International Journal of Advanced Scientific Research
ISSN: 2456-0421; Impact Factor: RJIF 5.32
www.allscientificjournal.com
Volume 2; Issue 4; July 2017; Page No. 01-04

A quasi-experimental study to assess the effectiveness of self instructional module on knowledge regarding prevention of needle stick injury among B.Sc. Nursing 2nd year students at P.G College of Nursing, Gwalior, M.P.

Vipina Saji

Assistant Professor, Bombay Hospital College of Nursing, Indore, Madhya Pradesh, India

Abstract

Aim: The study attempted to assess the knowledge on prevention of needle stick injury among B.Sc. Nursing 2nd year students before and after administration of self instructional module to experimental group; evaluate the effectiveness of self instructional module on knowledge regarding prevention of needle stick injury among B.Sc. Nursing 2nd year students.

Methods: A quasi-experimental study was carried out with 60 samples from P.G College of Nursing, Gwalior. Out of 60 students 30 students were in control group and 30 students were in experimental group. Convenient sampling technique was used to select the subjects. Self administered tool-multiple choice statements were used to evaluate the knowledge before and after administration of self instructional module. Data was analyzed with both descriptive and inferential statistics.

Results: The result showed that the mean pre-test and post-test knowledge score of control group are 21.33and 21.8 respectively and standard deviations are 6.38 and 6.12 respectively. The mean pre-test and post-test knowledge score of experimental group are 22.40 and 39.23 respectively and standard deviations are 7.44 and 5.63 respectively. There was no significant difference between pre-test and post-test knowledge scores of control group as assessed by paired 't' test value at 1.38 (NS), $t_{(29)}$=3.66 ($p<0.001$) but there was significant difference between pre-test and post-test knowledge score of experimental group as assessed by paired 't' test value at 14.14(HS), $t_{(29)}$=3.66($p<0.001$).

Conclusion: Thus for this study one can conclude that self instructional module could be an effective strategy to improve the knowledge of B.Sc. Nursing 2nd year students regarding prevention of needle stick injury.

Keywords: quasi-experimental, effectiveness, self instructional module, needle stick injury

Introduction

A needle stick injury is a percutaneous piercing wound caused by a needle point but possibly also by other sharp instruments or objects. Nurses are at high risk to get these injuries. Needle stick injuries are of more concern because it can cause blood borne diseases such as Hepatitis-B, C and even HIV. Despite their seriousness as a medical event, needle stick injuries have been neglected: most go unreported and ICD-10 coding is not available [1]. On the other hand, as needle sticks have been recognized as occupational hazards, their prevention has become the subject of regulations in an effort to reduce and eliminate this preventable event [2].

Among the health care workers, nurses are at highest rate of needle stick injuries. Risk of infection from a needle stick injury depends on the pathogen involved, immune status of the worker and severity of the needle stick injury. The probability that a single needle stick injury will result in disease is 3-5 chances in 1000 for HIV, 300 chances in 1000 for Hepatitis-B, 20-50 chances in 1000 for Hepatitis-C Needle stick injuries are less frequent, yet still a serious concern among law enforcement. Eight million self-injectors generate up to three billion sharps outside formal healthcare settings in the United States every year. One-third of these sharps are produced by injection drug users of heroin, cocaine, and other illicit drugs [3]. American Nurses Association estimates that from numerous needle stick injuries only about 1000 health care workers actually contract an infection. Besides exposure to blood borne pathogens, nurses are also at risk for about 20 other infections that can be transmitted through a needle stick, including tuberculosis, syphilis and malaria.

Needle stick injuries can and should be prevented. The fact is that over 80% of needle stick injuries can be prevented through the use of safer devices. Preventive steps can be taken at several levels and include reduction or elimination of use of sharps as much as possible, engineering controls (i.e., needles or syringes with safety devices), administrative controls including training and provision of adequate resources, and work practice controls; the latter may include using instruments (not fingers) to grasp needles, load scalpels, and avoiding hand-to-hand passing of sharp instruments also preparing of medications especially removing cap. Removing cap from a needle generally causes needle stick injury. There are several ways to remove the cap from the needle but the most ideal and safest way to remove the cap is by carefully grasping the syringe and guiding the needle cap using the thumb and the pointing finger. Then gently push the cap away from the syringe to detach the cap from the hub. In this way needle stick injury can be prevented by avoiding the incidence of the rebound effect. Do not use the other hand as it increases the likeliness to have the syringe to rebound [4]. Engineering advances include the development of safety needles and needle removers. The adherences to "no-touch" protocols that eliminate direct contact with needles in their use and disposal greatly reduce the risk of injury. In the surgical setting blunt-tip

suture needles are able to reduce Needle stick injuries. The American College of Surgeons (ACS) has endorsed the adoption of blunt-tip suture needles for suturing fascia [5].

Some countries have enacted legislation to protect healthcare workers. In the US, the Needle stick Safety Act was signed in 2000 and Blood-borne Pathogens Standard in 2001. These regulations mandate the use of safety devices and needle-removers with any sharps or needles [6]. Discarded sharps enter the medical waste stream.

The nursing students are responsible for collection of blood, administration of injectable drugs. The risk of accidental needle stick injuries is great during invasive procedures such as collection of blood and administering injections.

I as a researcher choose to work among B.Sc. nursing students as in short time they will be entering institution as staff nurses where they will start practicing the learnt concepts. So it is necessary that these upcoming nurses should aware of needle stick injury-its causes, effect, management and its prevention. So research should be conducted to improve the knowledge of the nursing students to reduce the risk of various blood borne diseases like HIV, AIDS & Hepatitis.

Objectives

1. To assess the existing knowledge score regarding prevention of needle stick injury among B.Sc. Nursing 2nd year students.
2. To determine the effectiveness of self instructional module on knowledge regarding prevention of needle stick injury among B.Sc. Nursing 2nd year students.

Hypothesis

H_0: There will not be significant difference in the mean pre-test and post-test knowledge score regarding prevention of needle stick injury.

H_1: There will be significant difference in the mean pre-test and post-test knowledge score regarding prevention of needle stick injury after administration of self instructional module.

Methodology

A quasi-experimental research design was used to evaluate the effectiveness of self instructional module through the difference between the pre-test and post-test score of control group and experimental group.

Study approach: Quantitative approach.

- **Research design:** Quasi-experimental research design with experimental and control group.
- **Setting:** The study was conducted at P.G College of Nursing, Gwalior, M.P.
- **Population:** The population for this study was B.Sc. Nursing 2nd year students of P.G College of Nursing, Gwalior, M.P.
- **Sample:** B.Sc. Nursing 2nd year students who met the inclusion criteria were selected as sample.
- **Sample size:** The sample size for the study was 60.

Inclusion criteria

1. Students of B.Sc. Nursing 2nd year.
2. B.Sc. Nursing 2nd year students who were posted in medical surgical ward.
3. Students who are willing to participate in the study.

Exclusion criteria

1. B.Sc. Nursing 2nd year students who were on leave.
2. B.Sc. Nursing 2nd year students who are not willing to participate in the study.

Reliability & validity of the tool

The reliability of tool was assessed by split half method & the tool was found to be highly reliable. Validity of tool was done by experts.

Data collection procedure

Data collection was done by using multiple choice statements on B.Sc. Nursing 2nd year students at P.G College of Nursing, Gwalior, M.P. The tool consist of two section, first section consist of 6 socio-demographic variables & second section consist of 40 multiple choice statements related to prevention of needle stick injury. Out of 60 B.Sc. Nursing 2nd year students, 30 students were in control group & 30 students were in experimental group. Pre-test was conducted among both control group & experimental group. Then self instructional module was administered to subjects of experimental group only. The subjects of control group were not given any manipulation. Then post-test was taken from control group & experimental group after. The collected data was analyzed by using descriptive & inferential statistics.

Results

Section 1:- Description of socio-demographic variables

The data showed that out of 60 B.Sc. Nursing 2nd year students, 48 (80%) belonged to age group of 19-20 years while 12 (20%) belonged to age group of 21-22 years. Majority of students 52 (86.66%) were female & only 8 (13.33%) were male. On the basis of area of practice 60 (100%) in government hospital. According to any seminar attended on needle stick injury 46 (76.66%) students had not attended seminar on needle stick injury & only 14 (23.33%) had attended seminar on needle stick injury. On the basis of number of needle stick injury acquired in a week, majority of students 32 (53.33%) had acquired many times 14 (23.33%) acquired once 10 (16.66%) acquired twice and 4 (6.66%) had never acquired needle stick injury. According to facilities for prevention of needle stick injury in clinical area 60 (100%) students accepted that there were facilities for prevention of needle stick injury in clinical area.

Table 1: Frequency & Percentage distribution of B.Sc. Nursing 2nd year students according to socio-demographic variables

S. No.		Socio-Demographic variables	Frequency	Percentage
1	Age(in years)	19-20	48	80%
		21-22	12	20%
2	Sex	Male	8	13.33%
		Female	52	86.66%
3	Area of practice	Government Hospital	60	100%
		Private Hospital	0	0%
4	Seminar attended on needle stick injury	Yes	14	23.33%
		No	46	76.66%
5	Number of times needle stick injury acquired in a week	Once	14	23.33%
		Twice	10	16.66%
		Many times	32	53.33%
		Never	4	6.66%
6	Facilities in clinical area for the prevention of needle stick injury	Yes	60	100%
		No	0	0%

Section II: Assessment of pre-test & post-test knowledge score of control group.

Table 2: Frequency & Percentage of pre-test & post-test score of control group, n=30

Grading	Pre-test score		Post test score	
	Frequency	Percentage	Frequency	Percentage
Poor(0-12)	2	6.66%	1	3.33%
Average(13-24)	19	63.33%	19	63.33%
Good(25-36)	8	26.66%	9	30%
Excellent(37-46)	1	3.33%	1	3.33%

In pre-test of control group, out of 30 students majority 19 (63.33%) had average knowledge, 8(26.66%) had good knowledge, 2 (6.66%) had poor knowledge & 1 (3.33%) had excellent knowledge regarding prevention of needle stick injury. In post-test of control group, out of 30 students30 students majority 19 (63.33%) had average knowledge, 9(30%) had good knowledge, 1 (3.33%) had poor knowledge & 1 (3.33%) had excellent knowledge regarding prevention of needle stick injury.

Section III: Assessment of pre-test & post-test knowledge score of experimental group.

Table 3: Frequency & Percentage of pre-test & post-test score of experimental group, n=30

Grading	Pre-test score		Post test score	
	Frequency	Percentage	Frequency	Percentage
Poor(0-12)	2	6.66%	0	0%
Average(13-24)	18	60%	1	3.33%
Good(25-36)	9	30%	4	13.33%
Excellent(37-46)	1	3.33%	25	83.33%

In pre-test of experimental group, out of 30 students majority 18 (60%) had average knowledge, 9(30%) had good knowledge, 2 (6.66%) had poor knowledge & 1 (3.33%) had excellent knowledge regarding prevention of needle stick injury. In post-test, out of 30 students30 students majority 25 (83.33%) had excellent knowledge, 4(13.33%) had good knowledge, 1 (3.33%) had average knowledge & no subject had poor knowledge regarding prevention of needle stick injury.

Section IV: Assessment of effectiveness of self instructional module.

This section deals with effectiveness of self instructional module in terms of knowledge increased in experimental group. The section was further classified into subsection:-

1. Mean & Standard deviation of pre-test & post-test knowledge score of control group.
2. Mean & Standard deviation of pre-test & post-test knowledge score of experimental group.
3. Significance of self instructional module by‘t’ test computation.

i) Mean & Standard deviation of pre-test & post-test knowledge score of control group.

Table 4: Mean & Standard deviation of pre-test & post-test knowledge score of control group, n=30

Score	Mean	Standard Deviation
Pre-test	21.33	6.38
Post-test	21.8	6.12

ii) Mean & Standard deviation of pre-test & post-test knowledge score of experimental group.

Table 5: Mean & Standard deviation of pre-test & post-test knowledge score of experimental group, n=30

Score	Mean	Standard Deviation
Pre-test	22.40	7.44
Post-test	39.23	5.63

iii) Significance of self instructed module by 't' test computation.

H_0- There will not be significant difference in the mean pre-test & post-test knowledge score regarding prevention of needle stick injury among B.Sc. Nursing 2nd year students.

Table 6: Mean, Standard Deviation & paired 't' test value of knowledge score of control group, n=30

Knowledge score of Control group	Mean	Standard Deviation	't' test
Pre-test	21.33	6.38	1.38
Post-test	21.80	6.12	NS

NS-Not Significant, $t_{(29)}$=3.66, p<0.001. It was evident that the calculated t(1.38)is lesser than the table value $t_{(29)}$=3.66.Hence H_0 was accepted at 0.001 level of significance. So null hypothesis is accepted.

H_1:- There will be significant difference in the mean pre-test and post-test knowledge score regarding prevention of needle stick injury after administration of self instructional module.

The significance of the mean difference of pre-test & post-test knowledge score of experimental group was done by paired 't' test & the values are given below:-

Table 7: Mean, Standard Deviation & paired 't' test value of knowledge score of experimental group, n=30

Knowledge score of Experimental group	Mean	Standard Deviation	't' test
Pre-test	22.40	7.44	14.14*
Post-test	39.23	5.63	

*-Highly Significant, $t_{(29)}$=3.66, p<0.001. It was evident that the calculated t(14.14)is greater than the table value $t_{(29)}$=3.66.Hence H_1 was accepted at 0.001 level of significance. So H_1 is accepted.

Discussion

In present study, the calculated t(1.38) of control group is lesser than the table value $t_{(29)}$=3.66 at 0.001 level of significance. Therefore we can say that existing knowledge is less than expected. This can be supported by research conducted by Simon LP (2009), the study was conducted to assess the knowledge and existing practice of staff nurses regarding needle stick injuries and evaluate the effectiveness of guidelines developed by the prevention and management of needle stick injury in a selected government hospital of Delhi. The study revealed that 70% of staff nurses sustained needle stick injuries and there was lack of awareness among staff nurses regarding prevention and management of needle stick injury.

In experimental group the calculated t(14.14)is greater than the table value $t_{(29)}$=3.66 at 0.001 level of significance. This shows the effectiveness of self instructional module. This can be supported by the research conducted by Sr. Tina Catherine (2005), to assess the effectiveness of self instructional module on cardiac angiography for patients undergone cardiac angiography in a selected hospital, the researcher found that the self instructional module was effective in increasing the knowledge of the subjects and in reducing the anxiety of all subjects undergone cardiac angiography procedure and this was confirmed by the result of the study in which the mean post test score was 29.30 as compared to the pretest score of 17.84 and the mean anxiety of post test score was 35.73of the subjects as compared to the pre test score of 55.66.

Conclusion

The main purpose of this study was to assess the effectiveness of self instructional module on knowledge regarding prevention of needle stick injury. After administration of self instructional module in experimental group there was increase in knowledge score. So, I concluded that self instructional module was effective to increase the knowledge of B.Sc. Nursing 2nd year students regarding prevention of needle stick injury.

Acknowledgements

It gives me great pleasure to thank with deep sense of gratitude and respect, my co-guide Ms. Jerrin Susan Jose, Asst. Professor, Department of Medical Surgical Nursing, for her inspiring guidance, suggestions, timely help, constant encouragement, patient listening, and co-operation during each phase of the study.

My sincere gratitude to my guide Dr. R K Dubey, P.G College of Nursing, Gwalior, MP for his encouragement, support and inspiration towards building a sound knowledge base for the study.

It is my privilege to convey my sincere thanks to the experts who have validated the research tools and guided me with their valuable suggestions.

Lastly, I express my sincere thanks and gratitude to all those who have directly or indirectly helped me in the completion of this dissertation.

References

1. Rapiti E *et al*. Estimation of the global burden of disease attributable to contaminated sharps injuries among health-care workers: American Journal of Industrial Medicine. 2009; 48(6):482-90.
2. Gebhart Fred. EPA issues new guidelines for sharps disposal: N Eng J Med. 2012; 35(8):696-704.
3. Chalupa S *et al*. Needlestick and Sharps Injury Prevention: Are We Reaching Our Goals: AAACN. 2008; 14(35):112-117.
4. Acello Barbara. Guidelines for compliance in health care facilities: The OSHA handbook. 2002; 16(39):502-600.
5. Blackiston M. Needle stick injury: The journal of medical education. 2010; 16:13-16.
6. Brooker Christine. Needle stick injury: Journal of American Medical association. 2010; 17:4-16.
7. Murra Gantz Nelson. Risk of needle stick injury: Journal of national medical association. 2002; 12:42-50.
8. Rockerfeller John. Infectious disease: The journal of infectious diseases. 2010; 1:23-25.