



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2020; 6(1): 32-35
www.allresearchjournal.com
Received: 19-11-2019
Accepted: 23-12-2019

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Problem solving approach on improper handling of needle leads to needle stick injury among staff nurses selected hospital of Moradabad UP

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Abstract

Background: Needle stick injury was major cause for hepatitis B, Hepatitis C, HIV/AIDS among health care workers in all over the world. Most of the research studies result shows that nurses to be the commonest group of health care workers experiencing needle stick injuries because of the nature of there work.

Method: we conducted this study in selected medical and surgical wards of Teerthankar Mahaveer medical college and research center Moradabad. The study is approved by Institutional ethical committee. Work Practice Procedure During Handling of Needle Check list used to assess the handling of needle among staff nurses.

Result: The cause or reason identified for needling stick injury in this study were following Less experience, Increase in work load, Lack of resources, Lack of policy, Lack of administrative skill. One month after intervention result of this study shows that 85% to 90% staff nurses doing safe needle handling before and after the procedure.

Conclusion: Needle stick injury is common among staff nurses with less experience. After interventional needling handling practices was improved in study participants.

Keywords: Needle stick injury, health care worker, staff nurses, HIV/AIDS, hepatitis

Introduction

WHO reports in the Health Report 2002, that of the 35 million health care workers, 2 million experience percutaneous exposure to infectious diseases each year.

In USA 6,00,000 to 10,00,000 receive NSI from conventional needles and sharps every year, while in UK it is 1,00,000 HCWs. In India, authentic data on NSI are scarce. It is known that around 3-6 billion injections are given per year, of which 2/3rd injections are unsafe (62.9%) and the use of glass syringe is constantly associated with higher degree of unsafely (Kermode M, Muani V.). it further notes that 37.6% of hepatitis B, 39% of Hepatitis C and 4.4% of HIV/AIDS in health care workers around the world are due to needle stick injury Needle sticks and sharp injuries have been recognized as one of the occupational hazards among health care workers (HCWs). An estimated 600,000 to 800,000 needle stick and other percutaneous injuries are reported annually among U.S. HCWs (National Institute for Occupational Safety and Health, 1999). It is estimated that 100,000 needle stick injuries occur annually in (UK alone Hofmann F, K.N., Beie M., 2002) ^[5] and 500,000 annually in Germany (O'Connor, M.B., 2009) ^[8] Occupational exposures to percutaneous injuries are substantial source of infections with blood borne pathogens among health-care workers and can cause substantial health consequences and psychological stress for HCWs and their loved ones (Do, A.N., *et. al.*, 2003) ^[3]. Occupational blood borne transmission of more than 50 different pathogens has been reported (Tarantola, A., *et al.*, 2003) ^[12] NSSIs increase risk of spread of diseases like HIV, Hepatitis B and Hepatitis C. Sharps injuries are a major source of HCV infection among HCWs, accounting for almost 40% of HCV infections. The risk of occupational infection with HIV, although alarming, has never reached the scale of hepatitis B. The average percutaneous transmission rates for hepatitis B (HBV) and C (HCV) are 33.3 (6-33%) and 3.3 per cent (1-10%), respectively, while the seroconversion risk for HIV is 0.31 percent ⁹.

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This could be due to the fact that most countries, especially those with a high population prevalence of HIV infection, have never instituted surveillance systems that would capture data on such case. Certain groups of individuals are at greater risk than others because of the nature of their work. Numerous studies have found nurses to be the commonest group of HCWs experiencing needle stick injuries. The objectives of the study were to determine the prevalence of needle sticks and sharps injuries and its associated factors among HCWs at Serdang Hospital.

Material and Method

The study was conducted in Teerthanker Mahaveer hospital and research center, a medical college located in Bagarpur Muradabad UP, India. This study were conducted in the year 2017

In December month. The study participants are staff nurses in selected medical and surgical wards of Teerthanker Mahaveer medical hospital and research center. The study tool contain two section A contain demographical variables and section B contain procedural checklist was used to find out the proper handling of needle before, during and after invasive procedure. The tool checked for validation by 6 experts of medical and surgical nursing departmental experts. Statistical calculation of data done manually. The study conducted to identify the factors responsible for causing needle stick injury after identification of problematic area. Demonstration shown for handling needle during invasive procedure and self-instruction module provided on focused area by researcher to study participants. One month after intervention procedural checklist used to assess the participants practice during handling needle.

Eligibility criteria

- Staff nurses working in medicine and surgery wards.
- Staff working in morning shift.

Objective

1. To reduce or elimination the health hazards.
2. To reduce risk of infection.
3. To assess the practice of needle handling during invasive procedure.
4. To evaluate effectiveness of best chosen alternative in Bio-Medical waste management of soiled needle.

Result

Total study participants for this study was 20 staff nurses working in medical and surgical wards. After identification of problem, demonstration done on practicing safe needle handling and biomedical waste management was done by researcher. One month after intervention result of this study shows that 85% to 90% staff nurses doing safe needle handling before and after the procedure.

Demonstration of safe needle handling had done on the base

of check list. Self-instruction module prepared for study participants the module focuses on identified causes which are following.

Causes identified

From the analysis of gathered information various causes which were responsible for needle stick injury. These causes were following

1. Personal factor

- a) Less experience
- b) Increase in work load

2. Environmental factor

- a) Lack of resources
- b) Lack of policy
- c) Lack of administrative skill

Section A

Table 1: Frequency and percentage distribution of staff nurses with their demographic variables

Demographic variable		f	%
Age in years	19 to 30 years	8	40
	31 to 40 years	10	50
	41 to 50 years	2	10
	51 and above	0	-
Gender	Male	14	70
	Female	6	30
Self-education	GNM	15	75
	Bsc. Nursing	4	20
	Post Bsc. Nursing	1	5
Any previous of needle stick injury	Yes	16	80
	No	4	20
Work experience	Fresher less than 6 months	6	30
	1-2 years	10	50
	3- 5 years	2	10
	>5 years	2	10

The data which shown in table no 1 depict the frequency and percentage of nurses by their Performa for demographical variable. Major finding of this study are following

- Majority 50% participants belonging to the 31 to 40 years of age.
- Majority 70% of the staff nurses are female.
- Qualification of majority of nurses are 75%
- Majority of staff nurses 80% had previous incidence of needle stick injury.
- Majority 50% of the nurses having 1 to 2 years of experience.

Section B

Procedure checklist

Table 2: Frequency and percentage distribution of staff nurses of procedural check list. Work Practice Procedure during Handling of Needle Check (✓) Yes or No

Procedure Steps	Yes		No	
	f	%	f	%
1. Prior to procedure using sharps:				
a) All equipment is available and within arm's reach	16	80	4	20
b) Ensure lighting is adequate.	17	85	3	15
c) Assess patient's capacity for cooperation; request additional help if patient needs to be physically stabilized.	18	90	2	10

d) Instruct patient to avoid sudden movement	16	80	4	20
e) Do not expose needles until moment of use and keep pointed away from user.	17	85	3	15
2. During procedure:				
a) Maintain visual contact with sharps during use.	20	100	0	-
b) Remain aware of positioning of other staff to avoid accidental contact.	19	95	1	5
c) Do not pass sharps by hand; place and retrieve from predetermined centralized location/tray.	18	90	2	10
d) Alert other staff when placing or retrieving sharps.	17	85	3	15
3. Post-procedure:				
a) Activate safety features of sharps and check (visual, auditory) to ensure features are activated and locked in place.	18	90	2	10
b) Ensure all sharps are accounted for and visible	17	85	3	15
c) Check trays, linens, waste materials prior to handling for sharps accidentally misplaced or left behind.	19	95	1	5
d) Transport reusable sharps in secured closed container	16	80	4	20
e) For non-reusable sharps, visually inspect disposal container to ensure device will fit.	18	90	2	10
f) Keep fingers away from tip of device when disposing, and avoid placing hands close to the opening of the container	20	100	0	-

The data which shown in table no 1 depict the frequency and percentage of nurses by staff nurses of procedural check list. Major finding of this study are following.

Major finding of this study shows that approximately 85% to 90 % of the steps followed by staff nurses accurately after demonstration of procedure.

Discussion

This study result shows that less experience and increase workload were major factor for causing needle stick injury staff nurses. Nursing administrators should pay more attention to clinically burned-out nurses, and provide more opportunity to nurses for training and education to reduce the prevalence of sharps injuries (Muralidhar, S., *et.al*, 2010) [7]. The study result shows that blood exposure from needle stick injuries leads to higher prevalence of depression, anxiety, and stress symptoms in nurses (Xiong., X, 2016) [14].

There is therefore an urgent need at the hospital level to have a uniform needle stick injuries policy covering safe work practices, safe disposal of sharps, procedures in event of needle stick injury, training including pre-employment training, monitoring and evaluation of needle stick injuries and procedures for reporting needle stick injuries.

Conclusion

Needle stick injury is common among staff nurses with less experience. After study intervention Most of the nurses using proper handling of needle during procedure and maintaining proper biomedical management after procedure. The problem selected by investigator was very useful for nurses to prevent injury and infection due to needle stick injury.

Acknowledgment

This Problem solving approach done during my MSC. Nursing second year during my management posting thanks to research coordinator Mr. Ilearaja Assistant Professor Teerthanker Mahaveer Hospital and Research Center.

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