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Awareness of occupational hazards among dentists: A questionnaire based study

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Abstract

This study was conducted to assess and increase the level of awareness of occupational hazards among the dental surgeons of Jaipur dental college, Jaipur. Methods: The data was obtained using a self-administrated questionnaire that included questions on awareness of occupational hazards, safety measures practiced and experience of occupational hazard while in practice. Results: All the respondents were aware of the occupational hazards. 4.75% were exposed to infectious occupational risk during the clinical activity. Herpes labialis was the commonest hazard in 35%. Maximum subjects (91.25%) under study respond that these hazards can be prevented by adequate use of gloves, masks and head masks. Conclusion: This study shows high level of awareness of exposure to occupational hazards among dentists. Increased awareness must be created about the dangers of these hazards. A practical step to prevent them needs to be reinforced.

Keywords: Occupational hazards, Dental surgeon, Herpes labialis

Introduction

Dental professionals are predisposed to a number of occupational hazards. These include exposure to infections, percutaneous exposure incidents, dental materials, radiation, and noise, musculoskeletal disorders, psychological problems and dermatitis, respiratory disorders, and eye insults. Basically, for any infection control strategies, dentists should be aware of individual protective measures and appropriate sterilization or other high-level disinfection utilities. Continuous educating and appropriate intervention studies are needed to reduce the complication of these hazards. So, it is important for dentists to remain constantly up-to-date about measures on how to deal with newer strategies and dental materials, and implicates the need for special medical care for this professional group^[1].

Material and Method: There are only few studies done in this area in relation to occupational hazards. Thus our study was designed to know the awareness among dentists about occupational hazards and their preventive measures.

So this study aimed at assessing and increasing the level of awareness of occupational hazards among the dental workers. A questionnaire was offered to all the staff members and postgraduates regardless of field of expertise or graduation. Questionnaires with less than 80% of completed answers or unclear answers were excluded. Therefore, the sample consisted of 80 participants who courses or working in the Jaipur dental college, Jaipur. They were asked to respond according to their opinion and understanding of the occupational hazards they faced in their practice in an orderly fashion and according to their perception of importance. Questionnaire that included questions on personal data, awareness of occupational hazards, safety measures practiced and the experience of occupational hazard while in practice.

Statistical analysis

Data was entered in excel sheet to prepare master chart and was subjected to statistical analysis. The chi-square test is used to determine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories.

Results: All the respondents in this study were aware of the occupational hazards. 4.75% were exposed to infectious occupational risk during the clinical activity. Herpes labialis was the commonest hazard in 35%.

Maximum subjects (91.25%) under study respond that these hazards can be prevented by adequate use of gloves, masks and head masks.

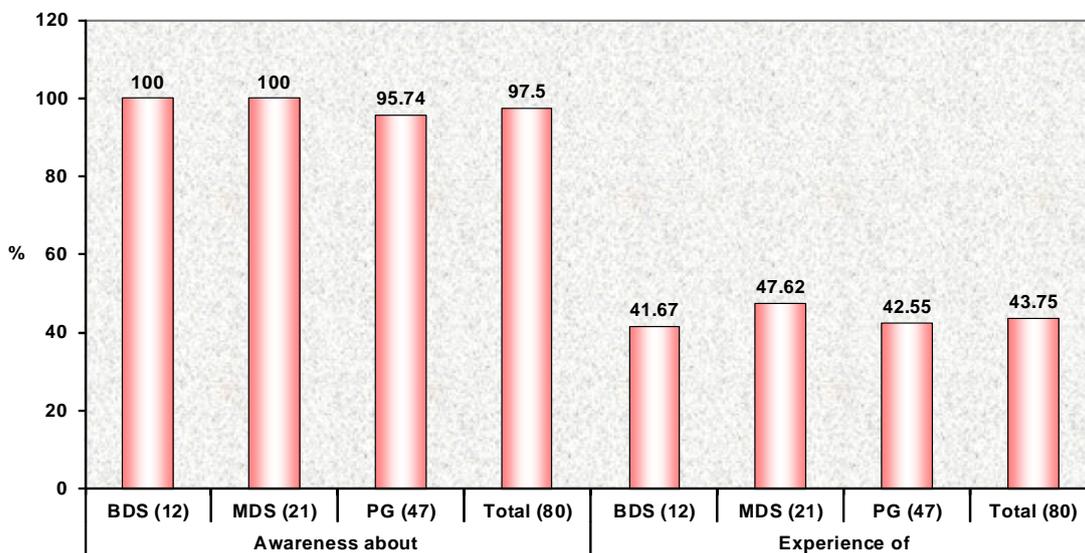
Discussion

Bio-safety is a concern in all health sector services. Dentistry is a profession that involves constant risk of exposure to various environmental and human infectious agents, transmitted through blood, oral and oropharyngeal secretions, air and water. Contamination can affect staff, patients and even members of their family. Dentistry is a stimulating and rewarding occupation but is physically and mentally demanding. Dentists report more frequent and worse health problems than other high risk medical professionals. However, the adoption of infection control measures is an effective way to reduce occupational risk. These measures essentially include cleaning, disinfection and sterilization, the use of personal equipment protection, immunization, and prevention and correct handling in occupational accidents which involve

exposure to blood and bodily fluids and antiseptics. Dental patients and Dental Health Care Workers may be exposed to variety of micro-organisms via blood or oral or respiratory secretions. Infectious agents that include are cytomegalovirus, hepatitis B virus, hepatitis C virus, herpes simplex virus types 1 and 2, HIV, mycobacterium tuberculosis and other viruses and bacteria, especially those that infect the upper respiratory tract.

So this questionnaire was distributed among staff members and post graduate students to assess the level of awareness, preventive measures undertaken and occupational hazards experienced. A total of 80 dentists completed the questionnaire with 12 BDS, 21 MDS staff and 47 post graduate students. According to the results of this study, the mean awareness of infection and infection control procedures among dental practitioners was approximately 78 (97.5%) as shown in Graph 1, two post-graduates did not respond this question. So the results indicated that dental practitioners had awareness about these hazards.

Awareness about Aquired Infetious Occupational Hazards and experience of infections while practicing by different categories of dentists



Graph 1: Shows awareness level and number of acquired infections

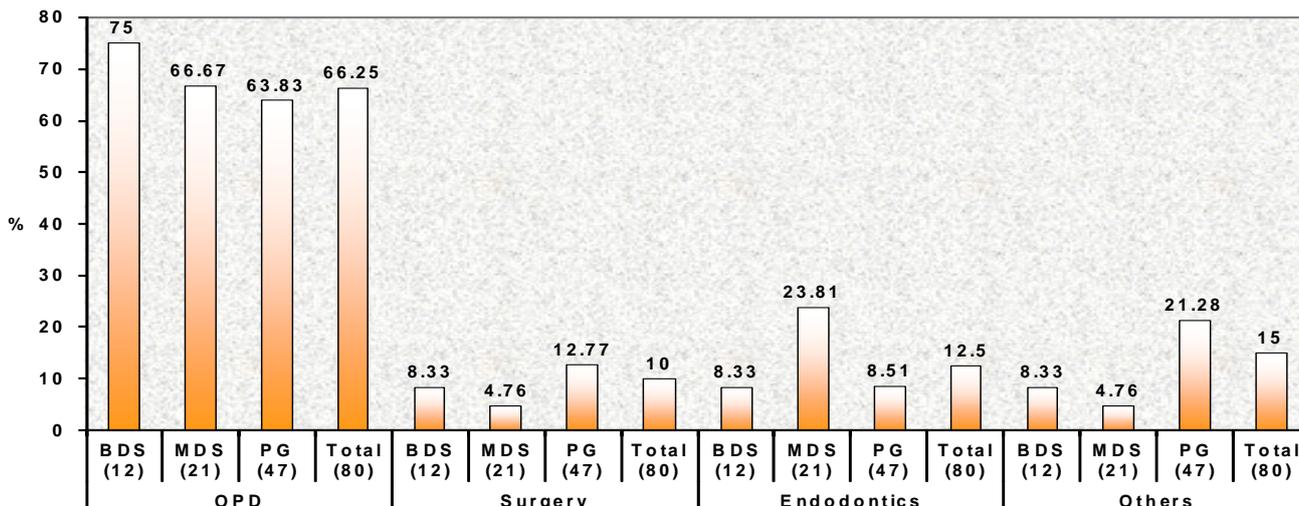
In our study, 35 (43.75%) subjects were consider that they were exposed to any kind of infectious occupational risk during the clinical activity, of which the most important is herpes labialis with 28 in number (35%) as shown in table 2. Ghaemi E (2007) [2] showed that 65.8% of the subjects experienced this infection during their life time. A study on the students of dentistry of 18-28 years of age of Tehran during 1999 showed that 23.8% of students had the primary history of herpetic infection and 35.8% had experienced the history of secondary infection (Taheri *et al.*, 2002), which showed 59.6% student experienced the lesion, this observation is similar to our findings. In a study on the students from Carolina university of Colombia which showed that only 28% of them

had the history of herpetic infection (Gibson *et al.*, 1990). [2] Study by Ghada Dh Al-Sayagh *et al.* (2005) [3] showed prevalence of infectious diseases among dentists was about 17.69%. From the exposed participants maximum (14) were Post-graduate students. Difference in the prevalence of Herpes labialis may be due to bioenvironmental factors. Herpetic whitlow was the next common hazard reported in present study with 7.50% of the subjects. As shown in Graph 3, out of total 66.25% participants replied that mostly of these hazards occurred while OPD procedures and 12.5% acquired while endodontic procedures. About 15% thought it occurs while other dental procedures.

Table 2: Distribution of occupational hazards experienced by different categories of dentists

	BDS (12)	MDS (21)	PG (47)	Total (80)	'p' Value*					
	No.	%	No.	%	No.	%	No.	%	No.	%
Herpes labialis	5	41.67	0	0	9	42.86	14	29.79	28	35.00
Hepatitis	0	0.00	0	0	0	0.00	1	2.13	1	1.25
Mumps	0	0.00	0	0	0	0.00	3	6.38	3	3.75
Whitlow	2	16.67	2	9.52	2	9.52	2	4.26	6	7.50
Others	0	0.00	3	14.29	3	14.29	2	4.26	5	6.25

Common type of dental treatments in which such infections as per different categories of dentists



Graph 3: Shows distribution of response about various dental branches

Table 4: List of Reasons for acquiring infections as per different categories of dentists

	BDS (12)	MDS (21)	PG (47)	Total (80)	'P' Value			
	No.	%	No.	%	No.	%		
Lack of Precautions	9	75	16	76.19	33	70.21	58	72.5
Lack of Sterilization	3	25	2	9.52	9	19.15	14	17.5
Lack of Knowledge	0	0	1	4.76	3	6.38	4	5
Others	0	0	0	0	2	4.26	2	2.5

Maximum dentist (72.5%) responded that these hazards acquire due to lack of precautions (Table 4). Concerning usage of protective measures, 91.25% of the subjects under study (Table 5) respond that these hazards can be prevented by adequate use of gloves, masks and head masks. This may be

due to that younger age dentists show more awareness about their health and they know the importance of using protective measures to avoid any type of occupational hazard and infectious disease.

Table 5: Profession wise distribution of respondents about safety precautions

	BDS (12)	MDS (21)	PG (47)	Total (80)	'p' Value*				
	No.	%	No.	%	No.	%			
Gloves	2	16.67	0	0	3	6.38	5	6.25	
Masks	0	0	0	0	3	6.38	3	3.75	
Head caps	0	0	0	0	1	2.13	1	1.25	
All of above	10	83.33	21	100	42	89.36	73	91.25	

A study carried out by Bulgarelli *et al.* emphasizes that the use of disposable barriers for each patient reduces bacterial contamination by 70% [4]. In 1994 it was found that 91.8% of dentists in Ontario, always wore gloves, 74.8% always wore masks and 83.6% always wore eye protection. A study conducted by Morris *et al.* showed that about 90% of dentists in Kuwait wore gloves, 75% wore masks and 52% wore eyeglasses. In a New Zealand study, 42.0% of dentists wore gloves, 64.8% wore masks and 66.4% wore eye protection [5]. There are a number of hazardous dental wastes that when disposed improperly, could cause harm to us and the environment. Most chemical waste streams generated in dental office can be managed as nonhazardous waste, if proper disposal guidelines are followed. These are:

- 1) Mercury-containing wastes- Dental Amalgam particles are a source of mercury which is known to be a neurotoxic, nephrotoxic, and bioaccumulative element. This can be managed by using disposable suction traps and not throwing extracted teeth with amalgam fillings in the regular garbage.
- 2) Silver-containing wastes- Spent X-ray fixer used in dental

- 3) Lead-containing wastes- The lead foil inside X-ray packets and lead aprons contain leachable toxin which can contaminate soil and groundwater in landfill sites after disposal. These should only be handed over to CWC.
- 4) Blood-soaked/dripping gauze- Is a biomedical hazardous waste. It should be enclosed in a yellow biomedical waste bag covered with a double bag, labeled with a biohazard symbol and refrigerated.
- 5) Sharps- Needles, scalpels, burs, acid etch tips, files, blades and other sharp objects. Their waste management includes collection in a red or yellow puncture resistant container with a lid that cannot be removed. The container should be properly labeled with biohazard symbol and once full, the CWC should be contacted for disposal [6,7].
- 6) In conclusion, this study showed many occupational

health problems in modern dentistry and although there appears to be an awareness of exposure to occupational hazards among the dental surgeons, the practical steps to prevent occupational hazards among them need to be reinforced. Herpes labialis was the most common form of occupational hazard in this study followed by herpetic whitlow. Dentists are in a high risk of contracting this disease due to the procedures and instruments of dental treatment. So dentists and their staff should know well the risk of infection from their patients, the risk of cross-infection between patients, and the risk of infecting each other. It is recommended that regular workshops and seminars on occupational hazards be organized for all dental clinicians periodically.

Conclusion

Most steps in infection control routine are directed at prevention of contact with infectious agent. Personal protection barriers are of great significance in this process. Various methods like sterilization, decontamination and disinfection are indispensable. The WHO and CDC have issued certain guidelines regarding prevention and dealing with certain infective conditions. Dentists need to update themselves about these guidelines, to be able to administer these policies effectively. As in our study, Herpes labialis is very common hazard that affects dentists. But obviously, adequate awareness exists among dentists about most of these hazards, and the compliance of dentists to at least the major preventive techniques has diminished these hazards.

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