

# Knowledge Regarding Needle Stick Injury and its Prevention Among Nursing Students in a Selected Nursing College of Punjab

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**Abstract:** ***Introduction and Aim:** Needle stick injuries (NSI) are widely recognized as a prevalent occupational risk for healthcare professionals, especially for nursing students who frequently encounter needles and sharp tools during their clinical training. These injuries carry a substantial potential for spreading serious infections like Human Immunodeficiency Virus (HIV), Hepatitis B, and Hepatitis C. When proper safety measures are not in place, the likelihood of exposure increases significantly. Having sufficient knowledge on how to prevent and manage NSI is crucial for ensuring the safety of nursing students and for ensuring adherence to safe clinical practices. The objective of this research was to assess the understanding related to needle stick injuries and their prevention among nursing students at a specific nursing institution in Punjab. **Methodology:** A non-experimental descriptive quantitative research design was utilized for this study. A total of 108 nursing students were selected through a probability simple random sampling method from the State Institute of Nursing and Paramedical Sciences located in Badal, Punjab. Data was gathered using a self-created knowledge questionnaire that incorporated demographic information and 20 multiple-choice inquiries. Descriptive statistical approaches, including frequency and percentage, were applied for analyzing the data. **Results:** Findings revealed that 46.3% of the participants had a good grasp of the topic, 38% showed average comprehension, while 15.7% had limited understanding concerning needle stick injuries and their prevention. It was also observed that students with extensive clinical involvement and those who had seen needle stick injuries before scored higher on knowledge assessments. Chi-square analysis indicated no significant connection between knowledge levels and certain demographic elements, including age, course enrolled, sources of information, and clinical exposure ( $p > 0.05$ ). **Conclusion:** In summary, the research concluded that while a majority of nursing students possess moderate to good knowledge about preventing needle stick injuries, noticeable gaps persist. Consequently, ongoing educational initiatives, training sessions, and hands-on clinical practice are essential to enhance awareness and mitigate workplace hazards among nursing students.*

**Keywords:** Knowledge, Needle Stick Injury, Prevention, Nursing Students, Occupational Hazard

## 1. Introduction

A needle stick injury (NSI) is defined as an inadvertent puncture caused by a needle or sharp object that could be tainted with blood or other bodily fluids. This type of injury is one of the prevalent occupational hazards encountered by healthcare professionals globally. Nurses and nursing students face a heightened risk because they frequently engage in tasks like injections, blood collection and intravenous treatment.

The World Health Organization (WHO) reports that millions of healthcare professionals experience needle stick injuries annually, with a notable percentage of these incidents occurring among nursing students during their hands-on training. Contact with contaminated needles potentially facilitates the spread of severe blood-borne diseases, including Human Immunodeficiency Virus (HIV), Hepatitis B virus (HBV), and Hepatitis C virus (HCV). Having appropriate knowledge about safe needle handling, following established safety protocols, utilizing personal protective equipment (PPE), and disposing of sharps correctly can greatly diminish the likelihood of needle stick injuries. Furthermore, being informed about post-exposure prophylaxis (PEP) and reporting practices is crucial for alleviating complications that may arise post-exposure. Consequently, evaluating nursing students' understanding of needle stick injuries and their

prevention is crucial to fostering safe clinical habits and enhancing workplace safety.

### Need of the Study

Needle stick injuries are a significant public health issue for healthcare professionals around the world. Nursing students are especially at risk as they are in the process of developing their clinical competencies and frequently perform tasks that involve sharp devices during their educational programs.

Research conducted in India has shown that a considerable number of nursing students experience needle stick injuries during their clinical training. These incidents commonly result from inadequate sharp handling, re-capping needles, lack of proper supervision, and limited knowledge about safety protocols.

Another significant concern is the insufficient awareness surrounding post-exposure prophylaxis and the appropriate mechanisms for reporting incidents. Many cases go unreported, heightening the danger of infection and delaying vital treatment.

As nursing students are the impending workforce in nursing, it is crucial that they have a robust understanding of how to prevent and deal effectively with needle prick incidents, manage needle stick injuries. Evaluating their level of

knowledge will aid in pinpointing deficiencies and creating effective educational programs aimed at enhancing safety in clinical environments.

#### Problem Statement:

“A descriptive study to assess the knowledge regarding needle stick injury and its prevention among nursing students in a selected nursing college, Punjab.”

#### Objectives of the Study:

- 1) To assess the level of knowledge regarding needle stick injury and its prevention among nursing students.
- 2) To find out the association between knowledge regarding needle stick injury and selected demographic variables among nursing students.

## 2. Methodology

#### Research Approach and Design

A quantitative non-experimental descriptive research approach and design was used to assess the level of knowledge and its prevention among nursing students regarding needle stick injury.

#### Variables

##### Research Variable

Knowledge regarding needle stick injury and its preventions among nursing students.

##### Demographic Variables

Age, Course, clinical exposure to needle stick injury and its preventions.

##### Research setting

The study was conducted in State Institute of Nursing and Para Medical Sciences Badal, Punjab.

##### Target Population

The Target population is **Nursing students** studying in the selected nursing college of Punjab.

##### Sample, Sampling Technique and Sample Size

The sample consisted of **100 Nursing Students from the B.Sc. Nursing 2<sup>nd</sup> semester, GNM 2<sup>nd</sup> year, PB B.Sc. Nursing 1<sup>st</sup> year students**. A **probability sampling technique in which simple randomization sampling is used** to select the samples. The sample size is 100.

##### Inclusion Criteria

Students who:

- Studying in the selected nursing college of Punjab.
- Present at the time of data collection.
- Willing to participate in the study.

##### Exclusion Criteria

Students who:

- Were absent during data collection.
- Were not willing to participate.

To evaluate the understanding of needle stick injuries and their prevention among nursing students. A non-experimental

descriptive research design was utilized for this study. This approach was deemed suitable as it enables the researcher to methodically outline and interpret the existing knowledge without altering any variables. The study included a sample of 100 nursing students who were pursuing B. Sc Nursing, Post Basic B. Sc Nursing, and GNM courses. The selection of participants was carried out through a probability simple random sampling technique, Ensure that all students were given an equal chance to participate in this study, This strategy minimized selection bias and enhanced the sample's representativeness. The research took place at the State Institute of Nursing and Para Medical Sciences, located in Badal, Punjab. Prior to collecting data, formal approval was secured from relevant institutional authorities to ensure adherence to ethical standards and enable the research to be carried out smoothly. A self-constructed questionnaire was employed as the means of data collection. The questionnaire contained 20 multiple-choice questions that addressed various dimensions of needle stick injuries and prevention, including general knowledge, procedures and guidelines, health and safety issues, as well as ethical and social concerns. This tool was crafted to objectively evaluate the level of knowledge among the participants. Before the questionnaire was distributed, the study's aim was clearly communicated to the participants to promote transparency. Informed consent was secured from all students, with guarantees of confidentiality and anonymity provided. Participants were allotted 20 to 30 minutes to fill out the questionnaire in a comfortable and undistracted setting. The gathered data were methodically organized and analyzed using both descriptive and inferential statistical techniques. Descriptive statistics, such as frequency, percentage, mean, and standard deviation, were utilized to summarize the information. Inferential statistics, including the Chi-square test, were implemented to evaluate the relationship between knowledge levels and certain demographic factors and in accordance with the objectives of the study.

## 3. Results

**Table 1** depicts the frequency and percentage distribution of nursing students according to their demographic variables (N = 100). The majority of the students 51 (51.0%) belonged to the 18–20 years age group, followed by 34 (34.0%) in the 20–22 years age group, 10 (10.0%) in the 22–24 years age group, and only 5 (5.0%) were above 24 years. With regard to course, the highest proportion 47 (47.0%) were B.Sc Nursing students, followed by 38 (38.0%) from GNM and 15 (15.0%) from Post Basic B.Sc Nursing.

Regarding clinical exposure, 39 (39.0%) students had more than 6 months of experience, 33 (33.0%) had 4–6 months, and 28 (28.0%) had less than 3 months of exposure. In terms of previous observation of needle stick injury, the majority 65 (65.0%) had witnessed a needle stick injury, while 35 (35.0%) had not.

**Table 1:** Frequency and percentage distribution of Nursing Students as per their demographic variables. (N = 100)

S.no.	Demographic variables	Frequency (f)	Percentage (%)
1	<b>Age (Years)</b>		
	18–20	51	51.0
	20–22	34	34.0
	22–24	10	10.0
	Above 24	5	5.0
2	<b>Course</b>		
	GNM	38	38.0
	B.Sc Nursing	47	47.0
	Post Basic B.Sc Nursing	15	15.0
3	<b>Clinical Exposure</b>		
	< 3 months	28	28.0
	4–6 months	33	33.0
	> 6 months	39	39.0
4	<b>Seen Needle Stick Injury</b>		
	Yes	65	65.0
	No	35	35.0

**Table 2:** Frequency and percentage distribution of nursing students depending upon their level of knowledge regarding needle stick injury and its prevention

Level of knowledge	Frequency	(%)
Good (16–20)	46	46.0
Average (11–15)	38	38.0
Poor (0–10)	16	16.0

**Table 2** shows the frequency and percentage distribution of nursing students according to their level of knowledge regarding needle stick injury and its prevention (N = 100). The findings reveal that the majority of the students 46 (46.0%) had good knowledge. About 38 (38.0%) students had average knowledge, while 16 (16.0%) students had poor knowledge.

This indicates that most nursing students possessed good to average knowledge, while a smaller proportion demonstrated poor knowledge regarding needle stick injury and its prevention.

**Table 3:** Knowledge scores- descriptive statistics

Parameter	Value
Sample size (N)	100
Minimum score	3
Maximum score	20
Mean score ( $\pm$ SD)	<b>13.91 <math>\pm</math> 4.16</b>

**Table** illustrates that the average knowledge score among participants was 13.91 out of a highest possible score of 20. This suggests that, in general, the survey takers had a moderate understanding of needle stick injuries and their prevention. The standard deviation of  $\pm 4.16$  indicates a moderate dispersion of knowledge scores within the student group.

The research discusses the correlation between the levels of knowledge about needle stick injuries and prevention and various demographic characteristics among nursing students. The findings reveal that there was no significant statistical correlation between knowledge levels and any of the demographic variables assessed. The relationship between age groups and knowledge was deemed not significant ( $\chi^2 = 5.21$ ,  $df = 6$ ,  $p = 0.517$ ). Similarly, the association between the field of study and knowledge levels was also not statistically

significant ( $\chi^2 = 4.89$ ,  $df = 4$ ,  $p = 0.298$ ). Furthermore, the relationship between clinical experience and knowledge levels did not exhibit significance statistically ( $\chi^2 = 6.12$ ,  $df = 4$ ,  $p = 0.190$ ).

Moreover, the connection between prior observations of needle stick injuries and knowledge levels was found to be similarly non-significant ( $\chi^2 = 2.73$ ,  $df = 2$ ,  $p = 0.255$ ). Table 3 shows that the participants had an average knowledge score of **13.91** out of a maximum possible score of 20. This indicates that overall, the respondents possessed a moderate level of knowledge regarding needle stick injury and its prevention. The standard deviation of  $\pm 4.16$  reflects a moderate variation in knowledge scores among the students.

#### 4. Discussion

This research examined the awareness of nursing students concerning needle stick injuries and how to prevent them, achieving an average score of  $13.91 \pm 4.16$ , which indicates a moderately satisfactory level of understanding. A significant portion of the respondents, 46.0%, displayed good knowledge, while 38.0% demonstrated average awareness, and 16.0% had poor comprehension. Although the students exhibited a general level of understanding, deficiencies were noted in crucial aspects, including post-exposure prophylaxis, procedures for reporting incidents, and guidelines for safe disposal practices.

The results align with earlier investigations conducted by Sharma & Singh (2023), Reddy & Thomas (2023), and Gupta & Kaur (2021), which also showed moderate to high levels of awareness among nursing students. Furthermore, Choudhary & Mehta (2022) pointed out a lack of thorough knowledge regarding post-exposure management and safety procedures within the healthcare student population, which underscores the necessity for improved educational efforts.

The research revealed no statistically meaningful relationship between the level of knowledge and demographic factors like age, educational program, clinical exposure, or prior experience of needle stick injuries ( $p > 0.05$ ). This implies that knowledge deficits are prevalent among all student demographics. Comparable results were noted by Beevi et al. (2021) and Kamar (2021).

In summary, the findings highlight the urgency for organized educational initiatives, workshops, and enhanced clinical experiences to elevate nursing students' knowledge and understanding about needle stick injuries and their prevention.

#### 5. Conclusion

The study concludes that nursing students have a moderate to good understanding of needle stick injuries and their prevention strategies; however, there are notable gaps in knowledge regarding post-exposure prophylaxis (PEP), reporting protocols, and the safe disposal of sharps.

Even with clinical exposure and theoretical learning, the students' comprehension appears inconsistent and inadequate to guarantee full occupational safety in clinical environments.

The lack of significant correlations suggests that knowledge weaknesses are spread across various demographic categories, indicating a need for structured teaching efforts instead of solely depending on clinical experience or unstructured learning.

This investigation underlines the necessity of integrating thorough training on preventing needle stick injuries within nursing education to foster safe practices in clinical settings. It is suggested that structured educational programs, workshops, and clinical instruction be developed to boost knowledge and provide safety against occupational risks.

## 6. Recommendations

Structured educational programs focused on preventing needle stick injuries should be included in the nursing curriculum.

- Regular workshops and seminars addressing infection control and post-exposure management should be held.
- Clinical training should prioritize practical demonstrations on safe procedures for needle handling and disposal.
- Efforts should be made to enhance awareness around post-exposure prophylaxis (PEP) and reporting standards.
- Further studies should be undertaken with larger sample sizes and across various institutions.

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