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Original Research Article

Awareness about Occupational Exposure for Blood Borne Infections among Medical and Dental Students

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ABSTRACT
Occupational exposure to blood and body fluids has an increased risk for acquiring blood-borne infections. Needle stick injury poses one of the greatest risks for medical personnel. The study was conducted to know the awareness about occupational exposure for blood-borne infections, standard precautions, post exposure prophylaxis (PEP) among medical and dental students. Self-administered questionnaires were distributed to collect data. Statistical analysis was done by Z test. The study showed that awareness about HIV transmission by occupational exposure was seen in 102 (94.4%), HBV in 72 (66.7%), HCV in 45 (41.7%). Occupational exposure occurred in 50 (46.3%). Among the exposed, only 24 (48%) reported the incident. Injury through needle stick was the major form of occupational exposure. Overall good awareness of the PEP was seen. Only 6 (11.1%) of PG and 15 (27.8%) of interns were unaware about PEP. Fifteen (13.9%) were not vaccinated for HBV. Sixty (55.6%) were unaware of the colour code for sharp disposal container. This study shows the need for periodical training programmes to increase awareness among medical and dental students.

Key-words: *Occupational exposure, needle stick injury, standard precautions, PEP*

Key Messages: *Awareness about transmission and prevention of infections blood borne pathogens need to be improved among the medical and dental students by periodic training programmes and workshops.*

Introduction

Health care workers (HCW) who have occupational exposure to blood and body fluids has an increased risk for acquiring blood-borne infections like Hepatitis B virus (HBV) or Hepatitis C virus (HCV) and acquired immunodeficiency syndrome (AIDS) due to Human immunodeficiency virus (HIV)[1]. Needle stick injury poses one of the greatest risks for medical personnel. 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 amongst HCW[2].

The study was conducted to know the awareness about occupational exposure for blood-borne

infections, standard precautions, post exposure prophylaxis (PEP) among medical and dental students.

Subjects and Methods

A cross-sectional study was done among medical and dental students, 54 post- graduate students (PG) and 54 interns (*n*=108) of A.J. Institute of Medical Sciences and A.J. Institute of Dental Sciences, Mangalore. Self administered question-aires were distributed to collect data[4]. The questionnaire contained a list of questions to assess the participant's knowledge, awareness and compliance with standard precautions, needle stick injuries, post exposure prophylaxis and waste management.

Results

Awareness about standard precautions was claimed to be 88.6%. Only 39 (36.1%) knew about the various components of standard precautions. The study showed that awareness about HIV transmission by occupational exposure was seen in 102 (94.4%), HBV transmission in 72 (66.7%), HCV transmission in 45 (41.7%). Awareness about the rate of transmission of HBV was not satisfactory. Thirty eight (35.2%) were not aware that HBV had the greatest risk of transmission by occupational exposure.

Occupational exposure occurred in 50 (46.3%). Among the exposed, only 24 (48%) reported the incident. The reason for non-reporting was that 13(50%) thought that the patient was at low risk for the transmission of HBV, HIV or HCV, five (19.2%) were not aware of the reporting procedure, three (11.5%) were bothered about confidentiality and two (7.7%) had no time to report (Fig: 1). Injury through needle stick was the major form of occupational exposure, (90% among the exposed PG and 50% among the exposed interns). Recapping of needles was cited as the most important cause for needle stick injuries by majority of PGs (77.8%) and interns (66.7%).

Overall good awareness of the PEP was seen. Only six (11.1%) of PG and 15 (27.8%) of interns were unaware about PEP. Awareness about the ideal time for PEP 48(44.4%) responded it to be within one hour of exposure and six (5.6%) thought PEP could be taken at any time. About 36(66.7%) PGs had been trained on PEP but only 15(27.8%) interns were trained. Fifteen (13.9%) were not vaccinated for HBV.

Responses for the immediate steps to be followed after a needle stick injury were varying (Fig: 2). Twenty seven (50%) PGs and 21(38.9%) interns would follow rinsing with soap and water, washing with surgical sprit was favoured by interns 30 (55.6%).

Awareness about needle disposal were high among PGs compared to interns, 30 (55.6%) of PGs and 15 (27.8%) of interns favoured the use of a needle shredder. Among the interns recapping and disposal of needles were more common, 21 (38.9%) (Table: 1).

Table: 1 Responses to the methods of needle disposal

NEEDLE DISPOSAL	PG (%)	INTERNS (%)
Puncture proof container with disinfectant	11.1	11.1
Bend and throw	11.1	16.1
Dispose directly into dustbin	5.6	5.6
Recap and dispose	16.7	38.9
Needle shredder	55.6	27.8

Sixty (55.6%) were unaware of the colour code for sharp disposal container.

Overall awareness about management of blood spills both small 90 (83.3%) and big 99 (91.7%) was high.

Fig: 1 Reasons for not reporting the exposure

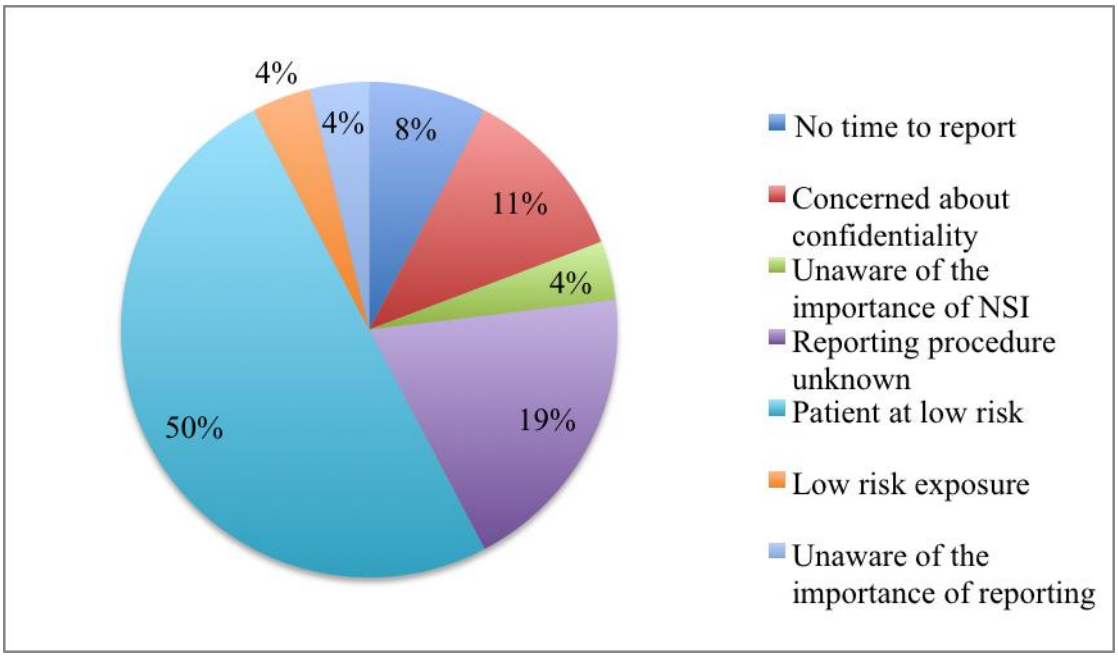
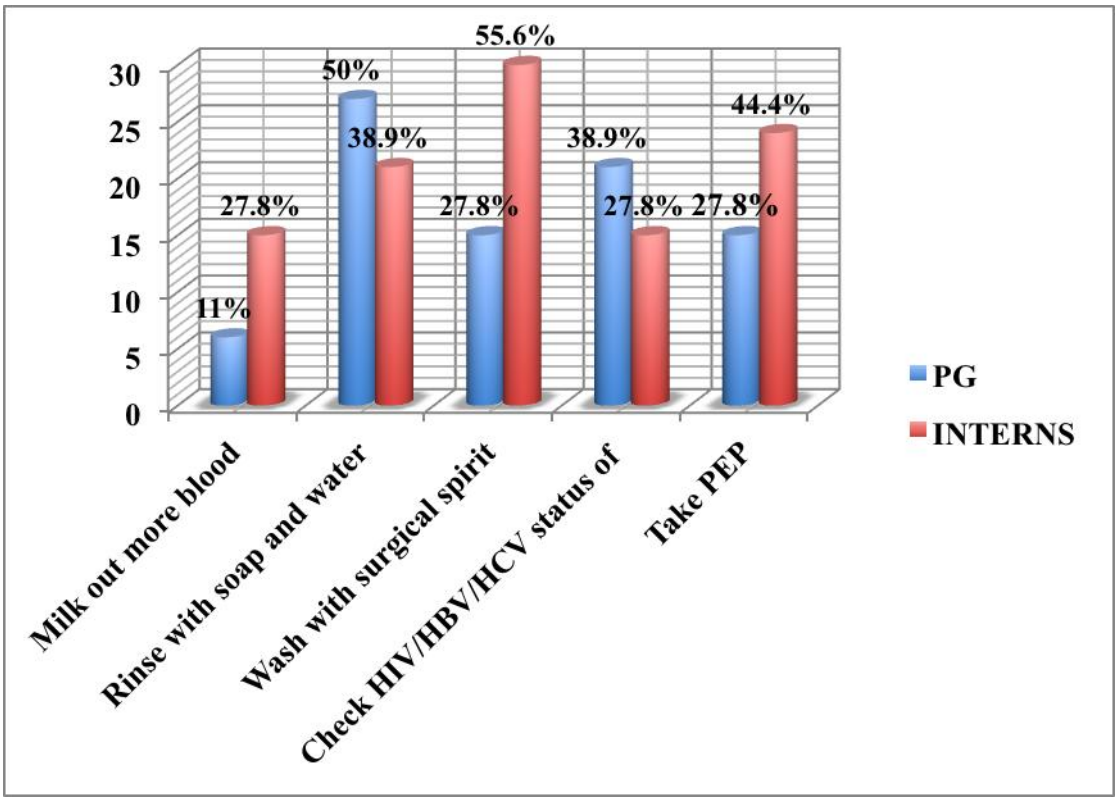


Fig: 2 Precautions taken following needle stick injury



Discussion

Occupational disease burden in India is growing at an unprecedented pace. As a result of market liberalization and globalization, the profile of occupational diseases has changed. Proportionate training of human resources in occupational health and safety has not taken place in our country[3].

In our study knowledge of standard precaution claimed to be 88.6% but only 39 (36.1%) knew about the various components of standard precautions. Similar results reported in other studies, 92% by Hesse A A J[5] and 81% by Shah[3].

In a study by Salelkar and colleagues[6], the incidence of needle stick injuries was reported to

be 37.34% among interns and 20.01% among resident doctors. Our values were higher we found that the incidence among interns were 55.6% and 37% among PGs. Both these studies showed that there is a higher incidence of needle stick injuries among the interns which could be attributed to their inexperience in the profession.

In our study the reporting rate of occupational exposures was (48%) which is similar to the study conducted by Fullerton and Gibbons[7] where they reported 40% underreporting among doctors. The reporting rates were much lower in a study by Shah[3], 8.3%.

The reasons for not reporting were found to be the belief that the patient was at low risk for HIV, HBV or HCV (50%), not aware of reporting procedure (19.2%), bothered about confidentiality (11.5%) and no time to report(7.7%). In a study by Fullerton and Gibbon[7]the reasons for not reporting included a lack of time to carry out the reporting procedure and perceived low risks of contracting an infection from a patient by 16%.

As per WHO recommendations, needles should not be recapped, bent, broken, removed from disposable syringes or otherwise manipulated by hand as these procedure increase the risk of needle stick injuries[8, 9]. Needle recapping was cited to be the most important cause for injury by 72.2% respondents which was similar to that reported by Hesse[5] ie,78%.

Awareness of PEP was 100% among doctors, interns and residents in a study by Salelkar and colleagues[6], in our study it was 80.6%. In a study conducted by Wig[10] in Delhi 62.8% doctors were unaware of the PEP.

Awareness of blood spill management was high 87.5% which is similar to the reports by Salehi and Garner[11], 81.2%.

Conclusion

Needle stick injury was commonest among the different occupational exposures. Awareness about PEP was good. Awareness about HCV transmission by occupational exposure was poor. Awareness about reporting of occupational exposure and ideal method of needle disposal was also poor. This study shows the need for periodical training programmes to increase awareness on among medical and dental students. There is also a need for strict and effective monitoring system to give out timely information on occupational exposures, risk factors, changing trends in safe needle usage, emerging problems and also to provide effective interventions for better healthcare practice.

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