A STUDY TO ASSESS THE EFFECTIVENESS OF PLANNED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PREVENTION AND MANAGEMENT OF NEEDLE STICK INJURY AMONG THE NURSING STUDENTS AT SELECTED COLLEGES OF THE CITY

Mrs. Jaslin Jose[1a]*, Ms. Amruta Sawant[2b], Mr. Abhijeet Ade[3c], Ms. Gayatri Mane[4c], Mr. Abhishekh Gaikwad [5c], Mr. Akash Somwanshi[6c], Onkar Shelke[7c]

a. Assistant professor, DES Smt. Subhadra K. Jindal College of Nursing, Pune.
b. Clinical Instructor, DES Smt. Subhadra K. Jindal College of Nursing, Pune.
c. Basic B.Sc. Nursing Student, DES Smt. Subhadra K. Jindal College of Nursing, Pune.
   *Corresponding Author- Mrs. Jaslin Jose

ABSTRACT
Introduction: A skin-penetrating wound brought on by a hollow-bore needle tainted with blood or bodily fluids from another person is known as a needle stick injury (NSI). Blood-borne illnesses including HIV, Hepatitis B (HBV), and Hepatitis C (HCV) are common among healthcare workers (HCWs), particularly nurses. Because of their hectic schedules and demanding obligations, many healthcare workers neglect their personal safety even if they are aware of the risks. It's imperative that medical personnel know how to prevent and treat infections because of their rising prevalence. The handling and disposal of needles and sharps is one of the most dangerous jobs for medical professionals. The risk of exposure is greatly decreased by appropriate information and rigorous adherence to safety procedures. The purpose of this study was to assess how well a designed training program on NSI management and prevention worked with nursing students at particular colleges. Assessing knowledge prior to and during the intervention, investigating correlations with demographic variables, and evaluating the effectiveness of the instructional program were among the goals. Purposive sampling was used to choose 40 nursing students using a one-group pretest-posttest design and a quantitative research methodology. Questionnaires were used to collect the data. The findings demonstrated a notable increase in knowledge after the intervention. The mean score on the pre-test was 12 (SD = 3.3), and the mean score on the post-test was 17.3 (SD = 3.5). After the intervention, just 2.5% of pupils were still classified as deficient, 20% showed adequate understanding, and 77.5% had moderately adequate knowledge.
Conclusion: The findings indicate that the planned teaching program was effective in enhancing the students' understanding of NSI prevention and management. Education and training are crucial in equipping future healthcare workers to protect themselves and reduce the risk of occupational exposure.
Keywords: Planned, Teaching, Program, Needle, Injury

INTRODUCTION
Accidental puncture wounds from hollow-bore needles that may be tainted with bodily fluids, such as blood, are known as needle stick injuries (NSIs). Healthcare workers (HCWs) are at significant risk from these injuries since they expose them to blood-borne infections such as HIV, Hepatitis B (HBV), and Hepatitis C (HCV). Despite the risks, many of these instances go unreported because they are perceived as "part of the job."

Healthcare workers deal with physically taxing jobs, unpleasant working environments, and ongoing exposure to infectious organisms. NSIs are one of the most prevalent and hazardous types of occupational risks. In fact, the WHO estimates that there were 2 million NSIs worldwide in 2007;

other research have shown that the figure may be as high as 3.5 million every year, with nurses being the most afflicted.

Unsafe behaviors like two-handed needle recapping, inappropriate sharps disposal, ignorance, understaffing, and insufficient training are frequently the cause of NSIs. The risk of infection varies depending on the type of injury—roughly 0.3% for HIV, up to 30% for HBV, and 2–5% for HCV. Anxiety, depression, and PTSD are among the psychological impacts of NSIs that extend beyond physical health. They put additional strain on the healthcare system through follow-ups, missed workdays, and treatment expenses.

Over 85% of injuries are never formally reported, making underreporting a serious problem. Many health care workers are either too busy or don't know where or how to report. The issue is exacerbated by the absence of official training.

The purpose of this study was to evaluate nursing students' understanding of NSIs and emphasize the value of formal education. The findings highlight the critical need for frequent and organized instruction on NSI prevention and management, demonstrating that educational programs greatly increase future healthcare providers' awareness and safe behaviors.

NEED OF THE STUDY

Put a needle injuries sustained during blood collection operations, inappropriate disposal of sharps, and recapping of the needles. Injuries from needle sticks are frequent and, to some extent, inevitable in the course of providing medical treatment. A used needle or other sharp object that is contaminated with body fluids accidentally pricks the skin, resulting in per cutaneous exposure. Injuries from needle sticks have been acknowledged as a source of exposure for healthcare workers to blood borne infections such the hepatitis B, C, and HIV viruses. According to estimates from the Centers for Disease Control, in just the United States alone, more than three million healthcare workers are exposed to blood and bodily fluids through cuts and other muco cutaneous injuries each year.

442 nursing students participated in a cross-sectional survey the majority of who were female students who worked in shifts at night frequently. Syringe needles were the cause of 59.95 injuries among students who did not use personal protective equipment or follow safety training programmes. The most frequent injury agent was discovered to be opening ampoules or vials, and of the needles and sharps that caused injuries, 41% were determined to be unused and 22.7% to be unknown. 89.65 needle stick injuries in total went unreported to the hospital's infection control department. According to the study, needle stick injuries were most likely to occur in nursing students. Hence Workplace safety hence to avoid needle stick injuries among students, occupational safety training methods should be created and executed (Henry Ziong, 2017).

In Hong Kong, a study on needle stick injuries among students was examined. Eight of the 51 reported needle stick injuries involved sharp objects. The annual occurrence of sharp injuries in the second and third years of a nursing degree was associated with and giving injections and using a glucometer to check blood sugar also contributed to the greatest proportion. Some behaviors, such as removing the needle cap, opening the ampoule, putting the needle in, and improperly discarding used objects and dirty material in the same kidney tray, were identified (Kin Chueng, 2010).

During their clinical experiences, students are at a greater risk of suffering needle stick injuries. In order to regulate and avoid needle stick injuries the steps to be taken for the student awareness. So hence there is a need to conduct the study on nursing student by using planned teaching program so the student will be able to gain the knowledge regarding the prevention and management of NSI.

282

Aim of the study: to assess the effectiveness of planned teaching programme on knowledge regarding prevention and management of needle stick injury among the nursing students at selected colleges of the city

RESEARCH METHODOLOGY
Objectives

1. To assess the pre-interventional level of knowledge regarding prevention and management of needle stick injury among the nursing students at selected colleges of the city.
2. To assess the post-interventional level of knowledge regarding prevention and management of needle stick injury among the nursing students at selected colleges of the city.
3. To find out the association between knowledge of nursing students with selected demographic variables.
4. To evaluate the effectiveness of planned teaching programme on knowledge regarding prevention and management of needle stick injury among the nursing students at selected colleges of the city.

Research design: The research design selected for this study was a quasi - experimental approach, time series design.

Research Approach: The research approach adopted for the present research is Quantitative Descriptive Research approach because the study aimed to assess the effectiveness of planned teaching programme on knowledge regarding prevention and management of needle stick injury among the nursing students at selected colleges of the city

Research setting: The study was conducted at selected colleges of nursing on BSc Nursing students.

Subjects: In this study, the population consisted of 40 students who are perusing their study in Basic B.Sc. nursing.

Statistical analysis: A study was conducted to assess the effectiveness of planned teaching programme on knowledge regarding prevention and management of needle stick injury among the nursing students at selected colleges of the city and with the help of questionnaire the data was collected.

RESULTS
The data was analyzed and presented in the following sections:

Section I: Description of Demographic data of students

Section II: Effectiveness of plan teaching program on knowledge regarding prevention and management of needle stick injury among the nursing student in selected city**.**

Section III: Hypotheses testing

Hypothesis testing was done by using Paired't' test and chi-square test.

Section IV: Association of demographic variables with knowledge of Nursing Students.

Section I Analysis: Description of Demographic data

Frequency and percentage distribution of people as per their socio demographic characteristics.

The demographic table provides an overview of participants based on age, gender, religion, and prior knowledge.

1. Age Distribution

- The majority (47.5%) are 17-18 years old.
- A slightly smaller group (45%) are 19-20 years old.
- Only 7.5% are 21-22 years old.
- No participants are above 22 years.

283

2. Gender Distribution
- Female participants form the majority (52.5%).
- Males make up 47.5%.
- No transgender individuals participated.

3. Religion
- Most participants are Hindu (87.5%).
- Christians make up 7.5%.
- A small percentage (5%) follows other religions.
- No Muslim participants were recorded.

4. Previous Knowledge
- A significant majority (95%) reported having no prior knowledge.
- Only 5% had previous knowledge.

This data indicates that the participants are mostly young (below 20 years), predominantly Hindu, and primarily female. Additionally, most had no prior knowledge related to the subject of study.

Section II Analysis: Effectiveness of planned teaching programme on knowledge regarding prevention and management needle stick injury.

Table No: I

Frequency and percentage wise distribution of pre-test and post-test knowledge among nursing students of first semester regarding prevention and management needle stick injury.

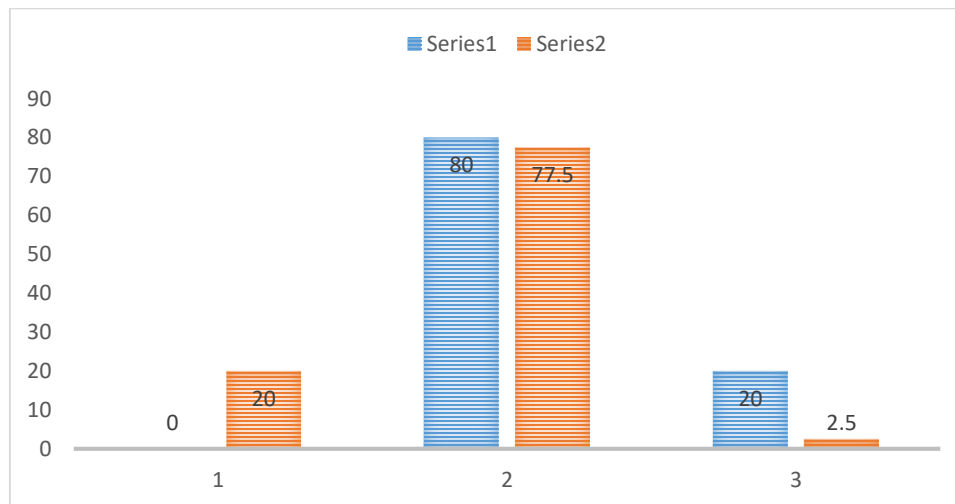| Sr no	Knowledge Score	Pre-test		Post-test	
		Frequency	%	Frequency	%
1	Adequate knowledge (21-25)	0	0	8	20
2	Moderate adequate knowledge (10-20)	32	80	31	77.5
3	Inadequate knowledge (1-9)	8	20	1	2.5

Fig: Frequency and percentage wise distribution of pre-test and post-test knowledge among students of first semester nursing regarding prevention and management of needle stick injury highest percentage in pre-test (80%) of respondents had Moderately adequate knowledge, (20%) of them had Inadequate knowledge, (0%) of them had adequate knowledge and in post-test (77.5%) of the respondents had Moderately adequate knowledge, (20%) of the respondents had Adequate knowledge, (2.5%) of them had Inadequate knowledge. Hence it can be interpreted that effect of planned teaching program on knowledge regarding prevention and management of needle stick injury was effective for improving the knowledge of nursing students of first semester.

Section III Analysis: Hypotheses testing
Table No: II
Paired 't' value of pre and post-test knowledge regarding prevention and management of needle stick injury.

	Group	Mean	SD	't' value	P Value	Level of significance
	Pre-test	12	3.3	7.5	0.304	**Significant**
	Post-test	17.3	3.5			

Table value = 12.59

t value was calculated to analyze the difference in pre-test and post-test knowledge score of nursing students. Highly significant difference was found between pre and post-test knowledge score of 7.5 Hence the stated null hypothesis is rejected as it is interpreted that there was no significant difference between pre-test and post-test knowledge score regarding prevention and management of needle stick injury among the nursing students at selected colleges of the city.

285

Section IV Analysis:

In this section the association of demographic variables with level of Knowledge. The calculated value of chi square (**3.1**) of demographic variable- age is less than table value (**12.59**) shows there is no significant association between age and level of knowledge. Along with, the calculated value of chi square (**2.3**) of demographic variable gender is less than table value (9.49) shows there is no significant association between Gender and level of knowledge. With that, the calculated chi-square values of demographic variables- religion and awareness about post exposure prophylaxis of needle stick injury are **2.04** and **702.1** respectively shows there is no significant association between demographic variables- religion and awareness about post exposure prophylaxis of needle stick injury and level of knowledge.

DISCUSSION

The study was proposed to assess the effectiveness of planed teaching programme on knowledge regarding prevention and management of needle stick injury among the nursing student of 1st semester. The sample size 40 was taken from selected college of the city the validity was done, which suggested that the tool was reliable. The pilot study was done on 15 samples.

Findings of the study:

5.1 Frequency and percentage distribution of nursing students according to their demographic data

The study involved 40 nursing students, with 47.5% aged 17-18 years, 45% aged 19-20 years, and 7.5% aged 21-22 years. Among them, 52.5% were female and 47.5% male. Most students (87.5%) were Hindu, followed by Christians (7.5%) and others (5%). Only 5% had prior knowledge of Needle Stick Injuries (NSIs), while 95% had none. A similar study by Daewin Das (2017) found that 60% of subjects were 18-19 years old, and none had attended NSI-related seminars. Another study by Suliman (2018) revealed that 26.2% of students experienced NSIs, but many did not report the incidents.

5.2 Frequency and percentage distribution of knowledge regarding prevention and management of Needle Stick Injuries.

The study assessed the knowledge and attitude of 40 participants regarding Needle Stick Injuries (NSIs). In the pre-test, 80% had moderately adequate knowledge, while 20% had inadequate knowledge. After implementing a structured teaching program, 20% gained adequate knowledge, 77.5% had moderately adequate knowledge, and only 2.5% had inadequate knowledge. A study by Saleem (2010) supported these findings, revealing that while many medical students were aware of NSIs, only 16.4% of third-year students and 36.2% of final-year students fully understood NSI prevention. Additionally, 26% had experienced NSIs, but only 29.7% reported them. Another study by Anu Jacob Kachappillil (2017) showed a significant improvement in knowledge post-intervention, with 90% achieving adequate knowledge. Regarding attitude, in the pre-test, 73% had a moderately favorable attitude, 24% had a favorable attitude, and 3% had an unfavorable attitude. By Post-test II, 48% had a favorable attitude, showing improvement. Saleem (2010) emphasized the need for better NSI-related practices as risks increase with education.

5.3 The effectiveness of the planned teaching programme on knowledge regarding prevention and management of Needle Stick Injuries:

In this study, the pre-test means and standard deviation was 12,3.3 and the post-test mean and standard deviation was improved to 17.3, 3.5 It concludes that there was a gradual increase in the mean and standard deviation of all three observations.

The present study, the findings revealed that there is an increase in the knowledge of the study participants after being exposed to the planned teaching program. The results show that there was a significant improvement in the post-test knowledge of the nursing students. This showing that the planned teaching programme was effective regarding prevention and management of Needle Stick Injuries.

5.4 Association between post-test knowledge of study participants regarding prevention of Needle Stick Injuries and their selected demographic variables.

It was concluded that there was a significant association between post test scores of knowledge of the study participants regarding prevention of Needle Stick Injuries with previous knowledge of needle stick injuries of study participants. The calculated chi square value was greater than table value.

CONCLUSION

A study was conducted to assess the effectiveness of planned teaching programme on knowledge of prevention and management of needle stick injury among the nursing students. With the help of questionnaire data was collected. According to this data maximum number of students having moderately adequate knowledge 31 (77.5%) after those 8 (20%) students have adequate knowledge and 1(2.5%) student having inadequate knowledge.

Recommendations: The following recommendations are suggested:
1. A similar study can be replicated on a larger sample size to generalize the findings.
2. A study can be conducted by using other booklets, flashcards, demonstration, role play, simulation and video.
3. Hospital personnel should be provided with periodic training services regarding prevention of Needle Stick Injuries.
4. A larger study can be carried out to assess the knowledge and attitude and practice regarding universal precaution towards infectious diseases.

REFERENCES
1. Shahzad, Nazim & ., Raja & Ahmad, Tufail & Bibi, Afsha. (2024). Knowledge and Attitude Regarding Needle Stick Injury among Undergraduate Nursing Students. Pakistan BioMedical Journal. 7. 10.54393/pbmj.v7i10.1150.
2. D, Anandadurai & R, Praisie & Sriandaal, V. & Nelson, Sudhir & Thulasiram, Manoje. (2024). Awareness, Perception, and Practice Regarding Needle-Stick Injury and Its Prevention Among Healthcare Workers in a Tertiary Care Hospital in Southern India. Cureus. 16. e55820. 10.7759/cureus.55820.
3. A.P, Anjana & Thomas, Reshma & Renjitha,. (2021). Effectiveness of Structured Teaching Programme on Knowledge Regarding Post Exposure Prophylaxis Following Needle Stick Injury among B. Sc Nursing Students. Indian Journal of Forensic Medicine & Toxicology. 15. 96-100. 10.37506/ijfmt.v15i4.16667.
4. Saleem, Taimur & Khalid, Umair & Ishaque, Sidra & Zafar, Afia. (2010). Knowledge, attitudes and practices of medical students regarding needle stick injuries. JPMA. The Journal of the Pakistan Medical Association. 60. 151-6.

5. kram, Kashif & Siddiqui, Humayun & Maqbool, Sana & Altaf, Maham & Khan, Sania. (2015). Frequency of Needle Stick Injury among Dental Students and Dentists of Karachi. World Journal of Dentistry. 6. 213-216. 10.5005/jp-journals-10015-1345.

6. .Aiken LH, Sloane DM, (2012) Hospital nurses' occupational exposure to blood, American Journal of Public Health, 87(1), Pp 103 - 107

7. Abimbola. O, Michael. C, (2016), Needle Stick Injuries among health care workers in on do State, International Journal of Medicine and Public Health. 6 (10) Pp - 31 to 34.

8. Afridi. AAK, Sayani. R, (2013) Needle Stick Injuries - Risk and Preventive Factors; A study among Health Care Workers in Tertiary Care Hospitals in Pakistan. Global Journal of Health Sciences .5 (4) Pp 84 - 92.

9. Allen Joe (2017), Knowledge of Needle Stick Injuries and its prevention among interns and post graduate students working at a tertiary health care workers. International Journal of community and Public Health Volume - 4, Pp - 2443.

10. Anu Jacob kachappillil, (2017), Effectiveness of Structured Teaching Programme on knowledge regarding Prevention of Needle Stick Injuries. Tanzania Journal of Health Research, volume - 17, Pp - 30 to 35.