

PREVALENCE OF OCCUPATIONAL INJURY AMONGST THE DENTAL STUDENTS: A CROSS-SECTIONAL STUDY - A QUESTIONNAIRE STUDY

Original Article

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ABSTRACT

Aim: To access the prevalence of occupational injuries amongst the third year, final year, interns, graduates and the post-graduates dental students of Ahmedabad Dental College and Hospital, Ahmedabad, India.

Materials and Methods: The present cross sectional questionnaire study was conducted in the Ahmedabad Dental College, to access the prevalence of occupational injuries amongst the third year, final year, interns, graduates and the post-graduates dental students of Ahmedabad Dental College and Hospital, Ahmedabad, India. The sample size included 165 dental students. The survey was scheduled to spread over a period of 1 month. Data was collected by using self-designed questionnaire (Annexure- C). The questionnaire was developed in English. Questionnaire was administered by the investigator himself to each participant on the scheduled days and collected back on the next visit. Collected data was coded, compiled and tabulated. The data was analysed by applying descriptive and inferential statistical analysis. Analysis was carried out using SPSS package version 17.

Result: Amongst the 165 students, females were 123 and males were 42. The prevalence of the occupational injury was incredibly high in females (94/123) as compared to males (21/42). The department causing the highest rate of injuries is in the Conservative department in both the genders, with the next being Prosthodontics and Periodontics Department. The instrument causing the highest rate of injury is the scalers and burs.

Conclusion: Thus through the inference of this questionnaire, one can conclude that the prevalence of the occupational injury using these sharp instruments is not only high but surely exceeded its limits. And this injury can surely be the major reason for the spread of blood borne transmission diseases i:e Hepatitis B etc. Thus one has to take care regarding the immunization of Hepatitis B, reporting of the injuries etc.

KEYWORDS: occupational injury, third year, final year, interns, graduates and the post-graduates dental student

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INTRODUCTION:

It is estimated that there are 35 million healthcare workers worldwide representing 12% of the working population.^[1] Two million injuries are believed to occur each year among health care workers.^[1] Dentist and dental students can also be considered amongst the health care workers. Although sharp instruments injuries are preventable, a minor injury can carry the risk of transfer of over twenty pathogens of which the most serious are Hepatitis B virus (HBV), Hepatitis C virus (HCV) and Human Immunodeficiency virus (HIV). These injuries result in 66,000 HBV; 16,000 HCV and 1,000 HIV infections each year among HCWs.^[1,2] Other estimates indicate that occupational injuries have resulted in 2.5% of HIV and 40% of HBV and HCV cases among HCWs worldwide.^[3] These blood borne viruses (BBVs) have serious consequences, including long-term illness, disability and death.^[2]

Dental practice represents an occupational hazard for injuries and transmission of serious infections.^[4] Healthcare students are exposed to a number of occupational hazards in the workplace and injuries are a major concern. There is a high risk of exposure to pathogens among healthcare students while they become involved in patient's investigation and treatment during their clinical training.^[5,6] Dental students are generally considered at a higher risk because they undertake exposure prone techniques during their training years and use sharp instruments more often.^[4,6] Several studies have highlighted that knowledge and compliance among dental students is inadequate regarding prevention and management of sharps injuries.^[7] Lack of experience and skill in performing dental procedures during clinical training places dental students at risk of exposure to blood-borne viruses (BBVs).^[7] The carrier rate following transmission is 20% for HBV, 80% for HCV and almost 100% for HIV.^[8]

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The likelihood of being infected by a virus after a single exposure is low. However, the consequences for the dental student who becomes infected are potentially serious, and include the potential of transmission of blood-borne pathogens and associated detrimental effects on their personal and professional lives.^[9] The emotional impact of needle stick injuries (NSIs) can be severe and long lasting, even if a serious infection is not resulted.^[3]

Sharps injuries are a hidden problem and the vast number go unreported and are virtually undocumented in developing countries, but probably equal or exceed those in the industrialized world.^[8]

MATERIALS & METHODS:

- The present cross sectional questionnaire study was conducted in Ahmedabad Dental College, to access the prevalence of occupational injury amongst the third year, final year, interns, graduates and the post-graduates dental students of Ahmedabad Dental College and Hospital, Ahmedabad, India.
- The study sample comprised of 200 dental students of Ahmedabad Dental College and Hospital, Ahmedabad, India.
- Sample size determination and the sample selection was carried out randomly.
- Inclusion Criteria: Third year, final year, interns, graduates and the post-graduates dental students of Ahmedabad Dental College and Hospital.
- Exclusion Criteria: Students who do not want to participate and those students who are not responding or not giving back questionnaire during the stipulated time period despite of repeated reminders.
- The survey was scheduled to spread over the period of one month. A detailed weekly schedule was prepared well in advance. Although a detailed schedule was prepared meticulously, few adjustments and changes were done due to the logistic reasons.
- Two days in a week were allotted for

conducting the study. A questionnaire related to occupational injury in the form of multiple choices was given to each participant and the response sheets were collected after 2 days.

- The data was collected by a single investigator. (principal investigator).
- A pilot study was conducted on 10% of the total sample size to check the feasibility of the study and to validate the questionnaire.
- Prior to the study, questionnaire was pre-tested and validated. The questionnaire was validated for construct and content validity, reliability and the ease of the use. Content and construct validity showed no significant changes. Questionnaire showed high degree (0.89) of agreement during test-retest of questionnaire. Those individuals who participated in the pilot study were not considered for the main study to prevent possible bias.
- Data was collected by using self-designed questionnaire. The questionnaire was developed in English. The questionnaire consisted of 8 questions pertaining to prevalence of the occupational injury faced by the dental students. Questionnaire was administered by the investigator himself to each participant on scheduled days and collected back on the next visit.
- Collected data was coded, compiled and tabulated. The data was analysed by applying the descriptive and inferential statistical analysis. Analysis was carried out using SPSS package version 17.

RESULTS:

- The present study was conducted to access the prevalence of occupational injuries amongst the third year, final year, interns, graduates and the post-graduates dental students of Ahmedabad Dental College and Hospital.
- A total of 165 participants from Ahmedabad Dental College and Hospital were included in the study population.
- Following are the results presented:
 1. Distribution of participants according to their gender. Out of 165 participants, 42 are males and

123 are female dental students.

2. Distribution of subjects according to their educational qualification. Out of 165 participants, 37 are third year, 73 are final year, 6 interns, 8 graduates and 41 are post-graduate students.

Distribution of subjects according to the prevalence of the injury. Out of 165 students, 115 (M=21/F=94) experienced the occupational injury and 50 (M=21/F=29) did not experience it.



4. Distribution of subjects according to number of injuries experienced by the participants. Out of 115 students, injury occurred once 41(M=8/F=33), twice 24 (M=3/F=21), more than twice 50 (M=10/F=40)

5. TABLE 1: Shows the distribution of subjects according to department causing injuries in a descending order. Out of 115 students, conservative department: 38 (M=10/F=28), periodontics department: 20 (M=1/F=19), orthodontics department: 19(M=2/F=17), oral surgery department: 18(M=2/F=16), prosthodontics department: 18 (M=6/F=12), pedodontics: 2(F=2)

Department	Total(%) =115	Males (%) =21	Females (%)=94
Conservative	38	10	28
Periodontics	20	1	19
Orthodontics	19	2	17
Oral surgery	18	2	16
Prosthodontics	18	6	12
Pedodontics	2	-	2

6. TABLE 2: Shows the distribution of subjects according to the instrument causing occupational injury in a descending order. Out of 115 students, bur 23(M=7/F=16), needle 22(M=4/F=18), scaler 20(M=1/F=19), orthodontic wire 14(M=3/F=11), endodontic file 13(M=2/F=11), orthodontic band

6(M=1/F=5), explorer 5(M=2/F=3), suture needle 3 (F=3)

Instrument	Total(%) =115	Males (%) =21	Females (%)=94
Bur	23(20%)	7	16
Needle	22(19.130%)	4	18
Scaler	20(17.39%)	1	19
Orthodontic wire	14(12.17%)	3	11
Endodontic file	13(11.30%)	2	11
Orthodontic band	6(5.21%)	1	5
Explorer	5(4.34%)	2	3
Suture needle	3(2.60%)	-	3
Surgical elevator	-	-	-
Others	9(7.82%)	1	8

7. TABLE 3: Shows the distribution of subjects according to the procedure they were injured in a descending order. Out of 115 students, endodontic treatment 29 (M=5/F=24), collision with sharp instrument 24 (M=4/F=19), scaling 18(M=1/F=17), local anaesthesia administration 13(M=2/F=11), needle recapping 7(F=7), sharp instrument disposal 5(M=3/F=2), wasting of sharp instruments 4(M=2/F=2).

Procedure	Total (%)	Males (%)	Females (%)
Endodontic treatment	29	5	24
Collision with sharp instrument	24	4	19
Scaling	18	1	17
Local anaesthesia administration	13	2	11
Needle recapping	7	-	7
Sharp instrument disposal	5	3	2
Wasting of sharp instruments	4	2	2
Needle exchange	2	1	1
Others	14	3	11

8. Distribution of subjects according to the immediate post-reaction after the injury. Out of 115 students, anxiety/stress and indifferent attitude was with the same amount of students 42, anger directed at one's self was with 31 students.

9. Distribution of subjects according to reporting of injury done by the students. Out of 115 students, majority did not report the injury 89(M=16/F=73), and the rest reported 26(M=5/F=21)

10. Distribution of subjects according to reason of why students did not report the injury. Out of 89 students, 51 felt it was minor, 25 used self-care, 6 were busy, 4 did not know whom to report and 3 were like instrument was unused.

DISCUSSION:

Several studies have reported on occupational injuries among dental students with variable findings. Differences in reporting can be attributed to the operational definitions used for investigating occupational injuries. While some studies have focused solely on Needle Stick Injuries, others have described percutaneous and occupational injuries to include other forms of injuries to which dentists can be exposed to in their work environment. The divergence of results reported in the literature has also resulted from variations in definition of the recall period, sample sizes, academic years surveyed and study design approaches.

EPIDEMIOLOGY OF OCCUPATIONAL INJURIES

The overall prevalence of sharp instruments injuries of 69.6% reported in this study is considered to be high. The most common form of injury among dentists is while using burs and scalers. The prevalence of Needle stick injuries among dental students in this survey was 25%. Prevalence rates of NSIs ranging from 23% - 75.4% were reported in dental schools.^[5,7,10] As in other studies, most students were exposed to multiple injuries.^[3,5,10] It has been reported that inadequate staff, lack of experience, insufficient training, duty overload and fatigue may lead to occupational injuries.^[10]

Dental students work in various dental departments where they can be exposed to injuries. The most frequently reported places for injuries have varied across the literature. Endodontics, surgery, prosthodontics, operative dentistry, paediatrics and

periodontics departments were reported as places for injury occurrence.^[3,4,10] In this study, most injuries were reported to occur in the conservation followed by periodontics, surgery, orthodontics, prosthodontics and pedodontics departments.

In dental practice, multiple cavity preparations, tooth preparations and scaling are carried out, which is the major cause of occupational injuries among dental professionals. In this survey, some of the students reported injuries through needles. Significant risks of work acquired infections can be attributed to hollow-bore needles that are already contaminated.^[4,5] This is because a larger volume of blood remains inside the bore of the needle as compared to a suture needle which is a solid core needle.^[5] When a student is exposed to NSIs, the risk of transmitting various types of blood-borne pathogens from an infected patient is greatly increased.^[7] In this survey students reported other instruments such as the orthodontic wire, scaler, bur, orthodontic band, suture needle and surgical elevator as causing injuries which were also reported in similar studies.^[5-7]

REPORTING OF SHARP INJURIES

Non-reporting of occupational injuries is a contentious issue within the dental profession.^[7] The under-reporting is an established fact because HIV, HBV and HCV infections have implications for personal relationships, future employment and insurance coverage.^[12] All injuries require reporting and evaluation. Reporting of incidents is important to ensure appropriate counselling and treatment of healthcare students.^[5]

In this study, 78.6% of students did not report their injury. Similar studies have reported high rates of under-reporting and in one study 85% of students have acknowledged that they did not report their injuries.^[6,7,10] Reasons provided by students in this survey for not reporting injury were using self-care, injury being minor, item being unused and student being busy. Additional reasons reported in other studies by dental students for not reporting were: fear of stigmatization and discrimination, feeling embarrassed, fear of the consequences, the patient

was low risk, good local anti-sepsis undertaken at time of injury, heavy clinical schedule, students more concerned with finishing their clinical requirements and not knowing that there is a reporting protocol, negative faculty reaction and negative patient reaction.^[7,13,14] The literature has also revealed that that “most students indicate that they do not see routine universal precautions undertaken by staff and residents, and no requirement for the compliance is enforced”.^[15] Additional reasons cited by the WHO for not reporting injuries were ignoring that Post-exposure prophylaxis is available and efficient, uncertainty regarding the confidentiality of the results and a lack of support and encouragement to report.^[14,16] Fear of testing may also play an important role in the underreporting of occupational exposure.^[16] It has been suggested that such a high rate of under-reporting requires students' need for education on prevention, with the emphasis of reporting injuries and the possibilities of prophylaxis against blood borne diseases.^[3,10] Low compliance among students, especially in reporting of injuries, may be

partly explained by the perception that they are insignificant and pose no risk to them and this may be due dental students doing their own risk assessment.^[7]

CONCLUSION:

Thus, through this study one can conclude that there is a high rate of prevalence of the occupational injuries among the dental professionals. But however they lack the understanding regarding the harmful effects of not reporting the injury immediately irrespective of the injury being minor or being busy. So awareness regarding the blood borne diseases caused by these injuries, should be spread amongst the dental students. Also pre and post exposure prophylaxis should be given to the health care professionals to prevent and cure them against the blood borne disease. Thus this survey has achieved a complete response rate. And the survey is without any limitations.

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