

# Knowledge and Awareness About the Occupational Hazard Among Dentist in Tertiary Care Hospital in Karachi

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## ABSTRACT

**Objective:** To determine the knowledge and awareness regarding the occupational hazard of dentistry professional.

**Study Design:** Non-probability convenient sampling

**Place and Duration of Study:** This study was conducted at the tertiary care hospital in Karachi, from June 2022 to Jul 2022.

**Materials and Methods:** This study surveyed a sample of 300 male and female dentists, including final year students, house officers, P.Gs, and specialists. Data was collected from mid-June 2022 to the end of July 2022 using a 39-question closed-ended questionnaire. The study aimed to analyze the responses using SPSS to understand the perceptions and experiences of the dental professionals in different institutions.

**Results:** Among the participants of the study, about 95% of the participants encircled in 21 to 30 year old group, among them majority were females about 78% and 47% found to be undergrad students. Working experience, working hours, frequency of suffering from any of the above hazards, posture of doing RCT, were found to be statistically significant at p value significant at p value < 0.001.

**Conclusion:** In dentistry, hazards are still prevailing and this is regarded to be the most important issue for the dentist. The dentist is an important part of a country health system and their compromised health will cause a great setback for the country's people as the clinician will not be able to treat them efficiently.

**Key Words:** Dentist, hazard, occupational, practice. Behavior, attitude.

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## INTRODUCTION

Occupational Hazard is a working condition which can lead to illness or any physical deformity to a severe extent, dentists are in the limelight for health care facilities and their health is of crucial importance as they will serve the public with treatment and care of their dental health.

Dentistry is considered to be a profession with a demanding nature. Modern dentistry is thought to have fewer hazards than before.

There are risks which pose a serious threat to the dental professionals. During their daily practice, they are exposed to a number of hazards such as infections, needle stick injuries, Musculoskeletal Disorders allergies and stress etc. as years pass, the hazards cause illness to dentist.

Infections are a serious issue with their life they come in contact with this problem when working intra orally and coming in contact with blood, saliva or air droplets. During dental procedures many viruses can be transmitted which include Hepatitis B, HIV, Hepatitis C, HSV etc. The organism passes through blood or saliva if the patient has the disease. Hepatitis B concentration is at its peak in gingival sulcus. HCV is found in salivary gland. Both the hepatitis B and hepatitis C causes liver inflammation which leads to permanent liver damage. Because of this damage death occurs in severe cases as the body immunity is not up to the mark and it cannot heal or repair the damage.

Needle stick injury is a percutaneous injury piercing in character cause by needle point and is an important problem which affects dentist. The dentist keep on working under ignorance after it happens during application of local anesthesia as the dentist are not careful when capping the needle back after giving local anesthesia. This can lead to several viral infections like HBV, HCV or HIV. WHO stated that 37.6% of

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Hepatitis B, 39% of Hepatitis C and 4.4% of HIV infections are due to NEEDLE STICK INJURIES, Recapping is the cause for 25 to 30% of the needle stick injury cases. Study shown that 30% of the needle stick injury cases occur during disposal of the needle.<sup>1</sup>

Musculoskeletal Disorders is a problem which is the most frequently encountered by a dental professional (55-93%).<sup>2,3</sup> The causative factor for MSD is the working position which dentist follows in providing the treatment. Dentists perform repetitive movement of rotation and flexion of spine, elbow flexion and movement of wrist, during extraction or other procedures. Along with that prolong sitting and standing causes the dentist to suffer from these problems. The organs which are affected the most are neck, lower back, shoulder, wrist, hand and elbow. Direct vision during RCT and filling may cause lower back and cervical pain respectively to dentist (55, 38%).<sup>2,4</sup> other mechanisms which affect the dentists are ischemia of the muscle which is because of improper posture followed during the treatment. These postures make muscles stretched which became ischemic and painful with time. Hypo mobility of the joint may occur because of decreased production of synovial fluid, due to continuous muscle contraction joints become restricted and hypo mobility results. Injury to Spinal disk may also result. Unsupported sitting causes increased pressure of lumbar disk making it prone to injury.

Stress also plays a role as a hazard for the dentist work-related stress can affect the health of the practitioner. To work on the children is the main cause of stress for the clinician as the children are the most uncooperative of all the patients.<sup>5,6</sup> Shortage of time and heavy burden of work and patient load are stresses which a dentist faces in his routine practice. A study showed that 83% clinicians have regarded dentistry as "a very stressful profession".<sup>6,7</sup> Stress produces many instant reactions to the dentist such as high blood pressure, depression, fatigue etc. Dentist may encounter a stress situation if the patient is not happy with the treatment provided to him. Challenging environment, not using proper skills and low level of self-confidence render the dentist to stressful conditions as well.

Allergies are another health hazard for the dentist. Dental professionals use latex gloves and other equipment's which help in decreasing the chances of having HIV and other Blood Borne diseases. The cause for latex allergy is mainly because of the reaction to the plant having allergic proteins presents in the natural rubber. It is called as Latex type 1 allergy. Study has shown that 6.2% were test positive for type 1 allergy.<sup>6,8</sup> Prevalence is decreased from 8.5% to 4.3% because of the usage of gloves with low allergen content.<sup>6,8</sup> The gloves and mask produce a barrier against many organisms and are useful in protecting the dentists if they are not torn and are undamaged. Corn-starch

powder, present in latex gloves is the culprit which causes reaction because as they are inhalable and absorbable there is sensitization of the airways causing instant allergic reactions. Contact dermatitis may also occur as a result of extensive usage of acrylate and its products. During operative procedures restorative materials set by either visible curing light or by a chemical reaction. This will lead in an incomplete polymerization and free monomers are released causing skin disorders.

Ionizing Radiations can affect the well-being of the dentist as the rays are passed through the body causing changes within the dentist body. Ionizing radiations such as X-ray have the ability to initiate and produce harm to body cells. Malignant

And genetic changes can occur. Dentist who are careless during x-ray taking are more prone to this hazard because they prefer to hold the x-ray with their hand in the patients mouth to get a better quality of the image which leads them to radiation dermatitis on their hands.

Non Ionizing Radiation are another threat for the practicing clinician as nowadays composite and some other resins are used frequently which is affecting the eyes and other tissues because eyes are directly exposed to the curing light.<sup>6</sup> They have a particular wavelength and direct contact with this may cause eye issues and will lead to impaired vision.

## MATERIALS AND METHODS

The study population was 300. Data collection was done during the period between middle of the June 2022 until the end of July 2022. Both the male and female dentists were included in the sample. Target population was final year students, house officers, P.Gs and specialist who are working in different institutions. Close-ended questionnaire was given to the subjects. Demographic data was there which included age, sex and qualifications.

They were asked about the weekly working hours and length of time they are practicing. They were questions which ask them about the most common hazards of their profession and the frequency with which they are affected. Dental ergonomics was included in the questionnaire which asked them about their posture when performing a treatment. Data is analyzed through SPSS. Chi square test was performed.

## RESULTS

Among the participants of the study, about 95% of the participants encircled in 21 to 30 year old group, among them majority were females about 78% and 47% found to be undergrad students were (Table No. 1).

Working experience, working hours, frequency of suffering from any of the above hazards, posture of doing RCT, were found to be statistically significant at p value significant at p value < 0.001 (Table No. 2).

**Table No. 1: Demographic factors**

		Frequencies	Percentage
AGE	21-30	95.7	95.7%
	30-40	3.7	3.7%
	40-50	0.3	0.3%
	>50	0.3	0.3%
GENDER	MALE	65	21.7%
	FEMALE	234	78.0%
QUALIFICATION	UNDERGRADUATE	142	47.3
	GRADUATE	119	39.7%
	POST GRADUATE	28	9.3%
	SPECIALIST	11	3.7%

**Table No. 2: Frequencies of responses of participants**

		Frequencies	P-value
How long have you been practicing dentistry	1-5years	245 (81.7%)	0.000**
	5-10years	53 (17.7%)	
	>10 years	2 (0.7%)	
How many hours do you practice weekly	10-15hours	123 (41.0%)	0.000*
	15-20hours	80 (26.7%)	
	20-25 hours	97 (32.3%)	
As a dentist, what are the occupational hazards of your profession	musculoskeletal disorder	59(19.7%)	0.025*
	Stress	24 (8.0%)	
	Allergies	9 (3.0%)	
	needle injuries	30 (10.0%)	
	radiation exposures	15 (5.0%)	
	all of them	163 (54.3%)	
Which occupational hazard is the most common?	musculoskeletal disorder	111 (37.0%)	0.491
	Stress	32 (10.7%)	
	Allergies	4 (1.3%)	
	needle injuries	121 (40.3%)	
	radiation exposures	7 (2.3%)	
	all of them	25 (8.3%)	
How often do you suffer from these hazards	once weekly	96 (32.0%)	0.000**
	once monthly	135 (45.0%)	
	Never	69 (23.0%)	
Which of the following have you experienced in the past three months?	injured by needle prick injuries	129 (43.0%)	0.319
	allergic dermatitis	24 (8.0%)	
	got infected by air borne organisms	23 (7.7%)	
	got infected by blood borne organisms	7 (2.3%)	
	splash exposure while performing scaling	117 (39.0%)	
Which one of the following do you regularly carry out in the clinic? While performing the treatment	wear gloves	108 (36.0%)	0.947
	wear face mask	23 (7.7%)	
	wear protective clothes	8 (2.7%)	
	use eye wear	3 (1.0%)	
	all of the above	158 (52.7%)	
How do you perform dental extraction?	standing position	287 (95.7%)	0.090
	sitting position	13 (4.3%)	
How do you perform scaling?	standing position	20 (6.7%)	0.318
	sitting position	280 (93.3%)	
How do you perform root canal procedure?	standing position	25 (8.3%)	0.932
	sitting position	275 (91.7%)	
How do you perform and visualize maxillary posterior tooth during	in a direct vision	48 (16.0%)	0.000**
	in an indirect vision	252 (84.0%)	

rct?			
How do you perform fillings and crown preparation?	standing position	82 (27.3%)	0.065
	sitting position	218 (72.7%)	

## DISCUSSION

This study was conducted to assess the knowledge and the application of knowledge along with the prevention of the occupational hazards among dentists in Karachi. Occupational hazards in dentistry include a variety of problems which cause deleterious effects to dentist when they come in contact with them. The main include musculoskeletal disorder.

Musculoskeletal as the name suggest is the disorder relating to the musculoskeletal system. Heavy work load, strained posture and prolonged sitting and standing causes the dentist to suffer from this disorder. This study reveals that 37% of the dentist thinks that MSD is the most common hazard which they encounter on a monthly basis because of their posture and continuous muscle and joint movement. This finding is in accordance with a study which states that MSD is the most frequent hazard among dentist worldwide with a frequency of 32-82%.<sup>9</sup> Dentist develops MSD because of their work conditions as they have shortage of time with increased work load. Completion of the task within allocated time period is the root cause for this issue. The finding correlates with that of a study done in India which narrates that around 34-66% dentist develop MSD related to their stressful work 2. While performing RCT, major problems arise when doing RCT in maxillary molars as the vision is affected. There is a positive sign seen in this study as 84% of the dentists perform root canal treatment of posterior maxillary molar in an indirect vision. This will reduce their chance of suffering from this hazard. In a study analysis show that 29.41% subjects used indirect vision which is insignificant as the prevalence is quite low.<sup>10</sup> NSI is a common issue when practicing dentistry. This occurs during anesthetization as the dentist does not pay attention while recapping the needle back after giving local anesthetic. This study shows that 43% of the dentists do have injuries because of needle prick. This is supported by a study took place in India which reported that 47.06% subjects had an injury with a sharp instrument like needle tip within last six months.<sup>10</sup>

Because of needle prick, chances of having Hep B and HIV became greater. The mode of transmission of Hep B and HIV is through body fluids whether blood or saliva. This study reveals that 36% of the dentist thought that they have 50-90% chance of developing Hep B after a contact with needle prick injuries of Hep B positive patient. Studies show that 86.9% dentist notifies that they are at a high risk of getting infected as this study also reported that finding.

Prevention from these hazards can be done if the dentists follow proper safety protocol and made it compulsory to wear personal protective equipment. This will not only make them safe but also reduce the chances of getting infections.<sup>11-13</sup>

## CONCLUSION

In dentistry, hazards are still prevailing and this is regarded to be the most important issue for the dentist. The dentist is an important part of a country health system and their compromised health will cause a great setback for the country's people as the clinician will not be able to treat them efficiently.

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## REFERENCES

1. Hung KN G, Fong KN. Effects of telerehabilitation in occupational therapy practice: A systematic review. *Hong Kong J Occupational Therapy* 2019; 32(1):3-21.
2. Karibasappa GN, Sujatha A, Rajeshwari K. Dentists' knowledge, attitude and behavior towards the dental ergonomics. *IOSR J Dent Med Sci* 2014; 13(5):86-9.
3. Sartorio F, Vercelli S, Ferriero G, d'Angelo F, Migliario M, Franchignoni M. Work-related musculoskeletal diseases in dental professionals. 1. Prevalence and risk factors. *Giornale italiano di medicina del lavoro ed ergonomia* 2005;27(2): 165-9.
4. Ratzon NZ, Yaros T, Mizlik A, Kanner T. Musculoskeletal symptoms among dentists in relation to work posture. *Work* 2001;15(3):153-8.
5. Newton JT, Mistry K, Patel A, Patel P, Perkins M, Saeed K, et al. Stress in dental specialists: a

- comparison of six clinical dental specialties. *Primary Dental Care* 2002; (3):100-4.
6. Ayatollahi J, Ayatollahi F, Ardekani AM, Bahrololoomi R, Ayatollahi J, Ayatollahi A, et al. Occupational hazards to dental staff. *Dental Research J* 2012;9(1):2.
  7. Giri S, Bhargava A, Ahluwalia R, Nautiyal A, Tomar S, Bhalla K. Review of risk factors and control measures for occupational health hazards in a dental practice. *J Survey Fisheries Sciences* 2023;1188-95.
  8. Ding J, Li J, Qi J, Fu L. Characterization of dental dust particles and their pathogenicity to respiratory system: a narrative review. *Clinical Oral Investigations* 2023;2:1-5.
  9. Zafar R, Shakoor A, Haider MU, Muhammad U, Baloch N. The presence/absence of cusps of the Carabelli in patients presenting to the dental outdoor department in a teaching hospital in Multan, Pakistan. *Profess Med J* 2023;30(2): 281-4.
  10. Ruggiero SL, Dodson TB, Aghaloo T, Carlson ER, Ward BB, Kademani D. American Association of Oral and Maxillofacial Surgeons' Position Paper on medication-related osteonecrosis of the jaw—2022 update. *J Oral Maxillofacial Surg* 2022.
  11. Qamar MK, Shaikh BT, Afzal A. What do the dental students know about infection control? A cross-sectional study in a teaching hospital, Rawalpindi, Pakistan. *BioMed Res Int* 2020.
  12. Butt F, Thakkar H, Munguti J, Waigayu E. Infection control measures among dental health care workers. *Annals Afri Surg* 2019;16(1).
  13. Coulthard P. Dentistry and coronavirus (COVID-19)-moral decision-making. *Bri Dental J* 2020;228(7):503-5..