

## IMPROPER POSITION A PERPLEXING PROBLEM – A QUESTIONNAIRE STUDY.

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## ABSTRACT :

**Background:** Dentists have a high prevalence of work-related musculoskeletal issues, and the incidence of numerous illnesses has increased dramatically over the last two decades. In dentistry, the overall frequency of musculoskeletal problems ranges from 63 to 93 percent. Various researches have been conducted to document stress levels and health-related behaviors of dentists in other countries, but data on this topic is scarce in our country.

**Methods:** This survey was conducted among 154 dentists from various specialties of dentistry who had at least one musculoskeletal issue in the previous 12 months. Demographic data, work history, risk factors, and ergonomic awareness with job task specifics were all collected using a standardized questionnaire. MS Excel was used to enter data, while SPSS version 18 was used to analyze it.

**Results:** More than 63 % and 47 % of the participants reported pain and discomfort in at least one body region in the last 12 months and the last 7 days respectively. The major affected part was neck, followed by lower back, shoulders and hands / wrists.

**Conclusion:** This survey found that there is a high prevalence of MSDs and WMSDs among dentists. Hence, Ergonomic awareness, health promotion, medical treatment and physiotherapy exercise need to be integrated with the professional practice for dentists.

**KEYWORDS:** Ergonomics, dentists, musculoskeletal pain, physical activity, work place.

## INTRODUCTION :

"Health" is defined by the World Health Organization as "a condition of complete physical, mental, and social well-being, not only the absence of sickness or infirmity." When employment is linked to health risks, it can lead to occupational sickness, which can influence not only one's physical, psychological, and social well-being, but also one's job capacity, resulting in absences and early retirement<sup>1</sup>. Dentists are responsible for the diagnosis, prevention, and management of oral problems, thus the profession is not without risks. Dentists are predisposed to a variety of occupational hazards due to the nature of their clinical work<sup>2</sup>.

Infections such as HIV and viral hepatitis; percutaneous exposure accidents, dental materials, radiation, and noise; musculoskeletal diseases; psychological issues and dermatitis; respiratory illnesses; and eye injuries are just a few examples. Musculoskeletal disorders (MSDs) have been the most commonly documented among these<sup>3</sup>.

WRMSDs (work-related musculoskeletal diseases) are a sequence of micro traumatic events that collect in the body as a result of workplace and employment characteristics, with the potential to evolve into a more significant musculoskeletal injury in the future<sup>3</sup>. MSDs, or musculoskeletal disorders, are described by the Centers for Disease Control and Prevention (CDC) as injuries and disorders of the soft tissues (muscles, tendons, ligaments, joints, and cartilage) and neurological system<sup>4</sup>.

Because to risk factors such as physical conditions of the environment, psychological factors, faulty

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equipment design with unsuitable anthropometric requirements, and unavailability of hazardous postures, dentists are the recruits most prone to MSDs<sup>4</sup>. The primary goal for clinicians is to achieve maximum comfort at work by following ergonomic principles. Ergonomics, or "human factors," is a "science of work" derived from the Greek words "ergon" (labor) and "nomos" (rules). Its main goal is to reduce the risk of (WRMSDs) through planning, creating, reviewing, and assessing projects, jobs, tools, and systems, which can be accomplished by taking a neutral stance. This concept focuses on preserving the natural curves of the spine, as proper joint alignment and muscle balance are regarded to be essential for a healthy musculoskeletal system<sup>5</sup>. Because improper ergonomic practices put dentistry at risk, progress is needed in terms of productivity, work engineering, appropriate machinery and tool designs, substitution/modification of equipment and processes, good working practices, better work organization, and individual factor modification<sup>5</sup>. Also, while minimal intervention may be necessary, the current scenario indicates that a lack of understanding of MSDs, as well as insufficient studies, has an impact on dental professions and slows the stream's progress. As a result, the goal of this survey is to look into MSDs among Peoples University dentists in terms of symptoms and risk factors, as well as to help avoid and mitigate their harmful effects, as the null hypothesis is that there will be no pain among the dentists surveyed.

**METHODOLOGY:**

A cross-sectional survey of People's University dentists was done with the agreement of the Head of Institute and ethical clearance from the ethical board committee. On the day of the study, 200 questionnaires were sent to dentists who indicated their agreement to participate, and 154 dentists responded. The study's specifics were described, and written informed consent was requested. Demographic information, work-related load, musculoskeletal complaints, and self-adopted pain

management measures were all included in the questionnaire. The validity and reliability of the questionnaire were evaluated before to the start of the study, with a kappa statistic value of 87 percent. SPSS software was used for statistical analysis, and statistical significance was defined as a p value of less than 0.05.

**RESULTS:**

The present study had a response rate of 77%, 154/200 respondents. The average age range being 26-50 yrs of (79%) of the participants whereas (30%) were below 25yrs.(90%) dentists were right handed of which 97% had low back problem, while the remaining (10%) were left handed. More than half of the participants had experienced musculoskeletal symptoms in past 12 months most frequently with neck (72%), lower back/ pelvis (40%), shoulder /arm (40%) and wrist/hand (18%) respectively (Table 1). There was more than two and three region involvement in 41.5% and 12.9% respectively (Table 2). Half of the dentists were involved in clinical practice and had a work experience of less than 5yrs (63%), of which majority had problems in neck (69%) and shoulder (41%) (Table 3). Very less were aware of the Ergonomic principles.

Neck	111/154	72%
Lower back/ pelvis	62/154	40%
Shoulder /arm	62/154	40%
wrist/hand	29/154	18%

Table1: Region of symptoms

	Neck	back	shoulder	Wrist
Teaching	66.6%	44.4%	38.8%	11%
Clinical	69.5%	36.55	41.4%	25.6%
Both	88.8%	44.45	38.8%	11.1%

Table 2: Work category Vs region of symptom

	Neck	Back	Shoulder	Wrist
<5yrs	72%	41%	37.7%	27.5%
5-10yrs	66.6%	41.6%	47.2%	5.5%
>10yrs	80%	30%	40%	0%

Table 3: Clinical experience Vs region of symptom

**DISCUSSION:**

Dental surgeons are frequently listed among the



professionals at risk of MSDs due to prolonged uncomfortable or strained postures at work and a failure to take preventive measures<sup>6</sup>. Repetitive movements, extended static postures, and inadequate alignment, according to Karwaski et al<sup>7</sup>, may be to blame for the symptoms. On the other hand, Ratzen et al<sup>8</sup> linked the appearance of these symptoms to the recurrent use of static postures, which typically require more than half of the body's muscles to contract in order to keep the body motionless while resisting gravity. These, in turn, are hypothesized to set off a chain of events that could result in pain, injuries, or the loss of a dentist's profession.

In addition, when compared to previous studies, the response rate for surveys conducted on dentists was greater (77%). Previously, an 88% response rate was recorded<sup>9</sup>. According to several research, the prevalence of MSDs among dentists ranges from 63 percent to 93 percent worldwide<sup>6-10</sup>. In line with earlier studies<sup>11</sup>, more than half of the dentists in the current study reported pain and discomfort in at least one portion of their body in the previous 12 months.

The participants in the study ranged in age from 26 to 50 years old, which was similar to the findings of Nihar Sultana et al<sup>8</sup> (28-62 years) and Yemini et al<sup>10</sup> (28-62 years) (35.7 yrs). In line with other studies<sup>10</sup>, in which the majority of participants were right-handed (89.2%), 90% of dentists in our study were right-handed, with 97% of them having low back difficulties. (63%) of dentists had been in the field for less than 5 years, and the majority had reported MSDs, which was similar with Jianru Yi et al<sup>2</sup> findings. On the other hand, Anna Kierklo et al<sup>11</sup> discovered that the average number of years spent in the dentistry profession was 16.

In addition, 31 percent of dentists have been in practice for more than 20 years, and 23.74% have been in the profession for 11-15 years. While 15.53% has experience ranging from 1 to 5 years and 6 to 10 years<sup>11</sup>. Harutunian K et al<sup>10</sup> discovered a significant link between lack of physical activity and the number of afflicted regions, with two regions in 42% of the

sample and more than two in 22% of the sample in our study. Lack of regular physical activity and work-related stress could be the culprits.

According to the research, the majority of dentists had issues with the Neck (26 % -83.8 %), 1,8,10,12, while others had issues with the Lower Back (30 % -80 %) <sup>1,8,10,11,12</sup> followed by shoulder (18.9% -72.4%) <sup>1,8,11,12</sup> and wrist (26 % -49.7%) <sup>8,11-15</sup> respectively.

15-16 % of participants reported experiencing paresthesia, pain, or difficulties with movement in the hip/thigh, ankles/foot, knees, feet, or elbows in the previous 12 months, which matches the findings of Emmuanuel et al<sup>16</sup> and Kierklo A<sup>17</sup>. Only 19 % of the respondents were aware of the correct ergonomic posture in clinical practice, which was consistent with Madaan V et al<sup>11</sup> and Kanteshwari K, et al<sup>13</sup> who reported that fewer than half of the participants were informed, showing that a huge percentage of dentists are unaware.

As therapy modalities, dentists should choose particular exercises and yoga to improve the health and integrity of the spinal column, as well as stretching exercises for the hands, head, and neck, and maintaining appropriate working posture. As stated by Alshammari F et al<sup>18</sup>, occasional pauses and working in indirect vision should also be conducted as precautionary measures to ease pain and prevent injuries. However, only 5% of the participants in this study stated that they did stretching activities. Also, only 31% of people engaged in regular physical activities, the most popular of which were yoga, walking, and badminton.

66.2 % of respondents, on the other hand, made no steps to avoid such issues<sup>10</sup>. This was supported by our research, which found that 65 % of dentists did not take any preventive steps. As a result, several ergonomic elements that should be considered include upper-limb supports, the use of large-handled devices, and working with a mechanically adjustable chair with an adjustable backrest. Use of indirect vision and proper patient positioning in the dental chair are also important to minimize awkward or forced neck postures. Proper illumination, as well as

technologies like magnifiers and microscopes, can assist reduce tiredness and increase productivity.

Musculoskeletal disease has a multifactorial etiology due to the inclusion of biomechanical, individual, and psychological factors associated to labor. As a result, the preventive strategy must be multifaceted, rather than focusing solely on ergonomics. As a result, any significant study on musculoskeletal problems among dentists should include a review of preventive interventions.<sup>19,21</sup>

However, despite feeling musculoskeletal discomfort, the professionals in this study did not take steps to prevent or alleviate the symptoms. Only 33.8 % of them claimed to have taken some preventive measures. Even while the key preventive measures should be changing posture, taking breaks, and stretching between subsequent patients - although these procedures were very rarely used by our subjects - these actions were not the best answer.<sup>20-23</sup>

The results collected in this study hint toward the inappropriate working habits and lack of fundamental knowledge of ergonomics among the surveyed dentists. Findings imply that the risk of MSDs can be minimized by raising alertness of these concerns among dentists. Students should be educated about ideal working postures and healthy work habits from the beginning of their undergraduate studies as a preventive approach to avoid such issues in their future careers.

#### **CONCLUSION :**

The most common reason for early retirement in dentists globally is musculoskeletal disorders. Understanding potential risk factors is crucial to preventing musculoskeletal problems. Many, if not all, dentists and faciomaxillary surgeons attribute their neck pain and/or radiculopathy to normal dental procedures, which are rather typical symptoms among dentists. Due to ill health, many dentists may take several sick breaks, change occupations, or even retire. MSDs are the most common cause of ill health retirements in the latter group, accounting for 55 % of all ill health retirements.

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