

Effectiveness of educational program on knowledge regarding needle stick injuries among nursing students

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World Journal of Advanced Research and Reviews, 2023, 18(01), 684–689

Publication history: Received on 06 March 2023; revised on 13 April 2023; accepted on 16 April 2023

Article DOI: <https://doi.org/10.30574/wjarr.2023.18.1.0663>

Abstract

The aims of this study are to assess the knowledge regarding needle stick injury in nursing students, The objective of study was to assess the level of knowledge regarding needle stick injury among the nursing students, to evaluate the effectiveness of educational program on knowledge regarding needle stick injury among the nursing students, The use of safety practice exposure, to blood and blood containing material and contributing factors. A multiple choice questionnaire was completed by 60 nursing students studying at Shri Ram Murti Smarak College of Nursing, Bareilly. These sample was selected by using the purposive sampling method. The data was collected by using the multiple choice questionnaire and these data was analyzed by SPSS version 27. The result of study was 75% of the participants were belongs to 22-23 years age group and 11.7% of the participants were belong to 24-25 years and 6.4% were belong to 26-27 years age group & 6.4% belong to more than 28 year, majority of the participants i.e. 53.3% were female and remaining 46.7% were male. 80 % of the participants were unmarried, 10% of the participants were married . 43.4% were having GNM qualification, 51.7% were having B.Sc. Nursing degree and 1.7% were having post basic nursing degree and remaining 3.3% having NPCC degree. majority of the participants are that is 78.3% were not participated in any educational program and remaining 21.7% were participated in educational program. Interpreted the mean post-test knowledge score (16.37 ± 3.37) of the experimental group was greater than the mean pre-test knowledge score (10.87 ± 3.61) of the experimental group with the mean difference of 5.5.

Keywords: Needle sticks injury; Universal precautions; Nursing students; Protective glasses

1. Introduction

A needle-stick injury (NSI) is defined as “a penetrating wound with an instrument that is potentially contaminated with the body fluid of another person” [1]. NSIs represent a major occupational hazard in the health care industry, with professional nurses incurring a large proportion of the total burden particularly with items that have been previously used on patients [2].

Injuries occurred most frequently when the nursing students was separating a needle and syringe recapping a needle, transporting needles for disposable and giving an injection [3]

Needle-stick and other percutaneous injuries pose the greatest risk of occupational transmission of serious blood borne infections such as hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV) to health care workers (HCW) and patients [4].

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In Turkey, about four million people are estimated to be carriers of chronic HBV between 0% and 2% of the blood donor population were found to be HCV antibody positive. The numbers of patients with HIV reported is relatively low, rates have been increasing steadily in recent years, whereas this number reached a total of 1325 in 2001 [5].

A cross-sectional study was undertaken to measure the incidence of SIs in Taiwanese support personnel. All support personnel, including laundry workers, cleaners, porters and central supply workers, from 16 hospitals were surveyed for SIs, sustained between June 1996 and July 1997[6]

Injuries occurred most frequently when the nurse was separating a needle and syringe recapping a needle, transporting needles for disposable and giving an injection [7]

The Centre for Disease Control and Prevention (CDC) and The Occupational and Safety Health Administration have been developed guidelines for the prevention of these injuries. The safety measures include hand washing, gloves, mask, eye protection, face shield, gown, patient care equipment environmental control, linen, occupational health and blood borne pathogens and patient placement [8]

Of the 1,555 nurses who returned a completed questionnaire, 49.6% (95% confidence interval [95 CI] 47.1%-52.1%) recalled at least one sharps injury, of which 52.6% were classified as NSI. Just over one fourth (26.3%; 95 CI 24.1%-28.6%, 409/1,555) of respondents sustained at least one NSI, 75.6% (95 CI 71.1%-79.6%) recalled having sustained between 1 and 4 injuries in the past 12-months, of which 72.2% involved a hollow-bore needle and 95.1% of injuries involved fingers. Predictors of NSI included being a registered nurse (odds ratio [OR] 1.6, 95% CI 1.1-2.3) or midwife (OR 2.4, 95% CI 1.4-3.9) compared with nurse managers, being employed in a hospital located in other cities smaller than Shiraz (OR 1.4, 95% CI 1.1-1.8). Nurses who reported a previous contaminated NSI were less likely to sustain a further injury (OR 0.3, 95% CI 0.2-0.4).[9]

The estimated number of percutaneous injuries sustained annually by hospital-based HCWs was 384,325 (95% confidence interval, 311,091 to 463,922). The number of percutaneous injuries sustained by HCWs outside of the hospital setting was not estimated.[10]

NSIs require appropriate evidence-based management to minimize the risk of infection. Guidelines on exposure, to potential sources of HIV, HBV and HCV exist and have been adapted for use by some practices [11]

According to the World Health Organization (WHO), 16000 HCV, 66000 HBV and 1000 cases of HIV may have occurred worldwide in the year 2000 among health care workers through their exposure, to NSIs [12].

WHO reports that the number of sharp and needle stick injuries per person among health care are 4 per year in Africa, Western Mediterranean and Asia [13].

The risk of occupational infection is rises by a factor including the following: hospital overcrowding lower ratio of HCWs to patients, limited awareness of the risks associated with exposure, to blood, failure to implement standard precautions, inadequate supplies of basic safety equipment, handles contaminated needles and other sharp instruments are reuse. Developed countries recognized the importance of safety practice among HCWs [14]

He Centre for Disease Control and Prevention (CDC) and The Occupational and Safety Health Administration have been developed guidelines for the prevention of these injuries. The safety measures include hand washing, gloves, mask, eye protection, face shield, gown, patient care equipment environmental control, linen, occupational health and blood borne pathogens and patient placement [15].

They reported good knowledge, positive attitudes and practices. Cluster 2 subjects were characterized by relatively poor knowledge, negative attitudes and practices. Significant differences towards standard and transmission-based precautions were found between clusters, except attitudes towards choosing protective personal equipment ($p = 0.095$) and practices on wearing gowns and eye shields/goggles ($p = 0.759$). Attitudes of Cluster 2 staffs were highly significant, but weakly correlated with practices ($r(s) = 0.39, p < 0.05$).[16]

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2. Material and methods

2.1. Design

A pre experimental study was used in the study.

2.2. Setting

Shri Ram Murti College of Nursing Bareilly was the setting of study.

2.3. Sample

Sample of study the nursing students studying in Shri Ram Murti College of Nursing Bareilly

2.4. Sampling method

Purposive sampling was used in the study

2.5. Sample size

Finally a total of 60 nursing students were included in the study.

2.6. Demographic variables

The demographic variables of this study are includes Age in years, Gender, marital status, professional education and any educational program

2.7. Independent variables

In the present study the independent variable was the education intervention needle stick injury among the nursing students

2.8. Dependent variables

In the present study the dependent variable was knowledge of nursing students regarding needle stick injury

Instrument:- of data collection

- **Part :-1** comprised the demographic data.
- **Part :-2** comprised the multiple choice questionnaire.

2.9. Data collections

Data were collected from 60 nursing students who were chosen with the purposive sample method. The researcher distributed the questionnaire which was accompanied by verbal instructions to all nursing students present when each unit was visited. All those approach agreed to participate. Instructions were given to complete and return the questionnaire to the researcher directly or via their ward managers. Nursing students were approached by the researcher in the units where they were studying and given the questionnaires, which were collected at the end of the shift of the same day.

2.10. Data analysis

All data were collected by the researchers. It was entered into SPSS version 20 for Windows. Data analysis was conduct by academic employed in university. It was analyzed the data using descriptive statistics.

2.11. Section A: description of the demographic variable

Table 1 Description of sample characteristics in terms of frequency and percentage (n=60)

Demographic variable		Experimental group	
		F	%
Age in years	22-23	45	45
	24-25	7	7
	26-27	4	4
	≥28	4	4
Gender	Male	32	32
	Female	28	28
Marital Status	Married	12	12
	Unmarried	48	48
Professional Education	G.N.M	26	26
	B.Sc. Nursing	31	31
	Post Basic Nursing	1	1
	NPCC	2	2
Any education program regarding needle stick injury?	Yes	13	13
	No	47	47

Table 2 Level of pretest Knowledge Score among The Nursing Students

Level of knowledge	Score	N	%
Adequate	(21-30)	00	00
Moderate	(11-20)	05	8.3
Inadequate	(0-10)	55	91.6

3. Results

In this 75% of the participants were belongs to 22-23 years age group and 11.7 % of the participants were belong to 24-25-33 years and 6.4% were belong to 26-27 years age group &6.4% belong to more than 28 year, majority of the participants i.e. 53.3% were female and remaining 46.7% were male. 80 % of the participants were unmarried, 10% of the participants were married . 43.4% were having GNM qualification, 51.7% were having B.Sc. Nursing degree and 1.7% were having post basic nursing degree and remaining 3.3% having NPCC degree. majority of the participants are that is.78.3% were not participated in any educational program remaining 21.7% were participated in educational program.

3.1. Section B: effectiveness of educational intervention on knowledge regarding on needle stick injury

Table 3 Comparison of mean pre-test and post-test knowledge scores of the experimental group (n= 60)

Test	Range	Mean ± SD	Mean Difference	df	t- value (p-value)
Pre-test	28-7=21	10.87 ± 3.61	5.5	59	19.11(0.000)
Post-test	29-12= 17	16..37 ± 3.37			

$$t(99) = 1.671, p < 0.05$$

Table 6.1 interpreted the mean post-test knowledge score (16.37 ± 3.37) of the experimental group was greater than the mean pre-test knowledge score (10.87 ± 3.61) of the experimental group with the mean difference of 5.5. The calculated t value was ($t = 19.11$) more than the tabled value ($t_{99} = 1.671$). Henceforth the finding denoted there is no significance difference in the mean post-test knowledge scores.

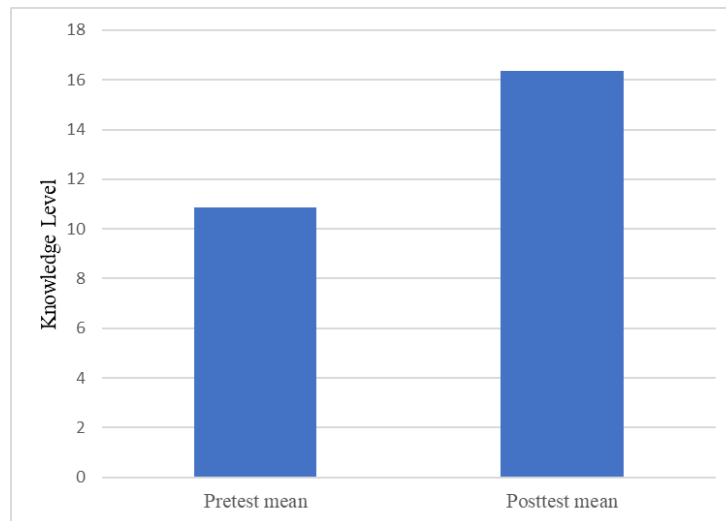


Figure 1 Comparison of mean pre-test and post-test knowledge scores of the experimental group

4. Discussion

75% of the participants were belongs to 22-23 years age group and 11.7% of the participants were belong to 24-25-33 years and 6.4% were belong to 26-27 years age group & 6.4% belong to more than 28 year, majority of the participants i.e. 53.3% were female and remaining 46.7% were male. 80% of the participants were unmarried, 10% of the participants were married. 43.4% were having GNM qualification, 51.7% were having B.Sc. Nursing degree and 1.7% were having post basic nursing degree and remaining 3.3% having NPCC degree. majority of the participants are that is 78.3% were not participated in any educational program remaining 21.7% were participated in educational program.

5. Conclusion

Our study shown that in working surgical departments and intensive care units young nursing students with middle professional experience are higher exposed to sharp and needle stick injuries. Be most important findings our study, most of the nursing students did not report NSIs to the health authors.

- Avoid the use of needles where safe and effective alternatives are available.
- Help your employer select and evaluate devices with safety features.
- Use devices with safety features provided by your employer.
- Avoid recapping needles.
- Plan for safe handling and disposal before beginning any procedure using needles.
- Dispose of used needles promptly in appropriate sharps disposal containers.
- Report all needle stick and other sharps-related injuries promptly to ensure that you receive appropriate follow up care.
- Tell your employer about hazards from needles that you observe in your work environment. Regular auditing of the implantation and of these measures is also needed. A national survey of NSI among nurses should also be conducted in this country.

Compliance with ethical standards

Acknowledgments

Students, Faculty & Shri Ram Murti College of Nursing.

Disclosure of conflict of interest

The authors declare that there is no conflict of interest that would affect the findings of this study.

Statement of informed consent

Informed consent was obtained from all participants included in this study.

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