A Study To Assess The Effectiveness Of Structured Teaching Programme On Knowledge Regarding Prevention And Management Of Needle Stick Injury Among Staff Nurse In Tertiary Hospital, South India.

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Abstract: *The 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 any time during handling disassemble or dispose of needles.The needle stick injury can lead to life threatening infectious disease like HIV, hepatitis B and hepatitis c. In majorities of health care worker didn't have adequate Knowledge regarding needle stick injury prevention and managementHence, a quantitative research approach and pre-experimental one group pretest and posttest research was undertaken at Apollo Adlux Hospital Karukutty, Angamaly "To Assess the Effectiveness of Structured Teaching Programme On Knowledge Regarding Prevention and Management of Needle Stick Injury Among Staff Nurses at Tertiary Hospital, South India."*
Data was collected from 50 staff nurses. Nonprobability convenient sampling method was used. A Structured questionnaire was given from 21/12/2021 to 22/12/2021. Data was analysed 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 association with knowledge at 0.05 level of significance. All the staffs in a hospital should know about the needle stick injury and its management to prevent the transmission of blood borne diseases through needle stick injury. 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 are more taking care about their own and others health too.
Key word*: Effectiveness, Structured teaching program, Knowledge, needle stick injury, staff nurse.*

I. Introduction

"You cannot hit the point of a needle with a fist "-Armenian proverb

A needle stick injury is the most common accidents reported by healthcare professionals, including doctors, nurses, and nonclinical 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 is 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 health care worker after exposure to HIV-infected blood is estimated 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]

Besides having health consequences, these injuries also result in emotional distress in health care workers, resulting in missed workdays and affecting the availability of health care services and resources.

Globally, according to a WHO study, 0.9 million of health-care workers (HCW) contract the HCV virus, 70000 contract HBV virus and 170000 contract HIV virus, leading to about 15000 HCV infections and 1,000 HBV infections, respectively. Hence need to assess the knowledge of staff nurses regarding prevention and management of needle stick injury and providing education for improving their knowledge is essential. [2]

Health care settings are constantly exposure to numerous occupational hazards. The blood born disease is one of the major diseases of health care workers fear. It has been reported that about that nearly 3 million

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suffers from percutaneous injury every year. The center for disease control and prevention estimates that each year 85,000 needle stick and other sharps related injury are sustained by hospital-based health care personnel.[7]

A quantitative quasi experimental study was conducted in Bengaluru, Karnataka, India among 30 nursing students. Knowledge based questionnaire was developed by the investigator to collect the data. The study finding showed that 6 students (20%) had knowledge towards needle stick injury, 24 students (80%) had moderate knowledge and none of them where adequately knowledge regarding needle stick injury (Rahil Shil, Shivaleela)[10]

A cross sectional study was carried out in a tertiary care Hospital in Delhi 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 to be a high risk. Very few NSIs reported to the health care 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 health care workers.[5]

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

II.   Objective

1. To assess the knowledge regarding prevention and management of needle stick injury before the structure teaching program.
2. To assess the knowledge regarding prevention and management of needle stick injury after the structured teaching program.
3. To find out the effectiveness of structured teaching programme on prevention and management of needle stick injury among staff nurses.
4. To determine the association between knowledge regarding prevention and management of needle stick injury and selected demographic variables such as age, experience, qualification, working units, previous knowledge regarding needle stick injury, had any needle stick injury.

III.   Hypothesis

1.   NULL HYPOTHESIS

H_{01}: Therewill be no significant increase in the knowledge of the nurses after the structured teaching program.
H_{02}: There will be no significant relationship between the pre test knowledge of the staff nurses with the selected demographic variable.

2.   RESEARCH HYPOTHESIS

  H_1: There will be a significant 30% increase in the knowledge of the nurses after the structured teaching program.
H_2: There will be significant relationship between the pretest knowledge of the staff nurses with the selected demographic variable.

IV.   Materials and methodology

Research Approach and design
A quantitative research approach with pre and post-test design was used:
  O1----------------x--------------O2
O1: pre-test – Assessment of knowledge of staff nurses through structured questionnaire, before implementing structured teaching programme on prevention and management of needle stick injury.
X: Distribution of structured teaching programme on prevention and management of needle stick injury
O2: Post-test, – Assessment of knowledge of staff nurses through structured questionnaire after implementing structured teaching programme on prevention and management of needle stick injury

Setting of the study
The study was conducted in Apollo Adlux Hospital KarukuttyAngamaly, Kerala. Itsa 300 bedded Hospital with 252 staff nurses.
Sample and Sampling technique
50 staff nurses working in the hospital were selected using purposive sampling for the study.
Tool
Structured questionnaire was used to assess the knowledge of staff nurse regarding prevention and management of needle stick injury. The tool consisting of section A demographic variable and section B questions regarding

needle stick injury prevention and management. Ethical clearance permission letter from the Director of Medical Services & AGM – Nursing was taken. Consent was taken from the Samples too.

V.   Result

The collected data was organized, tabulated, and analysed based on the objectives of the study by using descriptive statistics that is 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 chi-square test was used to test the association between demographic variable in the post test knowledge score. The findings of the study were presented in the form of tables and figures mention in result

Section 1: Description of subject based on demographic variable**.**
Frequency and percentage distribution based on demographic variable.

Demographic variable	Frequency	Percentage	
Age			
❖ 21-25 years	22	44%	
❖ 26-30 years	15	30%	
❖ 31-35 years	13	26%	
❖ 36 above	0	0%	
Experience			
❖ 0-1 years	12	24%	
❖ 2-3years	6	12%	
❖ 4-5 years	13	26%	
❖ 5 and above	19	38%	
Qualification			
❖ GNM	7	14%	
❖ BSc Nursing	36	72%	
❖ Post BSc Nursing	7	14%	
❖ MSc Nursing	0	0%	
Working unit			
❖ ICU	19	38%	
❖ Labour room	4	8%	
❖ OT	1	2%	
❖ ER	6	12%	
❖ Ward	20	40%	
Previous knowledge regarding needle stick injury.			
❖ Yes	44	88%	
❖ No	6	12%	
Had any needle stick injury.			
❖ Yes	10	20%	
❖ No	40	80%	

Table 1: Percentage wise distribution of staff nurses according to the age depicts that highest 44% of staff nurses were in age group of 21-25 years and lowest 0% of staff nurses above 36 years. The percentage distribution of 38% of staff nurses had more than 5 year of experience and 12% of staff nurses had 2-3 year of experience.72% of staffs had qualification of BSc Nursing and 0% of staff had qualification of MSc Nursing.40% of staff nurses from ward and 2%from OT .Among the 50 Staff nurse 88% had previous knowledge regarding prevention and management of needle stick injury and only 12% staff nurses had no previous knowledge regarding prevention and management of needle stickinjury.80% staff nurses had no history of needle stick injury and 20% had history of needle stick injury
Section 2: To assess the knowledge regarding prevention and management of needle stick injury before and after the structured teaching program.

Distribution of knowledge of Staff Nurse based on before and after administrating structured teaching programme
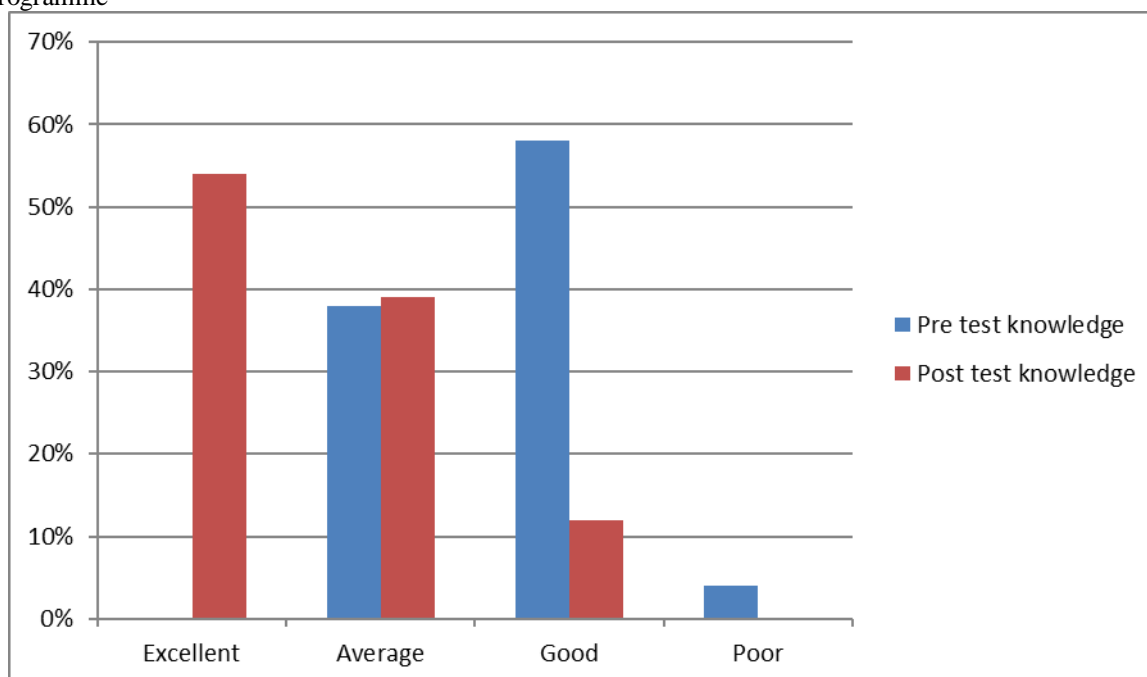

Figure 1 reveals that 4 % staff had poor knowledge, 58% staff had good knowledge, 38 % staff have average knowledge, no staff had excellent regarding prevention and management of needle stick injury. On posttest 54% had excellent knowledge, 39% had average knowledge, 12% had good knowledge and no one had poor knowledge regarding prevention and management of needle stick injury after structured teaching programme.

Section 2: To find out the effectiveness of structured teaching programme on prevention and management of needle stick injury among staff nurses.

Knowledge score	Mean	Standard deviation	t value	Inference
Pre-test	9.52	2.377	9.8807	Significant
Post-test	15.32	3.411		

T49=2.02 P>0.05*=Significant

Table 2. Indicate the computed value 9.8807 is greater than t value 2.02 and it is significant at 0.05 level. So, the hypothesis$_1$ is accepted. The structured teaching programme is effective to improve the knowledge of Staff Nurse regarding prevention and management of needle stick injury. Paired t test was calculated to analyze the difference in pretest and posttest knowledge scores of staff nurse regarding prevention and management of needle stick injury. Shows the highly significant difference between the pre-test and post-test knowledge score in all areas.

Section 3: To determine the association between knowledge regarding prevention and management of needle stick injury and selected demographic variables such as age, experience, qualification, working units, previous knowledge regarding needle stick injury, had any needle stick injury.

Demographic variables	Chi-square value	Df	Chi- square table value	Significant status
Age	67.338	9	16.919	significant
Experience	2.0544	9	16.919	Not significant
Qualification	0.7602	9	16.919	Not significant
Working unit	5.98	12	21.026	Not significant
Previous knowledge	1.488	3	7.815	Not significant
Had any needle stick injury	2.622	3	7.815	Not significant

Table 3:reveals that there is significant association between the age and pretest knowledge score of the staff nurses as the calculated chi square value(67.38) is more than the table value(16.919) at 0.05 level of significance where as all other variables such as experience ,qualification, working units ,previous knowledge, had any

needle stick injury has no significant association with pretest knowledge as the calculated chi square value (Experience 2.0544, Qualification 0.7602, Working unit 5.989, Previous knowledge 1.488, Had needle stick injury 2.622) is less than the table value (Experience16.919,Qualification 16.919,Working unit 21.026,Previous knowledge7.815, Had needle stick injury 7.815) at 0.05 level of significance .

VI. Discussion

Highly significant difference found between the pretest and posttest knowledge score (P<0.05) the computed value 9.8807 is greater than t value 2.02 and it is significant at 0.05 level. So, the hypothesis$_1$ is accepted. The structured teaching programme is effective to improve the knowledge of Staff Nurse regarding prevention and management of needle stick injury. The study Shows that only age has association others had no significant association between pre-test knowledge score of staff nurse regarding prevention and management of needle stick injury and selected demographic variables. As quantitative quasi experimental study to assess the effectiveness of structured teaching programme on knowledge regarding NSI prevention among GNM students of selected Nursing College in Jammu. The mean knowledge score in pretest is 15.75 and mean knowledge of posttest is 23.95. The study result shows that structured teaching programme significantly effective in improving the knowledge of students .In our study overall mean knowledge score 15.32 obtained by the subject in post test was higher than mean pretest score 9.52.

VII. Conclusion

The needle stick injury can lead to life threatening infectious disease like HIV, hepatitis B and hepatitis c. In majority of health care worker didn't have adequate Knowledge regarding needle stick injury prevention and management.so it is very important to improving their knowledge to avoid the consequences in their life. Most of the health care settings had introduced various plan to avoid needle stick injury like waste management technique, teaching and practicing programme. Our unit also providing proper orientation during induction period regarding needle stick injury prevention and management, proper labeling of sharp containers and waste management.

VIII. Recommendations

➤ A large-scale study can be done forreplication to standardize the structured teaching programme regarding 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.

Reference

[1]. G. Dharmendra G, S. Shashi S,VijnderK,Meenakshi S.A study to assess knowledge , attitude and practice of needle stick injury among nurses in a tertiary care hospital. Uttar Pradesh, India, 2019; Available from:www.research gate net
[2]. Health care worker safety.World health organization .AID-MEMOIR. Geneva ,Switzerland;2003:Available from:https://www.who.int/occupational_health/activities/1am_hcw.
[3]. Key mon min swe,AmitB,RatanaS.The Effectiveness of needle sticks injury prevention intervention model on medicalstudents. melaka Malaysia .2016; www.researchgat.net.
[4]. S. Salelkaretal. Study of needle stick injuries among healthcare workers at a tertiary care hospital. Goa.2010; Available from: www.pubmed.ncbi.nlm.nih.gov.
[5]. Rahul Sharma, S K Rasania, Saudan Sigh A study of prevalence and response to Needle stick injuries among health Care workers in a tertiary care hospital, Delhi.India,2010; Available from:www.research gate net.
[6]. FirasK,MuhamadH,Anita A R,Salmiah.Needle stick and sharp injuries among health care workers in hospitals .SelangorDarul Ehsan,Malaysia.2014;www.researchgate.net.
[7]. AsaithambiAnupriya,SubramanianManivelan.KAP study on the assessment of needle stick injuries and occupational safety among health care workers.Trichy,Tamilnadu,India;2014.
[8]. ArshidNazirShah.Aquasi experimental study to assess the effectiveness of structured teaching programme on knowledge prevention of needle stick injury among GNM student. Jammu. India;2019.
[9]. AnnuKaushik,SarinJyoti.A quasi experimental study to assess the effectiveness of standard operating procedures on prevention and management of needle stick injury in a teaching hospital of Haryana,India;2015:www.msjonline.org.
[10]. Rahul shil,Shivalla P upashe.Nursing students knowledge regarding ndl stick injury:Effectivenss of structured teaching programme.Karnadaka .India;2021:www,researchgate.net.
[11]. DechasaAM,Sinatt,YohannsMD.Worldwide prevalence of occupational exposure to the needle stick injury among Health care workerscanadian journal of infectious diseases and medical microbiology;volume 2021.
[12]. Mehdi Jahangiri, Alisoleimani.Needle stick injury and their related safety measures among nurses in a university hospital. Shiraz.Iran,2019: https://www.sarma direct. Com.