



EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE AND PREVENTION OF NEEDLE STICK INJURIES AMONG NURSING STUDENTS IN SRM COLLEGE OF NURSING CHENGALPATTU DISTRICT

Ms. Monal C¹, Ms. Sujatha M², Mrs. Priya. V^{3*}, Dr. Kanniammal C⁴

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Abstract

A needle stick injury are wounds caused by needles that are accidently puncture the skin. These injuries can occur at any time when people use disassemble or dispose of needle. To assess the pre-test and post-test level of knowledge and prevention of needle stick injuries among nursing student. The research approach was quantitative research design adopted experimental design. The sample was selected by purposive sampling technique. The sample size for the study was 71. The study findings revealed that the pre-test, 45(63.38%) had inadequate knowledge, 23(32.39%) had moderate adequate knowledge and 3(4.23%) had adequate knowledge. The post test, 39(54.93%) had moderate adequate knowledge, 26(36.62%) had adequate knowledge and 6(8.45%) had inadequate knowledge and prevention of needle stick injuries. This study finding shows that demographic variables occupation of father and residential area had shown statistically significant association with post-test level of knowledge and prevention of needle stick injury among nursing students at $p < 0.05$ level. From the analysis outcome found that there was moderate applicable understanding about knowledge and prevention of needle stick injury among nursing students. After conducting structured teaching on needle stick injury helps them in understanding to maintain adequate knowledge on needle stick injury.

Keywords: Needle Stick injury, Nursing students

¹B.SC Nursing, SRM Institute of Science and Technology, Kattankulathur, Chengalpattu Dist – 603203, Chennai, Tamil Nadu, India

²B.SC Nursing, SRM Institute of Science and Technology, Kattankulathur, Chengalpattu Dist – 603203, Chennai, Tamil Nadu, India

³Pediatric Nursing. Asst Professor SRM Institute of Science and Technology, Kattankulathur, Chengalpattu Dist – 603203, Chennai, Tamil Nadu, India

⁴M.Sc (N), Ph. D., Dean, SRM College Of Nursing , SRM IST, Kattankulathur

Email: priyakeerthi82@gmail.com

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1. Introduction

Needle stick injuries (NSIs) as defined by the United States National Institute of Occupational safety and Health are injuries caused by needles such as hypodermic needles, blood collection needles, intravenous (IV) stylets, and needles used to connect parts of IV delivery systems. NSIs are common and to an extent inevitable in health-care workers (HCWs) during execution of their patient care services. Percutaneous exposure occurs as a result of a break in the skin caused by a needle stick or sharps contaminated with blood or body fluids. Mucocutaneous exposure occurs when the body fluids come into contact with open wounds, non-intact skin such as found in eczema, or mucous membranes such as the mouth and eyes. HCWs are also exposed to droplets or splashes of blood, saliva and urine.

Statement of the Problem

A study to assess the effectiveness of structured teaching programme on knowledge and prevention of needle stick injuries among nursing student in SRM College of Nursing.

Objectives

1. To assess the pre-test and post-test level of knowledge and prevention of needle stick injuries among nursing students.
2. To find out the effectiveness of structured teaching programme on knowledge and prevention of needle stick injuries among nursing students
3. To associate between the levels of structured teaching programme on knowledge and prevention of needle stick injuries with their selected demographic variables among nursing students.

Assumptions

1. The students may have some knowledge regarding the prevention of needle stick injury.
2. The planned health teaching may improve the knowledge regarding the prevention of needle stick injury.

Hypotheses

H1- There is significant difference between the pre-test and post-test level of effectiveness of structured teaching programme on knowledge and

prevention of needle stick injuries among nursing students.

H2- There is association between the pre-test and post-test level of knowledge and prevention of needle stick injured and their selected demographic variables among nursing students.

Delimitations

- Study limited for one weeks.
- The B.Sc. (Nursing) II-year students are only involved in the studies.

2. Methodology

A quasi-experimental one group pre and post-test control group research design was adopted in order to assess the effectiveness of structured teaching programme on knowledge and prevention of needle stick injuries among nursing students. The independent variable of this study was prevention of needle stick injuries. The dependent variables were knowledge on needle stick injury. The study population includes students who were studying in SRM college of Nursing Kattankulathur, The sample size consisted of 71 students (who fulfils the inclusion and exclusion criteria) selected by purposive sampling technique. Descriptive and inferential approaches were used to analyse the information based on the objectives. The data was collected over the course of a week. Part A It consists of demographic variables such as age, sex, religion, educational status, occupation of father, monthly income of father. Part B It deals with structured questionnaire to assess the effectiveness of Prevention of Needle Stick Injury which comprised of 30 questions.

Organization of the Data

SECTION A: Assessment on Demographic variables of Nursing students.

SECTION B: Association between the demographic variable and Pre test level of knowledge and prevention of Needle Stick Injury.

SECTION C: Effectiveness of structure teaching programmed on knowledge and prevention of Needle Stick Injury.

SECTION D: Association between the demographic variable and post test level of knowledge and prevention of Needle Stick Injury.

SECTION – A:

Table 4.1: FREQUENCY AND PERCENTAGE DISTRIBUTION OF DEMOGRAPHIC VARIABLES OF NURSING STUDENTS. N= 71

| DEMOGRAPHIC VARIABLES | FREQUENCY | PERCENTAGE |
|-----------------------|-----------|------------|
| Age in yrs | | |
| 18 to 20 | 64 | 90.1 |
| 21 to 23 | 7 | 9.9 |
| 24 to 25 | - | - |

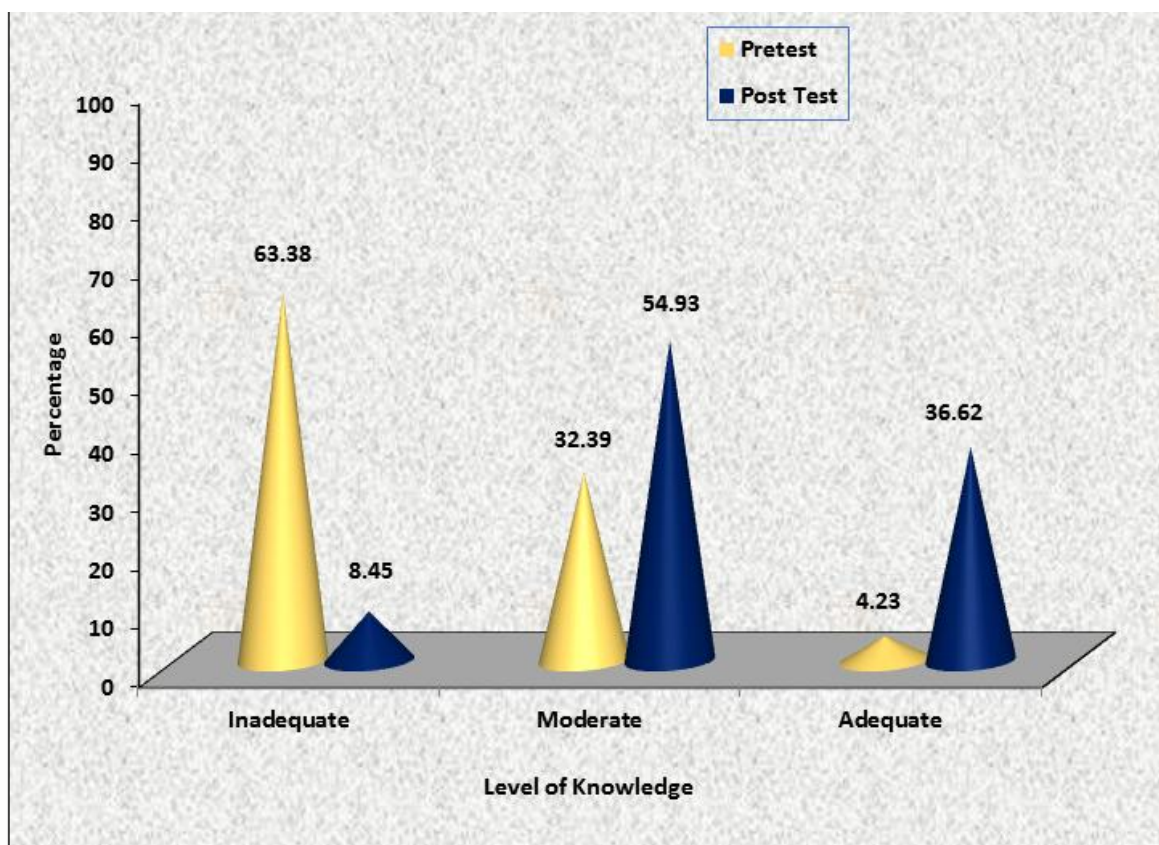
| DEMOGRAPHIC VARIABLES | FREQUENCY | PERCENTAGE |
|---|-----------|------------|
| Above 25 | - | - |
| Gender | | |
| Female | 49 | 69.0 |
| Male | 22 | 31.0 |
| Educational status | | |
| B.Sc. Nursing I year | - | - |
| B.Sc. Nursing II year | 71 | 100.0 |
| B.Sc. Nursing III year | - | - |
| B.Sc. Nursing IV year | - | - |
| Occupation of father | | |
| Daily wages | 19 | 26.8 |
| Private employee | 29 | 40.8 |
| Self employer | 18 | 25.4 |
| Government employer | 5 | 7.0 |
| Income | | |
| <5,000 | 12 | 16.9 |
| 5,000 to 10,000 | 37 | 52.1 |
| 10,000 to 50,000 | 18 | 25.4 |
| >50,000 | 4 | 5.6 |
| Religion | | |
| Hindu | 56 | 78.9 |
| Christian | 9 | 12.7 |
| Muslim | 5 | 7.0 |
| Others | 1 | 1.4 |
| Marital status | | |
| Married | 6 | 8.5 |
| Unmarried | 65 | 91.5 |
| Type of family | | |
| Joint family | 23 | 32.4 |
| Nuclear family | 48 | 67.6 |
| Source of information | | |
| TV/Radio | 20 | 28.2 |
| Internet | 41 | 57.7 |
| Health workers | 6 | 8.5 |
| Neighbours | 4 | 5.6 |
| Residential area | | |
| Rural | 43 | 60.6 |
| Urban | 28 | 39.4 |
| Have you experience any Needle Stick Injury? | | |
| Yes | 13 | 18.3 |
| No | 58 | 81.7 |

SECTION –B

Table 4.2: Frequency and percentage distribution of level of knowledge and prevention of needle stick injuries among nursing students. N = 71

| Knowledge | Inadequate (≤50%) | | Moderate (51 – 75%) | | Adequate (>75%) | |
|-----------|-------------------|-------|---------------------|-------|-----------------|-------|
| | No. | % | No. | % | No. | % |
| Pretest | 45 | 63.38 | 23 | 32.39 | 3 | 4.23 |
| Post Test | 6 | 8.45 | 39 | 54.93 | 26 | 36.62 |

The table 4.2 depicts that in the pre-test, 45(63.38%) had inadequate knowledge, 23(32.39%) had moderate adequate knowledge and 3(4.23%) had adequate knowledge. The table 4.2 also shows that in the post test,



39(54.93%) had moderate adequate knowledge, 26(36.62%) had adequate knowledge and 6(8.45%) had inadequate knowledge and prevention of needle stick injuries.

4.3 Percentage distribution of level of knowledge and prevention of needle stick injuries among nursing students

SECTION C

Table 4.3: Effectiveness of Structured Teaching Programme on knowledge and prevention of needle stick injuries among nursing students. n = 71

| Knowledge | Mean | S. D | Mean Difference Score | Paired 't' Test value |
|-----------|-------|------|-----------------------|-------------------------------|
| Pretest | 14.15 | 4.14 | 6.62 | t = 9.244 p = 0.0001, S*** |
| Post Test | 20.77 | 3.94 | | |

***p<0.001, S – Significant

SECTION: D

Table 4.4: Association of post -test level of knowledge and prevention of needle stick injuries among nursing students with their selected demographic variables. n = 71

| Demographic Variables | Inadequate | | Moderate | | Adequate | | Chi-Square Value |
|-----------------------|------------|-----|----------|------|----------|------|---|
| | No. | % | No. | % | No. | % | |
| Age in yrs | | | | | | | $\chi^2=0.457$ d.f=2 p = 0.796 N.S |
| 18 to 20 | 5 | 7.0 | 35 | 49.3 | 24 | 33.8 | |
| 21 to 23 | 1 | 1.4 | 4 | 5.6 | 2 | 2.8 | |
| 24 to 25 | - | - | - | - | - | - | |
| Above 25 | - | - | - | - | - | - | |
| Gender | | | | | | | $\chi^2=0.317$ d.f=2 p = 0.854 N.S |
| Female | 4 | 5.6 | 26 | 36.6 | 19 | 26.8 | |
| Male | 2 | 2.8 | 13 | 18.3 | 7 | 9.9 | |

| Demographic Variables | Inadequate | | Moderate | | Adequate | | Chi-Square Value |
|---|------------|-----|----------|------|----------|------|--|
| | No. | % | No. | % | No. | % | |
| Educational status | | | | | | | |
| B.Sc. Nursing I year | - | - | - | - | - | - | |
| B.Sc. Nursing II year | 6 | 8.5 | 39 | 54.9 | 26 | 36.6 | - |
| B.Sc. Nursing III year | - | - | - | - | - | - | |
| B.Sc. Nursing IV year | - | - | - | - | - | - | |
| Occupation of father | | | | | | | |
| Daily wages | 2 | 2.8 | 5 | 7.0 | 12 | 16.9 | $\chi^2=14.041$ d.f=6 p = 0.029 S* |
| Private employee | 2 | 2.8 | 21 | 29.6 | 6 | 8.5 | |
| Self employer | 1 | 1.4 | 9 | 12.7 | 8 | 11.3 | |
| Government employer | 1 | 1.4 | 4 | 5.6 | 0 | 0 | |
| Income | | | | | | | |
| <5,000 | 1 | 1.4 | 6 | 8.5 | 5 | 7.0 | $\chi^2=4.249$ d.f=6 p = 0.643 N.S |
| 5,000 to 10,000 | 4 | 5.6 | 20 | 28.2 | 13 | 18.3 | |
| 10,000 to 50,000 | 1 | 1.4 | 9 | 12.7 | 8 | 11.3 | |
| >50,000 | 0 | 0 | 4 | 5.6 | 0 | 0 | |
| Religion | | | | | | | |
| Hindu | 5 | 7.0 | 29 | 40.8 | 22 | 31.0 | $\chi^2=5.149$ d.f=6 p = 0.525 N.S |
| Christian | 0 | 0 | 5 | 7.0 | 4 | 5.6 | |
| Muslim | 1 | 1.4 | 4 | 5.6 | 0 | 0 | |
| Others | 0 | 0 | 1 | 1.4 | 0 | 0 | |
| Marital status | | | | | | | |
| Married | 0 | 0 | 4 | 5.6 | 2 | 2.8 | $\chi^2=0.738$ d.f=2 p = 0.692 N.S |
| Unmarried | 6 | 8.5 | 35 | 49.3 | 24 | 33.8 | |
| Type of family | | | | | | | |
| Joint family | 2 | 2.8 | 10 | 14.1 | 11 | 15.5 | $\chi^2=1.981$ d.f=2 p = 0.371 N.S |
| Nuclear family | 4 | 5.6 | 29 | 40.8 | 15 | 21.1 | |
| Source of information | | | | | | | |
| TV/Radio | 1 | 1.4 | 11 | 15.5 | 8 | 11.3 | $\chi^2=2.581$ d.f=6 p = 0.859 N.S |
| Internet | 5 | 7.0 | 21 | 29.6 | 15 | 21.1 | |
| Health workers | 0 | 0 | 4 | 5.6 | 2 | 2.8 | |
| Neighbours | 0 | 0 | 3 | 4.2 | 1 | 1.4 | |
| Residential area | | | | | | | |
| Rural | 5 | 7.0 | 27 | 38.0 | 11 | 15.5 | $\chi^2=6.157$ d.f=2 p = 0.046 S* |
| Urban | 1 | 1.4 | 12 | 16.9 | 15 | 21.1 | |
| Have you experience any Needle Stick Injury? | | | | | | | |
| Yes | 1 | 1.4 | 9 | 12.7 | 3 | 4.2 | $\chi^2=1.400$ d.f=2 p = 0.496 N.S |
| No | 5 | 7.0 | 30 | 42.3 | 23 | 32.4 | |

*p<0.05, S – Significant, N.S – Not Significant

The table 4.4 shows that the demographic variables occupation of father ($\chi^2=14.041$, **p=0.029**) and residential area ($\chi^2=6.157$, **p=0.046**) had shown statistically significant association with post test level of knowledge and prevention of needle stick injuries among nursing students at p<0.05 level and the demographic variables had not shown statistically significant association with post test level of knowledge and prevention of needle stick injuries among nursing students

3. Result and Discussion

The results depicted that pre-test, 45(63.38%) had inadequate knowledge, 23(32.39%) had moderate adequate knowledge and 3(4.23%) had adequate knowledge. That in the post test, 39(54.93%) had moderate adequate knowledge, 26(36.62%) had adequate knowledge and 6(8.45%) had inadequate knowledge and prevention of needle stick injuries. That the pre-test mean score of knowledge was

14.15±4.14 and the post-test mean score of knowledge was 20.77±3.94. The mean difference score was 6.62. The calculated paired 't' test value of $t = 9.244$ was found to be statistically significant at $p < 0.001$ level. This clearly infers that Structured Teaching Programme on knowledge and prevention of needle stick injuries administered to nursing students was found to be effective in improving the post-test level of knowledge and prevention of needle stick injuries among nursing students. That the demographic variables occupation of father ($\chi^2=14.041$, $p=0.029$) and residential area ($\chi^2=6.157$, $p=0.046$) had shown statistically significant association with post-test level of knowledge and prevention of needle stick injuries among nursing students at $p < 0.05$ level and the demographic variables had not shown statistically significant association with post-test level of knowledge and prevention of needle stick injuries among nursing students.

4. Conclusion

Nursing students are at risk of having blood borne diseases in case they are exposed to blood and other biological samples of the patient. Thus, it was concluded that the structured teaching programme was effective in enhancing knowledge regarding Needle stick injury among students. Therefore, the study reinforces the need to organize teaching programs which sensitize the students to enhance the knowledge regarding Needle stick injury.

5. References

- Norsayani MY, Noor Hassim I. Study on incidence of needle stick injury and factors associated with this problem among medical students. *Joccup Health*. 2003; 45:172-8. [PubMed] [Google Scholar]
- Alonso A. Cementing sharps safety in the European union: The importance of complying with the 2010 EU council directive on sharps injury prevention. *J Nurs Care*. 2014; 3:1-2. [Google Scholar]
- Rogers B, Goodno L. Evaluation of interventions to prevent needlestick injuries in health care occupations. *AM J Pub Med*. 2000;18(4 Suppl):90-8. [PubMed] [Google Scholar]
- Sepkowitz KA. Occupationally acquired infections in health care workers. Part I. *Ann Intern Med*. 1996; 125:826-34. [PubMed] [Google Scholar]
- Gerberding JL. Incidence and prevalence of human immunodeficiency virus, hepatitis B virus, hepatitis C virus, and cytomegalovirus among health care personnel at risk for blood exposure; Final report from a longitudinal study. *J infect Dis* 1994; 170:1410-7. [PUBMED]
- Tokars JL, Marcus R, Culver DH, Schable CA, Mckibben PS, Bandea CI, et al. Surveillance of HIV infection and zidovudine use among health care workers after occupational exposure to HIV-infected blood. *Ann intern Med* 1993;118;913-9.
- Pruss-ustun A, Rapiti E, Hutin Y. Sharps injuries: Global burden of disease from sharps injuries to health-care workers. Geneva, World Health Organization, 2003 (WHO Environmental Burden of Disease Series, No.3)
- Humaira Bashir, Syed Shuja Qadri (2019): A study on needle stick injuries among health care workers in a tertiary care hospital in india. <https://www.msjonline.org/index.php/ijrms/article/view/6209-2019>
- Hanny Handiyani, L Meily Kurniawidjaja, Dewi Irawaty, Rita Damayanti (2016): The effective needle stick injury prevention strategies for nursing students in the clinical settings. <https://www.elsevier.es/es-revista-enfermeria-clinica-35-articulo-the-effective-needle-stick-injury-S1130862118300603>
- Jahan S. Epidemiology of needle stick injuries among health care workers in a secondary care hospital in Saudi Arabia. *Ann Saudi Med* 2005 May-June 25(3): 233-8
- Fethin George (2020): Effectiveness of structured teaching programme in knowledge regarding prevention and management of needle stick injury among selected students nurses. <https://ajner.com/HTML/Paper.aspx?Journal=Asian%20Journal%20of%20Nursing%20Education%20and%20Research;PID=2020-10-1-17>
- Sudhar Singh (2020): A pre experimental study to asses the effectiveness of structured teaching programme regarding knowledge of needle stick injury and its prevention among nursing in selected nursing institutes Faridabad, Haryana. https://ijshr.com/IJSHR_Vol.5_Issue.2_April2020/IJSHR0052.pdf
- Sumyra Nazir, Amit Sehrawat, Sanju Dagar, Ankita Sharma (2020): A study to evaluate the effectiveness of structured teaching program on prevention of needle stick injuries in terms of knowledge among B.SC Nursing 2nd year students in SGT university Gurugram. https://www.ijsr.net/get_abstract.php?paper_id=SR20207133649
- Dr. Shyamkumar Sriram (2019): Study of needle stick injuries among providers: Evidence from a teaching hospital. <https://www.jfmpr.com/article.asp?issn=2249-4863;year=2019;volume=8;issue=2;page=599;epage=603;aulast=Sriram>
- Prof Dr.Sindhu Devi M (2019): A study to evaluate effectiveness of structured teaching programme regarding needle stick injury

- among first year B.SC Nursing students in selected colleges at Ernakulam district.
<https://ijrcs.org>
https://www.researchgate.net/publication/348462585_Nursing_students_knowledge_regarding_needle_stick_injury_Effectiveness_of_structured_teaching_plan
- Utalbasha N Dhangari (2018): Effectiveness of planned teaching programme on knowledge regarding needle stick among the staff nurses.
<https://ijisrt.com/wp-content/uploads/2018/10/IJISRT18SP295.pdf>
- R.Usha Rani, M Sreelatha and Dr.P Sudharani (2017) : A study to assess the effectiveness to structured teaching programme on knowledge regarding needle stick injury among health workers in selected health centers of Tirupati.
<https://www.allresearchjournal.com/archives/2017/vol13issue11/PartA/3-8-39-295.pdf>
- Sheela Willimas (2016): A study to assess the knowledge and practice of staff nurses regarding needle stick injury in selected hospital at Mysuru with a view to develop an informational pamphlet <https://ijneronline.com/HTMLPaper.aspx?Journal=International%20Journal%20of%20Nursing%20Education%20and%20Research;PID=2016-4-3-7>
- Husoyam, mindel T, Knuden H, Tidsskr No Laegeforen,. Needle stick injury routines. (2010) April : 130 (7), Nowerign. www.pubmed.gov
- Simon LP. Prevention and management of needle stick injury in Delhi. Br J Nurs 2009 Feb 26 – Mar 11;18(4):252-6
- Rujis WH, Timen. A Guidelines of needle stick injury assessment and post exposure management in practices Ned TijdschrGeneesk. 2008 Sep 6; 152 (36): 1967 – 71. Review Dutch. OMID: 18807333. www.Pubmed.gov
- Zafer A, Aslam N, Nasir N, Meraj R, Mehraj V. Knowledge, attitudes, and practices of health care workers regarding needle stick injuries at a tertiary care hospital in Pakistan. J Pak Med Assoc 2008; 58(20): 57-60
- Ya-Hui-Yang, Saou-HsingLiou, Chiou-Jong Chen, Chun-Yuh Yang, Chao-Ling Wang, Chiu-Ying Chen and Trong -Nengwu. The effectiveness of a training program on reduction needle stick injuries / sharp object injuries among soon graduate vocational nursing school students in southern Taiwan. Journal of Occupational Health 2007;49(5) 424-9