

Dental Workplace Risks: A Review

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ABSTRACT

A variety of occupational dangers can affect dental staff members and their patients. These lead to the development of a number of diseases unique to the occupation that manifest over time and worsen. They frequently lead to diseases and disease clusters. Hearing loss is brought on by noise from suction, saliva ejectors, turbines, engines, amalgamators, compressors, etc. Allergies and skin conditions are brought on by the drugs, supplies, and cleaners used in dental procedures. The osteoarticular system is unstable due to tense posture at work, which also overburdens the spine. Certain muscle and joint groups are also impacted by the overburdening. Diseases of the peripheral nerve system and the musculoskeletal system result from this. The respiratory, cardiovascular, and digestive systems are also affected, as well. The dentist is exposed to occupational biohazards, primarily those that are contagious, due to close contact with the patients, their saliva, and blood. Visible blue light's harmful effects are less well documented than those of mercury and nitrous oxide. The dental professional may feel stressed out in a variety of clinical scenarios. Additionally, a small operating room and its artificial illumination might cause eye strain, conjunctivitis, impaired vision, or shortsightedness. As a result, the present paper analyzes a few particular occupational dangers by drawing on the literature.

Key words: hazards, occupation, dentistry.

INTRODUCTION

Dental professionals are exposed to a number of occupational risks while performing their professional duties, which can result in the development of a number of disorders that worsen with time. [1]

Bernadino Ramazzini, known as the father of occupational medicine, recognized the function of medicine in the dynamics of health and disease in the 18th century, which is when occupational hazard awareness first became a recognized phenomenon. It can also be used to describe a task, item, activity, circumstance, or method that raises the risk of an accident or illness occurring at work (MC Asuzu). Both dental staff members and their patients are vulnerable to a variety of workplace dangers.

These lead to the development of a number of diseases unique to the occupation that manifest over time and worsen. They frequently lead to diseases and disease clusters. The dentist is exposed to occupational biohazards on a daily basis, namely those that are contagious because to

close contact with the patients' saliva and blood. The osteoarticular system is unstable due to tense posture at work, which also overburdens the spine. [2,3]

Certain muscle and joint groups are also impacted by the overburdening. Diseases of the peripheral nerve system and the musculoskeletal system result from this. The respiratory, cardiovascular, and digestive systems are also affected, as well. Hearing loss is brought on by noise from suction, saliva ejectors, turbines, engines, amalgamators, compressors, etc. Eye strain, conjunctivitis, hazy vision, or shortsightedness is caused by a small surgical area and its artificial lighting.

The dental professional may feel stressed out in a variety of clinical scenarios. Allergies and skin conditions are brought on by the drugs, supplies, and cleaners used in dental procedures. Furthermore, while the harmful consequences of nitrous oxide and mercury are widely documented, those of visible blue light are less well known. As a result, the present paper analyzes a few particular occupational dangers by drawing on the literature.

PHYSICAL RISKS

Many dental procedures carry a risk of physical harm to the dentist and the medical team. Physical harm can result from various things, such as oral debris hitting the eyes, cuts from cutting objects, or puncture wounds from needles or other sharp objects. Such wounds may cause the dental professional to contract a dangerous infectious disease. In 1–15% of surgical procedures, typically involving suturing, needle stick injuries and cuts from sharp objects and equipment (percutaneous injuries) have been described. The powerful dental curing light is another potential risk factor for eye damage. It should be recommended to users of dental curing lamps to wear safety goggles while using them. [4] Musculoskeletal injuries are said to be the most frequent ones suffered by dental professionals. The requirement to labor in a fixed position while performing a continuous repetitive motion puts the clinical dentistry professional at risk for neck pain, lower back pain, and wrist pain.

CHEMICAL RISKS

Due to the frequent introduction of new chemicals and solutions, the chemical environment is one of the work environment's elements that is expanding the fastest. Many of these substances are among those whose health effects may not be understood and which may offer long-term health risks. Many of the auxiliary materials and biomaterials used in dentistry are chemically reactive. Mercury, powdered natural rubber latex (NRL), disinfectants, and nitrous oxide are examples of dangerous chemical substances used in clinical dentistry (N₂O). Mercury [5] is by far the most significant and perilous of these agents. Dental professionals who utilize it in dental amalgam run the risk of being continuously exposed to mercurial vapor, which can be absorbed through the skin and lungs. The mercurial vapor's active ingredient has a special affinity for brain tissue.

Tumors on the face, arms, or legs are a sign of mercury poisoning, which is also marked by trembling, illegible handwriting progression, and slurred speech. The latex sensitization brought on by exposure to NRL protein aerosol is the most severe possible risk connected to the continuous use of powdered NRL gloves in dental practice. The hands may develop dermatitis as a result. Due to how frequently this happens, latex products like gloves and rubber dams are no longer used in many dental offices. This is now recognized as an occupational hazard in the field of dentistry. Despite the fact that it was long assumed that N₂O's only toxicity was related to its

anesthetic effects, the neurological abnormalities seen in healthcare professionals who were exposed to N₂O repeatedly have proven this to be false. A number of health issues and reproductive abnormalities have been connected to work exposure to N₂O in dentistry and medical staff surveys conducted in the past. [6]

BIOLOGICAL (Cross-Infection) RISKS

Dentistry is unique in that clinical staffs are in direct or indirect contact with traumatized tissues, saliva, and blood on a daily basis. All members of the dental team are at risk of exposure to Hepatitis B virus (HBV), HIV infection, and other types of communicable infections. In the United Kingdom for example, the carrier rate HBV in the general population is 0.5%, while dentists have a carrier rate of approximately 1.6%. Several of the common viral agents that can cause hepatitis have been detected in body fluids including saliva and blood. The viruses most commonly implicated include hepatitis A virus (HAV), HBV, and hepatitis C. In a study done by Watt HIV/AIDS was believed to be very similar to eye injury and mercurial poisoning in terms of rate of concern amongst dental personnel. Bleicher JN et al (1987) reported upto 98% of clinical dental staff reported hand and finger infections resulting from their occupation. Local infections such as herpetic whitlow can be painful & incapacitating. [7] The terms “aerosol” and “splatter” in the dental environment were used by Micik and colleagues in their pioneering work on aerobiology. Aerosols were defined as particles less than 50 micrometers in diameter. Splatter was defined by Micik and colleagues as airborne particles larger than 50 μ m in diameter. [8-9] Legoinnaries disease, tuberculosis and severe acute respiratory syndrome is believed to be spread by direct contact and aerosolized spray. [10]

PSYCHOLOGICAL

Stressful events are a natural part of a dentist's workday. Despite being rarely discussed, they should be taken into account given the risks associated with this line of work. According to research by Hill GB et al., Scarrott DM et al., Glass RL et al., Blachy PH et al., Orner G et al., Dean G, Rose KD, Simpson R et al., CVD, cancer, and suicide are the leading causes of mortality for dentists in the UK, USA, Japan, and other industrialized nations. A career that calls upon a dentist to serve in two capacities: as a proficient manual operator and as a psychotherapist. Cooperation between the dentist and the patient has significant psychological components.

Everyone is aware of how challenging it may be to allay a child's worry and gain their trust, particularly in circumstances involving dental surgery. Treatment of the elderly or the mentally challenged also causes other issues. A stricter adherence to the doctor's advice by the patient is positively influenced by good doctor-patient communication. The nature of the doctor-patient relationship has a big impact on how the patient feels and how well they respond to therapy. In daily clinical practice, a dentist must have a unique approach toward a patient, based on the patient's personality and mental health. The success of the preventative measures and the treatment is typically determined by psychological knowledge, effective communication, and the development of a good rapport between the dentist and the patient. [11-14]

MEDICO-LEGAL RISKS

There are pertinent laws and rules that relate to the practice of dentistry in every nation. Any of these violations may call for legal action to be taken against a dentist, especially in industrialized nations where people seem to be more conscious of their rights.

All clinical staff members of the dental hospital should be informed about hazard awareness and the prevention of legal hazards in order to help ensure a safe work environment for dental care.

In light of this, the practitioner's mistakes may be categorized as; Fault of commission: The act of administering an ineffective or unneeded treatment that could make the illness worse. For instance, if a diabetic patient had their tooth out without first checking their serum glucose level and receiving appropriate treatment, this might result in cellulites and even death if their diabetes was not under control.

Fault of Omission: Refusing a necessary therapy that could harm or kill the patient. For instance, if a patient experiences an allergic reaction, failing to administer adrenalin 1:1000, 1 cc, followed by an injection of betnesol (a steroid), may prove fatal. The dentist can reduce medical and legal hazards in his or her practice by: Keeping accurate dental records (useful to the income tax department as well. obtaining knowledge from the patient or, in the case of minors, the parents. By participating in conferences, workshops, and continuing dental education programs, we educate ourselves regularly. Last but not least, a dental surgeon can protect themselves against malpractice claims by purchasing professional indemnity insurance.

CONCLUSION

There is no denying that dentistry has significant potential for occupational health risks. Reckless practice can seriously harm both dentists' and patients' health. Needles injuries continue to be a significant issue for dentists who may be exposed to dangerous infectious pathogens, such as MSD, needle injuries, and contact dermatitis. Maintaining a correct working posture and using ergonomics are important for MSD. Additionally, it is critical that dental professionals stay current with the clinical recommendations for the safe handling of mercury, radiation, and dental materials. Dentists should continue to receive HBV vaccinations, use personal protective equipment, and employ the proper sterilization or high level disinfection procedures. The entire dental profession would benefit from continuing education in preventing these risks.

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