



AN EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF AN EDUCATIONAL INTERVENTION ON KNOWLEDGE REGARDING PREVENTION OF NEEDLE STICK INJURY AMONG HOUSEKEEPING STAFF AT ASRAM HOSPITAL, ELURU.

Child Health Nursing

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ABSTRACT

Background: Needle-stick injuries are an occupational hazard among hospital housekeeping staff. Improving knowledge is essential for prevention. **Objectives:** To assess regarding needle-stick injury prevention, evaluate the effectiveness of an educational intervention, compare pre- and post-test scores and identify associations with selected demographic variables. **Methodology:** A quantitative quasi-experimental study was conducted among 80 housekeeping staff at ASRAM Hospital, Eluru, with 40 participants each in experimental and control groups selected through convenient sampling. Data were collected using a structured knowledge questionnaire. The experimental group received a 45–60 minute educational session using lecture, discussion, visual aids, and demonstration. **Results:** Experimental-group knowledge increased from 32.1% pre-test to 88.75% post-test, compared with 32.5% to 36.5% in the control group. The paired t-value was 35.37 ($p < 0.05$). **Conclusion:** The educational intervention was effective in improving knowledge prevention of needle-stick injuries among housekeeping staff.

KEYWORDS

Needle-Stick Injury, Housekeeping Staff, Educational Intervention, Knowledge Assessment, Occupational Safety, Infection Prevention.

INTRODUCTION

A needle stick injury (NSI) is an accidental skin-penetrating injury caused by a contaminated needle, while a sharp injury (SI) results from contact with sharp instruments. WHO reports more than 3 million occupational exposures annually among 35 million HCWs. Housekeeping staff are particularly at risk during biomedical waste handling and cleaning, with studies reporting NSI rates of 33.64%–36.8%. Improper sharp disposal, recapping and inadequate puncture-proof containers are common contributing factors.

NSIs can transmit blood-borne infections, including HBV (3%–10%), HCV (3%), and HIV (0.3%). The CDC recommends universal precautions and appropriate post-exposure prophylaxis (PEP). Therefore education and safe waste handling are essential for NSI prevention. Therefore, education and safe waste handling are essential for NSI prevention.

NEED FOR THE STUDY

Needle-stick injuries are a major occupational hazard, particularly among housekeeping staff. Housekeeping staff face a disproportionately high risk. A Saudi Arabian hospital study (2011–2013) reported NSI rates of 17.8% among housekeeping staff, compared with 3.7% among nurses and 1.3% among doctors. In Mangalore (2016), 77% of housekeeping staff received training, while 14% lacked basic information. Studies reported NSIs of 12.5% in Western India (2023), 15.6% in public and 9.4% in private hospitals in Meerut (2021) and 24% in Delhi (2019).

Despite the Needlestick Safety and Prevention Act (2000) and its effective implementation from April 18, 2001, underreporting and inadequate knowledge regarding NSI prevention remain concerns. Housekeeping staff are particularly vulnerable during biomedical waste handling. Therefore, continuous education, adequate safety resources, proper reporting and regular monitoring are essential to improve knowledge and practices and reduce occupational NSI risk.

Problem Statement

An Experimental study to Assess the effectiveness of an educational intervention on knowledge regarding prevention of needle stick injury among housekeeping staff at ASRAM hospital, Eluru.

Objectives

- To assess the level of knowledge regarding prevention of needle stick injury.
- To evaluate the effectiveness of the educational intervention on improving knowledge.
- To compare pre test and post test knowledge after educational intervention.
- To find out association between post test knowledge with selected demographic variables.

Hypothesis

H0: There is a significant difference between pre-test and post-test knowledge score.

H1: Post-test knowledge scores is significantly higher than the mean pre-test knowledge score.

H2: There is a significant association between levels of knowledge with selected demographic variables.

METHODOLOGY

Research Approach: Quantitative experimental approach.

Research Design: Quasi-experimental pre-test and post-test design.

Setting: ASRAM Hospital, Eluru.

Variables:

Independent Variable: Educational intervention on NSI prevention.

Dependent Variables: Knowledge regarding NSI prevention.

Target Population: Housekeeping staff.

Sample: Housekeeping staff at ASRAM Hospital.

Sample Size: 80 participants

Sampling Technique: Non-probability convenience sampling.

Inclusion Criteria

Staff who understood Telugu or English, were willing to participate and were available during the study.

Exclusion Criteria

Staff on leave or unwilling to participate were excluded

Development and Description of the Tool

Tool Development: The tool was developed from literature review and expert guidance.

Section A: Demographic variables-age, gender, experience, previous knowledge, work area, needle/sharp injuries and immunization status.

Section B: Tool to Assess Score for Total 20 Structured Knowledge Interview Questionnaire. Scoring: Yes 1. No-0.

Level of knowledge	Score	Percentage
Adequate knowledge	>15-20	>75–100%
Moderate knowledge	10-15	50–75%
Inadequate knowledge	< 10	<50%

Plan for Data Analysis

Descriptive Statistics: Frequency, percentage, mean and standard deviation.

Inferential Statistics: Paired t-test and chi-square test.

Major Findings of the Study

Section I: Distribution of Housekeeping Staff According to Selected Demographic Variables.

Among 80 housekeeping staff, 40 (50%) were in the experimental group and 40 (50%) in the control group. In the experimental group, 18 (45%) were aged 31–40 years, while 18 (45%) of the control group were aged 20–30 years. All participants were female. More than 5 years of

experience was reported by 26(65%) experimental and 24(60%) control participants. No previous knowledge was reported by 25(62.5%) participants in each group. The experimental group mainly worked in the general ward and ICU, 15(37.5%) each, while 25 (62.5%) control participants worked in the general ward. 25 (62.5%) participants in each group reported five or more needle/sharp injuries. Regarding immunization, 20(50%) in each group had received TT vaccination; Hepatitis B vaccination was reported by 5(12.5%) experimental and 3(7.5%) control participants.

Section II; Comparison of Pre-test and Post-test Knowledge Scores Regarding Prevention of NSI

In the pre-test, all 40(100%) housekeeping staff had inadequate knowledge <50%, with none having moderate or adequate knowledge. Following the educational intervention, the post-test showed that all 40(100%) participants achieved adequate knowledge >75%. The mean knowledge score increased from 32.1% to 88.75%. The improvement was statistically significant ($t=35.37$, $df=39$, $p<0.05$), confirming the effectiveness of the intervention.

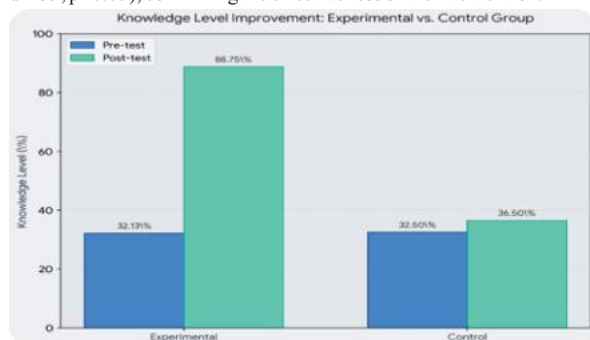


Figure I: Comparison of Level of Knowledge Between Pre-test and Post-test for Experimental Group and Control Group Participants.

Table 1; Mean, Mean Percentage and Standard Deviation, T-test Value of Demographic Variable Previous Knowledge in Post test for Experimental Group. N=40

S.No	Variable	Mean	Mean%	Standard Deviation	T-test value
1.	Previous knowledge	17.75	88.75%	1.04	CV=35.37 TV=2.04, df=39 P < 0.05 S

Section III: Association of Post-test Knowledge with Selected Demographic Variables

The chi-square analysis showed that age ($\chi^2=5.63$, $df=6$), gender ($\chi^2=0$, $df=2$), experience ($\chi^2=1.11$, $df=6$), working department ($\chi^2=0.66$, $df=6$), number of needle pricks/sharp injuries ($\chi^2=1.22$, $df=6$) and TT/Hepatitis B vaccination ($\chi^2=1.77$, $df=6$) were not significant (NS) at the level of $p<0.05$.

Nursing Implications

Nursing Practice: Promotes safe handling, segregation, and disposal of sharps to reduce the risk of needle-stick injuries.

Nursing Education: Emphasizes regular education and demonstration on standard precautions, safe sharps disposal, and prevention of needle-stick injuries.

Nursing Administration: Strengthens safety policies, injury reporting systems, vaccination coverage, and availability of protective resources.

Nursing Research: Encourages further research to evaluate the long-term effectiveness of educational interventions and adherence to safe practices.

Limitations

The study was limited to telugu- or english-speaking housekeeping staff and a six-week duration.

Recommendations

- Provide mandatory, language-appropriate safety orientation for new auxiliary staff.
- Ensure free Hepatitis B vaccination and compliance monitoring.
- Conduct regular audits of sharps segregation and biomedical waste handling.

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