



Original Research Article

Occupational Exposure to Needlestick and Sharp Injuries among Hospital Waste Handlers in Selected Government Health Facilities of Bhopal District

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ABSTRACT

Introduction- Percutaneous injuries, caused by needle sticks and other sharps, are also a serious concern for waste handlers in hospitals and pose a significant risk of occupational transmission of blood borne pathogens.

Objectives- 1.To study prevalence and responses to needle stick and sharp injuries among waste handlers in selected government hospitals.2. To assess the risk factors among waste handlers leading to needle stick and sharp injuries in the above hospitals.

Materials and Methods: It was a hospital based cross sectional study of 2 months duration i.e. from July – Aug 2014. 89 waste handlers were selected through random sampling and interviewed about their knowledge regarding waste handling from the selected government primary, secondary & tertiary health care institutions in Bhopal district.

Results- out of the total 71.1 % of the waste handlers had a needle stick or sharps related injuries in last 6 months. Knowledge about the universal precaution in hospital waste handlers was minimal at all the three levels of health care institutions. On asking about the responses after needle sticks and sharps related injuries 28.5 % of the Waste handler had done nothing after injury.38.7 % of the waste handler said they washed their hand with water and the other 30.8 % of the Waster handler used soap with water. Hepatitis B vaccination was absent in the waste handlers of primary health care while the status of hepatitis B vaccination was minimal in the waste handlers of secondary and tertiary health care facility.

Conclusion: needle sticks and sharp related injuries often get unnoticed in the waste handlers in hospitals. Some of the waste handlers even did not report it to their superior which is a matter of apprehension and need immediate awareness among the waste handlers about needle stick injuries.

Keywords: Injuries, waste handlers, Primary health centre, Hepatitis B, Vaccination etc.

INTRODUCTION

Occupational safety and health including the performance of safe injections and waste management are important concerns to protect healthcare workers, patients, and the community. Hospital waste

handlers (HWHs) often considered as the ancillary group or often given secondary status in health care provision but proper sanitation greatly improves the success of medical intervention and plays a critical role in prevention, especially for the sick. The

role of HWHs in ensuring safe environment is irrefutable and utterly essential because the environments for care are part of care. [1]

The collection, segregation and disposal of injection waste entails labor intensive operations, involving many possibilities of direct contact with the waste increasing the risk of infections to the HWHs. [2,3]

Sharps or needle stick injury, a cut or puncture wound resulting in penetration of the skin by a hypodermic needle, surgical blade, fragment of glass or metal or other sharp item including rigid plastic, is the primary hazard for those working with healthcare wastes. Though much attention is paid to the safety of healthcare workers and their protection from sharps injury, the welfare and safety of those in the waste disposal sector has received very little attention. [4]

Percutaneous injuries, caused by needle sticks and other sharps, are a serious concern for HWH in hospitals and pose a significant risk of occupational transmission of blood borne pathogens. Needle stick injuries that occur immediately after an injection are more likely to spread disease caused by blood-borne pathogens, but needle sticks from trash piles may cause injury and infection from germs in the environment. [5]

According to official statistics from World Health Organization, in 2000, 5% of the global HIV incidence was estimated to occur because of poor waste handling and contaminated injections (WHO, 2007). [6] The segregation of infectious from non-infectious waste is essential, and containers should be used for sharps and not be overfilled to avoid exposure to infections, injuries, and toxic material. [7] Improper disposal of waste, can lead to resale of medical equipment on the black market.

Objectives

1. To study prevalence and responses to needle stick and sharp injuries among hospital waste handlers in selected government hospitals.

2. To assess the risk factors among hospital waste handlers leading to needle stick and sharp injuries in the above hospitals.

MATERIALS AND METHODS

It was a hospital based cross sectional study of 2 months duration i.e. from July - Aug 2014. 11 government health facilities were selected through cluster sampling. HWHs those were working in the above facilities were randomly selected. Thus a total of 89 HWHs were selected and interviewed about their knowledge regarding waste handling from the selected government primary, secondary & tertiary health care institutions in Bhopal district. The Data were coded and validated. Data entry and analysis were using EPI info (version 7) and MS Excel software. Generation of descriptive Statistics was done. Fisher exact probability test was used to identify potential risk factor of needle stick and other sharp related injuries. P value of < 0.05 was considered statistically significant.

The study was done according to world Helsinki declaration and verbal consent were obtained from the participants before administrating questionnaire. Anonymity of participants was maintained by avoiding any information revealing the identity of the participants in the questionnaire.

RESULTS

Baseline characteristics of HWHs are shown in table.1. The age of the HWHs enrolled in the study ranged from 20 - 59 years with a mean age of 38.5 ± 7.85 . It is observed that majority of HWHs were aged above 35 years followed the age group of 26-35 years. Male and female distribution in

the entire 3 tier of government health facilities was almost equal. While analyzing the experience of the waste handlers it was observed that Majority of the HWHs had the experience of more than 5 years in waste handling. The work experience of the study

participants ranged between 1 and 15 years (mean work experience of 5.67 ± 2.69 years). Majority of the HWHs in all the 3 tier of government health care facilities had a primary education.

Table.1. Baseline Characteristics of healthcare waste handlers

	Primary Health care facilities (%)	Secondary Health care facilities (%)	Tertiary Health care facility (%) y h).
Age groups (Years)			
<25	4 (23.5)	5 (12.2)	2(12.2)
26-35	5(29.5)	11(26.9)	8(26.9)
>35	8(47.0)	25(60.9)	21(60.9)
Sex			
Male	9 (53)	22(53.6)	14(45.1)
Female	8(47)	19(46.4)	17(54.9)
Work experience (Years)			
<5	6(35.2)	12 (29.2)	7(22.5)
≥5	11(64.8)	29(70.8)	24(77.5)
Education Status			
Primary	5 (29.6)	26 (63.4)	19 (61.3)
High School	6(35.2)	8(19.5)	3(9.6)
No primary education	6(35.2)	7(17.1)	9(29.1)
Total	17(100)	41(100)	31(100)

When the exposure to needle stick injuries was analyzed based on practice of wearing gloves at the time of NSI exposure it was noticed that only 28.5 % of the HWHs was wearing gloves at the time of NSI while 71.5 % was not wearing gloves. However this difference was not found statistically significant. While on the other hand comparing exposure to NSI and Knowledge of universal precaution was also not found

statistically significant. When comparing the training of injection waste handling and Needle stick injuries in waste handlers it was observed that 61.9 % of the waste handlers who had NSI in past 6 month do not had training on injection waste handling. While 73 .1 % of the trained waste handlers do not had any exposure of NSI in last 6 months. This difference was found to be statistically significant (P= <0.005).

Table.2. Relationship between certain variables and needle stick injuries.

	NSI	No NSI	P value *
Wearing gloves at the time of NSI			
Yes	18 (28.5)	12(46.1)	NS
no	45(71.5)	14(53.9)	
Knowledge of universal precautions			
Yes	12 (19.1)	5 (19.2)	NS
no	51(80.9)	21(80.8)	
Training of injection waste handling			
Yes	24(38.1)	19(73.1)	P= 0.005*
No	39(61.9)	7(26.9)	
Experience			
<5	18 (28.5)	7 (26.9)	NS
≥5	45(71.5)	19(73.1)	
Education			
Primary	38 (60.3)	12 (46.1)	P = 0.010*
High school	7(11.1)	10(38.5)	
No primary school	18(28.6)	4(15.4)	
Total	63 (100)	26(100)	

*Fisher exact probability test was performed.

Association between the years of experience and exposure to needle stick injuries was found to be statistically insignificant in waste handlers. On analyzing the education status with exposure to needle stick injuries it was noticed that the HWHs whose education status was of primary school or above were less exposed to needle stick injuries in the past 6 months. This difference was found to be statistically significant ($P = 0.010$). Relationship between above variables with needle stick injuries is shown in Table 2.

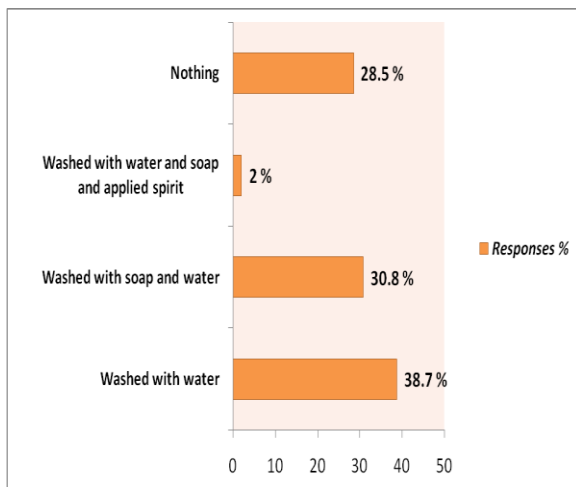


Fig.1. Responses of healthcare waste handlers after Needle Stick injury.

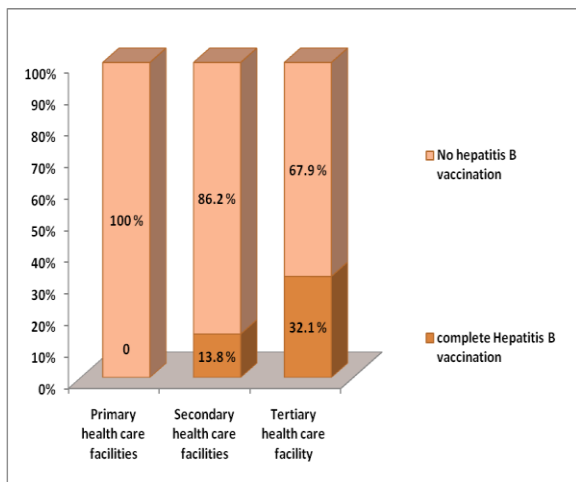


Fig.2. Hepatitis B vaccination amongst Waste handlers in different government health facilities.

Fig.1. shows the various responses of HWHs after the needle stick injuries they suffered in last 6 months. Majority of the waste handlers 38.7 % only washed their hands with water while 30.8 % of the HWH's washed with soap and water. Matter of concern is the 28.5 % of the HWH's who did nothing after the NSI. Post exposure prophylaxis after NSI was not taken by any of the waste handlers.

Fig.2. shows the Hepatitis B vaccination status in the HWH's in the all the 3 tier of the government health facilities. It was noticed that 32.1 % of the HWH's in the tertiary health care facility had complete 3 dose vaccination of hepatitis B while only 13.8 % of the HWH's are completely vaccinated against Hepatitis B in secondary health care facilities. No HWH's in the primary health care facilities was completely vaccinated against hepatitis B which is matter of concern.

DISCUSSION

The present study describe the prevalence of NSI among Hospital waste handlers of different government health facilities involved in BMW handling but also highlights the awareness of universal precaution and responses at the time of NSI's. The prevalence of NSI's in the hospital waste handlers was found to be 70.7 % (N=63) in the present study.

Hospital waste handlers are consider as ancillary group of the health care workers which often remained obscure in many studies done in the India about the prevalence of NSI's. Although sharps users like doctors, Nurses etc are at greatest risk, HWH and other support staff involved in early stages of the disposal chain features as the next most frequent group reporting injury. [8] Whereas studies done in tertiary health care center in south India and rural North India among doctors, nurses and lab technician has shown similar results to the

present study i.e. 71.9 % and 73% respectively therefore not much difference was found in the Prevalence of NSI's. [9,10] A study done in IRAN among Hospital waste handlers in government hospital shown proportion of NSI to be 31.3 % which is very less when compared to the present study it may be most likely due to lack of awareness and knowledge in our study population. [11]

In present study many hospital facilities do not had a infection committee while those who had, received very minimal reporting on NSI's and in many hospital waste handlers were not aware of such committee. According to NHS policy in the UK, it is compulsory when staff sustain a NSI to report the incident. [12]

The education status of the most hospital waste handlers (56.5 %) in present study was up to primary school. A study done in Coimbatore, India showed that most of hospital waste handlers (61%) in their study population had no primary education. [13] The association between education status and NSI's prevalence was statistically significant ($p = <0.01$) in present study. Higher the education status lower the prevalence in NSI's in hospital waste handlers. Whereas the training status of the hospital waste handlers was 48.4 % in the present study. A similar study done in Nigeria showed that 65.8 % of the hospital waste handlers received training before commencing on the job. [14] The association between training status and NSI's prevalence was statistically significant ($p = <0.005$) in present study. This shows that training and re-training of the health workers is important and should be encouraged.

This study has demonstrated that the inadequate reporting of NSSIs to medical staff was a common occurrence amongst Hospital waste handlers. As many as 28.5 % of the hospital waste handlers did nothing after an injury, which is a similar finding to

studies carried out elsewhere. [15-17] For the most part the common reasons for this may be scarce knowledge and meager practices. While none of the waste handlers approached for PEP in the present study. The observed high level of under-reporting suggests that workers need education on prevention, especially focusing on the importance of reporting all NSSI's and the possibilities of prophylaxis after exposure to BBV. [18-20]

Vaccination is one of the best ways to protect hospital waste handlers from infection, but vaccination is only available for HBV and tetanus. In the present study, the number of HBV vaccinated waste handlers in the tertiary health care center was 32.1 % and in secondary health care centers it was 13.8 % while none of the waste handlers in the primary health care centers had a complete hepatitis B vaccination. This figure would suggest that a greater awareness of the requirement of the HBV vaccination is required.

CONCLUSION

Needle stick injuries have been recognized as common occupational hazards among health care workers. The present study revealed the high proportion of NSI's among the hospital waste handlers in the government health institutions. Despite the proper guidelines of safe injection practices and unambiguous legislation of waste management by hospital administrations, there is a need for training and retraining of waste handlers by hospital administrations. All the waste handlers should have pre-employment immunization against hepatitis B.

The result of the study should be interpreted with caution as the present study was done only in selected government health institutions and has not taken into account the sites of NSI's and the circumstance that led to NSI's.

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