

Effect of Teaching Program on Knowledge Regarding the Prevention and Management of Needle Stick Injury among Staff Nurses at Selected Hospital, Ajman, UAE

Saji Shibu¹, Geetha Chandran², Soney M. Varghese³, Remya R. Pillai⁴

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Abstract

Introduction: World Health Organization estimates disclose that 1 in 10 health care workers (HCWs) worldwide sustain a needle stick injury each year. The risk of infection due to needle stick injuries (NSIs) varies from 0.5% to 40% for HIV and HBV infections, respectively. Globally, there is gross under-reporting of NSIs with the actual incidence of NSIs being much higher than those reported.

Methodology: A quantitative research approach with one group pretest posttest design was used to assess the effectiveness of teaching program on knowledge regarding prevention and management of needle stick injury among staff nurse in a selected Hospital in Ajman, UAE. Data were obtained from 68 staff nurses by using a convenient sampling technique. Permission was sought from the hospital management and informed consent was taken from the participants. On 14th day after the teaching program, posttest was conducted for all the participants. The collected scores were tabulated and entered in the excel sheet and further analyzed by using SPSS statistical package.

Results: The result shows that 79% of the staff nurses had adequate level of knowledge and only 21% had moderate level of knowledge. None of the staff nurses had poor knowledge regarding needle stick injury. After teaching program 97% of the staff nurses had adequate level of knowledge and only 3% had moderate level of knowledge. None of the staff nurses had poor knowledge regarding needle stick injury. Structured teaching program on needle stick injury was found to be effective at P (0.002). No association was found with any of the selected demographic variables.

Conclusion: The findings of the study revealed that the structured teaching program could make a significant improvement in knowledge level of staff nurses. The study highlights the need for conducting similar awareness programs regarding prevention and management of needle stick injuries among healthcare professionals.

Keywords: Needle Stick Injury; Staff Nurses; Structured Teaching Program.

Author's Affiliations: ¹Student, ³Assistant Professor, ⁴Lecturer, Department of Nursing, College of Nursing, Gulf Medical University, Ajman, United Arab Emirates.

Corresponding Author: Saji Shibu, Department of Nursing, College of Nursing, Gulf Medical University, Ajman, United Arab Emirates.

E-mail: sajilive@gmail.com

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INTRODUCTION

The United States National Institute of Occupational Safety and Health (NIOSH) defines Needle stick injuries (NSIs) as "a penetrating wound with an instrument that is potentially contaminated with another person's

body fluid". It is estimated that 12 billion injections are administered each year worldwide.¹ Center for Disease Control (CDC) reported that about 600,000 to 800,000 needle stick injuries occur annually among 8 million health care professionals who work in hospitals and other health care settings in the United States alone.²

Accidental needle stick injuries pose a hazard for health care workers and for the general public.³ Medical, nursing, dental, and midwifery workers are at high risk for occupational exposure to blood borne pathogens via sharp injuries such as needle stick injuries.⁴ According to the World Health Organization, 66000 cases of hepatitis B (HBV), 16000 cases of hepatitis C (HCV), and 1000 cases of HIV might occur worldwide among health care workers through their exposure to NSIs.⁵ The risk of transmission of infections from needle stick injuries is reported as 3%, 30% and 0.3% for Hepatitis C, Hepatitis B and HIV respectively. Moreover, transmission risk depends on the viral load of the patient and the amount of blood passes from one to the other.⁶ Accidental NSIs result in more than 100000 injuries annually among health care workers in UK hospitals. The major activities causing needle stick injuries are administering injections, recapping needles, needles disposal, handling trash and dirty linen (downstream injuries), blood sampling and transferring blood or anybody fluid from a syringe to a specimen container (such as a vacuum tube). Safety practice has a serious impact on safety and health maintenance of health care workers.⁷

Effective measures to prevent blood borne infections from NSIs include immunization against HBV, implementing Universal Precautions, eliminating unnecessary injections, eliminating needle recapping and disposing of the sharp into a sharp's container immediately after use, use of safer devices such as needles that sheath or retract after use, provision and use of personal protective equipment, and staff training regarding risks and prevention of transmission.⁸ Post-exposure prophylaxis with antiretroviral medications can reduce the risk of HIV transmission by 80%.⁹ Despite implementation of preventive measures to reduce sharp injuries which includes equipment design improvement and employee training, they continue to occur in every step of sharp devices usage, disposal or disassembly.¹⁰ Most NSIs go under reported and this leads to increased risk of mortality and morbidity among health care providers as well as the clients and their family who may contract the disease. This study is aimed to assess the effect of teaching program on knowledge regarding NSIs and their prevention in an attempt

to spread awareness among nurses working at a selected hospital in UAE.

METHODOLOGY

Quantitative research approach with one group pretest posttest design was used to assess the effectiveness of teaching program on knowledge regarding prevention and management of needle stick injury among staff nurses working in a selected Hospital, Ajman, UAE. Objectives of the study were to evaluate the effect of structured teaching program and to find the association between knowledge regarding prevention and management of needle stick injury with selected demographic variables. The study included staff nurses who joined newly, were between the age group of 20-55 years and those who were willing to participate.

Structured questionnaire was used to assess knowledge regarding prevention and management of needle stick injury. The tool consisted of two Sections. Section A assessed the Demographic characteristics of the participants while Section B consisted of questions related to the prevention, management and treatment of needle stick injury. The reliability of the tool was found to be 0.86. Data collection initiated after obtaining ethical clearance from institutional review board. 68 staff nurses were recruited using convenient sampling and consent was obtained from each of them. Pretest was conducted followed by a teaching program on the same day. On 14th day a posttest was conducted. The collected scores were tabulated and entered in the excel sheet and further analyzed by using SPSS package.

RESULTS

i. Demographic Characteristics of Staff Nurses

Most (44 %) of the staff nurses were between 31 to 40 years. Only (14%) of the staff nurses were above 40 years. Most (91%) of the staff nurses were females and (9%) were males. With regards to education, majority of the staff nurses (69%) holds BSN. Only (3%) of the staff nurses had completed post-graduation. With regards to experience, majority (59%) of the staff nurses were having 6-10 years and (41%) of the staff nurses were having 1-5 years but none of them had below 1 year of experience. The previous needle stick injury data shows that most of the staff nurses (85%) didn't have any needle stick injury whereas (14%) had history of needle stick injury. Most of the staff nurses (81%) received

training already and very few (19%) had no history of previous training. Among that majority (81%) were had received training from hospital. Few (19%) were had received training from non-hospital.

ii. *Effectiveness of Structured Teaching Program on Needle Stick Injury among Staff Nurses*

The result shows that 79% of the staff nurses had adequate level of knowledge and only 21% had moderate level of knowledge. None of the staff nurses had poor knowledge regarding needle stick injury. 97% of the staff nurses had adequate level of knowledge and only 3% had moderate level of knowledge. None of the staff nurses had poor knowledge regarding needle stick injury. The mean difference in knowledge score between

pre and posttest was 23.70. Statistical significance was calculated by using student's 't' test, P value 0.002 indicates significant knowledge gain post intervention.

iii. *Association between Knowledge Regarding Prevention and Management of Needle Stick Injury and Selected Demographic Variables*

The result shows that there was no statistically significant association between level of knowledge and any socio demographic variables like age (P value=0.2537), gender (p-value=0.6148), educational status (P value=0.9925), experience (P value=0.9653), previous needle stick injury (P value=0.6575) and previous training (P value=0.4623).

Table 1: Level of Knowledge among staff nurses during Pre-test and Post-test

Level of knowledge	Pre test		Post test		Mean/SD	P value
	f	%	f	%		
Poor (0-12)	0	0	0	0	Mean 23.70 SD 1.977	P=0.002 S*
Moderately Adequate (13-18)	14	20.58	2	2.94		
Adequate (19 & above)	54	79.14	66	97.05		

S* - Significant at P<0.005

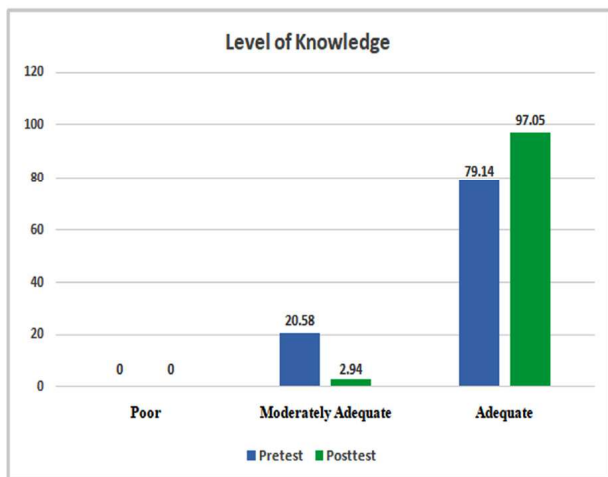


Fig. 1: Level of knowledge on Needle Stick Injury among staff nurses during Pre and Post-test

DISCUSSION

Out of 68 participants most (44%) of the staff nurses were between 31 to 40 years and only (14%) of the staff nurses were above 40 years. 91% of the staff nurses were females and (9%) were males. With regards to education majority of the staff nurses (69%) held BSN degree. Only (3%) of the staff nurses had completed post-graduation. With

regards to experience majority (59%) of the staff nurses were having 6-10 years and (41%) of the staff nurses were having 1-5 years of experience while none of them had less than 1 years. The previous needle stick injury data shows that most of the staff nurses (85%) didn't have any needle stick injury. Very few (14%) had history of needle stick injury. Most of the staff nurses (81%) received training already and very few (19%) had no history of previous training. Among that majority (81%) had received training from hospital.

The above findings were similar to a study (Dhandargi UN, & Kamala KN Dhandargi UN, 2018) conducted to assess the effectiveness of Planned Teaching Program (PTP) on knowledge regarding needle stick injury among the staff nurses. Among 50 staff nurses 62% were in the age group of 26-30 years and 34% were in the age of 22-25. 80% were males, 88% had educational qualification up to GNM/Diploma nursing, 42% of subjects had 4-6 years of experience and 74% of nurses reported to have experienced needle stick injury at least once in their carrier.¹¹

Effectiveness of Structured Teaching Program on Needle Stick Injury among Staff Nurses

The result shows that 79% of the staff nurses had

adequate level of knowledge and only 21% had moderate level of knowledge. None of the staff nurses had poor knowledge regarding needle stick injury. 97% of the staff nurses had adequate level of knowledge and only 3% had moderate level of knowledge. None of the staff nurses had poor knowledge regarding needle stick injury. STP on needle stick injury was affective at $p(0.002)$. Study finding were supported by a study (M Sreelatha, Dr. P Sudharani, et al. 2017) During the pre-test, out of 50 care givers, 25 (50%) were having moderate knowledge, 15 (30%) were having inadequate knowledge and only 10 (20%) were having adequate knowledge. In post-test, 23 (46%) were having moderate knowledge, and 17 (34%) were having adequate knowledge and 10 (20%) of health workers having inadequate knowledge. In pre-test the mean score was 1.90 and standard deviation was 0.707 whereas post-test mean knowledge was 2.14, and the standard deviation was 0.726. The t-value was 48.153. Hence research hypothesis was accepted. It evidenced that the structured teaching program was significantly effective on improving knowledge regarding needle stick injury among health workers.¹²

Another study on needle stick injury (Dhandargi UN, & Kamala KN Dhandargi UN, 2018) conducted on to assess the effectiveness of Planned Teaching Program (PTP) on knowledge regarding needle stick injury among 50 staff nurses. In pretest out of 50 staff nurses 21 (42%) had average and 29 (58%) subjects with poor regarding needle stick injury. Where as in posttest 8% had excellent knowledge, 68% had good knowledge, and remaining 24% had average knowledge. Thus it shows that PTP was successful in improving the knowledge of staff nurses regarding prevention of needle stick injury.¹¹

Objective: 2

Association between Knowledge Regarding Prevention and Management of Needle Stick Injury and Selected Demographic Variables

The result shows that there was no statistically significant association between level of knowledge and any socio demographic variables like age (P value=0.2537), gender (P value=0.6148), educational status (P value=0.9925), experience (P value=0.9653), previous needle stick injury (P value=0.6575) and previous training (P value=0.4623).

The above findings were similar to a study (Dhandargi UN, & Kamala KN Dhandargi UN, 2018) conducted to assess the effectiveness of Planned

Teaching Program (PTP) on knowledge regarding needle stick injury among the staff nurses. Chi square test was conducted to find the association between socio demographic variables with level of knowledge of staff nurses regarding needle stick injury. There was no statistically significant association found between level of knowledge and any socio demographic variable.¹¹

Recommendations

To generalize the study results, it is recommended that:

- More research with a large sample size and in different healthcare settings is needed.
- A quasi-experimental study might be carried among all healthcare professionals to evaluate the reduction in needle stick injuries.
- The comparative study can be conducted between nurses and other healthcare workers in the hospital.
- Each hospital should develop standards of practice regarding needle stick injury and its prevention. These safe techniques should be reinforced among healthcare staff at regular intervals.

CONCLUSION

This study was conducted to evaluate the effect of teaching program on knowledge regarding the prevention and management of needle stick injury among staff nurses at Thumbay University Hospital, Ajman. 14% of the nurses have experienced needle stick injury at least once in their career hence teaching programs are of great importance for nurses. Planned teaching program is one of the most effective ways to improve the knowledge of staff nurses regarding needle stick injury.

In this study, majority (97%) of the staff nurses had adequate knowledge after the structured teaching program and more than half of staff nurses had moderately adequate knowledge. The findings of the study revealed that the planned teaching program brought about a significant improvement in knowledge level of staff nurses which was confirmed by the post-test scores. The study found that planned teaching program on prevention of needle stick injuries helped increase knowledge among staff nurses and create awareness regarding prevention and management of needle stick injuries among them. The result of the study stresses the need of arranging similar

teaching programs to prevent needle stick/sharp injuries among healthcare workers.

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