Innovare Academic Sciences

International Journal of Pharmacy and Pharmaceutical Sciences

ISSN- 0975-1491 Vol 7, Issue 10, 2015

Short Communication

PREVENTIVE AND CURATIVE MEASURES ADOPTED BY DENTISTS TO COMBAT OCCUPATIONAL HAZARDS–A CROSS SECTIONAL STUDY

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Received: 09 Jul 2015 Revised and Accepted: 14 Aug 2015

ABSTRACT

Objectives: To assess various measures undertaken to overcome the occupational hazards among dentists in Bellary.

Methods: This was a cross sectional questionnaire study.

Results: Only nine dentists were still doing amalgam restorations and were properly disposing and handling it. Dentists were stretching their arms and improving their posture during and in between the treatment procedures. Hardly four dentists were using medication to relieve pain mainly for backache and headache. 100% (n=66) were wearing masks and most of them following standards for prevention of cross infection like wearing gloves, vaccination etc.

Conclusion: Study showed that most of the dentists in Bellary were well aware of the hazards they can come across in their field. Most of them were taking necessary steps to combat the problems in the form of physical exercise, meditation, vaccination, usage of preventive barriers as well as following ethical principles

Keywords: Dentist, Ergonomics, Occupational hazards, Prevention, Work Related Musculosketal Disorders (WRMSDs)

Dentistry is one of the professions, which needs the high degree of concentration, precision and patience. Dentists require good visual acuity, hearing, depth perception, psychomotor skills, manual dexterity and ability to maintain correct occupational postures over long periods. Dentistry is considered by the practitioners and most of the public as being extremely hazardous. The hazards include the following: [1, 2];

- **Physical hazards:** These include musculoskeletal complications which have direct relation to dental procedures, like postural situations that may increase the risk of twisting and contorting the body, varicose veins, cervicobrachial disorders, carpel tunnel syndrome etc
- **Chemical hazards**: Dental practice involves use of various chemicals as a part of dental materials, detergents, lubricating oils, solvents, and X-ray processing chemicals, latex gloves, etc. These could lead to various allergic reactions. High levels of mercury vapour in air can lead to biological and neurological problems. Use of anaesthetic gases over a long time may be hazardous.
- **Biological hazards:** Needle stick injuries and other sharp objects, spatter, and aerosols can transmit viral, bacterial infections like hepatitis B, C, an acquired immunodeficiency syndrome, syphilis and tuberculosis.
- **Psychological hazards:** Stress is one of the leading psychological conditions that occur in the dental profession. Stress might be related to workload, patient appointments etc.

Litigation hazard

Dentistry involves many invasive procedures and dentists should be very careful while treating patients. Dentists have to follow certain rules and regulations with respect to patients, colleagues and society, failing which they are liable to face legal issues.

Now a days, dentists are overcoming most of the hazards through measures like correct working positions, Ergonomics, employing proper ventilation, vaccination, yoga etc. The word 'Ergonomics' was derived from the Greek words: 'Ergon' which means to work; and 'nomos' meaning natural laws. [3] These natural laws have been incorporated in the instruments, dental chairs and operator stools as well as other machines which the dentists use.

Hence the present study has been undertaken to assess various measures undertaken by dentists to overcome the occupational hazards among dentists in Bellary.

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. Sixty six dentists were included in the study by convenience sampling method. Informed consent was obtained from the participants. The questionnaire was divided into two sections. The first section included demographic questions regarding gender, age, work duration and acquired specialization; section two on preventive measures used by the dentists against occupational hazards.

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 fifteen minutes. No incentives were promised for the participants and no effort was made to involve the non-respondents.

Collected data were analyzed using Statistical Package for Social Sciences (SPSS) 15.0 version. Responses were presented in the form of frequencies and percentages.

Demographic details

Study comprised about 66 dentists, among them 71.2% (n= 47) were male and 28.7% (n=19) female dentists. 1.5% (n=1) of dentists were left handed whereas 98.5% (n= 65) were right handed. 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 37.8% (n=25) dentists practiced four hand dentistry (with assistant). 13.6% (n=9) dentists and were

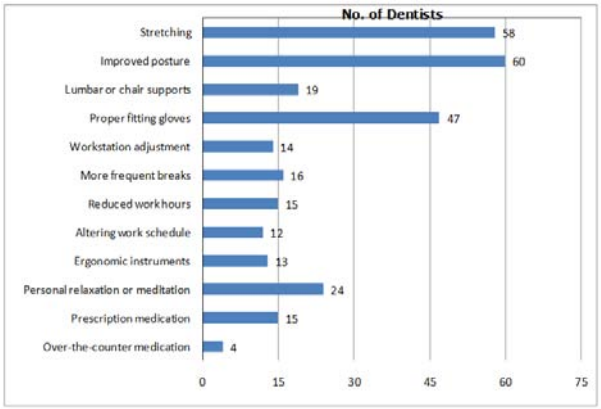
practicing standing dentistry. Age of dentists ranged from 25-65yrs and experience ranging from 2-25yrs.

Table 1 shows the measures used by dentists to prevent cross infections where 100% (n=66) were wearing mouth masks while treating the patients.

Table 1: Distribution of dentists according to measures followed against cross infection or occupational hazards

Measures	Responses
1. Barrier techniques like	
Use of facemask	100% (n=66)
Wear gloves routinely	98.4%(n=65)
Use of goggles (protective eye wear)	0.90%(n=6)
Hand washing before gloving and after degloving	100%(n=66)
Change of gloves between patients	98.4% (n=65)
Wash hands with bactericidal agent	96.9%(n=64)
2. Proper waste disposal	96.9%(n=64)
3. Ensure instrument sterilization	96.9%(n=64)
4. Hepatitis B vaccine	98.4% (n=65)
5. Full medical history of patients	100%(n=66)
6. Adherence to ethical conduct in practice	98.4% (n=65)

Graph 1 show that most of the dentists were stretching their arms and improving their posture during and in between the treatment procedures. Hardly four dentists were using medication to relieve pain mainly for backache and headache.



Graph 1: Measures taken by dentists to prevent physical hazard

Table 2 shows various measures to avoid chemical hazards. Only nine dentists were still using amalgam restorations and were properly disposing and handling it.

Table 2: Distribution of dentists according to measures followed during mercury handling

Measures	Responses
Store amalgam in sealed containers	100%(n=9)
Confine use to impervious surface	100%(n=9)
Clean up spilled amalgam	100%(n=9)
Use tightly closed capsules	0
Use no touch technique	100%(n=9)
Work in well ventilated space	100%(n=9)
Use goggles, water spray and suction	77.7%(n=7)
Periodic check of clinic for amalgam vapor	22.2%(n=2)
Amalgam blood level check	22.2%(n=2)

All the dentists were registered in their particular state and all were renewing their registration on a regular basis. They were also attending continuing education programmes related to hazards and its upcoming preventive measures.

A healthy dentist is one of the most important components in a successful dental practice. Dentists as well as other dental personnel are constantly exposed to a number of specific occupational hazards [1, 2]. Despite numerous technical advances in recent years, many occupational health problems still persist in modern dentistry [4]. The source of these hazards is the work environment which includes physical, chemical, biological, mechanical and social aspects [1, 2, 5]. However, once identified and recognized as risk, new guidelines, precautions and protocols are often rapidly instituted to greatly reduce or even eliminate the occupational hazard [4].

Most of the staff appeared to have adopted the guidelines proposed by the Occupational Safety and Health Administration (OSHA). [6, 7] Very few members of the clinical staff use protective eyewear while attending to patients. The use of protective eyewear is an important means of preventing occupational injury related to the use of dental curing lights and high-speed rotary instruments. Injury from splatters and projectiles including calculus and flying debris during cavity preparation is a common cause of damage to the eyes, and the use of protective eyewear should be emphasized [6-8].

Under a biopsychosocial framework, [9, 10] physical therapy has been shown to be the treatment of choice for work related musculoskeletal impairments mainly for work related back pain, muscle catch etc. This framework is helpful to provide education on acceptable and unacceptable work postures and their biomechanics, ergonomic advice and interventions. It also suggests workplace exercises and performing stretching to correct muscle imbalances. Earlier report witnessed increased use of physical therapy services for management of work related musculoskeletal disorders (WRMSDs). In our dentists' population, they were using physical therapy which may be due to their awareness.

Only 9 (13.6%) dentists were still doing amalgam for restorations. Storage practices for excess mercury and amalgam by dentists were shown to vary in one study, [11] 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 [12]. 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 [13].

All dental personnel should be alerted of the risk of mercury poisoning and should be familiarized with the preventive measures provided by the FDI against mercurial poisoning. It is advisable to conduct regular mercury vapor level assessments in clinical settings, receive episodic individual amalgam blood level tests, and use protective eyewear, water spray and high vacuum suction during the removal of old amalgam restorations.

Study showed that most of the dentists in Bellary were well aware of the hazards they can come across in their field. Most of them were taking the necessary steps to combat the problems in the form of physical exercise, meditation, vaccination, usage of preventive barriers as well as following ethical principles. In recent times, the use of magnifying loops has been playing a major role in maintaining the correct posture during dental procedures. Attending workshops and continuing éducation programmes have helped them to recognize and overcome their problems. Science is developing at an exponential rate and hence dentists have been suggested to attend the conferences, seminars, workshops and continuing health education programmes to upgrade themselves and prevent the future heralds to them as well as to the society.

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