission of HIV, hepatitis C, and hepatitis.(Khraisat et al., 2026).

The main occupational risk for pathogen-related death and morbidity in the clinical setting is thought to be percutaneous exposure to bodily fluids and blood during sharp equipment and needle stick infection. Healthcare students, particularly nursing students, are extremely vulnerable to exposure to and transmission of blood-borne pathogen infections through needle sticks and sharp injuries.(Al-Mugheed et al., 2023).

Nursing students are more likely to get blood-borne infections from needlestick injuries (NSIs) during clinical training. Sharp injuries can result from medical sharp tools such as syringe needles, sutures, scalpels, puncture needles, and ampoules.(Zahra et al., 2025).

These incidents pose a potential of transmitting blood-borne diseases such as hepatitis B virus (HBV), the hepatitis C virus (HCV), as well as human immunodeficiency virus (HIV).(Memish et al., 2013).

Injection procedures, venous catheter management procedures, and the removal of various types of needle debris were the most frequent causes of injuries. The risk factors for NSIs among nursing students include capping needles, intentionally breaking needles after injection, and manually removing needles from syringes.(Wang et al., 2021).

Nurses who are not well-versed in needle stick injury prevention and who did not acquire the necessary training during their undergraduate studies have a greater risk of needle stick injuries.(Al Qadire et al., 2021).

In addition to physical dangers, NSIs can cause serious psychological effects such as stress, anxiety, and fear of infection. Nursing students with limited clinical exposure and poor awareness of post-exposure prophylaxis protocols are especially vulnerable to these effects.(Ghanei Gheshlagh et al., 2025).

Accurate burden evaluation is crucial in nursing, where complicated clinical activities and high job demands are common. Prolonged stress can hamper effective task management and decision-making. Excessive workload, supervisory responsibilities, and irregular working hours, such as rotating or night shifts, can lead to decreased vigilance, delayed awareness of important situations, and increased risk of error. Needlestick injuries are a major occupational hazard for healthcare workers, with severe physical and psychological effects.(Bidel et al., 2026).

Additionally, measuring the frequency of these injuries highlights the vital need for educational initiatives that encourage nursing staff to follow safety procedures. Conversely, insufficient knowledge and skills among nurses greatly increase the risk of needle-stick injuries.(Zarei et al., 2025).

METHODOLOGY

A descriptive cross-sectional study was performed to determine the prevalence, attitudes, and risk factors for needle stick injuries among General BS Nursing students. The study was carried out in the Government Miangul Abdul Haq Jahanzeb Kidney Hospital Manglor Swat for three months, from August to October 2026. The study methodology was chosen to provide a thorough assessment of the incidence of needle stick injuries, students' attitudes, and associated risk variables at a certain time. The study's objective sample consisted of General BS Nursing students with clinical experience who met the stated inclusion and exclusion criteria. A convenient sample strategy was employed to enroll participants. A total of 102 General BS Nursing students who met the eligibility criteria participated in the study. Participants in the study were General BS Nursing students with at least 3 months of clinical experience, who freely agreed to participate and provided written informed permission prior to participation were all included the study. Students who did not meet the clinical experience requirements, registered nurses, nursing interns, and other healthcare professionals

were all excluded from the study. Additionally, students with lower than three months of clinical experience, as well as those who refused to participate, were eliminated. The inclusion and exclusion criteria were designed to guarantee that the selected participants had relevant clinical experience and could offer accurate information about needle stick injuries and related factors. Data were gathered using a standardized questionnaire adopted from a previously published research project. Before using the questionnaire to collect data, we acquired formal permission from the original author via email. The questionnaire included sections on demographic features, the history and prevalence of needle stick injuries, attitudes toward needle stick injury prevention, and potential risk factors for needle stick injuries among nursing students. The adopted questionnaire was examined to ensure that it was appropriate and relevant to the current study's aims. Before beginning the data collection process, official consent and permission were sought from the relevant hospital administration and the Nursing Director of the Government Miangul Abdul Haq Jahanzeb Kidney Hospital Manglor Swat. Presented the goal, objectives, importance, and procedures of the study to all eligible volunteers in straightforward and understandable terms. Prior to delivering the questionnaire, each participant provided written informed consent. Participants were told that their participation was entirely voluntary. Throughout the research process, all participants' confidentiality, anonymity, and privacy were rigorously protected. Participants were not asked to provide any personal identifying information, and all data obtained was utilized solely for academic and research reasons. To reduce external influence and assure honest responses, each participant filled out the questionnaire separately in a peaceful, pleasant, and non-threatening setting. The researcher remained present to answer any questions about the questionnaire without impacting the participants' responses. The average time required to complete each quiz was about 15-20 minutes. Following data collection, all questionnaires were carefully verified for completeness and accuracy. Descriptive statistics including frequencies and percentages were calculated manually .The results were organized tabulated and presented in tables . Data cleaning procedures were carried out to detect and repair any potential problems during data entering. Because of the limited sample size and descriptive nature of the study, reliability tests such as Cronbach's alpha were not performed. Furthermore, no inferential statistical tests were used, as the study's goal was not to find statistical connections or causal relationships between variables. The data was analyzed using descriptive statistical methods. Frequencies and percentages were used to describe demographic data, needle stick injury prevalence, attitudes toward prevention methods, and risk variables among General BS Nursing students. The study results were provided in the form of tables to ensure a clear, orderly, and accurate depiction. Because the study was planned as a descriptive cross-sectional study, the analysis concentrated solely on characterizing the distribution and features of the study variables, rather than establishing cause-and-effect correlations or forecasting results. The findings offered a comprehensive picture of the prevalence, attitudes, and risk factors for needle stick injuries among General BS Nursing students.

DATA ANALYSIS AND RESULTS

Table 1.1 shows the gender distribution of 102 nursing students shows that 58.82% (60) are male, while 41.18 % (42) are female. This indicates a significantly higher proportion of male students compared to female students in the group.

Table 1 Demographic Data

Gender	Frequency (n	Percentage (%
Male	60	58.82%
Female	42	41.18%
Total	102	100%

According to the data table 2 31.37% (32) of nursing students did not sustain needle stick or sharp injuries while working is compared to 68.63% (70) who did experienced . Just 42.85% (30) of the injured reported the occurrence, while majority 57.14% (40) did not report their injuries. Furthermore, 41.18% (42) of the individuals had not undergone preventive measure training, whereas 58.82% (60) had trained.

Table 2 Prevalence of needle stick injuries

Variables	Category	Frequency (n)	Percentage (%)
NSI or sharp injuries while working ?	Yes	70	68.63
	No	32	31.37
	Total	102	100
Injuries eported	Yes	30	42.85
	No	40	57.14
	Total	70	100
Trained on Protective Measures?	Yes	60	58.82
	No	42	41.18
	Total	102	100

On the table 3 it shows that from 102 respondents 29.41% (30) people always use gloves in risky procedures, 21.57% (22) people mostly put gloves in risky procedures, 24.51% (25) people sometimes put gloves in risky procedures, 14.71% (15) people rarely put gloves in risky procedures, and 9.80% (10) persons never put gloves in risky procedures. According to the responses it can assume that there are 34.31% (35) people whoalways put on gloves in resuscitative procedures, 19.61% o (20) people mostly put on gloves in resuscitative procedures, 29.41% (30) people sometimes put on gloves in resuscitative procedures, 11.76% (12) people rarely put on gloves in resuscitative procedures, and another 4.90% (5) person never put gloves in resuscitative procedures. From the providing data there are 39.22% (40) people who always recap needle off syringe after they use it, 24.51% (25) people mostly recap needle off syringe after they use it, 19.61% (20) people sometimes recap needle off syringe after they use it, 9.80% (10) people rarely recap needle of syringe after they use it, and 6.86% (7) people never recap needle off syringe after they use it. From the collected data there are 53.92 %(55) people who always detach needle off syringe after they use it, 24.51% (25) people mostly detach needle off syringe after they use it, 9.80% (10)people sometimes detach needle off syringe after they use it 7.84% (8) people rarely detach needle of syringe after they use it, and 3.92% (4) people never detach needle off syringe after they use it. From the responses there are 39.22% (40) people who always throwcontaminated sharp needles to special container, 14.71% (15) people mostly throw contaminated sharp needles to special container, 24.51% (25) people sometimes throw contaminated sharp needles to special container9.80% (10) people rarely recap needle of syringe after they use it, and 11.76% (12) student who never throw contaminated sharp needles to special container. From the provided data there are 58.82% (60)people who always intervene to dispose sharp object properly, 14.71% (15) people mostly intervene to dispose sharp object properly, 9.80% (10) people sometimes intervene to dispose sharp object properly, 8.82% (9) people rarely intervene to dispose sharp object properly, and 7.84 % (8) people never intervene to dispose sharp object properly.

Table 3 Attitudes Regarding Sharp Safety

Questions	Always	Mostly	Sometimes	Rarely	Never
I put on gloves in risky procedures in patient care.	30	22	25	15	10
I put on gloves in resuscitative procedures.	35	20	30	12	05
I recap needle of syringes after use.	40	25	20	10	07
I detach needle off syringes after use.	55	25	10	8	04
I throw contaminated sharp needles to special container.	40	15	25	10	12
I intervene to dispose a sharp object properly if Irun into a sharp in a wrong place.	60	15	10	09	08

Table 4 shows that According to 70 respondents who answered Yes on 1st section, there are devices that involved the injuries. There are 50% (35) people choose for syringe needles, 28.57% (20) people choose suture needle, 14.29 (10) people choose IV Cannula needle, and 7.14% (5) person choose another device. Through the responses it shows that 42.86% (30) people got injured because of recapping needles, 8.57% (6) people got injured because of disposition of needles to container, 14.29% (10) people got injured because of drawing blood, 5.71% (4) people got injures while transferring the blood to test tube, 8.57% (6) person who got injured because of suturing, 12.86% (9) people got injured while drawing drug to syringe, and 7.14% (5) people who got injured while removing the needle's safety cap.

Table 4: Devices and Mechanism of Injury

Questions	Options	Responses	Percent
Devices involved in injury	Syringe needles	35	50.00%
	Suture needle	20	28.57%
	IV Cannula needle	10	14.29%
	Other	05	7.14%
	Recapping needles	30	42.86%

Mechanism of injury	Disposition of needles to container	06	8.57%
	Drawing blood	10	14.29%
	Transferring the blood to test tube	04	5.71%
	Suturing	06	8.57%
	Drawing drug to syringe	09	12.86%
	Removing the needle's safety Cap	05	7.14%

Table 5 shows that The students also got injured due to worker related causes. The data gives the result that 57.14% (40) people got injured due to hurrying, 14.29% (10) people didn't pay attention while they do injection, 8.57% (6) people had failure to use PPE, 7.14% (5) people didn't have enough sleep, and 12.86% (9) people didn't get enough training for using syringe and to inject patient. There are also injures due to work related. According to the respondent's answers, the causes can be due to inappropriate disposition of contaminated needles and sharps which chosen by 28.57% (20) people, unfavorable physical conditions which chosen by 50% (35) people, and lack of protective measures which chosen by 21.43% (15) people. Besides all of the reasons above, there are also another cause. 42.86% respondents (30) people get injured due to unexpected movements from patient, and the rest 57.14% respondents (40) people got injured due to improperly designed disposition equipment.

Table 5: Causes of Injury

Question	Options	Response	Percent
Worker related causes	Hurrying	40	57.14%
	Inattention	10	14.29%
	Failure to use PPE	06	8.57%
	Sleepiness	05	7.14%
	Lack of training	09	12.86%
Work related causes	Inappropriate disposition of contaminated needles and sharps.	20	28.57%
	Unfavorable physical conditions, (over crowdedness, noise, work load)	35	50%
	Lack of protective measures, (eg, gloves, goggles, sharps collectors)	15	21.3%

Other causes	Patient related (unexpected movements)	30	42.85%
	Improperly designed disposition equipment (sharp collectors)	40	57.14%

Discussion

Health care workers, especially student nurses that are still undergoing training and obtaining clinical practice, are at serious risk from needle stick injuries. These injuries can have detrimental effects on one's health, including the spread of infections transmitted through the blood like HIV, HBV, and HCV. They can also cause psychological discomfort in those who are impacted, which can eventually result in feelings of fear, worry, and discontent at work.(Usman et al., 2026). The increased risk of NSI among nursing students is caused by a number of organizational and individual factors. Because inexperienced students usually lack technical competency, sensitivity to situations, and confidence in securely handling sharp instruments, early stages and less clinical experience are commonly linked to higher susceptibility.(Wilandika et al., 2026) . To enhance training and stop such accidents in the future, it is essential to determine the prevalence and risk factors within this group.

Present study revealed that the gender distribution of nursing students shows that 58.82% (60) are male, while 41.18 % (42) are female while another similar study shows that Gender distribution was comparable, with 27 males (13.0%) and 180 females (87.0% (Goyal et al., 2025). Present study shows that Just 42.85% of the injured reported the occurrence of needle stick (NSI) injuries Furthermore another study shows that 14.5% reported a history of needle stick injuries (NSI) (Nur Azlina et al., 2026) . Current study shows that 61.54% nursing students did not reported their injuries while another study shows that 39·5% of needlestick injuries were not reported.(Smith & Leggat, 2005). Present finding shows that 68.63%nursing students experienced needle stick injuries (NSI) Additionally another study shows that 68.9%, experienced multiple sharp injuries.(Ndyamuhakyi et al., 2026). While another study shows that 67.42% had experienced needle-stick or sharp injuries .(Zarei et al., 2025) . Current finding shows that recap needle of syringes after use are 39.22% while another study shows that 30.7% needle recapping .(Farajalla et al., 2026) .

Curent study shows that Syringe needles is the most common Devices involved in injuries 50% people injured due to syringe needle while other study shows that The most common devices responsible for the injuries were found to be syringe needles 63.8% (Palloş et al., 2024)

Present findings shows that only 14.29% (10) people got injured because of drawing blood while other study show that the technique of withdrawing blood caused 41.9 % of needle stick injuries (NSIs) (Asmar et al., 2025) . The students also got injured due to worker related causes. The curent data gives the result that 57.14% people got injured due to hurrying while another study shows that 30.1% people got injured due to hurrying (Olayinka & Adebisi, 2026)

Curent finddings revealed that only 9.80% persons never put gloves in risky procedures. While other same study were conducted in Turkey which shows that majority 31.7% were not using gloves when injured or in risky procedure . (Irmak & Baybuga, 2011).

Conclusion

The Government Miangul Abdul Haq Jahanzeb Kidney Hospital Manglor Swat, Khyber Pakhtunkhwa, Pakistan, is the site of this study. The study's objective was to determine the frequency and risk factors of needlestick injuries among nursing students. Our results indicate that student nurses are more likely to sustain work-related injuries at the bedside. It is imperative that tudents participate in comprehensive safety education programs. Additionally, the students must to be urged to notify the aforementioned organization—

SGTH—of their injuries. In this study, syringe needles are the most frequent item of harm, recapping used syringes is the most frequent technique of damage, and s hurrying is the most frequent worker-related cause.

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