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Occupational Hazards among Dentists: A Descriptive Study

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Abstract

Background: This study was conducted to assess occupational hazards among the dental surgeons of Bellary city.

Methods: Descriptive cross sectional survey was conducted using a self-administered questionnaire.

Results: Study showed 92.4% (n=61) dentists faced with physical hazards, 13.6% (n=9) chemical hazards, 63.6% (n=42) Biological, 78.7% (n=52) psychological hazards. None of the dentists faced any litigation problems. Dentists with clinical experience less than 5 years had greater prevalence of physical hazard (93.3%, n=14/15).

Conclusion: The physical activities and body positions that predispose dentists to backaches. Continuing education programmes have to be conducted to overcome these hazards.

Keywords: Dentists; Biological hazard; Chemical hazard; Litigation; Occupational hazard; Physical hazard; Psychological hazard

Background

Occupational hazard refers to a risk or danger as a consequence of the nature or working conditions of a particular job [1]. It can also refer to a work, material, substance, process, or situation that predisposes, or itself causes accidents or disease, at a work place [2]. The history of occupational hazard awareness can be traced back to the 18th century when Bernadino Ramazzini, who is referred to as the father of occupational medicine, recognized the role of occupation in the dynamics of health and diseases [2].

Occupational health should aim at the promotion and maintenance of the highest degree of physical, mental, and social well being of workers in all occupations; the prevention of deviation from health among workers caused by their working conditions; their protection from risks resulting from factors adverse to health [3]. Healthy practitioners are particularly important for a successful dental practice and well-being of the patient [4].

Occupational health hazards are not uncommon, although modern dentistry has been cited as the least hazardous of all the occupations, many still challenge the status of this occupation. These are found similar among dentists and other clinical dental workers worldwide and include a wide range of risks and sometimes even legal hazards. The source of these hazards is the work environment which can include physical, chemical, biological, mechanical and social aspects [2].

Studies across the world have shown that, dentists as compared to other medical profession have reported more frequent and serious health problems [5]. These problems include increased psychological stress, musculo- skeletal disorders and allergic reactions [6]. Beside that dental professionals on daily basis are in contact with tissues, saliva and blood directly or indirectly [7]. This predisposes them to a large number of transmitted infectious diseases [8]. Awareness from professional hazards is essential as physical wellbeing has been proved to be connected to psychological comfort [9]. Dentist is facing hazards like legal and suicidal tendencies too [10]. Assessment of professional hazards among dentists is therefore an important aspect of dental profession.

Concerning prevention, the international literature focuses mostly on infection control and proper handling of potentially infected materials, owing to the high profile of dentistry regarding transmission of infection. Barrier techniques include gloves, masks, protective eye wear, high power suction and good ventilation to reduce aerosols and vapor dangers. Hypoallergenic non-latex gloves are proposed to deal with latex allergy. Lead aprons, periodic maintenance of the X-ray machine and radiation level sensors prevent radiation hazards [11,12]. Hence this study was conducted with an aim of to identify dentists' perceptions of occupational hazards and preventive measures and to determine whether preventive techniques are employed.

Methodology

Descriptive cross sectional questionnaire based survey was conducted among dentists who were working in Bellary. The sample frame consisted of registered dentists in Bellary City. In Bellary city, dental care is provided through - one Government College and Hospital as well as dental clinics in zonal, district hospitals, community health centers and primary Health Centers. Dental Care in private set up is being provided through private clinics. 66 dentists were included in the study by convenience sampling method out of 80 registered dentists in Bellary city. Informed consent was obtained from the participants.

A pilot study was conducted on oral health care personnel to assess the validity of the questionnaire who were not included in the later study. After pilot testing, the necessary changes were made accordingly. The questionnaire was divided into 2 sections. The first section included demographic questions regarding gender, age, work

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duration and acquired specialization. Section two dealt with the work conditions and experience of physical, chemical, psychosocial, litigation problems and the organization of dentist's work (number of breaks and their purpose). Questions were explained whenever necessary & they were given assurance regarding confidentiality of their responses and requested to give correct answers by completing it individually. There was no stipulated time given to complete the questionnaire and most of the participants completed it in less than 15 minutes. No incentives were promised for the participants and no effort was done to involve the non-respondents. Collected data was analyzed using Statistical Package for Social Sciences (SPSS) 15.0 version.

Results

Study comprised about 66 dentists, among them 71.2% (n=47) male and 28.8% (n=19) female dentists. 1.5% (n=1) of dentists were left handed whereas rest 98.5% (n=65) were right handed dentists. 87.8% (n=58) dentists practiced general dentistry where as only few 12.1% (n=8) practiced their specialty. 63.6% (n=42) dentists practiced with assistant near chair where as 36.4% (n=24) dentists practiced four hand dentistry (with assistant). 13.6% (n=9) dentists practicing standing dentistry. Age of dentists ranged from 25-65 yrs and experience was ranged from 2-25yrs.

Study showed 92.4% (n=61) dentists faced with physical hazards, 13.6% (n=9) chemical hazards, 63.6% (n=42) Biological, 78.7% (n=52) psychological hazards. None of the dentists faced any litigation problems.

Among physical hazard pain was common symptom in neck region 83.3% (n=55) where as glove and monomer allergy was common in chemical hazards (9%, n=6), needle/sharp instrument prick was common in biological 59% (n=39) and workload (patient) related stress (42.2%, n=28) was common in psychological hazard.

As study showed maximum dentists suffered with physical hazard mainly Musculoskeletal symptoms in the form of Pain (90.1% n=55/61), Fatigue (8.1%, n=5/61), stiffness (83.8%, n=53/61), discomfort (98.3%, n=60/61) and numbness and other neurogenic symptoms (3.2% n=2/61). All dentists who were practicing in standing posture (n=9/9, 100%) faced Musculoskeletal pain mainly in lower back, neck and knee region.

Male dentists had greater prevalence of Physical hazards in the form of musculoskeletal discomfort (97.8%, n=46/47) in the neck and shoulder region in the form of discomfort and pain while the female dentists reported symptoms greater in back (52.6% n=10/19). Among dentists with 25-35 years age group, neck pain (76.6%, n=23/30) was most prevalent, followed by wrist and hand symptoms. In 36-45 years, dentists mostly had symptoms in shoulder, (85.18%, n=23/27) followed by neck and wrist/hand pain. Among 46-56 years age, dentists had greater symptoms in neck (100%, n=9/9) was most common, followed by knee (55.3%, n=5/9) and low back (44.4%, n=4/9).

Dentists with clinical experience less than 5 years had greater prevalence of physical hazard (93.3%, n=14/15) in the form of musculoskeletal pain in neck region followed by biological hazard mainly needle stick injury. (71.4%, n=10/14). Dentists with clinical experience greater than five years had physical hazard (92.15%, n=47/51) followed by psychosocial hazards commonly the stress related with patients work load (86.2%, n=44/51). Only 9 (13.6%) dentists still using amalgam for restoration. Table 1 shows chronic psychological work related complains.

Discussion

A healthy dentist is one of the most important components in a successful dental practice. Dentists as well other dental personnel are constantly exposed to a number of specific occupational hazards. Despite of numerous technical advances in recent years, many occupational health problems still persist in modern dentistry [13]. The source of these hazards is the work environment which can include physical, chemical, biological, mechanical and social aspects [11].

In present Study, majority of dentists (92.4%) faced with physical hazards followed by psychological hazards (78.7%), Biological (63.6%) and chemical hazards (13.6%). None of the dentists faced any litigation problems might be due to lack of patient awareness or dentists are correctly following the code of ethical principles. Whereas 59.7% dentists of private institution in India had musculoskeletal disorders, 50% reported sharp injuries [14]. 46% HP dentists suffered with musculoskeletal pain, 8% reported allergic dermatitis of hands. Government employed dentists suffered more with musculoskeletal pain than private dentists in HP [15]. 78% of dentists suffered with musculoskeletal pain (Nellore) [16].

Among physical hazard pain was common symptom in neck region 83.3% (n=55) A survey of dentists in Israel reported that 83% [17], Australian 82% [18], Saudi Arabia 74% of the dentists had experienced the lower back pain and neck pain respectively [19].

Many potential toxic materials that are used in dentistry pose health hazard if appropriate precautions are not used. In present study majority of dentists faced glove and monomer allergy [chemical hazards (9%, n=6)]. Dental polymer is a contact dermatitis [20-22]. Few studies reported that asthma, conjunctival symptoms and allergic contact dermatitis among dental technicians who are exposed to acrylic compounds [23]. Allergy to latex gloves is the most frequently reported cause of dermatitis in dental personnel in various studies around the world [24-26]. Some studies demonstrated, the health service employees who had an anaphylactic reaction to the dusting powder were positive in skin tests [27]. Starch particles combined with latex protein allergens cause of dermatitis in dental personnel in various studies around the world [24-26]. Some studies demonstrated, the health service employees who had an anaphylactic reaction to the dusting powder were positive in skin tests [27]. Starch particles combined with latex protein allergens become airborne, and consequently they are inhaled, or absorbed by the skin [28,29] The intensity of aerosol effect grows with the increased use of rubber gloves [28], sufferers from latex allergy should rather use vinyl or nitril gloves, while it is advisable for severe sufferers to work in latex-free environment.

Needle/sharp instrument prick was common in biological 59% (n=39). Several studies suggest that half of the dentists report PEI due to needle stick injuries or due to drilling instruments [30,31]. Needle stick injuries occur while giving injections, when there is residual body fluid in the needle from punctured site. Needle stick and sharp injuries were found common among dental students [32], Sydney [33] and US [34].
Workload (patient) related stress (42.2%, n=28) was common in psychological hazard. Dentists have to face many stressful situations in their personal and professional lives [35]. Studies [9,36,37] reported that dentists suffer a high level of job-related stress. In our study we found that dentists were getting stressed, fatigued due to work. Similarly a study in England showed that 60% of general dental practitioners feel nervous, tense or depressed, 58% had headache, 60% reported difficulty in sleeping at night and 48% feeling tired for no apparent reason [9]. Dental societies, family and friends are also in an ideal position to provide resources and support. Active membership in local, state and national organizations can lessen the feelings of professional isolation and can provide contacts, which can help starting practitioners improve their practice environments [38].

Among dentists with 25-35 years age group, neck pain (76.6%, n=23/30) was most prevalent, followed by wrist and hand symptoms. Dentists with clinical experience less than 5 years had greater prevalence of physical hazard (93.3%, n=14/15) in the form of musculoskeletal pain in neck region followed by psychophysical hazards commonly the stress related with patients (86.2%, n=44/51), biological hazard mainly needle stick injury (71.4%, n=10/14). The finding that younger and less experiences dentists were more likely to report MSD of the neck, upper back and shoulders was found in a study of dentists in Queensland, Australia [39]. It might be due to experienced dentists are well versed in adjusting their working position and techniques.

Only 9 (13.6%) dentists still using amalgam for restoration. Storage practices for excess mercury and amalgam by dentists were shown to vary in one study [40], although such practices are not consistent with guidelines published elsewhere, where it was advised that materials be stored in a closed container under a radiographic fixer [40]. New filling materials have been developed to help reduce the dependence on mercury based substances, such as composite resins, although these may be less durable and clinically effective than mercury amalgam [41].

Conclusions and Recommendation

In present study, Bellary dentists are suffering with one or the other occupational hazard related to dentistry. Among them Physical hazard in the form of musculoskeletal pain was very common. This may be due to the fact that Ergonomics as a subject is still not that popular and has not been added in regular curriculum and Dental Council of India should take interest in ergonomic issues as these concepts are extremely important for dental offices. Continuing dental education programmes should include education regarding ergonomics, new materials, operating methods, new laws, vaccination etc. This will not only help to build ergonomic awareness among dental students but will also widen the scope of ergonomic research in the context of dental practices. Study showed that none of the dentists came across litigation hazard that shows their sincerity and faithfulness towards their practice.

References

1. SS Chopra, SS Pandey (2007) Occupational hazards among dental surgeons. MJAfi, 63: 23-25.
2. Fasunloto A, Owolade FJ (2004) Occupational hazards among clinical dental staff. J Contemp Dent Pract 5: 134-152.
3. K Park (2009) Occupational health. Park’s Text Book of preventive and social medicine. 20th Ed. Jabalpur India: M/S Banarsidas Bhanot Publishers, 708-723.
4. Leggat PA, Chowanadisai S, Kedjarune U, Kukiattraikon B, Yapong B (2001) Health of dentists in Southern Thailand. Int Dent J, 51, 348-52.
5. Brooks SL, Rowe NH, Drach JC, Shipman C Jr, Young SK (1981) Prevalence of herpes simplex virus disease in a professional population. J Am Dent Assoc 102: 31-34.
6. Prashant B, Firoza S, Jaiswal JN, Bansal A (2011) Occupational hazards among dentists: A review of literature. Journal of International medical and dental research, 4: 87-93.
7. Hovius M (1992) Disinfection and sterilisation: the duties and responsibilities of dentists and dental hygienists. Int Dent J 42: 241-244.
8. Castiglia P, Lizuori G, Montagna MT, Napoli C, Pasqualetta C, et al. (2008) Italian multicenter study on infection hazards during dental practice: control of environmental microbial contamination in public dental surgeries. BMC Public Health 8: 187.
9. Myers HL, Myers LB (2004) ‘It's difficult being a dentist’: stress and health in the general dental practitioner. Br Dent J 197: 89-93.
10. Naheeda SM, Shaik MA (2013) Occupational hazards in Modern Dentistry. International journal of experimental dental sciences, 2013, 2(1), 33-40.
11. Al-Khlibat IA, Ishtayeh M, Barghouh Y, Akkawi B (2006) Dentist’s perceptions of occupational hazards and preventive measures in East Jerusalem. East Mediterr Health J 12: 153-160.
12. Kumar RS, Manish GN, Ferreira AM (2000) Occupational hazards among dental surgeons. Indian Journal of occupational and environmental medicine, 4: 139-141.
13. Leggat PA, Kedjarune U, Smith DR (2007) Occupational health problems in modern dentistry: a review. Ind Health 45: 611-621.
14. Tadakamadla J, Kumar S, Swapna LA, Reddy S. (2012) Occupational hazards and preventive practices among students and faculty at a private dental institution in India. Stomatologija, Baltic Dental and Maxillofacial Journal, 14: 28-32.
15. Bhardwaj VK, Sharma KR, Fotedar S, Jhingta P, Vaid S, et al. (2013) Occupational health problems among government dentists in Himachal Pradesh- India. J Cranio Max Dis 2: 16-21.
16. Dhanya M, Nusrath F, Shanthi M. (2013) Musculoskeletal Disorders among Dental Practitioners: Does It Affect Practice? Epidemiology Research International, 1-6.
17. Ratzon NZ, Yaros T, Mitzik A, Kanner T (2000) Musculoskeletal symptoms among dentists in relation to work posture. Work 15: 153-158.
18. Marshall ED, Duncombe LM, Robinson RQ, Kilbreathe SL,1997Musculoskeletal symptoms in New South Wales dentists. Aust Dent J 42: 240-246.
19. Al Wazzan KA, Almas K, A Shehri SE, Al-Ghahtani MQ (2001) Back & neck problems among dentists and dental auxiliaries. J Contemp Dent Pract 2: 17-30.
20. Shugars D, Miller D, Williams D, Fishburne C, Strickland D (1987) Musculoskeletal pain among general dentists. Gen Dent 35: 272-276.
21. Rustermeyer T, de Groot J, von Blomberg BM, Frosch PJ, Schaper RJ (1998) Cross-reactivity patterns of contact-sensitizing methylcyclohexanones. Toxicol Appl Pharmacol 148: 83-90.
22. Kanerva L, Lestander T, Jolanki R, Alanko K (2000) False-negative patch test reactions due to a lower concentration of patch test substance than declared. Contact Dermatitis 42: 289-291.
23. Mikov I, Turkaj I, Jovanović M (2011) Occupational contact allergic dermatitis in dentistry. Vojnosanit Pregl 68: 523-525.
24. Katelaris CH, Widmer RP, Lazarus RM (1996) Prevalence of latex allergy in a dental school. Med J Aust 164: 711-714.
25. Chowanadisai S, Leggat PA, Kukiattraikon B, Yapong B, Kedjarune U. (2000) Occupational health problems of dentists in Southern Thailand. Int Dent J, 50: 36-40.
26. Messite J. Ch.1. Occupational safety and health in the dental workplace. In:Occupational hazards in dentistry, Year book medical publishers, Chicago, USA, 1-19.
27. Rankin KV, Jones DL, Rees TD (1993) Latex glove reactions found in a dental school. J Am Dent Assoc 124: 67-71.
28. Verrusio AC, Neidle EA, Nash KD, Silverman S Jr, Horowitz AM, et al. (1989) The dentist and infectious diseases: a national survey of attitudes and behavior. J Am Dent Assoc 118: 553-562.
29. Tarlo SM, Sussman G, Contala A, Swanson MC (1994) Control of airborne latex by use of powder-free latex gloves. J Allergy Clin Immunol 93: 985-989.
30. Seggev JS, Mawhinney TP, Yunginger JW, Braun SR (1990) Anaphylaxis due to cornstarch surgical glove powder. Ann Allergy 65: 152-155.
31. Porter K, Scully C, Theyer Y, Porter S (1990) Occupational injuries to dental personnel. J Dent 18: 258-262.
32. McDonald RJ, Walsh LJ, Savage NW (1997) Analysis of workplace injuries in a dental school environment. Aust Dent J 42: 109-113.
33. deVries B, Cossart YE (1994) Needlestick injury in medical students. Med J Aust 160: 398-400.
34. Ramos-Gomez F, Ellison J, Greenspan D, Bird W, Lowe S, et al. (1997) Accidental exposures to blood and body fluids among health care workers in dental teaching clinics: a prospective study. J Am Dent Assoc 128: 1253-1261.
35. Grace E (1996) Dentistry, stress, and substance abuse. MSDA J 39: 77-79.
36. Baran RB (2005) Myers Briggs Type Indicator, burnout, and satisfaction in Illinois dentists. Gen Dent, 53: 228-234.
37. Gilmore J, Stewardson DA, Shugars DA, Burke FJ (2005) An assessment of career satisfaction among a group of general dental practitioners in Staffordshire. Br Dent J 198: 701-704, discussion 693.
38. Wasoski RL (1995) Stress, professional burnout and dentistry. J Okla Dent Assoc 86: 28-30.
39. Leggat PA, Smith DR (2006) Prevalence of percutaneous exposure incidents amongst dentists in Queensland. Aust Dent J 51: 158-161.
40. Yengopal V, Naidoo S, Chikte UM (2001) Infection control among dentists in private practice in Durban. SADJ 56: 580-584.
41. WHO consensus statement on dental amalgam. (1997) FDI World Dental Federation. FDI World 6: 9.