

Original Research Article

Knowledge and response of health care workers after needle - stick injury in a tertiary care hospital setting in tribal Rajnandgaon, Chhattisgarh, India

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ABSTRACT

Background: Health care workers (HCW) who have occupational exposure to blood are at increased risk for acquiring blood-borne infections. Occupational exposure to blood can result from per-cutaneous injury (needle stick or other sharps injury), muco-cutaneous injury or contact with non-intact skin. Hence not only doctors and nurses even laboratory technicians, housekeeping personnel and hospital waste handlers are at risk of harboring the blood borne infections through needle-stick injury (NSI).

Methods: The present prospective cross sectional study was carried out at the 400 bedded Government Medical College Hospital, Rajnandgaon, Chhattisgarh, India, during period from November 2015 to August 2016. Out of total study participants, 18 were doctors, 142 nurses and 20 lab technicians from different clinical departments/wards of the hospital. Data was collected by using a predesigned pretested questionnaire and analyzed using appropriate statistical software.

Results: Out of 180 HCW, 149 (82.78%) were females and, 31 (17.22%) were males. Majority 78 (43.3%) of the subjects said that the physician should be consulted after NSI within one hour. 51.1% of the subjects surprisingly replied that it was not necessary to report NSI. Around 72 (40%) of the subjects had history of NSI sometime in their life till then. Out of total exposed respondents, 56/72 (77.8%), took ICTC consultation. Out of total subjects who consulted ICTC, 51/56 (91.1 %), were suggested to take PEP by the ICTC physician. Out of 51 subjects who were advised PEP (Post Exposure Prophylaxis) by ICTC Physician, 45 (88.2%) started PEP within 1 hr of NSI. Majority of the participants replied that most probability of getting NSI was while drawing blood sample from the patients (29.2%). 68.9% of the study subjects were immunized completely against Hepatitis B.

Conclusions: The study subjects had adequate knowledge about NSI and their response in the form of actions that have to be taken after NSI was also satisfactory. The response in the form of taking consultation from a specialist and taking PEP was appreciable but it needs to be improved upon.

Keywords: Health care workers, ICTC, Needle-stick injury, PEP

INTRODUCTION

Health care workers (HCW) who have occupational exposure to blood are at increased risk for acquiring blood-borne infections. The level of risk depends on the

number of patients with that infection in the health care facility and the precautions the HCWs observe while dealing with these patients.¹⁻⁴ More than twenty diseases can get transmitted through NSI including Hepatitis B, Hepatitis C and HIV.⁵ Occupational exposure to blood

can result from per-cutaneous injury (needle stick or other sharps injury), muco-cutaneous injury (splash of blood or other body fluids into the eyes, nose or mouth), or contact with non-intact skin.⁶⁻¹⁰ Hence not only doctors and nurses even laboratory technicians, housekeeping personnel and hospital waste handlers are at risk of harboring the blood borne infections.^{2,11} According to the World Health Organization (WHO), out of 35 million health workers worldwide, about 3 million receive per-cutaneous exposures to blood borne pathogens each year; two million of those to HBV, 0.9 million to HCV and 170, 000 to HIV. These injuries may result in 16, 000 HCV, 66, 000 HBV and 1000 HIV infections.⁶ More than 90% of these infections occur in developing countries. The measures which can be taken to reduce these occupationally related bloods borne infections to health care personnel includes eliminating unnecessary injections, adhering to universal precautions, immunization against Hepatitis B, provision of personal protective equipment and the management of exposures.^{7,11-14} Keeping in mind this background information, the present study was planned and undertaken to know the extent of occupational exposure to needle stick injuries among health care personnel and their response to these injuries in a setting of tertiary care hospital.

METHODS

The present prospective cross sectional study was carried out at the 400 bed Govt. Medical college Hospital, Rajnandgaon, Chhattisgarh, India during study period November 2015 to August 2016. Prior approval was sought from Institutional Ethical Committee for the study. Universal sample of Health Care Workers (HCW) working in the hospital was taken and 180 of them were ready to participate in the study. Of a total 180 health care workers, 18 doctors, 142 nurses and 20 lab technicians from different departments/wards in the hospital were surveyed.

The tool used for data collection was a predesigned pretested questionnaire, the first part of which contained information on baseline characteristics of the health care worker. The second part was on the knowledge and response to needle-stick injuries. The respondents were given a briefing on the aims of the study, and were asked not to disclose their identity to assure them that the survey was only for academic purposes. Data was compiled in MS excel and checked for its completeness and correctness. Then the data was analyzed by using suitable statistical software.

RESULTS

Out of 180 HCW, 149 (82.78%) were females and 31 (17.22%) were males. Majority of the subjects were Nurses followed by Lab technicians and doctors. Out of 180 subjects, 71.66% were having experience less than 5 years (Table 1).

Table 1: Background characteristics of study subjects.

Background characteristics	No.	Percentage
Sex		
Male	31	17.22
Female	149	82.78
Job category		
Doctor	18	10
Lab. Technician	20	11.11
Nurse	142	78.89
Years of experience		
<5year	129	71.66
>5year	51	28.44

Around 86.6% of the subjects were having the knowledge that the hospital waste management protocol is followed at their hospital. In reply to the question what is to be done after NSI, majority 78 (43.3%) of the subjects said that the physician should be consulted and 60 (33.3%) said that matter should be discussed with the colleagues. 24 (13.4%) were also of the opinion to take self-medication. 51.1% of the subjects surprisingly replied that it was not necessary to report NSI, whereas 48.9 % had the knowledge whom to report the NSI (Table 2).

Table 2: Knowledge regarding different aspects of NSI.

Knowledge	Frequency	Percentage
Knowledge whether hospital waste management protocol followed at the hospital		
Yes	156	86.6
No	24	13.4
Total	180	100.0
Knowledge about what is to be done after NSI		
Discussion with colleagues	60	33.3
Consult with physician	78	43.3
Do nothing due to anxiety/fear	18	10.0
Take self medication	24	13.4
Total	180	100.0
Knowledge about whom to report after NSI		
General physician	58	32.2
ICTC (Integrated counseling and testing centre)	30	16.7
Not necessary to report	92	51.1
Total	180	100.0

Around 72 (40%) of the subjects had history of NSI sometime in their life till then. Out of total NSI incidences, 25 % and 40.3% subjects were frightened and anxious after NSI respectively, while 25 (34.7%) thought that the issue was not serious. In 40 (55.6%) incidences out of 72, the HIV status of the patient was not traceable, while in 6 (8.3%) this history was positive. 56 (77.8%) subjects sought consultation from ICTC physician within one hour of NSI exposure.

Table 3: Response to different aspects of NSI.

Practice	Frequency	Percentage
History of NSI till then		
0	108	60.0
1-2	48	26.7
>3	24	13.3
Total	180	100.0
Reaction after NSI		
Frightened	18	25.0
Not Frightened but anxious	29	40.3
Issue not serious	25	34.7
Total	72	100.0
HIV Status of the patient from whom NSI occurred, known		
Yes	6	8.3
No	26	36.1
Not traceable	40	55.6
Total	72	100.0
Whether consultation was taken within one hour from ICTC (integrated counseling & testing centre) physician		
Yes	56	77.8
No	16	22.2
Total	72	100.0
Whether ICTC physician suggested post exposure prophylaxis (PEP)		
Yes	51	91.1
No	5	8.9
Total	56	100.0
Number of subjects who started post exposure prophylaxis (PEP)		
Yes	45	88.2
No	6	11.8
Total	51	100.0
Screened for diseases other than HIV after NSI		
Hep. B	24	33.3
Hep. B, Hep. C	2	2.8
Hep. B Hep. C, Syphilis	15	20.8
Hep. B, Syphilis	2	2.8
Not screened at all	29	40.3
Total	72	100.0
Immunized completely against Hepatitis B		
Yes	124	68.9
No	56	31.1
Total	180	100.0
When have you experienced more probability of getting NSI?		
Drawing blood sample from the patients	21	29.2
During injection procedure (IM, IV)	9	12.5
During surgery	5	6.9
While recapping the used needle	18	25.0
Handling the used uncapped needles along with waste	19	26.4
Total	72	100.0

Out of 56 who consulted ICTC physician, 51 (91.1%) subjects were suggested PEP, and among them 45 (88.2%) started PEP. Out of the total, around 59.7% subjects were screened for one or more diseases other than HIV (Hep. B, Hep. C, Syphilis). 68.9% of the subjects were completely immunized against Hep. B. Majority of the subjects who had experienced NSI stated that the most probability of getting NSI was while drawing blood sample from the patients (29.2%) followed by handling the used uncapped needles along with waste (26.4%) and recapping the used needle (25.0%) (Table 3).

DISCUSSION

NSIs present the single greatest occupational hazard to medical professionals. Several studies have shown that injuries from contaminated needles and other sharp devices used in health care settings have been associated with transmission of more than 20 different blood borne pathogens to health care workers. Several studies on NSI and sharp injuries among health care workers have been reported from all over the world.^{1,3,5,7-9,11-13}

In the present study, around 40% of the HCWs reported having received NSI in their carrier, which is a concerning number. Few of the studies in North India had found a high prevalence of NSI (79.5% and 73%, which is higher as compared to the present study.^{1,15}

In present study around 77.8% of the subjects had taken the consultation from ICTC physician within one hour of NSI exposure. In a study from UK which focused on the awareness of surgeons about the guidelines on PEP, it was found that 10 out of 26 surgeons knew that PEP should be obtained within 1 hour of the injury, and only 2 knew from where to obtain PEP.¹⁶

In this study, out total exposed respondents, 56/72 (77.8%), took ICTC consultation. Out of total subjects who consulted ICTC, 51/56 (91.1%), were suggested to take PEP by the ICTC physician. Out of 51 subjects who were advised PEP by ICTC Physician, 45 (88.2%) started PEP within 1 hour. In a study done by Mathewos et al in North West Ethiopia, it was found that the percentage of exposed respondents who took PEP (74.2%) was lower than the present study (88.2 %).¹⁷ Many studies on PEP for HIV have shown that the rate of completion of prescribed PEP regimen ranges from 60- 94%.¹⁷⁻¹⁹ This particular parameter was not considered in our study which happens to be the limitation of the study.

68.9% subjects were completely immunized against Hep B in this study while in study by Alam M and by Prasuna J it was found to be 84 % and 69.69% respectively.^{20,21} The commonest clinical activity to cause NSI among doctors was blood sampling (37.5%) followed by re-capping of needles (31.3%) as per reported by Kashyap B & Gupta S, which are nearly similar to the findings in this study.²²

Recommendation

The authors would like to recommend that in all health care settings, reporting of sharp injuries should be considered as an essential activity. Counseling and Post Exposure Prophylaxis (PEP) facility should be made available by the hospital. Proper signage and posters should be displayed at important locations giving information regarding what to do and whom to consult after NSI. Teaching and training regarding the prevention of NSI should be an integral part of the curriculum of all disciplines including medical, dental, nursing and paramedics. Sensitization of the HCWs about universal precautions and safe injection practices should be undertaken by the hospital at regular intervals. In due course of time this multifaceted approach will definitely improve the knowledge, attitude and response of HCWs towards NSI, which will help in reducing the burden of diseases that can be spread by NSI and to make the workplace safe for them.

CONCLUSION

The study subjects had adequate knowledge about NSI and their response in the form of actions that have to be taken after NSI was also satisfactory, but a significant number of subjects thought that reporting NSI was not necessary which is worrying fact. The practice of taking consultation from a specialist and taking PEP was appreciable but it needs to be improved upon. They were aware of certain diseases can be spread through NSI, for which screening was required. A significant number of study subjects were immunized against HBV.

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