

# Reporting of sharp injuries and post exposure prophylaxis for HIV in health care personals

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## Abstract

**Background:** Health care workers (HCWs) are at a great risk to get infected as an occupational hazard. The incidence of needle stick injuries is considerably higher than the current estimates, due to gross underreporting. In India, authentic data on NSIs are scarce. **Aim:** To address the important issues of sharps injury, reporting and post exposure prophylaxis for HIV in health care personals. **Material and Methods:** The present cross-sectional observational study included all health care workers working at tertiary care hospital. History of exposure to sharps injuries, post exposure prophylaxis of HIV and standard precaution taken were recorded. Reasons for non-reporting were noted. **Results:** Out of 279 study subjects who sustained sharps injury, only 72 (25.81%) were reported to the appropriate authority. The most common reason stated by 85 (41.06%) study subjects for not reporting the injury was their conviction that the source patient was not infected. Very few of them, 26 (9.32%) took PEP drugs for HIV. **Conclusion:** Most of sharps injuries were unreported (74.19%). Timely reporting after exposure of the HCW is indeed the need of hour to avail the facility of PEP. There is a need for sensitizing the HCWs regarding the importance of PEP after occupational exposure to HIV.

**Keywords:** Health care workers, Sharp injuries, HIV, reporting, post-exposure prophylaxis.

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## INTRODUCTION

Health care workers (HCWs) are at a great risk to get infected as an occupational hazard.<sup>1</sup> It is estimated that the health care workforce of 35 million people worldwide represents 12% of the working population. Health care workers: nurses, physicians, paramedic and laboratory technicians, are especially exposed to injury by sharps instruments in the course of their duty.<sup>2</sup> The incidence of needle stick injuries (NSIs) is considerably higher than the current estimates, due to gross underreporting (often less than 50%).<sup>3,4</sup> In India, authentic data on NSIs are scarce. It

is known that around 3-6 billion injections are given per year, of which two third injections are unsafe (62.9%) and the use of glass syringe is constantly associated with higher degree of risk.<sup>5</sup> Post exposure prophylaxis (PEP) is recommended for occupational exposure to HIV depending on the level of risk to which the HCWs has been exposed and any known or potential antiretroviral resistance in the index patient.<sup>6</sup> PEP for HIV consists of a comprehensive set of services to prevent infection developing in an exposed person, including: first aid care; reporting and risk assessment; HIV testing and counseling; and depending on the risk assessment, the short term (28 days) provision of antiretroviral drugs, with support and follow up. For the 40%-80% of injuries that go unreported, the opportunity for post-exposure prophylaxis is lost.<sup>7</sup> Awareness of PEP for HIV is very crucial to ensure maximum utilization of PEP in any HIV prevention strategy. The present study addresses the important issues of sharps injury, reporting and post exposure prophylaxis for HIV in health care personals.

## MATERIAL AND METHODS

The present cross-sectional observational study included all health care workers working at tertiary care hospital. The study was conducted over a period of two years.

**Inclusion criteria:** Health care workers working at Tertiary Care Hospital. Health care workers willing to participate in the study.

**Exclusion criteria:** Health care workers not willing to participate in the study.

There were 604 health care workers working at our place of study. After exclusion of 6 health care workers who did not satisfy inclusion criteria, a total of 598 health care workers were taken as study population. There were 199 Doctors (Residents, Associate and Assistant professors), 241 Nurses (Registered Staff nurses), 45 Laboratory technicians (Lab technicians and assistants) and 113 Servants (Sweeper, Ward boy). Interns, medical students and nursing students were not included as rotation of posting changes in between the study duration.

### Methodology

Approval from Institutional Ethics Committee was obtained beforehand. A pilot study was done on 50 study subjects to assess the feasibility and to test the proforma. The objectives of the study were explained to subjects and informed consent was obtained.

### Methods of Data Collection

The interview technique was used for data collection. Predesigned and pretested questionnaire was used to record the necessary information. The predesigned and

pretested questionnaires included general information and socioeconomic details of study subject. Detailed history was obtained. History taking involved personal details of the individual like age, Gender, religion, residency, past history of any sharps injuries, details of exposure to sharps injuries, then knowledge of post exposure prophylaxis of HIV and standard precaution taken after any occupational exposure. If the study subject had sharps injury more than once, then details of exposure in recent injury was recorded.

### Statistical analysis

Descriptive statistic (percentages) was used to summarize baseline characteristics of the study subjects. Association between the categorical variables was analysed by using Chi-square test.

## RESULTS

The total number study subjects were 598. It was observed that maximum i.e. 219 (36.70%) study subjects were in the age group of 30-39 years and 212 (35.50%) in the age group 20-29 years. The mean age was 35.70 years with a standard deviation of 8.98 years and the range being 21-57 years. Out of total 598 study subjects, 309 (51.67%) were males and 289 (48.33%) were females. Majority of study subjects were nurses i.e. 241 (40.30%) and doctors i.e. 199 (33.28%). Remaining 113 (18.90%) study subjects were servants and 45 (7.52%) study subjects were lab technicians.

**Table 1: Characteristics of study subjects**

Characteristics of study subjects	No. of subjects	Percentage
<b>Age</b>		
20-29 years	212	35.5%
30-39 year	219	36.7%
40-49 years	132	22%
≥50 years	35	5.79%
<b>Sex</b>		
Male	309	51.7%
Female	289	48.3%
<b>Designation</b>		
Doctor	199	33.3%
Nurse	241	40.3%
Lab technicians	45	7.52%
Servants	113	18.9%
<b>Duration of service</b>		
≤10 years	378	63.2%
11-25 years	169	28.3%
>25 years	51	8.53%
<b>Patients attended/day</b>		
≤25	135	22.6%
26-49	115	19.2%
50-75	182	30.4%
76-99	102	17.1%
≥100	64	10.7%

Most of the study subjects 378 (63.21%) were having duration of service  $\leq 10$  years. Mean duration of service of study subjects was 10.38 years with standard deviation of 8.12 years and the range being 1-34 years<sup>5</sup>. Maximum number of study subjects were posted in Surgery allied departments i.e. 255 (42.64%) and Medicine allied departments i.e. 145 (24.25%). Maximum i.e. 182 (30.43%) subjects attended patients per day between 50-75 patients and 135 (22.58%) attended  $\leq 25$  patients per day. Only 64 (10.70%) subjects attended  $\geq 100$  patients per day. Out of total 598 study subjects, 279 (46.65%) were exposure to sharps injury and 319 (53.35%) had no history of any exposure to Sharps injury in last one year. Out of 279 study subjects who had a history of sharps injury in last one year, 206 (73.83%) had sharps injury one time and 64 (22.94%) had sharps injury two time during last year. Even 2 study subjects had sharps injury  $\geq 4$  in frequency in last year.

**Table 2:** Various type of sharps causing sharps injuries

Sharps	No. of injuries (n=279)	Percentage
Hollow bore needle	150	53.76%
Suture needle	48	17.20%
Intracatheter	39	13.98%
Scalp vein	19	6.81%
Lancet	18	6.45%
Scalpel	5	1.80%
<b>Total</b>	<b>279</b>	<b>100%</b>

Hollow bore needle was responsible for maximum number of injuries [150 (53.76%)] followed by suture needle [48 (17.20%)] and intracatheter [39 (13.98%)]. Out of 279 study subjects who sustained sharps injury, only 72 (25.81%) were reported to the appropriate authority. The most common reason stated by 85 (41.06%) study subjects for not reporting the injury was their conviction that the source patient was not infected i.e. 36 (57.17%) doctors, 46 (49.46%) nurses, 3 (37.50%) lab technicians. Others reasons were unaware about reporting [70 (33.82%)], patient was HIV negative [32 (15.46%)], exposure was not significant [13 (6.28%)], no time to report [7 (3.38%)].

**Table 3:** Reasons stated by study subjects for not reporting sharps injury

Reasons	Study subjects				
	Doctors n=69	Nurses n=93	Lab technicians n=08	Servants n=37	Total n=207
Conviction that source patient was not infected	36 (52.2%)	46 (49.5%)	03 (37.5%)	00 (0%)	85 (41.1%)
Unaware about reporting	03 (4.35%)	33 (35.5%)	04 (50%)	30 (81.1%)	70 (33.8%)
Patient was HIV negative	27 (39.1%)	04 (4.3%)	00 (0%)	01 (02.7%)	32 (15.5%)
Exposure was not significant	00 (0%)	09 (9.7%)	01 (12.5%)	03 (08.1%)	13 (6.3%)
No time to Report	03 (4.35%)	01 (1.1%)	00 (0%)	03 (08.1%)	07 (3.4%)

Out of 279 study subjects who sustained sharps injury only 72 (25.81%) study subjects reported their injury to appropriate authority i.e. 22 (24.18%) doctors, 39 (29.55%) nurses, 3 (27.27%) lab technicians and 8 (17.78%) servants. Out of 279 study subjects, 138 (49.46%) study subjects did testing for HIV on source patient they were 48 (52.75%) doctors, 63 (47.73%) nurses, 6 (54.55%) lab technicians, 21 (46.67%) servants. Out of 138 source patients, 16 were HIV positive. Only 66 (23.66%) study subjects did testing for HIV on themselves including 21 (23.08%) doctors, 29 (21.97%) nurses, 6 (54.55%) lab technicians and 10 (22.22%) servants. Very few of them, 26 (9.32%) took PEP drugs for HIV, these were 10 (10.99%) doctors, 12 (9.09%) nurses, one lab technicians and three servants.

**Table 4:** Practice of PEP for HIV by study subjects after sharps injury

Procedures in PEP	Study subjects (n=279)				
	Doctors n=91	Nurses n=132	Lab technicians n=11	Servants n=45	Total n= 279
<b>Reporting of the injury</b>					
Yes	22 (24.2%)	39 (29.5%)	03 (27.3%)	08 (17.8%)	72 (25.8%)
No	69 (75.8%)	93 (70.5%)	08 (72.7%)	37 (82.2%)	207 (74.2%)
<b>Testing done on source patient</b>					
Yes	48 (52.7%)	63 (47.7%)	06 (54.5%)	21 (46.7%)	138 (49.5%)
No	43 (47.3%)	69 (52.3%)	05 (45.5%)	24 (53.3%)	141 (50.5%)

Testing done on study subjects					
Yes	21 (23.1%)	29 (22%)	06 (54.5%)	10 (22.2%)	66 (23.7%)
No	70 (76.9%)	103 (78%)	05 (45.5%)	35 (77.8%)	213 (76.3%)
PEP drugs taken					
Yes	10 (11%)	12 (9.1%)	01 (9.1%)	03 (06.7%)	26 (09.3%)
No	81 (89%)	120 (90.9%)	10 (90.9%)	42(93.3%)	253 (90.7%)

## DISCUSSION

In the present study, the prevalence of sharps injury was found out to be 46.65%. This finding was similar to the result of the some of the other studies conducted by Hadadi A *et al.*<sup>8</sup> i.e. 43.4%, Zafer A *et al.*<sup>9</sup> i.e. 45%, Lachowicz R *et al.*<sup>10</sup> i.e. 46.7%, Akeem B *et al.*<sup>11</sup> i.e. 41.62%, and Chalya PL *et al.*<sup>12</sup> i.e.48.6%. Poor compliances to universal precautions are a risk factor for sharp injuries. Some circumstances such as pressure of work and time constraint was a contributing factor.<sup>13</sup> High prevalence may be attributed to patient overload and different work culture in the Indian scenario.<sup>14,15</sup> In present study, only 72 (25.81%) study subjects reported their injury to appropriate authority i.e. 22 (24.18%) doctors, 39 (29.55%) nurses, 3 (27.27%) lab technicians and 8 (17.78%) servants. Similar findings were reported by the studies conducted by Barakat I *et al.*<sup>16</sup> Jacob A *et al.*<sup>17</sup> conducted a study found that only 18% of the respondents who sustained a sharps injury filled in an incident reporting form, which is lower than our study. Markovic Denic L *et al.*<sup>18</sup> conducted a study and found that 106 (40.2%) had reported an accident to the responsible authority which was higher than our study. Accidents were significantly more often reported by health assistants and hospital hygienists (55.5%). Sarah OA *et al.*<sup>19</sup> conducted a study and found that 123 (87.0%) of the 142 respondents with needle stick injury reported to the appropriate authority, which is higher as compare to our study. Chalya PL *et al.*<sup>12</sup> conducted a study only 68 (32.1%) reported the incident to the relevant authority which was nearly similar to our study. In present study, 26 (9.32%) took PEP drugs for HIV, these were 10 (10.99%) doctors, 12 (9.09%) nurses, one lab technicians and three servants. Mathewos B *et al.*<sup>20</sup> reported majority 49 (74.2%) took PEP which was very much higher to our study. Owino O *et al.*<sup>21</sup> reported majority 72 % took PEP which was very much higher to our study. Gebreslase T *et al.*<sup>22</sup> reported 31 out of 158 (19.6%) used PEP which was nearly similar to our study. Sarah O A *et al.*<sup>19</sup> conducted a study found that only 8 out of 142 (6.3%) of respondents had PEP which was lower to our study. Singh R K *et al.*<sup>23</sup> reported only 7 (14.9%) had taken PEP, which was nearly similar to our study.

## CONCLUSION

In present study, overall prevalence of sharps injury among health care workers in tertiary care hospital is found to be

46.65%. Most of sharps injuries were unreported (74.19%). Timely reporting after exposure of the HCW is indeed the need of hour to avail the facility of PEP. There is a need for sensitizing the HCWs regarding the importance of PEP after occupational exposure to HIV.

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