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"From Risk to Resilience: Understanding Needle Stick Injuries Among Healthcare Professionals" "A descriptive study to assess the knowledge and practice regarding prevention of needle stick injury among B.Sc. (N) 1st year students in selected nursing colleges of district Patiala Punjab, with a view to develop an informational booklet"

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***Abstract*:**Needle-stick injuries (NSI) are a serious threat to the health of healthcare workers, nurses, and nursing students, as they can expose them to infectious diseases. Different prevalence rates have been reported for this type of injury in different studies worldwide. Therefore, this study aimed to estimate the pooled prevalence of NSI among nursing students.

Methods

A descriptive non experimental research design was used. Sample size of 60BSc nursing 1st year students. Purposive sampling technique was used to select BSc nursing 1st year students from selected nursing colleges of district Patiala, Punjab. The data collected was organized, tabulated, analyzed and interpreted by using descriptive and Inferential statistics.

Results

The study revealed that, majority 29 (48.3%) had moderate knowledge, followed by 23 (38.3%) respondents having inadequate knowledge, only very few 8 (13.3%) students have Adequate knowledge regarding prevention of needle stick injury. Whereas in practice the average practice score was 30 (50%) seen. and

correlation between knowledge and practice was score was 0.658 that shows strong positive relationship between knowledge and practice in this study.

Keywords: Prevention, Knowledge, Practice, Informational booklet, Needle stick injury.

Conclusion: The majority of students had moderate knowledge and only few were having adequate knowledge whereas in practice it was seen that knowledge and practice is having strong positive relationship.

Introduction

Needle stick injuries (NSIs) represent a significant occupational hazard for healthcare workers worldwide, with profound implications for both their health and the safety of patients. Defined as puncture wounds caused by needles or other sharp instruments, NSIs can lead to the transmission of bloodborne pathogens, including human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV). According to the World Health Organization (WHO), an estimated 3 million healthcare workers experience percutaneous exposure to bloodborne pathogens each year, underscoring the urgent need for effective preventive measures.

The prevalence of NSIs is particularly concerning in high-risk environments such as hospitals, clinics, and emergency medical services, where healthcare workers frequently handle needles and sharp instruments. A study published in the *American Journal of Infection Control* reported that approximately 38% of nurses and paramedics experience at least one needle stick injury annually. This statistic highlights the critical need for enhanced safety protocols and training to mitigate the risks associated with needle handling.

The consequences of NSIs extend beyond physical injury. Healthcare workers who experience NSIs often face psychological distress, including anxiety and fear of potential infection, which can adversely affect their job performance and overall well-being. Furthermore, NSIs can lead to increased healthcare costs due to the need for post-exposure prophylaxis, medical evaluations, and potential long-term health complications.

Despite the known risks, many healthcare facilities lack comprehensive safety protocols and training programs to address NSIs effectively. Factors contributing to the occurrence of NSIs include inadequate disposal practices, insufficient use of safety-engineered devices, and a lack of awareness regarding safe needle handling techniques. As the healthcare landscape continues to evolve, it is imperative to prioritize the development and implementation of robust strategies aimed at reducing the incidence of NSIs.

This research paper aims to explore the prevalence, causes, and consequences of needle stick injuries among healthcare workers, with a particular focus on paramedical staff. By identifying the key factors contributing to NSIs and evaluating the effectiveness of existing safety measures, this study seeks to provide actionable recommendations for improving workplace safety and protecting the health of healthcare workers. Ultimately, addressing the issue of needle stick injuries is not only a matter of occupational safety but also a critical component of ensuring high- quality patient care.

Methods

Research design

Descriptive research design was used to assess the knowledge and practices related to needle stick injuries among BSc nursing 1st year students of Patiala, Punjab. This design was appropriate for understanding the current awareness, preventive measures and compliances with safety protocols in health care settings

Study Population and Sample Size

The study has targeted first year BSc n nursing students of various colleges of district Patiala, Punjab. A sample size was determined using a suitable statistical formula, and participants was selected through a purposive sampling technique to ensure representation of first yeas BSc Nursing students.

Data Collection Method

Data was collected by using a structured, self-administered questionnaire. The questionnaire consists of three sections:

1. Demographic Information.
2. Knowledge Assessment – Awareness of NSI risks, safety protocols, post-exposure management, and use of protective measure.
3. Practice assessment: Adherence to standard precautions, reporting of incidents, and handling of sharp

Data Analysis

Descriptive and inferential statistic was used to analyze the data.

1. Descriptive statistics: frequency and percentage distribution
2. Inferential statistics: chi- square was used to fins association between level of knowledge and practice regarding needle stick injuries with their selected socio- demographic variables.

Ethical Considerations

1. Permission was obtained from the research ethical committee of Adarsh College of Nursing, Patiala, Punjab.
2. Permission was obtained from concerned authorities to conduct the study in selected nursing colleges of district Patiala, Punjab.
3. Informed consent was obtained from B.Sc. (N) 1st year students who were willing to participated in the study.
4. Anonymity and confidentiality of study participants was maintained.
5. This methodology has ensured a systematic approach to evaluating knowledge and practices related to NSIs, providing valuable insights for improving healthcare safety measures.

Quality assessment

VALIDITY OF TOOL: Content validity is concerned with the sampling adequacy of items for the content that is being measured. Content validity is relevant for both affective and cognitive measures. To ensure content validity, the tools were submitted to 7 experts in

the medical surgical nursing department for establishing the content validity. The experts were requested to judge items for relevance, clarity, appropriateness of the

content area. Modifications were done in the tools based on the expert's suggestions and in consultation with the guide.

RELIABILITY OF TOOL

Reliability of tool was computed by split half method using Karl Person's coefficient of correlation & thereby using their calculated knowledge and practice

scores. The computed correlation of knowledge score was (r =0.69) and practice scores was (0.68) therefore the tool was found to be reliable for further study.

RESULTS

The data was collected from 60 students of BSc (N) 1st year of Patiala, Punjab and results showed that, majority 29 (48.3%) had moderate knowledge, followed by 23 (38.3%) respondents having inadequate knowledge, only very few 8(13.3%) students have Adequate knowledge regarding prevention of needle stick injury. Whereas in practice the average practice score was 30 (50%) seen. And correlation between knowledge and practice was score was 0.658 that shows strong positive relationship between knowledge and practice in this study.

Section I: Assessment the knowledge score regarding prevention of needle stick injury among B.Sc. (N) 1st year students from selected nursing colleges of district Patiala, Punjab.

N=60

PERCENTAGE DISTRIBUTION OF KNOWLEDGE SCORE		
Category score	**Percentage (%)**	**Frequency**
Adequate (21-30)	13.3 %	8
Moderate (11-20)	48.3 %	29
Inadequate (0-10)	38.3 %	23

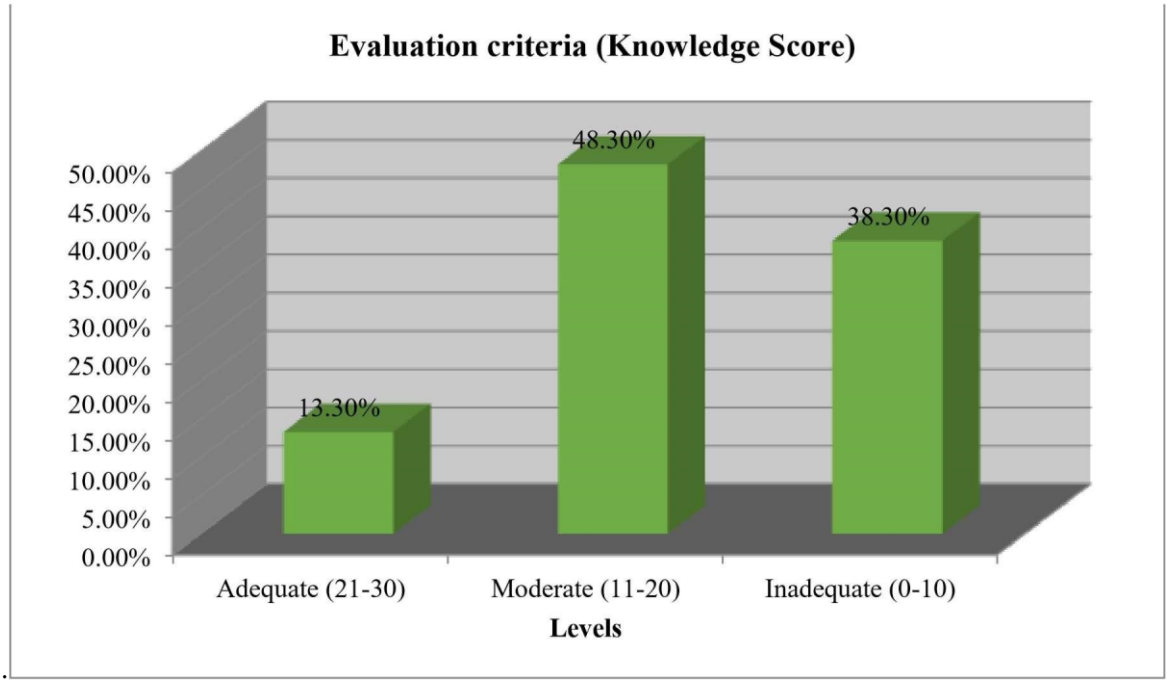

Figure No.01: Percentage Distribution of B.Sc. (N) 1st year students according to Knowledge level.

Section II: Assessment the practice score regarding prevention of needle stick injury among B.Sc. (N) 1st year students from selected nursing colleges of district Patiala, Punjab.

PRACTICE SCORE

Score Level (N= 60)	PRE-TEST f (%)
POOR (0-5)	22 (36.7%)
AVERAGE (6-10)	30 (50%)
GOOD (11-16)	8 (13.3%)
Maximum Score= 16 Minimum Score=0	

Shows that majority 30(50%) of B.Sc. (N) 1st year students had average practice score, followed by 22(36.7%) having poor practice score and 8(13.3%) having practice score regarding prevention of needle stick injury

Section 3: Find out the correlation between knowledge and practice regarding prevention of needle stick injury among B.Sc. (N) 1st year students from selected nursing colleges of district Patiala, Punjab.

Correlation between knowledge and practice regarding prevention of needle stick injury

Pearson's Correlation	**Paired Knowledge Practice**
Correlation	0.658
Result	Significant

Table: Shows that, correlation between knowledge and practice regarding prevention of needle stick injury among B.Sc. (N) 1st year students was 0.658. In this study, correlation is strong positive.

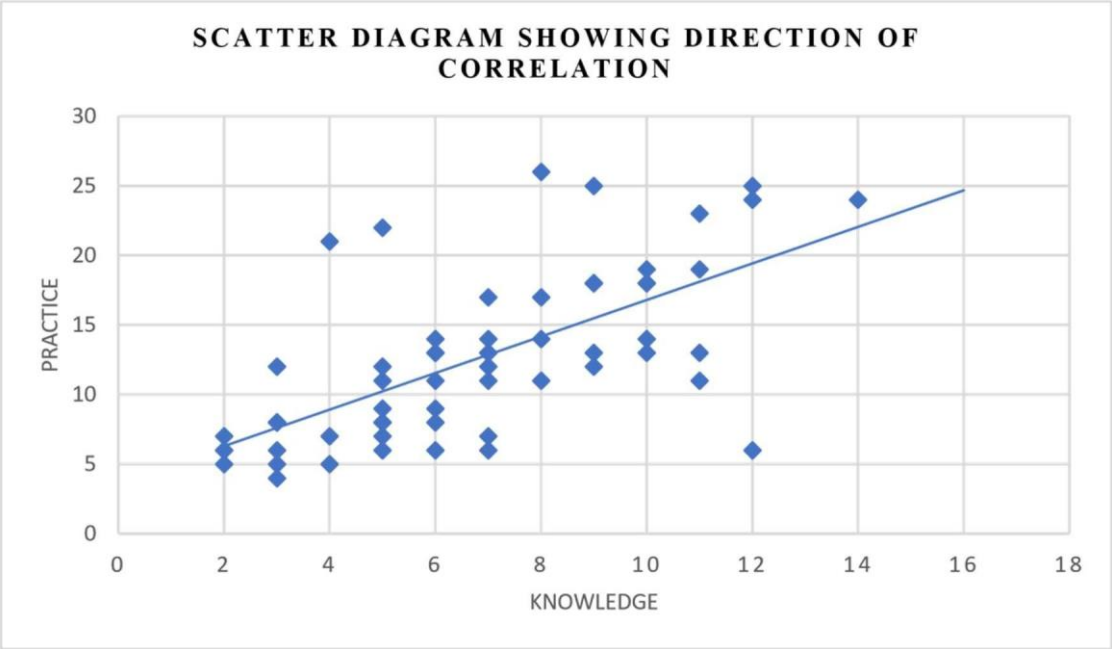

Figure No. 02: Show correlation between knowledge and practice score regarding prevention of needle stick injury.

Section 4: Association of knowledge score regarding prevention of needle stick injury among B.Sc.(N) 1st year students with their selected socio demographic variables.

Table: The association between the Knowledge score with their selected socio -demographic variables

Demographic Variables		Association of practice Score with their socio Demographic variables							
Variables	**Options**	**POOR**	**AVERAGE**	**GOOD**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
AGE IN YEARS	18-21 Years	16	24	8	2.72	0.256	2	5.99	Not Significant
	22-25 Years	6	6	0					
	Above 25 Years	0	0	0					
GENDER	Male	4	4	1	0.279	0.87	2	5.99	Not Significant
	Female	18	26	7					
RELIGION	Hindu	8	16	3	3.205	0.524	4	9.49	Not Significant
	Muslim	3	2	0					
	Sikh	11	12	5					
	Others	0	0	0					
HABITAT	Urban	12	17	5	0.151	0.927	2	5.99	Not Significant
	Rural	10	13	3					
SOURCE OF INFORMATION	Mass Media	3	3	1	1.777	0.939	6	12.59	Not Significant
	Books	7	6	2					
	Teachers	11	18	4					
	Colleagues	1	3	1					

This section deals with the findings related to the association of practice score with their socio- demographic variables of B.Sc. (N) 1st year students. The Chi- square test was used to determine the association between knowledge score with their selected sociodemographic variables.

There was no significant association between the practice score with their selected socio-demographic variables (Age, Gender, Religion, habitat, Source of information,) and as the table value was greater than calculated Chi-square value at 0.05 level of significance. The findings reveal that while a substantial number of first-year BSc Nursing students have a basic understanding of NSI risks, significant gaps exist in detailed knowledge and proper practice skills. This suggests a critical need for improved educational interventions focusing on NSI prevention and management.

EDUCATIONAL IMPLICATIONS

- Incorporate comprehensive NSI training modules into the first-year curriculum.
- Conduct regular workshops and simulations to enhance practical skills.
- Implement continuous assessment and feedback mechanisms to ensure retention of knowledge and skills.

LIMITATIONS

This study was limited to selected nursing colleges in Patiala, which may not represent the entire population of nursing students in Punjab. Future studies should include a larger sample size and multiple districts for broader generalizability.

CONCLUSION

The study highlights the urgent need for enhanced educational programs to improve knowledge and practice skills related to NSI among nursing students. Addressing these gaps will better prepare students for safe clinical practice, reducing the incidence of NSIs and promoting a safer healthcare environment.

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