



AN EVALUATIVE STUDY TO ASSESS THE EFFECTIVENESS OF SELF-INSTRUCTIONAL MODULE ON PREVENTION OF NEEDLE STICK INJURY AMONG STAFF NURSES AT APOLLO SPECIALITY HOSPITALS, NELLORE.

Nursing Science

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ABSTRACT

Percutaneous injury in health workers is increasing day by day and causing mortality and morbidity to health workers due to infections from blood-borne pathogens. These injuries can occur at any time during the handling disassembling or disposal of needles. The needle stick injury can lead to life-threatening infectious diseases like HIV, hepatitis B, and hepatitis c. The majority of healthcare workers didn't have adequate knowledge regarding needle stick injury prevention and management Hence, a quantitative research approach and pre-experimental one-group pretest and posttest research were undertaken at Apollo Speciality Hospitals, Nellore. "an Evaluative Study To Assess The Effectiveness Of Self-instructional Module On Prevention Of Needle Stick Injury Among Staff Nurses At Apollo Speciality Hospitals, Nellore" Data was collected from 200 staff nurses. A nonprobability convenient sampling method was used. A Structured questionnaire was given from 15/09/2022 to 15/11/2022. Data was analyzed by using descriptive and inferential statistics. The study revealed that the structured teaching program was found to be effective in increasing the knowledge of the staff nurses with a positive "t" test value (9.88) and expect age no other demographic variables had an association with knowledge at 0.05 level of significance. All the staff in a hospital should know about needle stick injuries and their management to prevent the transmission of blood-borne diseases through needle stick injuries. The study has improved the knowledge of staff nurses which helps them to apply that knowledge in their practice which reduces the occurrence of needle stick injury. Our unit also reduced the incidents related to the needle stick injury after receiving the structured teaching Programme and staffs care more about their own and others' health too.

KEYWORDS

INTRODUCTION

"CARING FOR THOSE WHO CARE"

A Needle stick injury is the most common accident reported by healthcare professionals, including doctors, nurses, and non-clinical staff. Hospital workers who receive needle pricks may be at risk for contracting viruses that are carried in their blood. The most serious of these are HIV and Hepatitis C. The rate of NSIs has been reduced over the past two decades. The average risk of transmission of HIV to a healthcare worker after exposure to HIV-infected blood is estimated at 3 in 1000. Injury from needle stick injuries has significant indirect consequences for the delivery of healthcare, especially in developing countries where the number of qualified workers is limited with respect to the disease burden in the population.⁶

Globally, according to a WHO study, 0.9 million healthcare workers (HCW) contract the HCV virus, 70000 contracts the HBV virus, and 170000 contract the HIV virus, leading to about 15000 HCV infections and 1,000 HBV infections, respectively. Hence need to assess the knowledge of staff nurses regarding the prevention and management of needle stick injury and providing education for improving their knowledge is essential.

Healthcare settings are constantly exposure to numerous occupational hazards. Blood born disease is a major disease healthcare workers fear. It has been reported that about that nearly 3 million suffer from percutaneous injury every year.

The knowledge-based questionnaire was developed by the investigator to collect the data. The study finding showed that 6 students (20%) had knowledge about needle stick injury, 24 students (80%) had moderate knowledge, and none of them were adequately knowledgeable regarding needle stick injury (Rahil Shil, Shivalaela)¹⁰

A cross-sectional study was carried out in a tertiary care Hospital in Delhi in 2010. 322 Health workers of the hospital were the samples. A large percentage (79.5%) of HCWs reported having one or more NSIs, maximum Nursing students (94.2%), among 60.9% washed the site of injury with soap and water. 14.8% did not follow their most recent NSI Management. Only 20 (7.8%) of the HCWs took post-exposure prophylaxis against HIV-AIDS after their injury. 11 (4.3%) knew that NSI was a high risk. Very few NSIs are reported to the healthcare systems. Only about 1 in 4 HCWs reported their injury to a supervisor or senior. The study concludes that there is an urgent need to educate on NSIs among all healthcare workers.⁵

According to WHO the worldwide pooled prevalence of NSIs among healthcare workers during career times and the previous year was 56.2% and 32.4% respectively. The review found a high prevalence of occupational exposure to NSIs among healthcare workers and suggested the need to improve occupational health and safety services in the healthcare systems (2021 report).¹¹

Objectives

1. To assess the knowledge of staff nurses regarding the prevention of needle-stick injuries through a structured knowledge questionnaire before and after the administration of the self-instruction module
2. To assess the practices of staff nurses regarding the prevention of needle stick injury through a structured observation checklist before and after the administration of the self-instruction module
3. To find the association of staff nurse pre-test knowledge and practices regarding the prevention of needle-stick injuries with their selected personal variables viz., age, professional education, Number of experiences, and designation.

Null Hypothesis

H₀₁: There will be no significant increase in the knowledge of the nurses after the structured teaching program. H₀₂: There will be no significant relationship between the pre-test knowledge of the staff nurses with the selected demographic variable.

Research Hypothesis

H₁: There will be a significant 30% increase in the knowledge of the nurses after the structured teaching program.

H₂: There will be a significant relationship between the pretest knowledge of the staff nurses with the selected demographic variable.

MATERIALS AND METHODOLOGY

Research Approach and Design

- **Research Approach:** Pre - Experimental
- **Research Design:** One group, Pre-test post-test design
- **Settings Of The Study:** Critical area Units and wards at Apollo Speciality Hospitals, Nellore
- **Duration Of The Study:** Three months (August - October 2022)
- **Data Collection Method:** Checklist and through structured questionnaire method
- **Target Population:** RN who is working in Critical Care Unit and wards

Sample:

- **Sample Size:** 200

- Sampling Method: Convenient Sample

Inclusion Criteria

- RN who works in critical care units and wards
- RN who is willing to participate
- RN who is present on duty on the day of study

Exclusion Criteria

- Roles (Clinical Instructor, Nurse Educator & above cadre)

Tool

The Tool Consists Of Three Sections:

Section 1: Demographic Performa includes 3 items to collect information on the subject's demographic characteristics. It includes age, qualification, years of experience, Previous knowledge regarding needle stick injury, and any needle stick injury Data was collected by the investigator through a self-reported questionnaire (pen and pencil method).

Selection 2: Structured knowledge questionnaire consists of 10 multiple choice questions to assess the knowledge regarding the Prevention of self-instruction module on Needle stick injury Data was collected by the investigator through a self-reported questionnaire (Pen and pencil method)

Percentage	Knowledge Level
(<40)%	Poor
(40-59) %	Average
(60-79) %	Good
(>80)%	Excellent

Section 3: The observation checklist on consists of 21 criteria to assess the practice of staff nurses, observed by the investigator Prevention of self-instruction module on Needle stick injury. The one score is for each correct step and no score is awarded for missed step.

Percentage	Practice level
<50%	Poor
51-79%	Good
>80%	Excellent

RESULTS

The collected data was organized, tabulated, and analyzed based on the objectives of the study by using descriptive statistics that are percentage, mean, and standard deviation, and inferential statistics such as chi-square and t-test. The paired 't' test was used to find out the difference in knowledge between pre and post-test and the chi-square test was used to test the association between demographic variables in the Pre & Posttest knowledge score. The findings of the study were presented in the form of tables and figures mentioned in the result.

Section: I Description of subject based on demographic variable. Frequency and percentage distribution based on demographic variables

S.No	Attributes	Frequency	Percentage (%)
1.	Staff		
	Age in years		
	a. 20-24years	89	44.5%
	b. 25-29years	78	39%
	c. 30-34years	21	10.5%
	d. 35 years and above	12	6.0%
2	Qualification		
	a. GNM	38	19%
	b. B. Sc / Post Basic	157	78.5%
	c. M.Sc.	5	2.5%
3.	Experience		
	a. 1 Year	78	39%
	b. 2-3years	88	44%
	c. 4-5 years	20	10%
	d. 5 and above	14	07%
5.	Previous knowledge regarding needle stick injury.		
	Yes	168	84%
	No	32	16%
6	Had any needle stick injury.		
	Yes	11	5.5%
	No	189	94.5%

Table 1: Percentage-wise distribution of staff nurses according to age

depicts that the highest 44.5% of staff nurses were in the age group of 20-24 years and the lowest 6.0% of staff nurses above 36 years. The percentage distribution of 38% of staff nurses had more than 5 years of experience and 44% of staff nurses had 2-3 years of experience. 78.5% of staff had the qualification of BSc Nursing and 2.5% of staff had the qualification of MSc Nursing. Among the 200 Staff nurses, 84% had previous knowledge regarding the prevention and management of needle stick injury and only 12% of staff nurses had no previous knowledge regarding the prevention and management of needle stick injury. 94.5% of staff nurses had no history of needle stick injury and 5.5% had a history of needle stick injury.

Section IIA

- To assess the knowledge of staff nurses regarding the prevention of needle-stick injuries through a structured knowledge questionnaire before and after the administration of the self-instruction module

Section IIA: Pre-test knowledge score of Staff Nurses

N=200

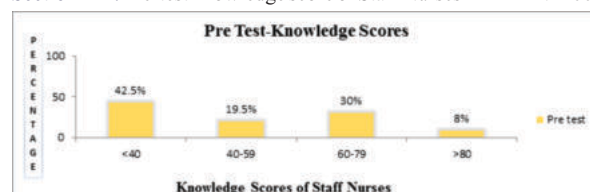


Figure 1: The bar diagram demonstrates the frequency and percentage distribution of knowledge scores among staff nurses before the administration of the teaching program.

Section IIA: Post-test knowledge score of Staff Nurses

N=200

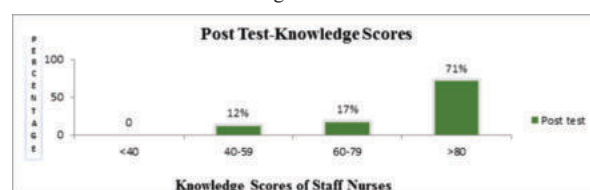


Figure 2: The bar diagram demonstrates the frequency and percentage distribution of knowledge scores among staff nurses after the administration of the teaching program.

Section IIA: Pre and Post-Test knowledge score of Staff Nurses

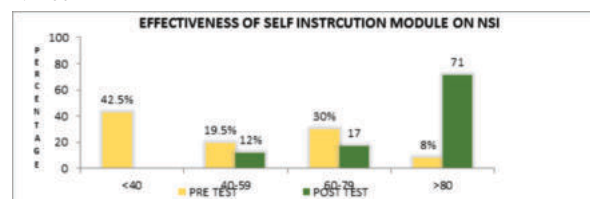
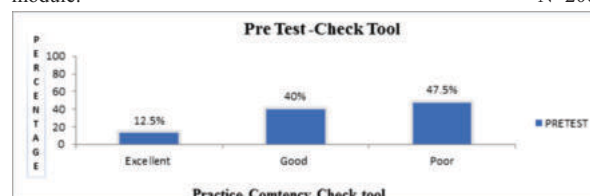


Figure 3 reveals that 29% of staff had poor knowledge, 18% of staff had good knowledge, 49.5 % of staff have average knowledge, and 2.5% of staff had excellent regarding the Effectiveness of self-instructional modules on the prevention of needle stick injury. On the posttest 82% had excellent knowledge, 18% had good knowledge and no one had poor knowledge & average regarding the Effectiveness of the self-instructional module on the prevention of needle stick injury after the structured teaching programme.

Section IIB: To assess the practices of staff Nurses regarding the prevention of needle stick injury through a structured observation checklist before and after the administration of the self-instruction module.

N=200



Section IIB: observation checklist after the administration of the self-instruction module.

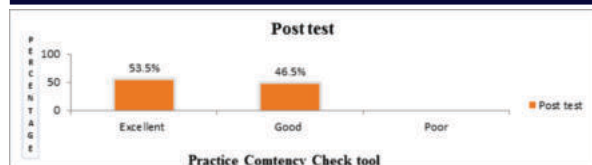


Figure 4: The bar diagram depicts the percentage distribution between pretest practice scores.

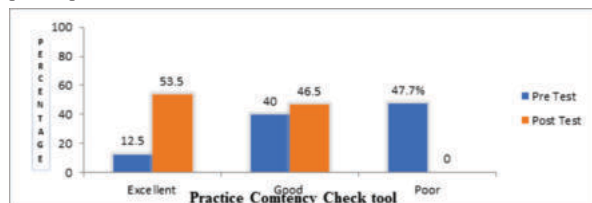


Figure 5: The bar diagram depicts the percentage distribution between pre-test practice scores.

Section: III: To find the association of staff nurse pre-test knowledge and practices regarding needle-stick injury prevention.

Table 2: Mean, Mean difference, SD, and t value of knowledge scores in the target group before and after administration of the teaching program
N=200

Observation	Mean	Mean difference	SD	't'
Pre-Test	5.2	5.4	2	13.4*
Post-Test	10.6		1.5	

't' df(39)=1.68, P<0.05

*Significant

As the calculated 't' value is greater than the table value, the research hypothesis is accepted and the null hypothesis is rejected.

Table 3: Mean, Mean difference, SD, and t value of Practice scores in target group before and after administration of self-instruction module teaching program,
N=200

Observation	Mean	Mean difference	SD	't'
Pre-Test	6.3	7.2	3.06	12.2*
Post-Test	13.5		2.09	

't' df(39)=1.68, P<0.05*Significant

As the calculated 't' value is greater than the table value, the research hypothesis is accepted and the null hypothesis is rejected. The teaching program was effective in enhancing knowledge and practice as the mean value of the post-test (10.6) and (13.5) was higher than the pre-test means values (5.2) and (6.3) and the calculated "t" test value [13.4, 12.2] of knowledge and practice score was more than the table value [1.68] at 0.05 level of significance. The self-instruction module Programme is effective to improve the knowledge of Staff Nurse regarding prevention of needle stick injury. Paired t test was calculated to analyze the difference in pretest and posttest knowledge scores of staff nurse regarding self-instruction module prevention of needle stick injury. Shows the highly significant difference between the pre-test and post-test knowledge score in all areas.

DISCUSSION

A highly significant difference was found between the pretest and posttest knowledge score (P<0.05) the computed value 12.2* is greater than the t value 2.09 and it is significant at 0.05 level. So, hypothesis 1 is accepted. The structured teaching Programme is effective to improve the knowledge of Staff Nurses regarding the prevention and management of needle stick injuries. The study shows that only age has an association others had no significant association between the pre-test knowledge score of staff nurses regarding the prevention and management of needle stick injury and selected demographic variables. An evaluative study to assess the effectiveness of a self-instructional module on prevention of needle stick injury on staff nurses at Apollo Speciality Hospitals, Nellore. The mean knowledge score in the pretest is 5.2 and the mean knowledge of the post-test is 10.6. The study result shows that structured teaching Programmes are significantly effective in improving the knowledge of Staff Nurses. In our study overall mean knowledge score of 6.3 obtained by the subject in the post-test was higher than the mean pretest score of 13.5.

CONCLUSION

The needle stick injury can lead to life-threatening infectious diseases like HIV, hepatitis B, and hepatitis. The majority of healthcare workers didn't have adequate knowledge regarding needle stick injury prevention and management. So it is very important to improve their knowledge to avoid the consequences in their life. Most of the health care settings had introduced various plans to avoid needle stick injuries like waste management techniques, teaching, and practicing programs. Our unit also provides proper orientation during the induction period regarding needle stick injury prevention and management, proper labeling of sharp containers and waste management.

Recommendations

- A large-scale study can be done for replication to standardize the structured teaching Programme regarding the prevention and management of needle stick injury.
- Similar study can be conducted with an experimental research approach having a control group.
- A comparative study can be carried out to generalize the findings.

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