A Study to Assess the Effectiveness of STP on Knowledge Regarding Needle Stick Injuries Among Nursing Students

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doi.org/10.64643/JATIRV2I3-140167-001

Abstract: Background of the study: Needle stick injuries (NSI's) are the injuries that are caused by needles, such as hypodermic needle, blood collection needle, interaction stylets, and needles used to connect parts of intravenous delivery system, NSI's are very common and in many instances unavoidable among healthcare providers when they are delivering patient care. In south India Feb 2019 Around 75% of the NSI's in developing countries are not reported. This study aimed to estimate the knowledge regarding needle stick injury among GNM 2nd year nursing students of Hirai institute of nursing education Malwadi masur.

Objectives of the study:

1. **To assess the existing knowledge regarding needle stick injury among nursing student before intervention.**
2. **To determine the effectiveness of structured teaching program on knowledge regarding needle stick injury among nursing student.**
3. **To find out association between post-test knowledge regarding needle stick injury among nursing student with all demographic variables.**

Methods: Research Approach: Quantitative Research Approach, Research Design: Experimental Group Pretest Post Test Research design, Setting: Hirai Institute of Nursing Education Malwadi, Masur, Karad. Population: 60 nursing students of Hirai Institute of Nursing Education Malwadi, Masur. A. SAMPLE: GNM 2nd year nursing student. SAMPLE

SIZE: 60 nursing students. SAMPLING TECHNIQUE: Purposive Random sampling technique.

I. INTRODUCTION

A needlestick injury is the penetration of the skin by a hypodermic needle or other sharp object that has been in contact with blood, tissue or other body fluids before the exposure. Even though the acute physiological effects of a needlestick injury are generally negligible, these injuries can lead to transmission of blood-borne diseases, placing those exposed at increased risk of infection from disease-causing pathogens, such as the hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV). In healthcare and laboratory settings globally, there are over 25 distinct types of blood-borne diseases that can potentially be transmitted through needlestick injuries to workers. In addition to needlestick injuries, transmission of these viruses can also occur as a result of contamination of the mucous membranes, such as those of the eyes, with blood or body fluids, but needlestick injuries make up more than 80% of all percutaneous exposure incidents in the United States. Various other occupations are also at increased risk of needlestick injury, including law enforcement, labours, tattoo artists, food preparers, and agricultural needles 1.

needles stick injuries can be greatly avoided, if the above in mentioned guidelines is strictly adhered to. Needle stick injuries can occur when due to precaution are not taken. In case of needle stick injuries. Prevention of needle stick injuries Health care providers can be risk at risk for needle stick injuries in any health care setting. The most common place for needle stick injuries to occur are in the operational room and patient rooms. Tasks that place the health care provider at risk including recapping needle and mishandling IV lines 2.

needle stick injuries are frequent occurrences in health care setting can lead to serious complication. While the introduction of universal precautions and safety conscious needle design has led to a decrease in needle stick injuries, they still do occur. Needle stick injuries are known to occur frequently in healthcare settings and can be serious. In North America millions of health care workers use needle in their daily work, and hence, design has led to a decline in needle stick injuries, they continue to be reported, albeit on a much smaller scale than in the past. Awareness of needle stick injuries started to develop soon after the identification of HIV in the early 1980s.

However, today the major concern after a needlestick injuries is not HIV but hepatitis B or hepatitis C. Guidelines have been established to help healthcare institution manager needle stick injuries and when to initiate post -exposure HIV prophylaxis.3

Increasing recognition of the unique occupational hazard posed by needlestick injuries, as well as the development of efficacious interventions to minimize the largely preventable occupational risk, encouraged legislative regulation in the US, causing a decline in needlestick injuries among healthcare workers 4. The psychological effects of occupational needle stick injuries can include health anxiety about disclosure or transmission to a sexual partner, trauma-related emotions, and depression These effects can cause self-destructive behaviour or functional impairment in

relationships and daily life. This is not mitigated by knowledge about disease transmission or post-exposure prophylaxis. Though some affected people have worsened anxiety during repeated testing, anxiety and other psychological effects typically abate after testing is complete. A minority of people affected by needlestick injuries may have lasting psychological effects, including post-traumatic stress disorder.5

After a needlestick injury, certain procedures can minimize the risk of infection. Lab tests of the recipient should be obtained for baseline studies, including HIV, acute hepatitis panel (IgM, HBsAg, HB core IgM, HCV) and for immunized individuals, HB surface antibody. Unless already known, the infectious status of the source needs to be determined. Unless the source is known to be negative for HBV, HCV, and HIV, post-exposure prophylaxis (PEP) should be initiated, ideally within one hour of the injury.6

Background: Needle stick injuries (NSI's) are the injuries that are caused by needles, such as hypodermic needle, blood collection needle, interaction stylets, and needles used to connect parts of intravenous delivery system, NSI's are very common and in many instance unavoidable among healthcare providers when they are delivering patient care. In south India Feb 2019 Around 75% of the NSI's in developing countries are not reported. This study aimed to estimate the knowledge regarding needle stick injury among GNM 2nd year nursing students of Hirai institute of nursing education Malwadi masur.7

NEED FOR STUDY: The World Health Organization estimated that in 2000, 66,000 hepatitis B, 16,000 hepatitis C, and 1,000 HIV infections were caused by needlestick injuries.1

Needle stick injury is defined as any percutaneous injury, penetration of skin resulting from a needle or other sharp object, which has been in contact with blood, tissue, or other body fluids prior to the exposure.2

The United States Centers for Disease Control and Prevention (CDC) estimates that about 600,000–1,000,000 needle stick injuries occur annually.3

An accidental needlestick injury can happen in an instant. These types of injuries, also called "sharps injuries," happen when a needle or another sharp object punctures your skin. These injuries are most common in medical workplaces, but they happen in other settings, too.

Following best practices after a needlestick injury is incredibly important. Sharps injuries can often heal on their own, but they do require you to follow a post-injury protocol for your protection. That's because these types of injuries can increase your risk of blood-borne infections, including hepatitis B and HIV.

Let's go over what to do right after you've experienced a needle injury, as well as the next steps to prevent further complications.4

Infected needlesticks and sharps may transmit infectious diseases, especially blood-borne pathogens (germs like viruses that cause disease). Concerns include the Human immune deficiency virus (HIV), which leads to AIDS (Acquired Immune Deficiency Syndrome), hepatitis B, and hepatitis c.

Incidental punctures by contaminated needles can inject hazardous fluids and pathogens into the body through the skin. There is potential for injection of hazardous drugs, but contact with infectious fluids, especially blood, is by far the greatest concern. Even small amounts of infectious fluid can spread certain diseases effectively.

Sharps can create a cut in the skin which allows contact between blood or fluids.

The risk of infection after exposure to infected blood varies by bloodborne pathogen. It is estimated that the hepatitis B virus has a 6% to 30% chance of causing an infection from a needlestick injury if the person is not vaccinated. In comparison, the risk of HIV transmission is about 0.3% and the risk for hepatitis C is about 1.8%. These are estimates. Regardless of the probability, it is always good practice to eliminate or reduce the risk of infection.

Sharps have transmitted many other diseases involving viruses, bacteria, fungi, and other microorganisms to healthcare workers, laboratory researchers, and veterinarian staff.5

Accidental needle sticks sustained by hospital personnel account for many hospital-related injuries, but little information is available dealing with risk factors amenable to control. We reviewed 316 reported needle stick injuries--accounting for one third of all work-related accidents--occurring in employees of our hospital over a 47-month period from 1975 to 1979. Housekeeping (127.0 cases per thousand employees annually) and laboratory personnel (104.7 per thousand) experienced the highest incidence of needle-stick injuries, followed by registered nurses (92.6 per thousand), but 60 percent of all injuries occurred in nursing personnel. Physicians rarely reported needle-stick injuries. Most injuries occurred during disposal of used needles (23.7 percent of all injuries), during the administration of parenteral injections or infusion therapy (21.2 percent), drawing blood (16.5 percent), recapping needles after use (12.0 percent), or handling linens or trash containing uncapped needles (16.1 percent). Sixty percent of the personnel who reported a needle puncture injury sought emergency room treatment where management was variable. The total cost of needle puncture injuries in our hospital over a 27-month period of $6,331. We recommend not recapping used needles and making widely available and promoting use of an efficient needle disposal system. All hospital personnel, including physicians, are urged to report needle-stick injuries to the hospital's Employee Health Service where evaluation and management can be effected most consistently by established protocols.6

Hepatitis B carries the greatest risk of transmission, with 10% of exposed workers eventually showing seroconversion and 10% having symptoms7

It is difficult to establish correct figures for the risk of exposure or the incidence of needlestick injuries. First of all it is difficult to observe a needlestick injury, either in oneself or in other persons. Glove perforations in surgeons are considered a reasonable proxy that can be measured objectively. Even though glove perforations can be objectively measured, it is still unclear what the relation is between glove perforations and needlestick injuries.8

Per 100 person-years, the injury rate in surgical staff was 88.2 (95% CI, 61.3-126.9; 21 studies) for self-reported injuries, 40.0 for perforations (95% CI, 19.2-83.5; 15 studies), and 5.8 for administrative injuries (95% CI, 2.7-12.2; 5 studies). Self-report probably overestimates the real risk and administrative data underestimate the risk considerably. Perforation data are probably the

most valid indicators. Considering that the perforation rates provided here are much lower than the self-reported injuries used to calculate the burden of disease due to sharps injuries by the WHO, these calculations should be revised.9

The prevention of needlestick injuries should focus on those health care workers that are most at risk.

The group most at risk are surgeons and surgical staff in the operating room who sustain injuries from suture needles and other sharps used in operations. There are basically three complementary approaches to prevention of these sharps injuries. The first one is the use of tools that have been changed so that they are less likely to lead to a sharps injury such as blunt or taper-point surgery needles and safety engineered scalpels.10

II. REVIEW LITERATURE

1.Sharma, Rahul; Rasania, SK; Verma, Anita; Singh, Saudan. A study conducted by Rahul Shil1, Shivaleela P Upashe2, on Nursing students knowledge regarding needle stick injury: Effectiveness of structured teaching plan at College of Nursing Sciences, Dayananda Sagar University, Kumaraswamy Layout, Bengaluru, Karnataka, India in 2020. A total 30 students nurses were recruited randomly. A quantitative study using Quasy experimental, one group pre-test and post-test design were used. The result reveals that, 6 student (20%) had inadequate knowledge towards needle stick injury, 24 student (80%) had moderate knowledge and none of them were having adequate knowledge level regarding needle stick injury. The Finding of study conclusion of the implementation of the structured teaching plan there were statistically significant improvement in student knowledge so, continuous education about Needlestick injury and its prevention among nursing students that's helpful in reducing the morbidity and mortality rate of blood born disease.

2. A study conducted by Department of Medical-Surgical Nursing Smt. Nagarathnamma College of Nursing Soldevenahalli, Bengaluru-90 on prevention of blood borne diseases among dialysis nurses and technicians in selected health facility Bengaluru in 2018 Nurses should have knowledge about the Levels of prevention and infection control precautions should be carried out during the working period. A pre-experimental study with one group pre-test and post- test design was used to evaluate the effectiveness of Structured Teaching Programme (STP) regarding knowledge on “Prevention of Blood borne diseases” among Dialysis nurses and technicians. The finding of study conclusion with regard to pre-test revealed that majority 53.3% of the respondents had inadequate knowledge, 46.7%had moderate knowledge and none of them had adequate knowledge on Prevention of Blood borne diseases. But in Post test, 51.7% respondents was found with adequate knowledge, 29(48.3%) had moderate knowledge and none of them had inadequate knowledge regarding Prevention of Blood borne diseases.

III. RESEARCH METHODOLOGY

The word ‘‘methodology’’ is frequently used when ‘method’ would be more accurate. Methodology refers to more than a simple set of methods. Research methodology is the systematic way to solve the research problem. It includes the steps that the researchers adopt to study his problem with the logic behind. It is a science of studying how research is done scientifically. In simple words, ‘a system of models, procedures and techniques used to find the result of a research problem is called research methodology.’

Methodology of research indicates the general pattern for organizing the procedure for the empirical study together with the method of obtaining valid and reliable data for problem under investigation.

This chapter provides a brief description of the method adopted by the investigator to conduct the study. This chapter includes the research approach, research design, research setting sampling technique, sampling criteria and method of data collection and so on.

A descriptive research design was selected to conduct the present study. Before conducting the study, A sample of 60student nurses who were fulfilling the inclusion sampling criteria will be selected conveniently at Hirai institute of nursing education malwadi masur A self-administered questionnaire prepare to collect data.

Research approach:

Research approach involves the description of the plan to investigate the phenomenon under study in a structured, unstructured or a combination of the two methods. Therefore, the approach helps to decide about the presence or absence as well a manipulation and control over variables. It also helps to identify the presence or absence of and comparison between single group. In view of the nature of the problem selected for the study, A pretest and postest design will be applied to determine the level of knowledge of nurses´ regarding needle stick injury. A convenience sampling technique will be used to recruit participants.

Research design:

The population of the current study was all 60 nursing students. All students who were actively engaged in college work during the data collection period and who agreed to participate were included in the study. Study Design will be experimental research design. The study will be conducted at the nursing student in Hirai institute of nursing education malwadi masur Random sampling technique was adopted for the study. The sample is selected based on the pretest and post test design

Research setting:

The study will be conducted at the nursing student in Hirai institute of nursing education malwadi masur, Karad, Satara.

POPULATION: Population is the set of people to which the results of the study are to be generalized. In present study the population is in nursing student of Hirai institute of nursing education malwadi, masur

SAMPLE: A sample is a portion of the entire population that represents that it is a subset of the population elements. Hirai institute of nursing education malwadi, masur.

SAMPLE SIZE: The population of the current study was all 60 nursing students.

SAMPLING TECHNIQUES: The sample is selected based on the pretest- postest design method

CRITERIA FOR SAMPLE COLLECTION
INCLUSIVE CRITERIA:

- All student nurses present at the time of data collection.
- Student who can understand English and Marathi.
- GNM 2^{ND} nursing students.

EXCLUSIVE CRITERIA:

- GNM 2^{ND} YEAR

TOOL FOR DATA COLLECTION:
Tool for data collection was preparing on the basis of objectives of the study.

METHOD OF DATA COLLECTION:
A total 60 student nurses are selected for the study as per the selection criteria.

1. Obtained permission from principal of HINE college of Nursing.

METHOD OF DATA ANYLASIS:
The data was analysed by using inferential statistics.

1. The plan for data analysis was organized in the master sheet.
2. Frequency and percentage were used to describe as well as summarized the data.
3. Inferential statistics was used to draw the following conclusions:

SUMMARY:
This chapter dealt with the description of the research methodology and steps undertaken for collecting the data and plan of analysis for the present study. It includes research approach, design, setting, population, sampling, sample size, criteria, technique, method of data collection, plan of analysis etc. The analysis and interpretation of the study will be presented in the following chapter.

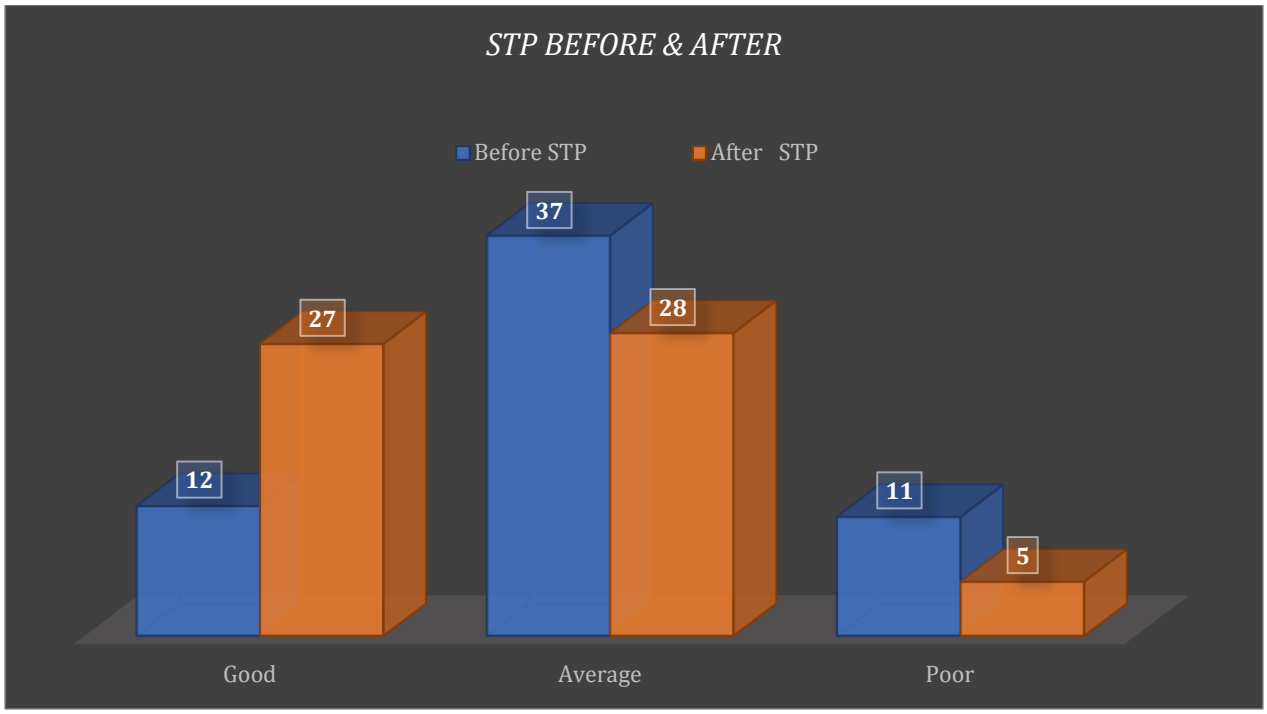

Fig.1: Assessment of STP on knowledge about needle stick injuries among the 2nd year nursing students

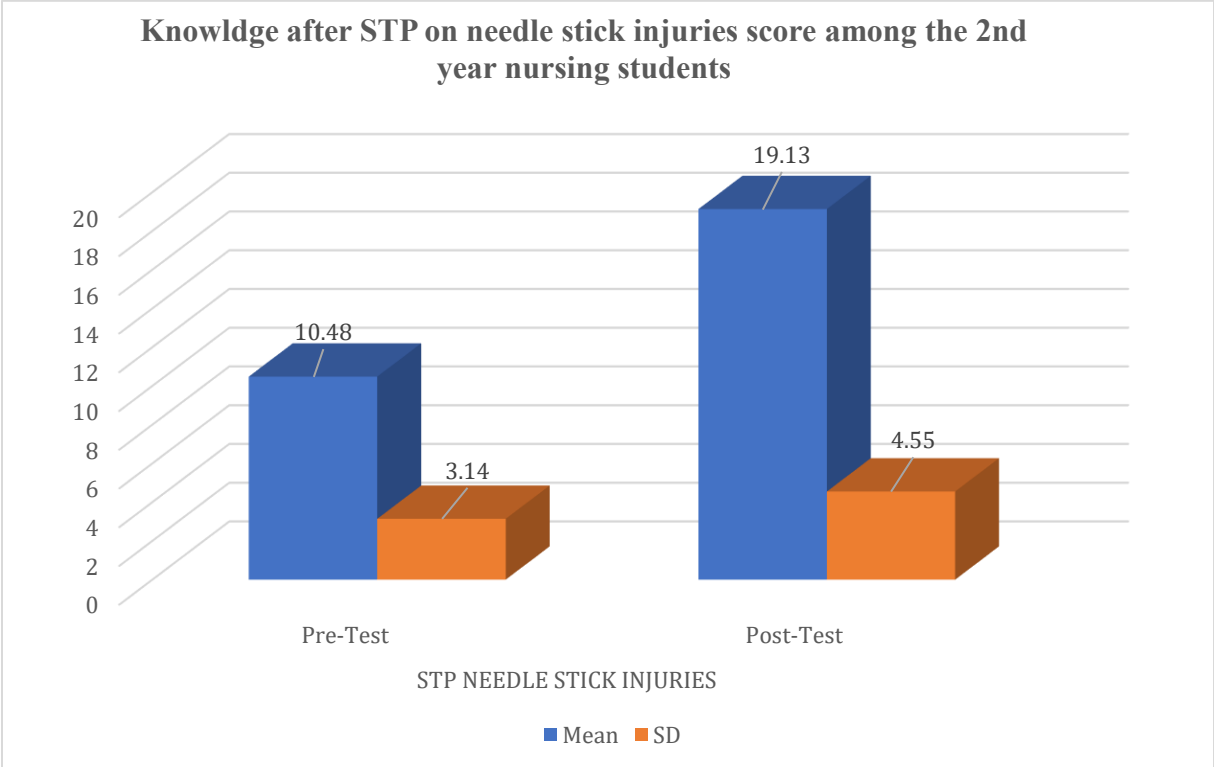

Fig. 2: Mean, SD of the structured teaching program on knowledge about needle stick injuries among the 2nd year nursing students.

IV. DISCUSSION AND SUMMARY:

This chapter represents a summary of the present study. It includes the conclusion from the findings, implementations of the study and recommendation for future research in this field.

OBJECTIVES

1. To assess the knowledge regarding needle stick injury among nursing student.
2. To determine the effectiveness of structured teaching program on knowledge regarding needle stick injury among nursing students
3. To find out association between post-test knowledge regarding needle stick injury among nursing student with all demographic variables.

DISSCUSION

The analysis of data was organized and presented under to its objectives. Given by the demographic data and research study as per collection of information and presentation of d Knowledge of the Study Participants about needle stick injury. In this study, students had good knowledge about Needle stick injury, is finding was consistent with the studies done in Hirai institute of nursing education malwadi masur. where 70%of their study participants had good knowledge of needle stick injury.

CONCLUSION

This is study revealed that student nurses studying at Hirai institute of nursing education Malwadi, had mean of the pretest (10.48) and a mean of the post test is (19.13) towards needle stick injury.

LIMITATIONS

- The study was confined to a small and specific number of subjects, which limits the generalisation of the findings.
- No standardized tools were available; therefore, the investigator prepared the tool for the purpose of her study.
- The study was limited to only the students of Hirai institute of nursing education Malwadi masur.

SUMMARY

Based on the up-to-date knowledge, a positive attitude and a good practice of Needle stick injury by the nurse will minimize the consequence and complications of needle stick; as a result, the students nurse is obliged to possess an updated knowledge and understanding of needle stick. Needle stick injury is a subjective experience of management.

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