Research Article

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Prevalence of needle stick injuries among paramedical staff: a cross sectional study at a tertiary level hospital in Indore

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ABSTRACT

Background: Paramedical staff is involved in treating and nursing patients always face great risk of acquiring infections like HBV, HCV & HIV by their daily work caring for others. Present study was conducted among paramedical staff at a tertiary level hospital in Indore. The objective was to assess the magnitude of needle stick injuries and to assess the attitude and knowledge towards safety for needle stick injuries (NSI).

Methods: A cross-sectional study was conducted in MGM Medical College & associated MY Hospital, Indore from September 2014 to December 2014. Randomly selected 200 paramedical staff which includes Nursing & laboratory technicians was interviewed through a well-structured and administered questionnaire. Collected data was analyzed using MS Excel sheets & SPSS.

Results: Among 200 staff 50 (25%) admitted that sometimes they tried to re-sheath the needle after administrating It. 64 (32%) have encountered needle stick injury during the last 12 months. 89% staff reports their injuries to doctors 72%, matron 9% and 8% discussed it with their coworker.

Conclusions: Paramedical staffs working in MGM Medical College and associated Hospital Indore are frequently exposed to NSI & therefore blood borne infections. NSIs were highly prevalent in these staff therefore preventive education programs should be given to them periodically to increase their awareness regarding the universal precautions. There should be a surveillance system and a centre for managing injured persons.

Keywords: Needle sticks injuries, Paramedical staff

INTRODUCTION

Needle stick injury (NSI) A needle stick injury, 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. 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 needlestick injuries. Paramedical staff is involved

in treating and nursing patients always face great risk of acquiring such type of infections. Nurses have the highest rate of NSI among health-care workers.³

The activities associated with the majority of needle stick injuries (NSIs) are injections, blood sampling, recapping and disposing needles and also handling trash.⁴

Route of these infections are,

1. Route of these infections could be through contact, aerosols, and needle Pricks, ingestion of pathogens etc.

- Body fluids and blood especially harbour a lot of pathogens that can easily be transmitted even with minute quantities like HIV, Hepatitis B & C, and Syphilis etc. all can easily be transmitted by very minimal amounts of infected body fluids.
- 3. With the advent of new Pandemic of HIV, the blood borne diseases assumed importance in-patient to provider infection. Needle stick injuries (NPI) are the commonest route by which these diseases are transmitted to Providers from patients.

Needle stick injuries may possible during re-capping, surgery, especially during wound closure, biopsy, When an uncapped needle has ended up in bed linen, surgery clothing, When taking an unsheathed used needle to the waste container, When taking an unsheathed used needle to the waste container.

Risk of these diseases with NPI is as following;

- HBV Risk=5-40%
- HCV Risk=3-10%
- HIV Risk=0.2-0.5%

Potential exposures are not limited to needle sticks alone, because manipulation of other sharp instruments or mucous membrane exposures to infected bodily fluids also can result in the transmission of infectious diseases. Quantifying the precise risk for disease transmission following mucocutaneous exposures is difficult because many go unreported. House staff; for example, fail to report between 60% and 95% of exposures. Even though the risk of injury per use is low, so many needles are used in health care settings that even a very low injury rate translates into an imposing number of injuries.

METHODS

Present study was a cross sectional observational study at MGM Medical College & associated MYH Hospital Indore for the period of 4 months from September 2014 to December 2014. MYH Hospital is one of the tertiary level Healthcare facilities and a teaching hospital of Indore. 200 paramedical staff which includes Nursing & laboratory technicians was randomly selected. A wellstructured and administered questionnaire was prepared and used for interviewing all participants. Staff of aged 20-50 years who agreed to give the informed consent has been considered as respondents to collect information. Only working paramedical staff was taken & Paramedical students who were currently in their academic study were excluded from study. The collected data were analyzed through percentages and frequencies in which the data were presented in table formats and pie charts which were obtained using Excel and some using SPSS.

RESULTS

Present study was conducted to found the prevalence of needle prick injury among the paramedical staff of M.Y. hospital and to assess the attitude and knowledge towards safety for needle stick injuries. Out of 200, 14 (7%) staff members were not administered injections in any form or not assisted in the removal or disposal of needles in last one year. Among 200 staff 50 (25%) admitted that sometimes they tried to re-sheath the needle after administrating it while remaining 150 (75%) staff did not re-sheath or directly thrown it to dustbin. 154 (77%) staff replied that they separate a needle from a syringe with gloved hands, 40 (20%) do it by Bare hands but with great caution & remaining 6 (3%) use forceps or using some cloth or any other Instruments. out of 200 staff members 164 (82%) were fully vaccinated against hepatitis B and reaming 16 (8%) were not vaccinated.

Table 1: Container used for disposing of a needle up to.

Container	Frequency
1/2 full	44 (22%)
2/3 full	56 (28%)
3/4 full	70 (35%)
Completely full	30 (15%)

^{*}Maximum staff use container till it was 3/4 full

Table 2: Safety measures prior to disposal of needle in container.

Option	Frequency
Make sure that it is properly labelled	122 (61%)
Put it in a yellow bag	16 (8%)
Wait until the next box is available	28 (14%)
Nothing	12 (6%)

*61% staff makes sure that it is properly labelled before using container

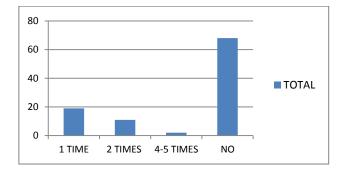


Figure 1: Needle stick injuries in last 12 months.

Out of 200 respondent 64 (32%) have encountered needle stick injury during the last 12 months & 136 (68%) don't have any injury in last one year. Out of 32% staff with injury; 19% workers have encountered with injury once. 11% workers have encountered with injury twice. 2% workers have encountered with Injury four to five times.

Table 3: Most recent incident happens during.

Incidents	Frequency
Improper handling of needle in hurry	80 (40%)
Violent/uncooperative patient	48 (24%)
During recapping of needle	36 (18%)
During night duty/others*	22 (11%)
Cannot remember the incident	14 (7%)

^{*}Others- accident may be due some others carelessness like resheathing of needle

Table 4: Reporting of injury to higher authority.

Name of staff	Frequency
Doctor	144 (72%)
Matron	18 (9%)
Coworker	16 (8%)
Nobody	22 (11%)

89% staff reports their injuries to doctors 72%, matron 9% and 8% discussed it with their coworker. 11% did not discuss it with anyone.

Table 5: Training status for prevention/treatment of needle sticks injury.

Training status	Frequency
Yes	122 (61%)
No	78 (39%)

Only 61% staffs were trained while 39% of staff did not get any training.

DISCUSSION

Paramedical staff is involved in treating and nursing patients always face great risk of acquiring infections like hepatitis B virus (HBV), hepatitis C virus (HCV) and the human immunodeficiency virus (HIV) etc. In present study Out of 200, 14 (7%) staff members were not administered injections in any form or not assisted in the removal or disposal of needles in last one year. It might be due to their more involvement in administrative work like office work, training etc. In This study 40% of staff got NPI due to Improper handling of needle in hurry, 24% got because of some violent/uncooperative patient, 18% injured during recapping of needle,7% were saying that they cannot remember the incident how they got NPI while remaining 11% staff admitted that incident happen during night duty when they were exhausted.

A study conducted by Jalina Laishram et al at Regional Institute of Medical Sciences, Imphal, Manipur and they found that 44.1 % staff nurses got NSI during rush and 25-6% got because of some Un co-operative patients & 7% were injured because of fatigue. Similarly a study conducted by Mubashir Aslam et al at Aga Khan University Karachi and they found that a large proportion of participants 33% claimed that over work was the

reason for their injury, among 19% recapping was as an important factor, 13% were due to quickness during procedure and 9% were saying that patient not cooperative which was responsible for the occurrence of needle stick injuries in nursing and para medical staff.⁸

M Rele et al at LTM Medical College and General Hospital, Sion, Mumbai found that out of the 38 selfreported accidental injuries by health care workers 34 were needle stick injuries.9 Khurram Siddique et al at Holy Family Hospital, Rawalpindi Pakistan also conducted a similar study on healthcare providers & found that causes of needle stick injuries were hasty work 37.9%, recapping of the needles 19.5%, lack of safety measures 17% among the health care providers were the main cause of needle stick injuries. 10 Prashant Bagdey et al at Government Medical College, Nagpur done a study & their study reveals that the maximum number 50.44% of NSI occurs in evening shifts.¹¹ Toru Yoshikawa et al conducted a study at 67 referral hospitals of Japan & found that NSIs most often occurred during the use of medical devices and involved mainly disposable syringes and suture needles. ¹² In all of above mentioned studies hurry due to over work & recapping of needles were the leading causes of NPI. These both were the cause in present study also.

In present study 72% paramedical staff reported their injury to doctor, 9% informed matron, 8% shared their injury to their coworker while 11% did not discuss about their injury to anybody except these worker all took proper medical care. While Mubashir Aslam et al found as high as 90% of participants were reported injury & none of them looked for medical care or reported their injury to any occupational injury unit. S. Salelkaret al at Goa Medical College, Goa found that post exposure prophylaxis after needle stick injuries taken by only 3% (6 among 200) health care workers while reporting of Needle stick injury to higher authority was only 32% among the study population.¹³ Jalina Laishram et al stated that only 5.7% (5/86) took post exposure prophylaxis (PEP) and 43% did not report the NSI to concern authority. Iram Manzoor et al at Lahore Medical and Dental College, Lahore, Pakistan conducted a study & found that only 49.4% of the needle stuck nurses reported their injury to their higher officials.1

In present study out of 200 staff members 164 (82%) were fully vaccinated against Hepatitis B and reaming 16 (8%) were not vaccinated while Khurram Siddique et al found in their study that 82.7% (n=248) healthcare workers had vaccination against hepatitis B. In a similar study conducted by Abha sharma et al at LNJP Hospital, New Delhi& they found that out of 376 self-reported cases of needle stick injuries by health care worker (HCWs) only 81.9% were immunized with HBV vaccine. In present study 61% of staff was trained for prevention /treatment of needle sticks injury, 39% not trained. Iram Manzooret al stated that only 59.7% of the

nurses 46 out of 77 of study population had received sharp management course.

In present study out of 32% staff got injury, 19% workers have encountered with injury once, 11% workers have encountered with injury twice & rest 2% workers have encountered with Injury four to five times in last 12 months. Varsha K. Pavithran, R. Murali et al conducted a study on dental professionals in a dental college at Bangalore. ¹⁶ & found that about 27.5% of the dental professionals had an NSI in the past 12 months, resulting in 0.27 NSIs per dental professional per year.

CONCLUSION

Findings of present study are that NPIs are common among nurses & other paramedical staff & unfortunately only few of them are reported so post exposure prophylaxis are not given to many of them. Present study suggests that there should be regular CMEs & educational programmes compliance with universal precautions (UP) should be conducted on prevention & hazards of NPI to increases awareness. Needle stick injuries often occur during careless handling of a used needle, therefore recapping of needles must be prohibited. This study also revealed that, our hospitals need to develop organizational capacity and a stronger institutional safety culture.

Staff should be encourages to use gloves and needle cutters during their work. It should be mandatory for all paramedical & nursing staff to get proper prophylaxis against hepatitis B before entering into clinical setting.

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Institutional Ethics Committee

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