Occupational Hazards among Dental Surgeons

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Abstract

Background: This study was conducted to assess and increase the level of awareness of occupational hazards among the dental surgeons of Indian Navy.

Methods: The data was obtained using a self-administrated questionnaire from 17 serving dental surgeons that included questions on personal data, 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 at workplace and had been vaccinated against Hepatitis B infection. 82.3% had regular exposure to dental amalgam. Backache was the commonest hazard in 70.59% members of the study.

Conclusion: This study shows that although there appears to be a high level of awareness of exposure to occupational hazards among the dental surgeons of the Indian Navy, the practical steps to prevent them needs to be reinforced. Increased awareness must be created about the dangers of chronic mercury poisoning, its prevention, the importance of regular monitoring of blood mercury levels and the mercury vapour levels in the clinic.

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Key Words: Occupational hazards; Dental surgeons; Mercury poisoning

Introduction

Occupational hazard refers to a risk or danger as a consequence of the nature or working conditions of a particular job. Dental surgeons are exposed to a number of occupational hazards in their professional work. Close contact with patients saliva and blood exposes the dentist to occupational biohazards, mainly of the contagious nature. Strained posture at work leads to diseases of the musculoskeletal and peripheral nervous systems. The noise of suction, saliva ejectors, turbines, engines, amalgamators and compressors causes impaired hearing. A limited surgical area with artificial lighting results in eyestrain, conjunctivitis, blurred vision or short-sightedness. Many clinical situations may be a source of stress for the dental practitioner. Dental material and disinfectants cause allergies. The adverse effects of mercury and nitrous oxide are known but those of visible blue light are not so well known.

Material and Methods

The study population consisted of dental surgeons posted in naval establishments in India. An original list of 18 participants was created for the study of which 17 responded, giving a response rate of 94.44%.

The data was obtained using a self-administrated questionnaire that included questions on personal data, awareness of occupational hazards, safety measures

practiced and the experience of occupational hazard while in practice. The study aimed at assessing and increasing the level of awareness of occupational hazards among the dental surgeons of Indian Navy.

Results

All respondents were aware of occupational hazards at workplace and had been vaccinated against Hepatitis B infection. Eight (47.06%) experienced an injury from a sharp instrument over the past six months, 14 (82.3%) had regular exposure to dental amalgam while none regularly took intra oral periapical radiographs. 70.59% did not always use indirect vision while working on maxillary teeth (Table 1).

The age distribution of the dental surgeons ranged from 27 to 48 years with the age group from 31-40 years having the highest frequency (88.23%). Fourteen males and three females responded to the study. The majority were in dental practice for last 11- 15 years (Fig. 1).

Wearing of facemasks and gloves were the cross infection control mechanisms routinely employed with wearing of protective eyewear being least employed (Fig. 2). Backache was the commonest hazard in 70.59%, followed by occasional anxiety and wrist ache. Only one suffered from allergic dermatitis (Fig. 3).

All worked in well-ventilated rooms using water spray and suction while removing amalgam and restoration. None had periodic estimation of blood mercury levels or measurement of clinical area for levels of mercury vapour (Fig. 4).

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Table 1

Responses to the questionnaire

Questions	Number	Percentage
Previous attendance to workshop on occupational hazards		
Yes	05	29.41
No	12	70.59
Sharp injury over past six months		
Yes	08	47.06
No	09	52.94
Vaccination against hepatitis		
Yes	17	100
No	00	00
Regular contact with amalgam		
Yes	14	82.35
No	03	17.65
Take all radiographs		
Yes	00	00
No	17	100
Hold IOPA film in patients mouth while taking radiograph		
Yes	11	64.71
No	06	35.29
Do you always use indirect vision while treating maxillary teeth		
Yes	05	29.41
No	12	70.59

Discussion

The age distribution 27 to 48 years was in keeping with the relatively young profile of the armed force personnel.

Only 29.41% previously attended a workshop on occupational hazards. The maintenance of personal health needs to be constantly emphasised so workers understand any possible negative health implications of

Fig. 1 : Number of years of dental practice

Fig. 2 : Prevention of cross infection methods routinely employed

their jobs and how to minimize them [1].

47.06% respondents had a sharp injury in the dental clinic over the past six months. Needle stick injuries and cuts from sharp objects and instruments (percutaneous injuries) have been reported in 1-15% of surgical procedures, mostly associated with suturing [2].

Eye injuries may occur from projectiles such as bits of calculus during scaling procedures and splatters from body fluids (bacterial and viral aerosols) while using high-speed hand pieces. Another potential source of eye injury is the intense dental curing light [3]. Only one respondent regularly wore protective eyewear.

Backache was the commonest ailment found in the present study. Only 29.41% respondents used indirect vision while treating maxillary teeth, thus the remaining dental surgeons were putting extra strain on their neck and back, predisposing them to various musculoskeletal ailments.

The dental surgeon assume a strained posture while working (both while standing and sitting close to a patient who remains in a sitting or lying position), which causes stress on the spine and limbs. The stress negatively affects the musculoskeletal system and the peripheral nervous system especially the peripheral nerves of the upper limb and neck nerve roots. Back pain syndromes diagnosed in dentists originate from spine degeneration in different phases. The posture of the dentist at work, with the bent and twisted neck, abducted arm, and

Fig. 3 : Occupational Hazards experienced by Dental Staff

Fig. 4 : Safety measures adopted while handling amalgam

repetitive movements of the hand cause the neck syndrome and pain within the shoulder and upper extremities. The dentist makes constant monotonous movements, which stress the wrist and elbow [4].

Hazardous chemical agents used in clinical dentistry include mercury, powdered natural rubber latex and disinfectants. By far the most important and dangerous of these is mercury [5]. Its use in dental amalgam has the potential for exposure of a dental practitioner to mercurial vapour, which can be absorbed via the skin and lungs. The active component in mercurial vapour has a particular affinity for brain tissue. Mercury poisoning can be characterized by tumours of the face, arms or legs and may be associated with progressive, tremulous illegible handwriting with slurred speech. The exposure risks for mercury can be minimized by careful handling. The subjects in the present study followed good mercury hygiene. All used mechanical amalgamators and there was no direct physical contact. None had blood levels for mercury checked or vapour levels of mercury in their dental surgeries tested.

All respondents were immunized against Hepatitis B. The cross infection control mechanisms employed by the majority are facemasks and hand washing before and after gloving. All members of the dental team are at risk of exposure to hepatitis B virus (HBV), human immunodeficiency virus (HIV) and other communicable infections.

Stress situations form an inherent part of a dentist's everyday work. In most cases, the knowledge of psychology, good communication skills and establishment of a proper relation between dentist and patient are

crucial for the treatment to be successful. High patient loads or un-cooperative patients, especially those of extremes of age were major causes for increased stress at work in the present study.

In conclusion, this study showed that although there appears to be an awareness of exposure to occupational hazards among the dental surgeons of Indian Navy, the practical steps to prevent occupational hazards among them need to be reinforced. Increased awareness needs to be created to the danger of chronic mercury poisoning and its prevention and also regular monitoring of blood levels for mercury and air level of their clinic for mercury vapour. Backache was the most common form of occupational hazard. There is a need to clarify the procedures and postures predisposing to backache and to improve training to alleviate musculoskeletal health problems. It is recommended that regular workshops and seminars on occupational hazards be organized for all dental clinicians periodically.

Conflicts of Interest

None identified

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