

Assessing the Awareness on Occupational Health Hazards Among Dentists of Different Private Dental Clinics in Dhaka, Bangladesh

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Abstract

To determine if dentists in and around Dhaka are aware of certain workplace hazards and what precautions they take to avoid them. The current study was done with the help of a self-administered questionnaire that was distributed to 30 dentists in and around Dhaka. Personal information such as age, gender, position (student or faculty), years of experience, and number of working hours per day were also included in the questionnaire. Only those who thoroughly filled out the questionnaire form and were willing to participate were considered for the study. PSpss open source latest version was used to analyze the data. 30.0 percent of the participants had worked in the dental field for more than 10 years, while 26.7 percent of dentists worked for less than 8 hours. General practitioners made up 66.7 percent of the participants, and 43.3 percent of them see nearly 10 to 20 patients per day. In clinical practice, 40.0 percent of them had a needle stick injury. In our study, 0.0 percent of dentists reported to getting some form of litigation from their patients. The current study found that the occupational hazards, biological hazards awareness, and preventive actions observed by dentists in Dhaka are generally consistent with published infection control guidelines and previous studies. The bulk of the dental professionals were in pain in their neck or back muscles. Regular training and workshops can aid in the reduction of such issues.

Keywords: Dentists, Private Clinics, Health hazards.

DOI: 10.7176/JBAH/12-18-02

Publication date:September 30th 2022

Introduction

A risk or danger that arises as a result of a job's working circumstances and environment is referred to as an occupational hazard. [1] Bernardino Ramazzini, known as the "Father of Occupational Medicine," is credited with documenting the role of work in the dynamics of health and disease. [2,3,4] Despite the fact that dentistry is considered to be one of the safest professions, there are still some risks to be aware of. [5] Physical, biological, chemical, and physiological dangers are the four basic categories that can be found in current dentistry practice. Dentistry, as a demanding vocation involving a range of activities in a demanding work environment, has been shown to have a negative impact on people's physical health or even exacerbate preexisting systemic disorders. [6,7]

Musculoskeletal injuries are the most common injuries reported and encountered by dental professionals. [8] This occupation necessitates working in the same position and posture for long periods of time while performing a difficult technical procedure, which can lead to neck stiffness or discomfort, wrist soreness, and lower backache in the clinical dentistry practitioner. [3] Furthermore, because dental workers and auxiliary personnel come into direct or indirect touch with surgical tissues, blood, and saliva on a daily basis, they are susceptible to a variety of illnesses. [8,9] Needle stick injuries or wounds from sharp objects and equipment (percutaneous injuries) have been reported to occur in around 1.0%–15.0% of surgical procedures, with suturing being the most common cause. [10]

During scaling or polishing treatments, as well as while utilizing high-speed hand pieces, small fragments of calculus or spatter from human fluids can cause eye damage. The penetrating dental curing light is another possible source of eye damage. [11,12] According to prior studies, irritants related with volatiles from resin-based products, X-ray chemicals, and cleaners can trigger reactions in the eyes and upper respiratory tract. Other disinfectants that can irritate or injure the eyes and upper airway include procaine, eugenol, iodine, formalin, phenol, and other powerful disinfectants. [13]

Dental professionals must also keep up to speed on legal fundamentals, as the likelihood of seeing such issues is increasing, particularly in the context of patient authorization and increased desire for improved personal appearance. With rising patient understanding of their rights and bylaws, dentists are more likely to be under psychological stress every other day. To establish a safe working environment in dental clinics, all clinicians should have awareness of potential dangers and how to manage them, as well as how to avoid legal risks. [14]

An assessment of the occupational dangers faced by Dhaka's dental population would aid us in motivating and developing preventive measures to improve the proficiency of these health care providers. As a result, the purpose of this study was to determine the level of awareness among dentists working at government colleges and hospitals, as well as private clinics in and around Dhaka, of numerous occupational dangers and the various steps taken to manage them.

Materials and Methods

Between September and December 2020, a cross-sectional survey of dentists was undertaken. A self-structured questionnaire was issued to all dentists operating in Dhaka centric private dental clinics. The survey included 20 multiple-choice questions about knowledge, attitude, and awareness of occupational dangers (both open-ended and closed-ended). The demographic data, years of experience of the dentists, number of clinical hours working on patients, and other details were included in the first section of the questionnaire, which was followed by questions about awareness of various occupational hazards and the various measures taken to manage them. The survey questionnaire was delivered as a hard copy to approximately 30 dentists at random, and the participants were told to select just one accurate and appropriate answer for each question; the completed forms were collected after 15 minutes. Only forms that were completely filled out were included in the study.

Statistical Analysis

Analysis of survey results was performed using PSPP. PSPP is a free software application for analysis of sampled data, intended as a free alternative for IBM SPSS Statistics.

Results

30.0 percent of the participants had worked in the dental field for more than ten years, while 70.0 percent worked for less than eight hours. Table 1 showed that 16.7 percent of our participants worked between 4 and 8 hours per day. And 66.7 percent of the participants were general practitioners [Table 2], with 43.3 percent seeing nearly 10 to 20 patients every day. Nearly 83.3 percent of dentists thought saliva was a source of disease transmission. All of the participants (100%) admitted to wearing a facemask, gloves, and protective eyewear on a regular basis while working with patients [Table 3]. Aerosol is thought to be a medium for the spread of microbes by about 73.3 percent of dentists. The majority of the participants (96.7%) sterilize their devices on a regular basis. Only roughly 40.0% of our dentists utilized amalgam in their daily practice, and 70.0% of the participants thought that coming into touch with mercury could have negative consequences. Chemical disinfectants are used by 80.0 percent of dentists surveyed in the study. In their clinical practice, about 40.0 percent of them had a needle stick injury. Approximately 60.0 percent of dentists admitted to experiencing pain or discomfort while treating patients. X-ray machines are used by 80.0 percent of dentists who operate in a clinical setting. 0.0 percent of dentists were unsure if they had been exposed to any other radiation sources except X-rays. In the long run, 70.0 percent of the participants considered there could be ergonomic risks linked with workplace design. In our study, 0.0 percent of dentists reported to getting some form of litigation from their patients. In our survey, 20.0% of the participants were dissatisfied with their job as a dental surgeon. In terms of technostress knowledge, 60.0 percent of the interviewees had never heard of the phrase [Table 3].

Table 1

Participants years of clinical experience and the number of daily clinical hours.

	Clinical Practice (Years)			Daily Working	Time (hours)	
	<5	5-10	>10	<4 h	4- 8h	>8 h
Number	Count (%)	Count (%)	Count (%)	Count (%)	Count (%)	Count (%)
	16 (53.3%)	5 (16.7%)	9 (30.0%)	3 (10.0%)	18 (60.0%)	9 (26.7%)

Table 2

Participants distribution based on the average number of patients seen each day and the type of practice

Patients Number			Practice Types	
<10	10 to 20	>20	General	Specialty
Count (%)	Count (%)	Count (%)	Count (%)	Count (%)
9 (33.3%)	13 (43.3%)	8 (23.3%)	20 (66.7%)	10 (33.3%)

Table 3
Participants' knowledge of workplace hazards

Question	Options	Total (n=30)	Percentage (%)
Do you believe saliva might be a source of disease transmission?	Yes	25	83.3%
	No	3	10.0%
	Not Sure	2	6.7%
When working with patients, do you wear a facemask, gloves, and protective eyewear?	Yes	30	100.0%
	No	0	0.0%
	Not Sure	0	0.0%
Does aerosol serve as a medium for microorganism transfer?	Yes	22	73.3%
	No	4	13.3%
	Not sure	4	13.3%
Are your devices sterilized?	Yes	29	96.7%
	No	1	3.3%
	Not sure	0	0.0%
In your practice, do you employ amalgam?	Yes	12	40.0%
	No	18	60.0%
	Not sure	0	0.0%
Is it possible to get sick from touching mercury?	Yes	21	70.0%
	No	3	10.0%
	Not sure	6	20.0%
In your practice, do you employ chemical disinfectants?	Yes	24	80.0%
	No	5	16.7%
	Not sure	1	3.3%
In your clinical practice, have you ever had a needle stick injury?	Yes	12	40.0%
	No	16	53.3%
	Not sure	2	6.7%
Have you been having problems with pain or discomfort at work?	Yes	18	60.0%
	No	10	33.3%
	Not sure	2	6.7%
Is there an X-ray machine in your clinic?	Yes	24	80.0%
	No	5	16.7%
	Not sure	1	3.3%
Is there any source of radiation other than X-rays?	Yes	0	0.0%
	No	100	100.0%
	Not sure	0	0.0%
Do you believe that the ergonomic risks linked with workplace design will have a long-term impact on your health?	Yes	21	70.0%
	No	3	10.0%
	Not sure	6	20.0%
Have you received any litigation from any of your patients?	Yes	0	0.0%
	No	30	100.0%
	Not sure	0	0.0%

Question	Options	Total (n=30)	Percentage (%)
Do you involve yourself in recreational activities?	Yes	18	60.0%
	No	11	36.7%
	Not sure	1	3.3%
Do you feel satisfied with your profession as a dental surgeon?	Yes	24	80.0%
	No	6	20.0%
	Not sure	0	0.0%
Have you heard of technostress?	Yes	7	23.3%
	No	18	60.0%
	Not sure	5	16.7%

Discussion

Recently, a few studies have been conducted on dentists in various regions of the world to measure their knowledge and awareness of occupational dangers. We were curious as to what the dentists in Dhaka had to say. It is common knowledge that a healthy mind and body can perform efficiently on their own. As a result, dentists must be in good health in order to run a profitable dental business. Even if there has been recent technological improvement in various domains, dentists continue to face a variety of occupational health risks. [15,16,17]

It's worth noting that 20.0% of the study's participants were dissatisfied with their job as a dental surgeon. While a large number of participants (60.0%) reported experiencing pain or discomfort in their bodies while working, Reddy et al. found that 60% of dentists working in private practice in India experienced some musculoskeletal disorders (MSD), and similar results were found in another study in which 60% of participants reported experiencing some musculoskeletal disorders (MSD). [16] Stress has become an inextricable aspect of the dental profession. Technostress was experienced by 23.3% of our participants. Subjects were stressed in some way, whether it was because of a patient, a dentist, or the economy. Another intriguing finding from the previous study was that professional dissatisfaction was more frequently linked to low back pain. [17,18,19] In their research of dentists in Australia, Leggat and Smith discovered that 58 percent of dentists had neck pain, 53 percent had shoulder discomfort, 54 percent had lower back pain concerns, and 9.1 percent had taken leave in the previous year due to an MSD. [20] In a research at Saudi Arabia's Jazan University, 54 percent of individuals developed MSD, and the majority of them needed expert therapy. [21] Another study in Saudi Arabia indicated that 73 percent of private practitioners suffer from MSD on a regular basis, yielding mixed results. [22,23]

It's important to note that just 23.3% of the survey participants are familiar with the term "technostress," despite the fact that the majority of them have experienced some type of stress. Technology alters how people work, and rapid technical improvements necessitate constant change, which can be stressful.

Dentists were unsatisfied with characteristics such as high stress levels and restricted personal time, lengthy work hours, fierce competition, and low financial returns.

Dentists are at risk of MSD because to a lack of physical activity. According to a survey conducted by Hakami in Saudi Arabia, 30 percent of students experienced psychological anguish. [24] Regular exercise can help to reduce the occurrence and severity of certain illnesses. Physical therapy, such as posture correction, ergonomic guidance, and stretching exercises, are critical in preventing musculoskeletal issues. [25,26] Exercising reduces the amount of adrenaline released as a result of stress, rejuvenates the body, and allows the body to return to a more balanced state. This has a significant impact on efficiency and energy consumption. It is recommended that one choose an activity that one enjoys and that will drive them to continue doing it on a regular basis. [27,28,29] Exercising releases endorphins, also known as the "feel-good factor," which helps us better manage our patients and employees. Due to a variety of factors, 36.7 percent of dentists in our survey did not participate in any recreational activities. Both a doctor and a patient may endure discontent and discomfort as a result of inexperienced treatment scheduling. The majority of dentists associate the presence of stressful conditions with painful thoughts, emotions, or concerns. It could also have a role in the onset of fast reactions including increased stress, elevated blood pressure, weariness, insomnia, and depression. [19,30,31,32]

In a research conducted in Riyadh, Saudi Arabia to determine the prevalence of hearing impairments over the previous five years, 16.6% of participants reported having tinnitus, and 30% had trouble discriminating between speech. [19] Specific hearing difficulties were not assessed in our study, but 68.5 percent of participants anticipated that over time, ergonomic dangers in their bodies would arise as a result of workstation design.

0.0 percent of the participants in the current study had to deal with patient lawsuit. When compared to other industrialized countries, this percentage is quite low; this could be due to a lack of patient awareness or because dentists are not following the code of ethical standards effectively. [33,34,35]

Preventive measures such as face masks, gloves, and protective eyewear were commonly used by the study population, and the results were consistent with earlier investigations. [25,26,35] Aerosols, according to 88 percent of our participants, operate as a medium for microbe translocation. According to prior research, some dental materials are aerosolized during high-speed cutting and finishing, and dental personnel may inhale them. Other dental materials are flammable and can cause skin irritation and breathing problems. [31] Despite the fact that we did not assess our participants' allergy status to latex or other dental materials, 70.0 percent of our dentists believe that coming into contact with mercury has negative consequences, and 80.0 percent of our dentists use disinfectants in their clinic on a regular basis that are harsh and harmful to the eyes and respiratory tract.

Both ionizing and nonionizing radiations are not shielded from dental staff. On a long-term basis, ionizing radiation is a well-established risk factor for cancer. Regardless, most dental offices and clinics have X-ray machines that are in use on a regular basis. In our survey, 80.0 percent of the participants have a dental X-ray machine in their offices, and 0.0 percent of the participants employ other types of radiation in their offices. Direct radiation harm has been nearly eradicated thanks to advancements in radiologic equipment procedures and radioprotection measures. With the use of blue light and ultra-violet light to cure various dental materials, nonionizing radiation has become a major concern. The retina and cornea, among other tissues of the eye, can be damaged by exposure to these radiations. In this case, the use of safety glasses and appropriate shielding can help to reduce or eliminate the radiation. [33,35,36]

Saliva was thought to be a source of illness cross-transmission by 83.3 percent of the people in our survey. Dentists labor in a low-access, low-visibility environment and regularly utilize sharp instruments, which contributes to this exposure. Human immunodeficiency virus (HIV), hepatitis C virus (HCV), and hepatitis B virus (HBV) are among the blood borne pathogens that are spread through percutaneous exposure (HBV). [32,33] The most common items that resulted in exposure and harm were needles and drilling instruments like burs. In our study, 40.0 percent of the participants admitted to having been injured by a needle in a dental clinic. In contrast, throughout their clinical training, 72 percent of Australian dental students were injured by sharp instruments. We included clinicians and experienced faculty in our study, which resulted in contradictory outcomes. As a result of the emergence of blood-borne infections, dentists are required to follow a set of precautions and sterilization measures that have been widely accepted in order to prevent infection. [37,38]

Sharps injuries are the most common among surgeons in practice and the most common route of transmission of blood-borne viruses. Occupational hazards might include musculoskeletal disorders, mental stress, radiation exposure, and the risk of communicable illnesses. Increased efforts in primary healthcare settings are needed to manage these musculoskeletal disorders and psychological stress by a combination of therapeutic therapies and raising knowledge about behavioral change, such as exercise, weight control, and mental health.

The findings of this study are critical for health-care interventions that improve future doctors' quality of life. However, there are certain limitations to this study that should not be overlooked. The use of a self-reported questionnaire could lead to logical bias, and the cross-sectional study design made it impossible to detect the connection and identify relevant risk factors.

Conclusion

Most of the people in the research were aware of the biological risks that come with dental work. Stress and sharp object injuries affected nearly half of the subjects. Furthermore, a bigger percentage of subjects reported having musculoskeletal diseases or pain. The bulk of those who took part were doing something fun. One must be healthy in order to be productive in the workplace. Overall health will be impacted by high production demands combined with stressful working conditions. It's important to remember that any technology, no matter how good, can have a detrimental impact on some people. Dentists should keep track of their work hours and pace, be mindful of potential workplace risks, and monitor their mental wellness. Dental professionals' well-being should be secured by developing and implementing strategies for promoting mental health and mitigating the consequences of job hazards. Several continuing dental education seminars should be planned so that dental practitioners can learn about newer innovations and ways for maintaining a happy working environment.

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