

# KNOWLEDGE ABOUT OCCUPATIONAL HAZARDS AMONG THE DENTISTS OF WESTERN U.P, INDIA

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## Abstract

**Background:** Present study was conducted to assess the knowledge about occupational hazards among the dentists of Western U.P.

**Materials & Method:** A multi-regional cross-sectional study was conducted in eight cities of western Uttar Pradesh (Moradabad, Kanpur, Ghaziabad, Bareilly, Noida, Lucknow, Meerut and Mathura) over a 4 months period. A self-administrated questionnaire was used to collect data from 1000 dental surgeons. Questionnaire included questions on demographic profile, knowledge of occupational hazards, protection measures practiced and incident of occupational hazard in practice.

**Results:** All the participants had knowledge of the occupational hazards at clinic and most of them had been immunized against Hepatitis B infection. Regular contact to dental amalgam had been seen in 64% dentists. The most common hazard seen in dental clinic was Backache .

**Conclusion:** Though there is a high level of knowledge about occupational hazards among dentists of Western Uttar Pradesh, the useful methods to stop them is needed to be reinforced. Increased wakefulness have to be created among dentists about the dangers of constant mercury poisoning, its prevention, the significance of monitoring of blood mercury levels and the level of mercury vapour in the clinic.

**Key Words:** Occupational hazards, Dentists, Amalgam.

## Introduction

Occupational hazard refers to a risk or danger as a consequence of the nature or working conditions of a particular job.<sup>1</sup> It can also refer to a work material, substance, situation or process that predisposes, or itself causes accidents or disease. Although modern dentistry has been cited as the least hazardous of the all the occupations, still many risks challenge the status of this occupation.<sup>2</sup> The history of occupational hazard awareness can be traced back to the 18th century when Bernardino Ramazzini, who is referred to as the 'Father of Occupational Medicine', first recognized the role of occupation in the dynamics of health and diseases.<sup>3</sup>

These occupational hazards can be divided in to five types: chemical, physical , biological, musculoskeletal and psychological hazards .<sup>4</sup>

Chemical hazards include toxicity from dental materials like mercury, toxicity from sterilizing agents like alcohol, toxicity from anesthetic gases and allergic reactions like dermatitis.<sup>5</sup>

Physical Hazards include ionizing and non ionizing radiation injuries due to X rays, noise induced hearing loss and burns and scalds from autoclaves due to heat.<sup>5</sup> Eyes may be affected with conjunctivitis and keratitis while using dental curing light, computer and lasers.<sup>4</sup> The biological hazards are constituted by infectious agents of human origin and include viruses, bacteria and fungi. A dentist can become infected either directly or indirectly, i.e., by a cut or wound, needle stick injury, aerosols of saliva, gingival fluid and natural organic dust particles.<sup>4</sup> In Psychological hazards Stress is the leading psychological condition that occurs in the dental profession.<sup>6</sup>

Coping with difficult or uncooperative patients, work overload, constant drive for technical perfection, skills underuse, low self-esteem and challenging environment are important factors contributing to stress among dentist. Other problems are professional burnout and anxiety disorder and depression.<sup>4</sup>

Musculoskeletal disorders: At work, the dentist assumes a strained posture (both while standing and sitting close to a patient who remains in a sitting or lying position), which causes an overstress of the spine and limbs. Back pain syndromes diagnosed in dental workers originate from spine degeneration in its different phases. Neck discopathy causes cervical nerve pains or cervico-acromial pains, which are particularly common among dental practitioners.<sup>7</sup> Assessment of the occupational hazards experienced among dentist population would help in motivating and planning preventive strategies so as to increase the efficiency and productivity of these health care practitioners.<sup>8</sup> Hence this study was conducted to assess and increase the level of awareness of occupational hazards among the dental surgeons of Western, U.P. , India.

## Materials & Method

A multi-regional cross-sectional study was conducted in eight cities of western Uttar Pradesh (Moradabad, Kanpur, Ghaziabad, Bareilly, Noida, Lucknow, Meerut and Mathura) over a 4 months period. ( beginning of January 2015 till end of April 2015)

The study population consisted of 1000 dental surgeons (both BDS and MDS) in eight cities of U.P., India. A list

of participants was obtained from IDA Uttar Pradesh branch for the study out of which only 1200 were taken but ultimately only 1000 responded.

Ethical clearance was obtained by Institutional review board of Teerthanker Mahaveer University to conduct the study.

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 purpose of the study was to assess the level of knowledge of occupational hazards among the dental surgeons of Western Uttar Pradesh, India.

### Results

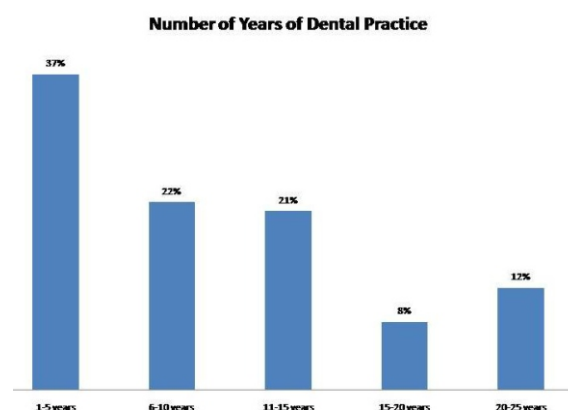
Only 12 respondents had attended workshops on occupational hazards. 930 (93%) respondents were vaccinated against Hepatitis B infection. 450 (45%) dentist had experienced an injury from a sharp instrument over the past six months, regular exposure to dental amalgam was seen in 690 (69%) whereas no dentist regularly took radiographs of the patients. Indirect vision while working on maxillary teeth was used by 310 (31%) dentists. (Table 1)

Distribution of the age among dental surgeons ranged from 24 to 52 years. Highest frequency was in the age group from 31-40 years (78%). Most of them were in dental practice for last 1- 5 years. (Graph 1)

Questions	Number	Percentage
Previous attendance to workshop on occupational hazards		
Yes	160	16
No	840	84
Sharp injury over past six months		
Yes	450	45
No	220	55
Vaccination against hepatitis		
Yes	930	93
No	70	7
Regular contact with amalgam		
Yes	690	69
No	310	31
Take all radiographs		
Yes	0	0
No	1000	100
Hold IOPA film in patients mouth while taking radiograph		
Yes	850	85
No	150	15
Do you always use indirect vision while treating maxillary teeth		
Yes	310	31
No	690	69

Table 1: Responses to the questionnaire

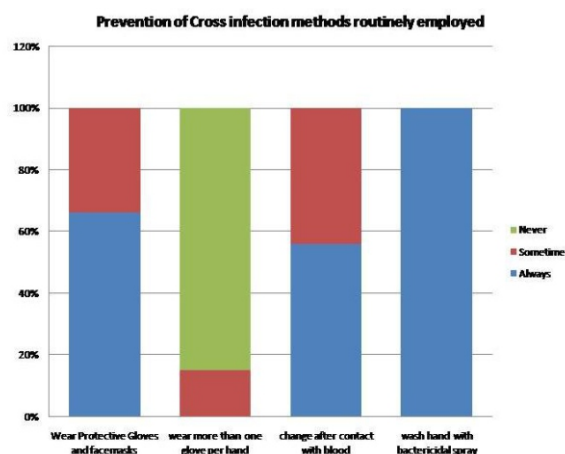
100% of them used bactericidal spray for washing their hands. 66% of the respondents always wears facemasks and gloves for the control of the cross infection. 56% of



Graph 1: Number of Years of Dental Practice

the respondents change gloves after contamination with blood (Graph 2).

541 respondents stores amalgam in sealed containers. All respondents clean spilled amalgam and worked in well-ventilated rooms. 935 respondents use tightly closed capsules while 180 use no touch technique.



Graph 2: Prevention of Cross infection methods routinely employed

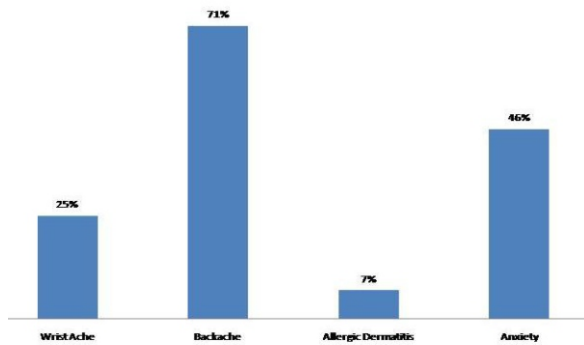
71% of the respondents suffered from Backache, followed by anxiety (46%) and wrist ache (25%). Allergic dermatitis was seen in 7 % of respondents (Graph 3).

No respondent had gone for blood estimation for amalgam level while only 11 respondents were gone for periodic estimation of clinic amalgam vapours. (Graph 4)

### Discussion

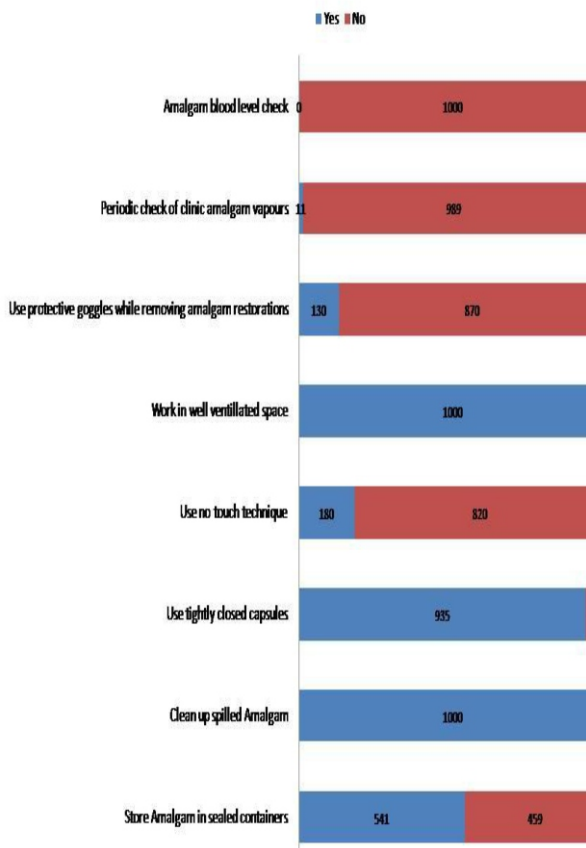
Out of 1000 respondents only 160 (16%) had previously attended an occupational hazards workshop which is much less than the study conducted by Chopra SS and Pandey SS (29.41%). To make dentists aware of any

**Occupational Hazards experienced by Dental Staff**



Graph 3: Occupational Hazards experienced by Dental Staff

**Safety measures adopted while handling amalgam**



Graph 4: Safety measures adopted while handling amalgam

potential harmful health implications of their work and the way to reduce them they should be constantly emphasised to maintain their personal health. 145% of the dentists suffered from injury due to some sharp objects in the present study which is in accordance with the study conducted by Chopra SS and Pandey SS (47.06%) and is much higher than the study conducted by Hauman CHJ (15%). Cuts from sharp objects and

instruments and needle stick injuries have been reported during surgical procedures, which are predominantly connected with suturing.<sup>9</sup> Maximum number of Eye injuries occurs from aerosols while using high speed handpieces and particles such as bits of calculus during scaling procedures. Strong curing light is also a potential source of eye injury.<sup>10</sup> Maximum number of respondents suffered from Backache (71%) in the present study which is in accordance with previous studies. In the present study only 31% works in indirect vision while working on maxillary teeth which is in accordance with previous studies. Rest of 69% dentists uses direct vision to work on maxillary teeth that leads to extra strain on neck and back. This extraneous strain leads to a range of musculoskeletal ailments.

Due to the strained posture of dentists while working there is continuous stress on the spine and limbs. This stress has negative impact on the peripheral nervous system (mainly the neck nerve roots and peripheral nerves of the upper limb) and musculoskeletal system. Spine degeneration in different phases leads to back pain syndrome in dental surgeons. Pain in the upper extremities and shoulder and the neck syndrome was caused due to incorrect posture of the dentists that includes abducted arm, bent and twisted neck, and rhythmic actions of the hand. Stress in the wrist and elbow is caused by steady and repetitive movements of dentist.<sup>11</sup> The physical position of the dentist has to be relaxed while they work otherwise it can cause musculoskeletal distress.<sup>12,13,14</sup> Dentist's practice can be disrupted by the frequent illness due to these disorders.

In the present study the entire respondent's works in the well ventilated space. 69% of the respondents use tightly closed capsules and there was no direct physical contact. No respondents had undergone blood amalgam level check and none of them go for periodic check of their clinic for amalgam vapours. Powdered natural rubber latex and mercury are the hazardous chemical agents used by dentists in their practice. But mercury is the most dangerous among them.<sup>15</sup> Vapours of mercury which comes from amalgam can be absorbed in the skin and lungs of the dentists. Brain tissues are most likely to get affected by mercurial vapours. Tumours of the face, legs or arms are associated with mercury poisoning. Progressive, trembling unreadable handwriting with slurred speech are also the consequences of mercury poisoning. Careful handling of mercury reduces the risk of mercury poisoning.

Maximum numbers of respondents (930) were vaccinated against Hepatitis B. Majority of the dentist's uses gloves & facemasks and 100% of the respondents wash their hands before and after procedure to control cross infection. Dentists are prone to Communicable infections like human immunodeficiency virus (HIV) and hepatitis B virus (HBV).

Stress is an innate element of everyday work of dentist. The essential components for the treatment to be successful by the dentist are their good communication

skills, knowledge of psychology, and establishing good relation with patient.

### Conclusion

In conclusion, this study showed that although there appears to be an awareness of exposure to occupational hazards among the dental surgeons of Western Uttar Pradesh. 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. Strategies for improving mental health and reducing the effects of occupational hazards should be developed. It is recommended that regular workshops and seminars on occupational hazards be organized for all dental clinicians periodically. Musculoskeletal disorder 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.

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