



## Original Article

# NSI: A major occupational hazards among the health care workers in Nepal

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## Abstract:

A percutaneous piercing wound as in needle stick injury is a typically set by a needle point, but possibly also by other sharp instruments or objects. These events are of concern because of the risk to transmit blood-borne diseases through the passage of the hepatitis B virus (HBV), the hepatitis C virus (HCV), and the Human Immunodeficiency Virus (HIV), the virus which causes AIDS.

The present study was done to determine the risk status regarding NSI among health care workers of Private Hospitals, Pokhara, Nepal.

Samples were selected through purposive sampling. Self administered questionnaire & risk assessment tool were used to collect data.

Study revealed that majority of health care workers were females (93%) with mean age of 22.66 years ( $\pm 3.1$ ). Sixty eight percent had got NSI, among them 41% had NSI more than 2times in life. Maximum NSI cases happened either by recapping of the needle (18%) or during disposal of sharps (16%) or while transferring a body fluid (blood) to a specimen bottle (15%).

The study concludes that majority of health workers had NSI more than two times which denotes NSI is a major occupational hazard. Cases happened either by recapping of the needle or during disposal of sharps or while transferring a body fluid to a specimen bottle.

**Key Words:** Needle Stick Injury, Risk Status, HCW.

## Introduction

A needle stick injury is a percutaneous piercing wound typically set by a needle point, but possibly also by other sharp instruments or objects. These events are of concern because of the risk to transmit blood-borne diseases through the passage of the hepatitis B virus (HBV), the hepatitis C virus (HCV), and the Human Immunodeficiency Virus (HIV), the virus which causes

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AIDS [1]. Causes of needle stick injuries are while drawing blood, administering an intramuscular or intravenous drug, or performing other procedures involving sharps, during needle recapping and as a result of failure to place used needles in approved sharps containers. Penetrating accidents of the surgeon or assistant with the scalpel or other sharp instruments are also handled as a needle stick injury [2]. A study conducted on health care of Kathmandu Medical College and Teaching Hospital showed that 4% and 61% of health care workers, respectively, were unaware of the fact that hepatitis B and hepatitis C can be transmitted by needle-stick injuries.

52 subjects (74%) had a history of needle-stick injuries and only 21% reported the injuries to the hospital authority. The survey revealed that knowledge of health care workers about the risk associated with needle-stick injuries and use of preventive measures was inadequate [3].

The basic objective of this study was to identify the risk status due to needle stick injuries among health workers working in private hospitals, Pokhara, Nepal.

## Method

In order to achieve the objectives of the study, descriptive survey approach was found to be appropriate. Data were collected by self-administered questionnaire from Nurses & Laboratory Technician working in various private hospitals Pokhara, Nepal. Sample were selected by purposive or judgmental sampling from various general wards (medical, surgical, orthopedic wards), ICU (general ICU, Paediatric ICU, Neonatal ICU, Haemodialysis, Medical ward, Surgical ward, OBG ward, Orthopedic ward, Paediatric ward, Private ward, Skin OPD), Laboratories (Biochemistry, Microbiology, Pathology). The instruments used for data collection were demographic/ professional Information questionnaire and tool to assess risk Status. Administrative permission was taken; as well as written consent was taken from each participants.

## Results

Hundreds of health care workers were interrogated. They were aged between 18- 34 years with mean age of 22.66 years ( $\pm 3.1$ ). These workers were having average 1.85 years of working experience. Among them 89% were nursing staff and 11% were laboratory technicians. It was found that, 82% of health care workers were vaccinated against hepatitis B.

Risk status was assessed by using risk assessment tool which was consisted of 10 multiple choice questions. Data were compiled and presented in Tables & figures. It was found that 68% of the participants had got NSI (Figure 1). Among those 68 victims, 60.2% had NSI more than 2times in life (Figure 2) & maximum NSI cases happened either by recapping of the needle (26.47%) or during disposal of sharps (23.53%) or while transferring a body fluid (e.g., blood) to a specimen bottle (22.06%) (Figure 3). Out of 68 victims' majority of the participants (83.82%) who got NSI did not fill any incident report. As a cause of non- reporting reasons were given by participants are they were too busy (26.47%), due to forgetfulness (16.18%), they

were not assured of confidentiality (14.71%) & 10.29% of them did not know that needle stick injury should be reported. Participants who got NSI, among them 50% new that patient's blood report was negative where as 42.65% was not knowing patient's blood report, where as 7.35% of them they knew that patient had Hep B/ Hep C/ HIV positive (Table 1).

**Table 1 Response of victims of NSI**

Items	(f)	(%)
Did you fill in an incident report?		
Yes	8	11.76
No	57	83.82
Cannot remember	3	4.41
What were the causes of non- reporting?		
You emphasizes on patient care; cannot leave patient	8	11.76
Too busy	18	26.47
Follow up time takes too long	9	13.24
Afraid of consequences to job/ fear of being fired	0	0
Forgetfulness	11	16.18
Don't know that needle stick injury should be reported	7	10.29
You were not assured that it will keep confidential	10	14.71
Filled incident report	5	7.35
Patient's blood report was		
Positive of any one of the disease (Hep B/ Hep C/ HIV)	5	7.35
Negative	34	50
Don't know	29	42.65

Among 68 of those victims 34 were at risk as five of their patients were positive in blood borne diseases & twenty nine of them did not know patient's blood report. Thus these 34 health workers were analyzed and represented in table 2. Majority (85.29%) of them had not checked their immune status & only 8.82% had taken post exposure prophylaxis who had completed their PEP as well has done follow up blood test. Whereas 91.18 % who were in need to take prophylaxis, had not taken PEP.

## Discussion

Needle stick injuries of HCWs are an important occupational hazard leading to infections with blood borne pathogens like HBV, HCV, or HIV [4].

The World Health Organization estimates the global burden of disease from occupational exposure to be 40% of the hepatitis B and C infections and 2.5% of the HIV infections among HCWs as attributable to exposures at work [5]. Vaccination is one of the best ways to protect HCWs from infections, but vaccination is only available for HBV. In the present study, it was found that,

82% of health care workers are vaccinated against hepatitis B but 18% were not vaccinated. Similar data were found in a Swedish university hospital [6]. A greater awareness of the HBV vaccination is required [7].

The risk of exposure to potentially infected body fluids may be minimized by adherence to a policy of universal precautions. This includes the wearing of disposable gloves, using goggles, avoiding recapping of needles, ensuring that all sharps are placed in disposal bin and regarding blood and the other high risk fluid from any patient as potentially infected [8]. In this study 47% of the workers do not know that hand washing, use of gloves, mask, gown, goggles, proper disposal of sharps are most precautionary point regarding NSI. From the analysis of the questioner it was found that, 41% of workers are using gloves during blood collecting all the time, but 50% use occasionally and 9% said they never used gloves.

**Table 2 Response of victims of NSI who were either unaware of patient’s blood report or with positive report.**

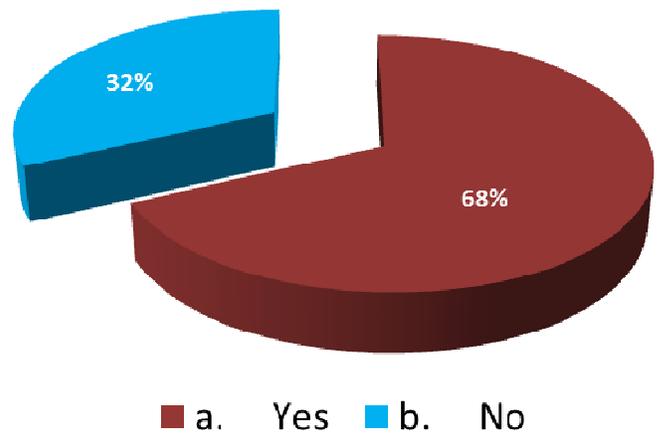
Items	f	%
If you had got NSI while handling sharp box & don't know for which patient the sharp instrument was used; have you checked your immune status after the injury?		
Yes	5	14.71
No	29	85.29
Have you taken prophylaxis therapy after NSI?		
Yes	3	8.82
No	31	91.18
Have you completed prophylaxis?		
Yes	3	8.82
No	31	91.18
Have you done follow up after completion of prophylaxis?		
Yes	3	8.82
No	31	91.18

The circumstances leading to needle-stick injury depend partly on the type and design of the device and certain work practices. The current study found that 36% workers don't know what to do with used needles. This study found that most of the workers (89%) are practicing a wrong practice as recapping/bending needle after use. The recapping of needles has been prohibited under the Occupational Safety and Health Administration (OSHA) blood borne pathogen standard (OSHA).

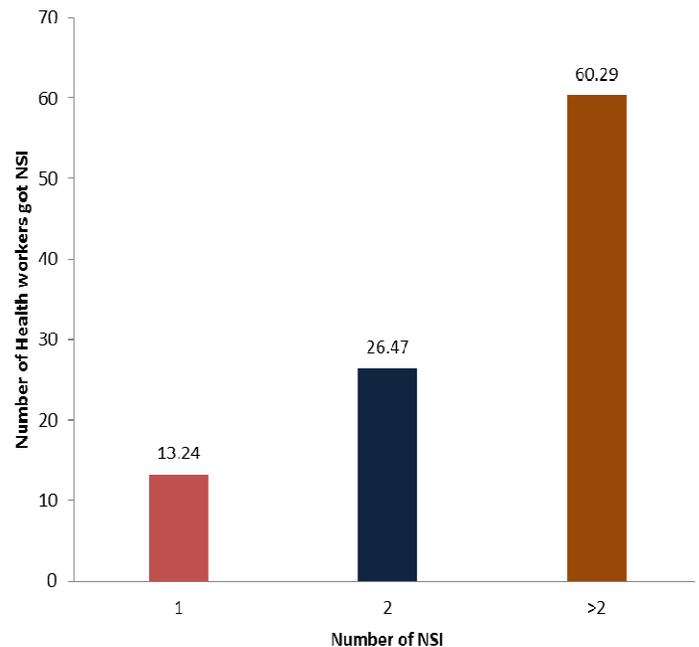
The present study also revealed that one of the major cause of NSI is needle recapping. Considering the lack of proper planning in at

least 35% of cases for collection of needle stick and sharps made it potential threatening condition for transmission of blood born infection to the other units and the workers. In this case, having of proper educational program about separation of sharps and needle stick from the hospital garbage is important [10]. In this study found only 35% of workers are disposing the sharps in proper places (cardboard box) where as 65% used wrong place. 78% workers showed wrong practice of changing of a disposing box with sharps which is definitely a risk factor for health care workers.

**Figure 1 Incidence of NSI.**



**Figure 2 Number of NSI got in health profession . (n=68)**

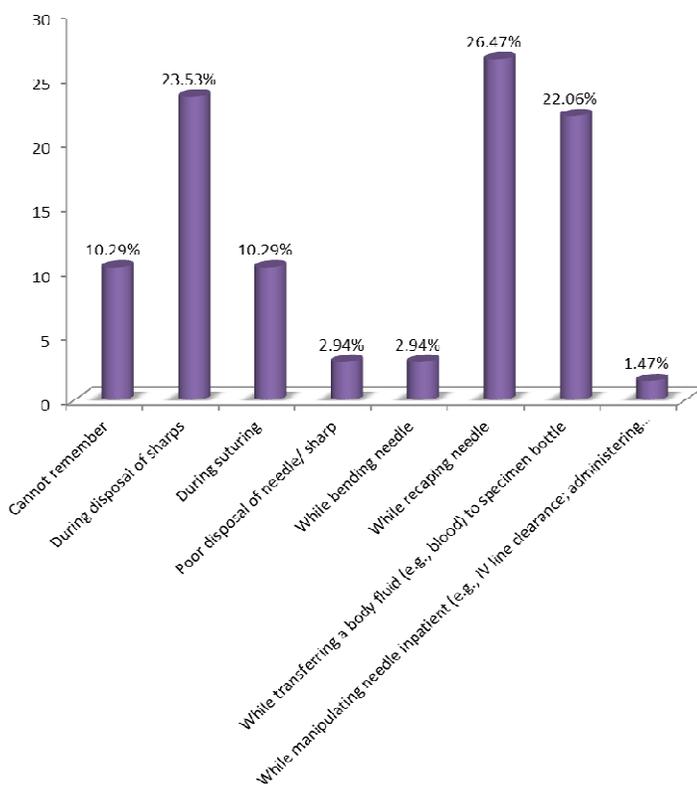


**Conclusion**

The study concludes that majority of health workers had NSI more than two times which denotes NSI is a major occupational hazard. Maximum of NSI cases happened either by recapping of

the needle or during disposal of sharps or while transferring a body fluid (e.g., blood) to a specimen bottle. It was very unexpected that being in health profession NSI victims were not comfortable to report after getting NSI even though they were in health profession. As a cause of non-reporting reasons were given by participants are they were too busy, due to forgetfulness, they were not assured of confidentiality & many of them did not know that needle stick injury should be reported. Maximum NSI victims had not checked their immune status & only very few had taken post exposure prophylaxis that had completed their PEP as well as done follow up blood test. Whereas a major part of them were in need to take prophylaxis but had not taken PEP.

**Figure 3 Causes of NSI in Health Profession.**



## Recommendations

- A similar study can be conducted on a large scale which may yield more reliable results.
- An experimental study can be conducted on training program regarding NSI.
- Other health care workers as Doctors, staffs of waste disposal, nursing or medical students also can be added in sample.

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