

**Comparison of knowledge, attitude and practices (KAP) regarding needle-stick injury among medical and dental students in a tertiary care institute of North India**

<sup>1</sup>Dr. Naina Chhabra, Department of Microbiology, PGIMS, Rohtak.

<sup>2</sup>Dr. Ritu Aggarwal, Department of Microbiology, PGIMS, Rohtak.

<sup>3</sup>Dr. Kunal Bansal, Department of Microbiology, PGIMS, Rohtak.

<sup>4</sup>Dr. Aparna Parmar, Department of Microbiology, PGIMS, Rohtak.

**Corresponding Author:** Dr. Naina Chhabra, Department of Microbiology, PGIMS, Rohtak.

**Citation this Article:** Dr. Naina Chhabra, Dr. Ritu Aggarwal, Dr. Kunal Bansal, Dr. Aparna Parmar, “Comparison of knowledge, attitude and practices (KAP) regarding needle-stick injury among medical and dental students in a tertiary care institute of North India”, IJMSIR- June - 2023, Vol – 8, Issue - 3, P. No. 242 – 246.

**Type of Publication:** Original Research Article

**Conflicts of Interest:** Nil

**Abstract**

**Introduction:** The Needle-stick injury (NSI) is one of the main safety issue for health care workers that has a significant risk of occupational transmission of infectious pathogens. The students are more vulnerable to NSI during their training periods due to lack of practical experience and skill. The consequences of this can have long lasting impact on physical, mental and social well-being.

**Materials and Methods:** A cross sectional study was conducted among 100 medical and 100 dental students currently studying in PGIMS and PGIDS, Rohtak. Simple random sampling was done to select students. Data was collected through an electronic questionnaire using the google forms service.

**Results:** The knowledge regarding the universal precautions of NSI was lesser among medical students (12 %) compared to dental students (34%). In our study, 26% medical students experienced NSI during their postings while 37% dental students experienced the same. Only 52% of medical students and 57% of dental

students reported NSI immediately, showing that NSI is still not timely reported and is neglected.

**Conclusion:** In our study, we found that NSI remains under reported mostly due to the gaps in students KAP. NSIs remain a major health hazard in most of the hospitals.

**Keywords:** Needle stick injury, Knowledge, attitude and practices, HIV, Post exposure prophylaxis

**Introduction**

The Needle-stick injury (NSI) is one of the main safety issue for health care workers that has a significant risk of occupational transmission of infectious pathogens such as Human immunodeficiency virus (HIV) and Hepatitis B and C viruses (HBV and HCV). For dealing with such issue, the needle-stick safety and prevention act was signed into law in California in November 2000 and it became effective in April 2001.<sup>1</sup>

In many studies done worldwide, it has been seen that more than 35 million healthcare workers (HCWs) are facing injuries percutaneously with contaminated sharps every year. In India, out of the 3 – 6 billion injections

given per year, around two-third injections are unsafe which constitute 62.9 % of total injections given. The annual estimated proportion of HCW exposed to HCV is 2.6%, for HBV is 5.9% and for HIV is 0.5% globally.<sup>2,3,4</sup>

The World Health Organization (WHO) has given definition of 'a safe injection' as one that does not harm the recipient or expose the provider to any avoidable risk and also does not result in any waste that is dangerous for the community. Most of the needle-stick injuries can be prevented by following universal safety precautions and having proper knowledge about post-exposure prophylaxis (PEP).<sup>5,6</sup>

It has been seen that students are more vulnerable to NSI during their training periods due to lack of practical experience and skill. Although the risk of infection from a single NSI is low, the consequences can have long lasting impact on overall physical, mental and social well-being.<sup>7,8</sup>

Understanding the gap between Knowledge, attitude and practices (KAP) will aid in structuring healthcare and formulating more effective preventive measures for NSI.<sup>9</sup> Hence, this study has been planned to compare the KAP regarding NSI amongst medical and dental students. This will also help in assessing whether different streams of healthcare have any correlation regarding NSI practices and awareness.

## **Aim and Objectives**

### **Aim**

To compare KAP regarding needle-stick injury among healthcare providers

### **Objectives**

1. To assess the knowledge and awareness of the medical and dental students regarding transmission of infection through NSI.
2. To assess the factors resulting in NSI among both groups.

3. Prompt reporting in case of any accidental NSI and knowledge regarding PEP.

## **Materials and Methods**

A cross sectional study was conducted among medical and dental students currently studying in PGIMS and PGIDS, Rohtak in second or third year. Simple random sampling was done to select students. A total of 100 medical and 100 dental students were enrolled for the study after informing about the purpose of the study and obtaining consent.

Data was collected through an electronic questionnaire using the google forms service. The questionnaire was adapted from previous studies which were conducted and some modifications made accordingly leading to final questionnaire of 27 questions. Initial part of the questionnaire comprised of demographic information of participants and other part collected data about their vaccination status, knowledge and practice of universal precautions and PEP.<sup>1, 8, 10</sup>

The data was entered in the MS-office Excel and analysed using the statistical package, SPSS version 29. Data was analyzed using chi-square test.

## **Results**

The study included 100 medical students and 100 dental students. Among medical students, 40 were males and 60 were females. While in dental students, 54 were males and rest were females. Most of the medical students (87%) belonged to third professional year while 80% of dental students belonged to second year.

The knowledge regarding the universal precautions of NSI was lesser among medical students (12%) compared to dental students (34%) while remaining students in both groups said that either they know only some details or just heard about these guidelines. Although 96% medical students and 98% dental students knew about various infections which can be transmitted through NSI but

most of the students feared mainly of HIV which was followed by HBV. The dental students have better knowledge in regard to appropriate method of discarding needle (71%) as compared to only 62% of medical students.

Knowledge parameters	Medical students (%)	Dental students (%)
Infection transmitted through NSI	96	98
Needle to be discarded into an appropriate container	62	71
Complete awareness about Universal precaution guidelines	12	34

Table 1: Knowledge parameters related to NSI

While 76% of medical students were of view that recapping of needle was the most important measure to prevent NSI, 68% dental students were in favour of the same. The practice of using gloves by medical students was 87%, comparatively lower than dental students (90%).

Practice parameter	Medical students (%)	Dental students (%)
Wear gloves	87	90
Recap needle	76	68

Table 2: Practices related to NSI

In our study, 26% medical students experienced NSI during their postings while 37% dental students had experienced the same. The PEP practices followed by study group were also analysed and tabulated. Questionnaire regarding Hepatitis B vaccination status of respondents highlighted that only 68% medical students were completely immunised in comparison to 72% dental students.

PEP	Medical students (%)	Dental students (%)
Rinse with soap and water after NSI	48%	66%
Complete Hepatitis B vaccination taken	68%	72%

Table 3: PEP practices

While 97% of total students agreed that NSI need to be reported but only 52% of medical students and 57% of dental students reported NSI immediately, showing that NSI is still not timely reported and is neglected. The data regarding attitude to NSI events among the study group showed that both the study groups have almost equal attitude scores.

Attitude parameters	Medical students (%)	Dental students (%)
Worried about NSI	72	66
Reported NSI immediately	52	57

Table 4: Attitude related to NSI

While 44% medical students agreed to contact emergency department first in case of sharps injury, 56% dental students agreed for the same.

Contact person in case of NSI	Medical students (%)	Dental students (%)
RMO/Emergency department	44	56
Infection control committee	16	8
Health staff	12	9
Ward nurses	8	11
General practitioner	8	7
Would not contact anyone	0	0
Don't know	12	9

Table 5: Contact person in case of NSI

Among the various practices analysed causing NSI, maximum injuries (25% each) occur in emergency department or home care as reported by medical students and mostly in procedure room (33.3%) in case of dental students.

The reasons of under reporting of NSI were analysed. The most common cause among both groups being that it was a minor injury, followed by second common cause that they were unsure about whom to report.

Reasons for non-reporting NSI	Medical students (%)	Dental students (%)
Fear of dismissal	0	1
Unaware of whom to report	37	34
Was only a minor injury	54	41
Lack of time to report	9	13
Vaccinated for Hepatitis B	0	0
Fear of having acquired HIV	0	11

Table 6: Reasons of non-reporting of NSI

### Discussion

The present study reported sustaining NSI by 26% medical students. This data corresponds with several reports from India.<sup>11</sup> This is probably owing to their lack of knowledge and practical experience. A study conducted in Japan among nursing students showed that classes on practical microbiology has significantly improved awareness among students regarding spread of infection and its prevention.<sup>12</sup>

According to the Occupational Safety and Health Administration (OSHA) Guidelines, recapping of needles has been strictly prohibited.<sup>13</sup> But in our study most of the student, 76% of medical and 68% dental students considered recapping as a method of prevention of NSI.

Timely reporting of NSI is of utmost importance but in our study, only 52% of medical and 57% of dental students knew its significance, which is comparable to the findings of Madhavan et al. and Datar et al.<sup>1,9</sup>

Most common reason of non-reporting of NSI incident as given by 54% of medical students and 41% of dental students was that they perceived it as a minor injury, this data differs from the study conducted by Pavithran et al in which the most common reason was fear of being blamed or getting into trouble.<sup>14</sup> Thus, our study suggests that reporting of NSI among students must be strengthened using educational classes. The correct PEP practice of washing wound with soap and water was followed by 48% of medical and 66% of dental students. These results were also comparable with findings of Madhavan et al.<sup>1</sup>

### Conclusion

In our study, we found that NSI remains under reported mostly due to the gaps in students knowledge, attitude and practices. NSIs remain a major health hazard in most of the hospitals. To reduce the risks of NSIs, teaching programs for risk reduction should be included in the undergraduate teaching curriculum like hands-on sessions on NSI prevention. Higher authorities should also be sensitised toward the importance of training of HCWs in this regard. Apart from this, timely reporting of NSIs to be emphasised upon and made mandatory for all healthcare facilities with regular audits regarding the same along with immediate implementation of PEP measures and provision of PEP drugs whenever required.

### References

1. Madhavan A, Asokan A, Vasudevan A, Maniyappan J, Veena K. Comparison of knowledge, attitude, and practices regarding needle-stick injury among health care providers. J Family Med Prim Care. 2019;8(3):840-5.

2. Rajasekar an M, Sivagnanam G, Thirumal aikol undu sub ramainan P, Namasivayam, et al. Injection practices in southern part of India. Public Health. 2003 ;117(3):208-13.
3. Sharma R, Rasanias S, Verma A, Singh S. Study of Prevalence and Response to Needle Stick Injuries among Health Care Workers in a Tertiary Care Hospital in Delhi, India. Indian J Community Med. 2010 Jan; 35 (1): 74-7.
4. Pruss-Ustun A, Rapiti E, Hutin Y. Sharp injuries: Global burden of disease from sharp injuries to health care workers. Geneva: World Health Organisation; 2003.
5. Siddique K, Mirza S, Tauqir S, et al. Knowledge, attitude and practices regarding needle stick injuries amongst healthcare providers. Pakistan J Surg. 2008; 24 (4):243-8.
6. Gogoi, J, Ahmed, S.J., Saikia H, Sarma R. A study on knowledge, attitude, practice and prevalence of needle stick injuries among health care workers in a tertiary care hospital of Assam. Inl Journal Of Community Med Public Health.2017;4(6):2031-5.
7. Khelgi A, Raj R, Chandran R. Knowledge, Attitude and Practice Regarding Needle-Stick Injuries among Nursing Staff in a Tertiary Care Hospital, Mangalore, India. Journal of Evolution of Medical and Dental Sciences. 2021;10(30):2290-3.
8. Marjadi B, Nguyen JD, Hoppett P, Mary-Louise M. Needlestick Injury among Medical Students in an Australian University. J Infect Dis Epidemiol. 2017;3(2):2474-3658.
9. Datar U, Kamat M, Khairnar M, Wad gave U. Needlestick and sharps injury in healthcare students: Prevalence, knowledge, attitude and practice. J Family Med Prim Care. 2022;11(10):6327-33.
10. Seetan K, Ghraibeh S, Alsharei A, et al. Assessment of knowledge, attitude and practices toward infection control measures among medical students. J Res Med Dent Sci, 2021, 9(8): 185-91.
11. Sharma A, Gur R, Bhalla P. Study on prevalence of needle stick injury among health care workers in a tertiary care hospital in New Delhi: A two-year review. Indian J Public Health. 2012;56:101-3.
12. Yano R, Okubo T, Shimoda T, et al. A simple and short microbiology practical improves undergraduate nursing students' awareness of bacterial traits and ability to avoid spreading infections. BMC Med Educ. 2019 ; 53:1483-4.
13. Occupational Safety and Health Administration. Final rule on occupational exposure to bloodborne pathogens. Fed Reg 1991.
14. Pavithran VK, Murali R, Krishna M, Shamala A, Yalamalli M, Kumar AV. Knowledge, attitude, and practice of needle stick and sharps injuries among dental professionals of Bangalore, India. J Int Soc Prev Community Dent. 2015;5:406-12