

Occupational Hazards among Dentists: A Descriptive Study

Reddy V^{1*}, Bennadi D², Satish G³ and Kura U⁴

¹Narayana Medical College, Karnataka, India

²Sree Siddhartha Dental College and Hospital, Karnataka, India

³Darshan Dental College, Karnataka, India

⁴Government Dental College and Research Institute, Karnataka, India

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-administrated 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 the all the occupations, many risks 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

***Corresponding author:** Dr Veera Reddy, Senior Dental Health Officer, General Hospital, Molakalmuru, Chitradurga, Karnataka, India, Tel: 9448331865; E-mail: drveera.reddy75@gmail.com

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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 28.7% (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 (55.5%, 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 psychological 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.

Chronic psychological work related complains	Responses
Occupational hazards affected your general health	94.2%(n=49/52)
Long working hours affect general health	69.2%(n=36/52)
Much stress because of work	50% (n=26/52)
Nervousness & anxiety after work	13.46%(n=7/52)
Fatigue	59.6%(n=31/52)
Tension before work	5.7% (n=3/52)
Job related awakenings at night	0%(n=0/52)

Table 1: Chronic psychological work related complains among Bellary dentists.

Discussion

A healthy dentist is one of the most important components in a successful dental practice. Dentists as well as other dental personnels 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 acrylate 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 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 often 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 psychological 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 experienced 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 been not 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.

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