

# Occupational hazards and preventive practices among students and faculty at a private dental institution in India

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## SUMMARY

**Aims.** To assess the level of awareness and occupational hazards experienced in addition to preventive measures undertaken by the students and faculty working at a private dental institution in India.

**Methods.** The present study was conducted at a private dental teaching hospital in India using self-administered questionnaires. All the students attending the clinics and the faculty members of the hospital were invited to participate in the study. The final study population consisted of 290 dental professionals. The self-administered questionnaire also included questions on personal information like age, gender, position (student or faculty), years of experience and number of working hours per day apart from the questions on the level of awareness, preventive procedures undertaken and occupational hazards experienced.

**Results.** Significantly greater number of females experienced musculoskeletal disorders ( $p=0.031$ ) and allergy to latex ( $p=0.004$ ) than males. Nearly half the study population reported of sharp instrument injury while treating the patients. The most prevalent preventive measure reported by the respondents was changing gloves between the patients (98.6%) and use of face mask (97.2%). Most of the participants (94.1%) had undergone Hepatitis B or other vaccination procedures.

**Conclusions.** Majority of the study population were aware of the biological hazards associated with the practice of dentistry. None of the preventive measures were observed by all the participants.

**Key words:** dentist; dental students; occupational hazards.

## INTRODUCTION

Occupational hazard refers to a risk or danger as a consequence of the nature or working conditions of a particular job (1). The history of occupational hazards awareness can be traced back to 18th century when Bernadino Ramazzini, who is referred to as father of occupational medicine, recognized the role of occupation in dynamics of health and diseases (2, 3).

Dentistry is known to be a demanding profession and a wide variety of deleterious work environmental factors are proved to affect the physical health of the dentists or even aggregate their pre-existing disorders (4, 5).

However, modern dentistry has been described as probably among the least hazardous of all occupations. In spite, many risks remain in dental practices which continue to challenge this status (6).

Carrying out their professional work, dentists are exposed to a number of occupational hazards. These cause the appearance of various ailments, specific to the profession, which develop and intensify with years. In many cases they result in diseases and disease complexes, some of which are regarded as occupational illnesses (7).

In addition, through this kind of health care practice, many infectious agents may be transmitted (8) as the dentists and their staff is in direct or indirect contact with traumatised tissues, saliva, and blood on a daily basis (9).

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Assessment of the occupational hazards experienced among dentist population would help in motivating and planning preventive strategies so as to increase the efficiency and productivity of these health care practitioners.

Hence, the present study was aimed to assess the level of awareness and occupational hazards experienced in addition to preventive measures undertaken by the students and faculty working at a private dental institution in India.

## MATERIAL AND METHODS

The present study was conducted at a private dental teaching hospital (Vishnu dental college and hospital) in India in November 2010 making use of self-administered questionnaires consisting of structured questions in order to assess the level of awareness, preventive measures undertaken and occupational hazards experienced. The questionnaire used in the present study was modified from a previous survey questionnaire (6) and contained questions about stress and physical hazards experienced, awareness about HIV and Hepatitis B. In addition, there were 11 statements related to the preventive measures undertaken; participants were asked to answer each questionnaire item as "yes" or "no".

All the students attending the clinics and faculty members of the hospital were invited to participate in the study. Subsequently, 304 dental professionals agreed to participate in the study voluntarily and completed the questionnaires. There was no stipulated time given to complete the questionnaire and most of the participants completed it in less than 15 minutes. However, 14 questionnaires were rejected as they were either incomplete or with multiple answers. Thus, the final study population consisted of 290 dental professionals. Informed consent was obtained from all the participants and ethical approval was obtained from the institutional ethical committee for conducting the study. No incentives were promised for the participants and no effort was done to involve the non-respondents.

The self-administered questionnaire also included questions on personal information like age, gender, position (student or faculty), years of experience and number of working hours per day. Of all the respondents in the current study, 83% were students and the remaining were the teaching staff. The mean age of the students and the staff was 21.37 and 27.53 respectively. Gender breakdown was 79.7% females and 20.3% males.

Statistical Package for Social Sciences (SPSS), 15.0 was used for statistical analysis. The data has

been presented as frequency tables and Fisher exact test was used to assess the significant difference between the genders for their responses. A p value of <0.05 was considered as significant.

## RESULTS

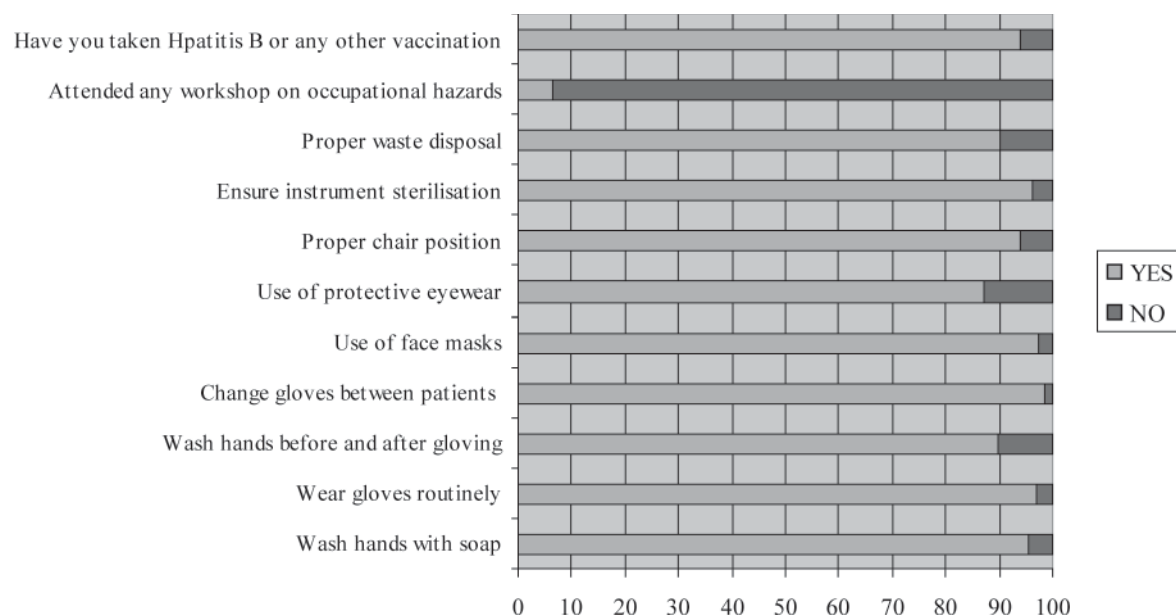
It is evident from Table that more or less half of the subjects experienced some kind of stress, either it be patient related, dentist related or economic. More than one half (59.7%) of the respondents had musculoskeletal disorders and a significantly greater number of females experienced musculoskeletal disorders ( $p=0.031$ ) in addition to latex allergy ( $p=0.004$ ). A major proportion of the respondents were well aware about the biological hazards (HIV and HBV) associated with dentistry. It was interesting to note that nearly half the study population reported of sharp instrument injury while treating the patients.

There was no significant difference between the genders for preventive measures undertaken against hazards at work. Figure demonstrates that the most prevalent preventive practice reported by the respondents was changing gloves between the patients (98.6%) and use of face mask (97.2%). However, only 6.6% of the participants have attended workshops on occupational hazards. It was motivating to note that 94.1% of the participants had undergone Hepatitis B or other vaccination procedures.

## DISCUSSION

Stress associated with work is an integral part of dentist's profession. More or less, half of the study subjects experienced some kind of stress, either it be patient related or dentist related or economic. The present scenario of dentistry in India where greater work hours, huge competition and fewer economic returns have become an integral part of dental practice could have contributed to this finding. Dentists have been shown to be dissatisfied with aspects such as their level of stress and limited amount of personal time (10, 11). In agreement, more than half of the Lithuanian dentists experienced work psychological complaints (4) and stress was identified as major hazard by all respondents in East Jerusalem (6).

At working, dentist assumes a strained posture both while standing and sitting close to the patient who remains in a sitting or a lying position. This overstress negatively affects the musculoskeletal system (12). In the present study, more than half (59.7%) of the respondents had musculoskeletal disorders.



**Fig.** Preventive measures undertaken by the study population against the hazards at occupation

This finding is in accordance with past surveys among Danish, Israel, US military and Australian dentists where 50% – 60% of the dentists reported of musculoskeletal pain (13).

However, this is in contrast to 80% observed among Lithuanian dentists which was attributed to the lack of understanding of ergonomic principles, uncomfortable work environment and the residual effects of treating seated patients which was a common practice in Soviet Union (4).

Significantly greater number of females was found to experience musculoskeletal disorders than the males. A previous survey among Australian

dentist population found that females experienced more symptoms of Musculo-skeletal disorders (14). Marshall et al., suggested that increased prevalence of musculoskeletal disorders may be due to greater willingness on the part of females to report symptoms. In addition, it was reasoned that higher energy is necessary in generating the required force for the female group when a range of tasks were performed (14). Another probable reason could be lower pain threshold in females than the males.

Turjanamaa et al., (15) observed that 8.8% of the dentists were found to be allergic to latex which is very less than 17.9% reported in the present study.

Furthermore, greater proportion of females had latex allergy than males. In accordance, the prevalence of occupational dermatoses symptoms was more in females than the male subjects as reported by the previous studies (16, 17). Women have been always reported to suffer more occupation-related health complaints than men (18).

Sharp instrument injuries represent the most efficient method for transmitting blood borne infections between patients and health care workers (13). These injuries are of concern as the needles often contain residual bodies from the puncture site which often

**Table.** Occupational hazards experienced and awareness of biological hazards by the study population

	Males	Females	Total
<b>Stress</b>			
Patient related	33 (55.9%)	143 (61.9%)	176 (60.7%)
Dentist related	28 (47.5%)	118 (52.2%)	146 (51.2%)
Economic	28 (47.5%)	99 (43.6%)	127 (44.4%)
<b>Awareness about biological hazards</b>			
Hepatitis B virus	27 (45.8%)	125 (54.8%)	152 (53%)
HIV	27 (45.8%)	126 (55.5%)	153 (53.5%)
<b>Physical hazards</b>			
Musculoskeletal*	28 (47.5%)	144 (62.9%)	172 (59.7%)
Eye/ear injury	21 (35.6%)	92 (40.7%)	113 (39.6%)
Allergic to latex*	3 (5.1%)	49 (21.2%)	52 (17.9%)
Sharp instrument injury	15 (25.4%)	115 (49.8%)	130 (44.8%)

Fisher exact test, \* p<0.05.

occurs during anesthetic procedures. It was alarming to note that nearly half the present study population reported of sharp instrument injury which is in accordance with dentists of UK (19) and Thailand (20).

In contrast, 72% of the dental students of Australia (21) had experienced sharp instrument injury during their clinical training. This difference could be due to the reason that we have even included faculty members in the present study.

Wearing of face masks and changing of the gloves were the preventive measures routinely employed by the study population in accordance to previous studies (22, 23).

Education is one of the important strategies for the prevention of occupational injuries and diseases (3). Only 6.6% of the respondents reported of attending workshops on occupational hazards which is far less than 71.1% and 29.4% reported among Nigerian (3) and Indian Navy dentists (1) respectively. This difference might be due to the fact that most of the participants in the present study were students who do not usually find time from their busy academics to attend workshops; however faculty members occasionally attend continuing education programmes.

Dental profession involves use of sharp instruments contaminated with blood or other fluids and thus there is an ample opportunity for inadvertent

skin wounds with possibility of Hepatitis and HIV transmission (24).

It was motivating to note that 94.1% of the participants had undergone Hepatitis B or other vaccination procedures. However, in a previous report among Indian Navy dentists all the subjects were vaccinated against Hepatitis B (1). This is in contradiction to 38% reported in dentists of East Jerusalem (6). In recent years, many dental schools in India have evolved a policy of vaccinating the students and faculty at discounted prices which could be a plausible explanation for majority of the participants being vaccinated against Hepatitis B. Alternatively, a major proportion of the respondents were well aware about the biological hazards (HIV and HBV) associated with dentistry which might be a reason for many participants undergoing vaccination in our study.

## CONCLUSION

Majority of the study population were aware of the biological hazards associated with the practice of dentistry. Nearly, half the participants experienced stress and sharp instrument injury. In addition, musculoskeletal disorders and latex allergy were reported by more females than the male participants. None of the preventive measures were observed by all the participants.

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