

SHORT ARTICLE

Needle Stick Injuries among health care workers in a tertiary care hospital in District Bathinda, Punjab

Dhruvendra Lal¹, Tanvir K Sidhu², PPS Coonar³, Gurkirat Singh⁴

¹Post Graduate, Department of Community Medicine, Adesh Institute of Medical Sciences & Research, Bathinda, Punjab; ²Professor, Department of Community Medicine, Adesh Institute of Medical Sciences & Research, Bathinda, Punjab; ³Professor and Head, Department of Community Medicine, Adesh Institute of Medical Sciences & Research, Bathinda, Punjab; ⁴PG student, Department of Community Medicine, Adesh Institute of Medical Sciences & Research, Bathinda, Punjab.

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Corresponding Author

Address for Correspondence: Dr Dhruvendra Lal, Post Graduate, Department of Community Medicine, Adesh Institute of Medical Sciences & Research, Bathinda, Punjab.
E Mail ID: drdhruvlal@gmail.com



Citation

Lal D, Sidhu TK, Coonar PPS, Singh G. Needle Stick Injuries among health care workers in a tertiary care hospital in District Bathinda, Punjab. Indian J Comm Health. 2017; 29, 4: 429-433.

Source of Funding: Nil **Conflict of Interest:** None declared

Article Cycle

Received: 21/09/2017; **Revision:** 17/10/2017; **Accepted:** 21/11/2017; **Published:** 31/12/2017

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Abstract

Background: Because of the environment in which health care staff works, many they are at an increased risk of accidental needle stick injuries (NSI). NSI has been recognized as one of the potential occupational hazards for healthcare workers which results in transmission of blood borne pathogens such as HBV, HCV, and HIV/AIDS while performing their clinical activities in the Hospital. **Aims & Objectives:** To study the prevalence of needle stick injuries and knowledge and behavior of health care workers in a tertiary care centre. **Material and Methods:** A Hospital based cross sectional study was conducted among Health Care workers at a tertiary care hospital in 2016 at District Bathinda, Punjab. **Results:** A total of two hundred and eight (208) participants took part in the study from various departments. 58 health workers out of 208 i.e. 27% had NSI in the last 12 months. 84.1% of the health care workers were aware of the fact that HIV could transmitted by needle-stick injuries. While 55.8% and 83.2% knew that HBV and HCV respectively be transmitted through NSI. Only 46.6% of the health workers remembered that they had ever received HBV vaccination. **Conclusions:** The survey found out that the knowledge regarding the risk associated with NSI and use of preventive measures was adequate among the health care workers but still there was a slight room for improvement in their attitude and practice and the same can be addressed through proper education and training

Keywords

Needle Stick Injuries; NSI; Tertiary Care Centre; Health Care Workers

Introduction

A Needle Stick Injury (NSI), percutaneous injury, or percutaneous exposure incident is the penetration of skin by a needle or other sharp object, which was in contact with blood, tissue, or other body fluid before the exposure. (1,2,3) Injuries commonly occur

during needle recapping or via improper disposal of devices into an overfilled or poorly located sharps container. (4).

Health Care Workers (HCWs) are at a risk of occupational acquisition of Human Immunodeficiency Virus (HIV) infection and other viral infections (HCV and HBV) due to accidental

exposure to infected blood and body fluids (5) Most exposures among healthcare workers are caused by percutaneous injuries with sharp objects contaminated with blood or body fluids. WHO reports in the World Health Report 2002, that of the 35 million health-care workers, 2 million experience percutaneous exposure to infectious diseases each year. 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 injuries. (6) The two most common causes of NSIs are two-handed recapping and the unsafe collection and disposal of sharps waste. (7) The implementation of education, universal precautions, elimination of needle recapping and use of sharps containers for safe disposal have been shown to reduce needle stick injuries by 80%. (8,9)

Aims & Objectives

1. To study the prevalence of Needle Stick Injuries among health workers in a tertiary care hospital.
2. To study the knowledge and behavior of health care workers towards Needle Stick Injuries.

Material & Methods

Study design: A Hospital based cross sectional study was conducted among health workers in a tertiary care hospital in District Bathinda, Punjab. **Unit of study:** The population under study included doctors, both graduate and post graduates, nursing staff, lab and OT technicians and ward boys/ attendants working in the various departments of the tertiary care hospital. Permission from Research and Ethics committee was taken beforehand. All the health workers of the tertiary hospital who gave consent to participate in the study were included. Interview was conducted by the investigator in the form of a self-designed, pre-tested questionnaire which included both closed and open-ended questions. The HCWs were contacted in person and told about purpose of the study and that their responses shall be kept anonymous. Informed verbal consent was taken from each respondent before conducting the interview.

Sample size: All the HCWs in the tertiary hospital who gave consent to participate in the study were included. Convenient sampling was used in this study.

Inclusion criteria: All the health workers (Doctors, Interns, Nurses, OT Assistant and Laboratory Technicians), both male and female were included in the study.

Exclusion criteria: Health workers who did not give consent to participate in the study and those who were absent during the time of conduct of study.

The data was analyzed using MS Excel and expressed as percentages, frequencies and association between various variables was calculated using Chi Squared Test and other relevant biostatistical tests.

Results

A total of 208 health workers participated in the study. Most of them were from the surgery department (13%), emergency department (12.5%) and medicine department (11.5%) (Figure 1). 34 (16.3%) of the participants were specialist doctors or consultants, 21 (10.1%), graduate doctors, 115 (55.3%) Nurses, 11 (5.3%), OT assistants, 13 (6.3%) Lab technicians and 14 (6.7%) Ward boys/ attendants. (Figure 2).

27.9% of the health workers told that they suffered needle stick injuries in past one year out of which 19 reported the same to the authorities (10 out of 19 were nurses).

Negligence was the most common reason cited by everyone (70 out of 208) followed by hurry (36 out of 208), increased work load (17 out 208), patient handling during emergency situation (9 out of 208) and inexperience (1 out of 208) (Figure 3). Many participants (35.6 %) thought that Emergency department was the most prone for Needle Stick Injuries, followed by OT (27.9%), ICU (14.4%), laboratory (13.5%), ward (7,2%) and OPD (1.4%). In contrast there were no needle stick injuries in laboratories. 8 were reported in OT and 2 in ICU. Medicine ward, Emergency ward and Surgery ward reported maximum NSI's of 10,8 and 6 respectively. Anesthesia department reported 7 NSI's in the past one year (Table 1). 34 Specialist Doctors/ Consultants were interviewed out of which 11 suffered needle stick injuries in the past one year. Out of 76 nurses who participated in the study, 39 reported NSI's in the past one year. 5 out of 6 OT assistants, 1 out of 12 laboratory technicians and 2 out of 12 ward boys/ attendants suffered the same in the past one year. This difference in injuries among various professions when analyzed came out to be significant ($p=0.006$). Many health care workers (162 out of 208) knew that HIV could be transmitted through NSI. On the other hand, less number of health workers knew that HBV could also be transmitted through NSI (103 out of 208 i.e. 49.5%) and 160 out of 208 (76.9%) thought the same for HCV. A total of 97 participants (46.63%)

received Hepatitis B vaccine. 31 out of 34 specialist doctors or consultants and 19 out of 21 graduate doctors received Hepatitis B vaccine. Only 38 out of 115 nurses (33.04%) received Hepatitis B vaccination. The difference in vaccination between various professionals came out to be highly significant ($p < 0.001$) (Table 2).

It was found out that patients seldom provide their own injection equipment with 52.4% buying syringes at the point of contact with the health care worker. 77.9% (162 out of 208) told that they used disposable syringes, 5.3% told that they used auto disposable syringes while 4.3% used sterilizable syringes. 12.5% had no idea of the type of syringes used and this included ward boys and attendants. 92.3% told that needle hub cutters should be used for safe disposal of used syringes. 76% of the participants told that they had sufficient sharp boxes for disposal and were aware of the new bio medical waste management rules. 57.7% of the participants told that they actually practiced recapping of used syringes. Only 95 out of 208 i.e. 45.7% knew the importance of not recapping the used syringes. 54 out of 95 were of the opinion that recapping should not be done because the health worker is at the risk of getting needle pricks while doing so. Other reasons cited by them were prevention of reuse and prevent spread of infections (Figure 4).

Most of the participants knew the definition of safe injection as described by WHO, which states that a safe injection can be defined as the one which does no harm to recipient (abscess) (90.6%), does no harm to the health worker (94.3%) and does no harm to community (83.9%). When asked about the new devices to prevent such injuries, it was found that very few had the knowledge regarding the new technologies which have come up in recent times. Only 27.7% had heard the name of reuse prevention syringe, 28.9% heard about prefilled injection devices, 39.3% heard about safety syringes, 43.4% heard about vacuum-based technology and 54.3% heard about safety needles and cannulas.

Discussion

Infection due to blood borne pathogens can be greatly reduced by strictly practicing infection control guidelines. These include hand washing, use of personal protective equipment's, training of the staff, having a check on the proper disposal of waste, and good surveillance system on hospital-acquired infections. The present study addressed certain

aspects of NSI in a busy tertiary care hospital and derived some equivocal and some contrasting results. The prevalence of Needle Stick injuries in this study was 27.9% which was far less than a study conducted CMC, Vellore in 2009 (49%). (10). Maximum participants in this study were from the department of emergency, surgery and medicine. In another study conducted at Safdurjung hospital, New Delhi in 2010, needle recapping and manipulating needle in patient were the two main attributes to NSI. (11) In this study negligence on the part of health worker and hurry were the attributable causes for needle stick injuries. Our study found out that many health workers still practiced re capping of needles and 54.3% did not know the importance of not recapping the needles. The injuries were more prevalent among nursing staff and the difference in the number of injuries as compared to other health workers was statistically significant. The knowledge regarding the newly introduced techniques for prevention of NSI was lesser known among the nursing and graduate doctors. According to a CDC report, use of safety engineered devices would reduce NSIs by 76%. (12) There is much room for improvement in protecting the HCWs from NSI, which can be accomplished through a combination of comprehensive programmes, including stress on institutional behavior and device related factors that contribute to the occurrence of these injuries, seeking alternatives to use of needles wherever possible, using newer devices with safety features, ensuring adequate training in safe use and disposal of needles, putting in place a culture of accident reporting, especially sharps-related, and following preventive practices like vaccinations for hepatitis B, as also stressed by several others. (13,14) Needle Stick Injuries were reported in almost every category of health care worker in this study.

Conclusion

It was found that there is still scope of mass improvement in attitude and practices of healthcare workers to bring down the incidence of such accidental injuries. Many issues need to be addressed such as use of newly engineered safety devices, proper training of all health care workers, proper recording and reporting of such injuries and adherence to new bio medical waste disposal rules.

Authors Contribution

All authors have contributed equally in this study.

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Tables

TABLE 1 NEEDLE STICK INJURIES IN VARIOUS DEPARTMENTS AND DESIGNATIONS

		Had Needle Stick Injury			P value
		Yes	No	Total	
Department	Medicine	14	10	24	0.004
	Surgery	21	6	27	
	Emergency	18	8	26	
	Psychiatry	5	4	9	
	ENT	11	3	14	
	Ortho	8	1	9	
	ICU	10	2	12	
	OBG	11	1	12	
	Dermatology	2	1	3	
	Laboratories	2	0	2	
	Special Wards	2	2	4	
	Pediatrics	6	0	6	
	Bio Chemistry	2	0	2	
	Pathology	14	2	16	
	Microbiology	9	0	9	
	Anaesthesia	3	7	10	
	OT	4	8	12	
Super Speciality	8	3	11		
Total		150	58	208	
Designation	Specialist Doctors/ Consultants	23	11	34	0.006

	Doctors Graduate	21	0	21
	Nurses	76	39	115
	OT Technicians	6	5	11
	Lab Technicians	12	1	13
	Ward boys/ Attendants	12	2	14
Total		150	58	208

TABLE 2 HEPATITIS B VACCINATION AMONG VARIOUS HEALTH CARE WORKERS

		Hepatitis B Vaccine			P value
		Yes	No/ Don't know	Total	
Designation	Specialist Doctors/ Consultants	31	3	34	<0.001
	Doctors Graduate	19	2	21	
	Nurses	38	77	115	
	OT Technicians	0	11	11	
	Lab Technicians	3	10	13	
	Ward boys/ Attendants	6	8	14	
Total		97	111	208	

Figures

FIGURE 1 PERCENTAGE OF PARTICIPANTS FROM EACH DEPARTMENT

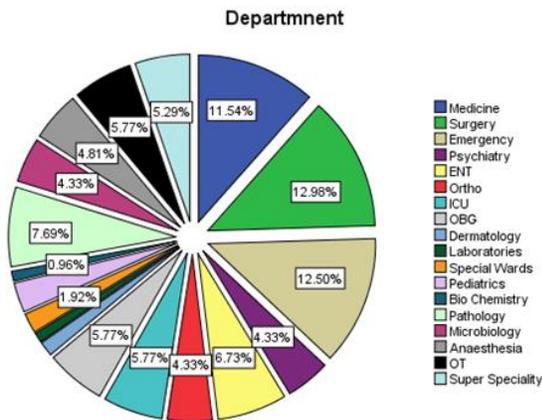


FIGURE 3 LIST OF VARIOUS PARTICIPANTS

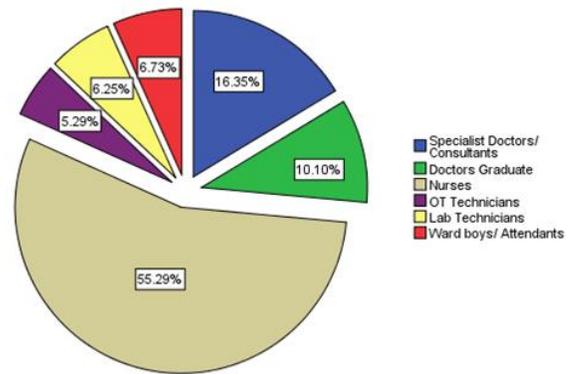


FIGURE 2 CAUSES OF NEEDLE STICK INJURIES

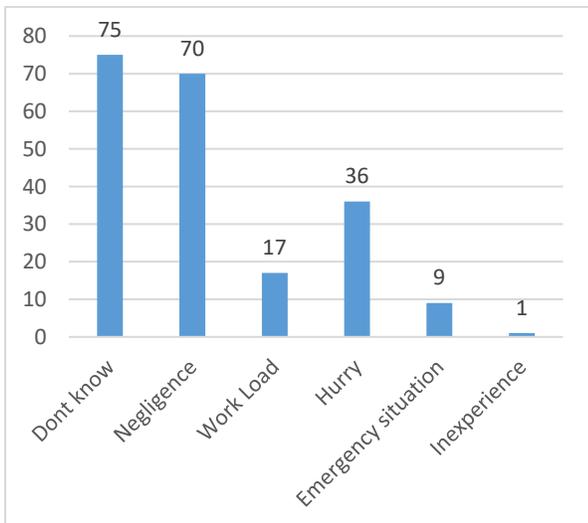


FIGURE 4 IMPORTANCE OF NO RECAPPING

