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Original Article

The incidence of occupational exposures among health care workers and students at Istanbul University Faculty of Dentistry



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ABSTRACT

Background/objectives: The aim of this study is to determine the incidence of occupational exposures, the immunization status and the rate of injuries being reported among health care workers (HCWs) and students at the dental school.

Methods: A questionnaire was applied to all academic staff, dental students and nurses. The questionnaire included the sections about frequency of sharp injuries, type of instrument that caused the injury, and whether or not the injury was reported. Data from the questionnaires was analyzed using SPSS[®] 17.0 statistical software and assessed in each group.

Results: The number of persons reporting one or more percutaneous injury was 415 (74.6%). 448 (80.5%) respondents reported saliva/blood splashes into skin and eyes. The majority of the respondents failed to report the exposure incidents. Common reasons for not reporting included lack of information about reporting and not to worry about the injury. The most common injuries were reported as needlesticks and dental probe injuries. 86% of respondents followed post-exposure protocol after the injury and 96% of them reported the regular usage of masks to prevent risk of infection. The immunization status of students, academic staff and nurses were 89.5%, 78.6% and 72%, respectively.

Conclusion: The high incidence of occupational injuries among health care workers reveals a necessity to raise awareness and to provide periodical training in infection prevention. Copyright © 2014, Hospital Infection Society India. Published by Reed Elsevier India Pvt. Ltd.

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1. Introduction

The provision of dental care consists many risks. Health care workers are exposed to several factors related with the risk of

infection transmission.¹ Blood borne infections occur mostly by percutaneous/mucosal exposure of HCWs to the blood, tissue, or other infectious body fluids of infected patients.^{2–5}

The effective infection control and barrier techniques are the basics of modern dentistry practices.^{6–8} Dentists use

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various sharp instruments and are always at risk of accidental sharps injuries.^{9,10} Dental students, because of their relative inexperience, are more at risk for these kinds of injuries.^{11,12}

The aim of this study is to determine the incidence of occupational exposures, the immunization status and the rate of injuries being reported among health care workers (HCWs) and students at the Dental School of Istanbul University.

2. Methods

A questionnaire was applied to all academic staff ($n = 189$), dental students ($n = 334$) and nurses ($n = 33$).

The questionnaire included the sections about frequency of sharp injuries, type of instrument that caused the injury, and whether or not the injury was reported.

Established infection control policies were used for the definitions of percutaneous and mucocutaneous exposures^{13,14}: Percutaneous exposure in the skin caused by: a contaminated needle, instrument, or other sharp object, glass containers with blood/body fluids or, human bite.¹³ Mucocutaneous exposure: body fluid contact to open wounds, non-intact skin (e.g. eczema, sores), or body fluid splash to mucous membranes (e.g. mouth, eyes).¹⁴ We additionally investigated the reasons for non-reporting events, immune status for hepatitis and methods of prevention of occupational exposures. The participation was voluntary. Informed consent was implied when the respondents completed and returned their questionnaires.

All statistical analysis was carried out using SPSS® 17.0 statistical program and assessed in each group. Data analysis was performed using chi-square test and a p value less than 0.05 was considered as statistically significant.

3. Results

556 health care workers including students (3rd, 4th and 5th class), academic staff and nurses at Istanbul University Faculty of Dentistry responded to the questionnaire, 379 (68%) were females and 117 (32%) were males with a mean age of 26.2. Among the health care workers; 127 (22.8%) were 3rd year students, 103 (18.5%) were 4th year students and 104 (18.7%) from 5th year students, 189 (34%) were academic staffs and 33 (6%) were nurses. Table 1 summarizes percutaneous and mucocutaneous injury rates of health care workers.

The number of persons reporting one or more percutaneous injury was 415 (74.6%). 448 (80.5%) respondents reported saliva/blood splashes into skin and eyes. The percutaneous and mucocutaneous injury rates of 3rd year students were significantly lower than 4th and 5th year students ($p = 0.0001$). The injury rates of nurses were significantly lower than students and academic staffs ($p = 0.0001$). The results showed that percutaneous and mucocutaneous injury rates of academic staff were high at Pediatric and Prosthodontics clinics and among nurses the high injury rates were at Oral Surgery, Endodontic and Pediatric clinics ($p = 0.001$). There were no significant differences injury rates between academic staff and nurses according to their working experiences.

Table 1 – Percutaneous and mucocutaneous injury rates of health care workers.

Percutaneous injury rates	Injury (+) (n%)	Injury (-) (n%)	Not remember (n%)
3rd class students	71 (55%)	51 (40%)	5 (5%)
4th class students	77 (74%)	25 (24%)	1 (2%)
5th class students	92 (88%)	10 (9%)	2 (4%)
Academic staff	155 (82%)	29 (15%)	5 (3%)
Nurses	20 (60%)	11 (33%)	2 (7%)
Mucocutaneous saliva/blood splashes rates	Injury (+) (n%)	Injury (-) (n%)	Not remember (n%)
3rd class students	87 (68%)	29 (22%)	11 (10%)
4th class students	90 (87%)	10 (9%)	3 (4%)
5th class students	93 (89%)	6 (5.7%)	5 (5.3%)
Academic staff	162 (86%)	13 (6.8%)	14 (7.2%)
Nurses	16 (48%)	16 (48%)	1 (4%)

The majority of the respondents failed to report the exposure incidents. 4% of students and academic staff and 20% of nurses reported the injury ($\chi^2 = 12.27$, $p = 0.015$). Common reasons for not reporting included lack of information about reporting and not to worry about the injury. The most common injuries were reported as needlesticks and dental probe injuries. The most important causes of injuries were reported as recapping a needle, cleaning the dental instruments and administering local anesthesia. The instruments and procedures that resulted in the exposure incidents are presented in Table 2.

In this study 53.3% of students reported using a one-handed technique (scoop technique) to recap needles, 92.6% of academic staff and 60.5% of nurses using a two-handed technique. The injured regions of students, academic staff and nurses are shown in Fig. 1.

Among 246 mucocutaneous injuries, only 114 patients were known if they had a contagious disease. 101 patients had no contagious disease, 1 patient had HBV(+), 8 patients were HBV carriers and 4 patients were HCV(+). 86% of respondents followed post-exposure protocol after the injury and 96% of them reported the regular usage of masks to prevent risk of infection.

The hepatitis B immunization status of students, academic staff and nurses were 89.5%, 78.6% and 72% respectively. The precautions to reduce the risk of infection and immunization status of respondents are presented in Table 3.

4. Discussion

Needlestick injuries or other sharp instruments are common in dental practice.¹⁵ Most exposures to infectious agents in the dental clinics are accidental and can be avoided by using safe work practices and following infection control guidelines.¹⁶

The University of Istanbul, Faculty of Dentistry has an established infection control policy designed to protect against the transmission of infectious diseases among operators and patients. The policy additionally dictates the protocol to be followed after accidental injury in the clinics. All

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