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Prevalence of Scapular Dyskinesis in Working Dentists: An Epidemiological Study

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Abstract:

Purpose: Assessing and evaluating the prevalence of Scapular dyskinesis among working dentists is the primary priority of the current study.

Methods: Both analytical and quantitative cross-sectional investigation was done in a spectrum of 108 dentists of both sexes with ages between 30 and 50 with normal BMI, no history of fractures, surgery, or shoulder impingement, who did not play music or engage in physical exercises like tennis, basketball, or volleyball. The cases were recruited and randomly assigned to four equal groups. The Salutogenic health indicator scale (SHIS), a modified version of the Standardized Nordic Questionnaire, was used to assess the risk factors for scapular dyskinesis. A modified digital inclinometer for measuring the posterior tilting of the scapula during humeral elevation at rest at angles of 45°, 90°, and 120°.

Results: Between the four groups, a statistically significant decline in SHIS scores was apparent, and their dominant side was more likely to exhibit scapular dyskinesis.

Conclusion: Dentists frequently experience scapular dyskinesis, which can result from overuse, weakness, poor posture, or any combination of these factors. Hence, guiding dentists about proper posture while working and encouraging them to regularly undertake scapular muscle stretching and strengthening exercises would aid in minimizing early muscular fatigue, pain, and scapular dysfunction.

Keywords: Prevalence, Scapular dyskinesis, Risk factors, Modified digital inclinometer, and Salutogenic health indicator scale.

1. Introduction:

Scapular dyskinesis (SD) is a disorder that is frequently linked to shoulder disease but can also exist in people who have no symptoms (1). It might be a coping mechanism to lessen pain and enhance shoulder functionality (2). Scapular dyskinesis is the medical term for the condition when the scapula moves or functions.

Three forms of scapular dyskinesis can be identified: Type I is a posterior displacement of the inferior medial angle from the posterior thorax; type II is a posterior displacement of the entire medial border of the scapula; and type III is an early elevation of the scapula or an excessive or insufficient upward rotation of the scapula (dysrhythmia) during dynamic observation (3).

Shoulder diseases may produce scapular dyskinesia or vice versa. SD h as both proximal and distal causes that can be determined. Serratus anterior, lower trapezius, and scapular muscular weakness are examples of proximal variables. Joint internal imbalances such as labral tears, GH instability, and acromioclavicular separation are examples of distal issues.

In all situations, the extended scapula with the arm at rest or in motion is the physical outcome (3). Dental hygienists are affected by musculoskeletal and psychosocial issues differently. Musculoskeletal discomfort is more likely to result in a reduction in working hours, whereas professional and social disputes are more likely to result in a change of work location (4).

According to Kesson et al. (1999) (5), dental professionals who stayed in the field had a higher tendency to experience more symptoms in the shoulders, elbows, wrists, and hands in year 5 compared to year 0 and to experience greater pain and diagnosis for the neck and shoulder region.

The biomechanical factors connected to work demands, the work environment factors, and the psychosocial elements can all be categorized as risk factors for developing scapular dyskinesis in dentists. The biomechanical aspects of dental work activities include sustained static postures brought on by prolonged sitting, stability, continual grasping of tools, neck, and wrist bending, and repeated movements, particularly when performing scaling operations (6).

The clinic's furniture doesn't fit the dentist's anthropometric measurements, there isn't enough light in the room and the dental lamps aren't adjusted, the tools aren't ergonomically designed for the user, and the treatment rooms are undersized (7). Stress, discontent with the frequency of breaks, a hard workload, and social isolation are the psychosocial factors that have been linked to scapular dyskinesia (8).

Scapular rest posture abnormalities include tilting and winging. The dominant hand exhibits much more tilting than the non-dominant hand, suggesting a relationship between tilting and hand dominance. It is reliable to use the observation of tilting and winging while at rest in clinical practice. The so-called SICK scapula syndrome, which is defined as scapular malposition, inferior medial border prominence, coracoid discomfort, malposition, and dyskinesis of scapular movement, is a common variation in scapular resting posture (9).

Scapular dyskinesis is linked to repetitive strain or cumulative trauma to the tissues, typically as a result of work, particularly in the dentistry department, which has the ability to treat diseases and other conditions that affect the teeth and gums, particularly the repair, extraction, and insertion of artificial teeth. It may result in musculoskeletal issues in the neck, shoulder area, and hand-wrist pain for dentists, as well as pain, extreme exhaustion, lost workdays, and early retirement (6).

For dentists and dental hygienists, a high prevalence of musculoskeletal discomfort in the upper extremities is a source of worry (10). In comparison to dentists, dental assistants, and dental technicians, dental hygienists have quite diverse responsibilities. When cleaning a patient's teeth, they use rotary, ultrasonic, and hand equipment to get rid of biofilm, calculus, stains, and smooth root surfaces. Dental hygienists cut teeth by pulling the tool blade along the surface from below the gum line to the tooth's crown when using hand instruments. Dental hygienists frequently repeat the same task on each patient throughout the course of the day, which makes their work extremely repetitive (11).

For instance, it indicates that having SD raises your likelihood of developing future shoulder pain. Subacromial space may be reduced by scapular dyskinesis. Additionally, scapular dyskinesis can weaken the rotator cuff, put more strain on the rotator cuff, and encourage apoptotic changes in the tenocytes that make up the rotator cuff tendons. Rotator cuff weakness may worsen motor control, leading to more humeral head translation and additional mechanical abrasion of the subacromial space structures. Because of this, assessing scapular dyskinesis may be helpful in developing injury prevention programs as well as periodic health examinations (12).

In order to prevent injuries and improve functional performance, injury prevention programs can benefit from recognition of and understanding of the risk factors for developing scapular dyskinesis in dentists, which can be classified as biomechanical factors related to work demands, factors associated with the work environment, and psychosocial factors (13).

This quantitative cross-sectional study's goal was to determine the prevalence of scapular dyskinesia, one of the work-related musculoskeletal disorders, among Egyptian dentists who were currently employed, had no history of upper-limb fractures or surgery and were not engaged in activities involving the upper extremities, such as playing volleyball or music. using the Standardized Nordic Questionnaire and the SHIS to measure overall health status and musculoskeletal complaints, respectively.

2. Patients and Methods:

2.1. Participants:

108 dentists of both sexes, 30 to 50 years old, with normal BMI, no history of fractures, surgery, or shoulder impingement at their upper limbs, who did not play music and did not participate in sports like tennis, basketball, or volleyball were recruited and randomly assigned to four equal groups.

2.2. Measurements

2.2.1. Measurement equipment and tools

2.2.1.1. digital inclinometer

A digital inclinometer was used to track the range of motion in the shoulders. Place the inclinometer next to the joint that needs to be measured, spin the dial until the scale reads zero,

move the joint over its range, and then read the range of motion (in degrees) directly from the dial (14).

When evaluating the active and passive range of motion in shoulders with unilateral subacromial impingement syndrome, the digital inclinometer demonstrated good to excellent reliability (15).

When precise measurement guidelines are followed, a digital inclinometer seems to be a reliable tool for calculating normal shoulder mobility. When interpreting change values from subsequent measurement sessions, clinicians and researchers should take into account the lowest detectable change at the provided 90% confidence interval value (16).

The findings suggest that goniometry and digital inclinometers can be used interchangeably to quantify shoulder mobility. Clinically significant variations are likely to exist when using these instruments interchangeably, so clinicians should take the 95% limits of the agreement into account (17).

For Flexion measurement: The case was instructed to flex his shoulder after the digital inclinometer was placed on his upper arm. It should be noted that the subject might twist to avoid this, therefore stabilization is essential for the test (18). During humeral elevation trials, a digital inclinometer (Pro 360, Baseline®, Fabrication Enterprises, White Plains, NY) will be adopted to measure the scapular AP tilt (**Figure 1**).

The inclinometer will undergo a number of adjustments to make it acceptable for calculating AP tilt. To properly line the inclinometer with scapula bony landmarks, specially crafted wooden feet will be utilized with it. The scapular bone landmarks will be aligned using each "foot," which measures 5.3 cm by 1 cm by 1 cm and has a blunted end. a specially manufactured plate that is 7.0 cm by 20.5 cm.

(Lexan*, SABIC Innovative Plastics, Pittsfield, MA) will be attached to the inclinometer, allowing for adjustable spacing of the “feet” (1 cm increments). Each “foot” will be attached to a 3.5cm corner brace and affixed to the Lexan plate using standard hardware (19).

2.2.1.1. Digital inclinometer

Patients with SIS can have their scapular position and kinematics accurately determined by measuring their anterior-posterior tilt and upward rotation. And others, 2021) (20). A modified digital inclinometer was claimed to be a trustworthy method for measuring scapular upward rotation, with an ICC range of 0.89 to 0.96. (2018) (21).

The adjustments will enable alignment with an axis that is vertically orientated and intersects the spine, medial scapular border, and inferior scapular angle. I'll be able to line up the inclinometer with these two sites using palpation (22).

Figure (1): Modified digital inclinometer

Evaluation Procedures:

Interviews, a widely used form of data gathering in studies involving occupational risks, were used to acquire the data. All interviews were done by the same investigator in order to minimize the possibility of interviewer bias, and the questions were answered in full, without the need for further explanation. The survey was four pages long (23).

Participants filled out a three-page modified version of the Standardized Nordic Questionnaire (24). The survey was modified from a recent iteration used by healthcare professionals (25, 26). and students studying the health sciences, such as dental hygiene students (27, 11). It was subjected to peer review by a number of academicians and dental hygienists.

The questionnaire covered topics like demographics, dominant side, qualifications, working hours, current work habits, and musculoskeletal problems. It also included two quick answer options. Long periods of sitting, standing, or walking; twisting; bending the neck or wrist; lifting; climbing; turning; using small or large equipment; maintaining a steady grip on equipment; repetitive movements; frequently changing equipment; and exposure to chemicals, toxins, or gases were among the biomechanical factors that came up in the questions.

Unexpected fatigue, discontent with the frequency of breaks, sleep issues, social isolation, and a severe workload were among the psychological reasons that were raised in the survey. The size, illumination, and suitability of the room's furnishings were among the environmental work factor questions (28).

It has been shown that the NMQ has respectable validity and reliability (29). an instrument with good to very good test-retest reliability (k = 0.6-0.81), internal consistency from good to acceptable (Kuder-Richardson 20 = 0.74-0.87), and good construct

validity that can be adopted to analyze musculoskeletal symptoms in an ergonomic or occupational health context and measure the outcomes of epidemiological studies on musculoskeletal disorders (30).

By making reference to specific body regions or by using partial or whole-body illustrations that designate specific regions to be examined, the modified Nordic Musculoskeletal Disorder Questionnaire seeks to gather information on the site of discomfort (31).

The index for the salutogenic health indicator scale appeared on page four (SHIS) (32). While seated, subjects will actively elevate their humeri in the scapular plane to clinically significant degrees. To reduce compensatory alterations in the lower extremities and trunk, which can affect shoulder biomechanics, subjects will be sitting on a stool (33).

The cases will be instructed to move their hands to choose spots on the scapula that corresponded to various shoulder motions (rest, 45°, 90°, and 120° of humeral elevation). Beginning with their dominant hand by their sides, subjects are instructed to move it to a specific position and keep it there while kinematic data is gathered. The time between trials will be between 5 and 10 seconds, with each trial lasting 10 to 15 seconds. The identical trials will then be performed by subjects using their non-dominant hand (34).

The subjects will be instructed to extend their elbows as they attempt to lift their hummers in order to protect their wrist joints by keeping them midway between flexion and extension as well as by extending their thumbs (34). Using palpation, the inclinometer can be positioned at two points: the inferior angle of the scapula and the junction of the spine, and the medial border of the scapula (**Figure 2**) (35).

Data analysis:

To prepare for analysis, data were gathered using a data collection form and then arranged on a sizable data collection sheet. When dealing with interval and ratio data, the data were expressed as mean and standard deviation, and when dealing with nominal and ordinal data, they were expressed as frequency and %. (36). Since the sample size is too little to employ this technique, no aim was made to treat the analysis (37).

Using the interquartile range (IQR) equation, outliers were removed from the data, and normality was examined to decide the test to be run analysis (38).

Figure (2): Orientation of Modified digital inclinometer relative to scapula.

Utilizing the Mixed model ANOVA analysis (39) test for normally distributed data and the Kruskall-Wallis analysis (40) test for non-normally distributed data, SPSS V26 was used to analyze the data for all outcome measures. To identify any associations between nominal variables, the Chi-square test was also performed analysis (41).

3. Results:

Table (1) shows descriptive data for the entire sample, while **Table (2)** shows descriptive data for several groups and demonstrates baseline homogeneity between groups. The frequency distribution and chi-squared test of hand dominance and sex distribution between the four groups are shown in **Table (3),** and this test revealed no disparity between the groups.

While the posterior scapula tilting at the active humeral elevation position of the four groups as shown in **table (4)** demonstrated statistical crystal-clear variations between groups. **Table (5)** displayed the results of the Kruskal-Wallis test for the four groups' biomechanical work-related elements, while **Table (6)** displayed the results of the test for the groups' psychosocial and environmental work-related components.

Table (1): Description of the total sample

Variables	Frequency	Percentage
Gender		
Males	79	73
Females	29	27
Age (years)		
30-35	34	31.5
36-40	27	25
41-45	25	23.1
46-50	22	20.4
Working hours/week		
24	7	6.5
30	7	6.5
36	27	25
42	27	25
48	20	18.5
54	20	18.5
Experience (years)		
6-10	27	25
11-15	27	25
16-20	27	25
>20	27	25
Total sample	108	100

Table (2): Mean values of age, weight and height of the four groups

	Group A	Group B	Group C	Group D	f-value	p-value
Age (years)	31.8 ± 1.5	36.7 ± 1.4	41.7 ± 1.4	47.2 ± 1.7	309.3	0.001
Weight (kg)	72.1 ± 7.4	74 ± 7	73.1 ± 6.7	73.4 ± 4.2	0.251	0.860
Height (cm)	170.7 ± 7.5	172.4 ± 7.9	171.2 ± 4.9	171.9 ± 7	0.156	0.925

Table (3): The frequency distribution and chi squared test of sex distribution and hand dominance between the four groups

	Group A n=27	Group B n=27	Group C n=27	Group D n=27	χ2 value	p-value
Sex						
Females	8 (29.6%)	7 (26%)	7 (26%)	7 (26%)	0.240	0.971
Males	19 (70.4%)	20 (74%)	20 (74%)	20 (74%)		
Hand dominance						
Right	19 (70.4%)	20 (74%)	19 (70.4%)	21 (77.8%)	0.519	0.915
Left	8 (29.6%)	7 (26%)	8 (29.6%)	6 (22.2%)		

4. Discussion:

Numerous investigations found that in people without dyskinesia, the dominant side's scapula rotated more upward than the non-dominant during arm movements at various angles, particularly higher one (42). Numerous investigations have found differences in the scapular kinematics of those with and without dyskinesia (43). Increased upward rotation and a reduced scapulohumeral rhythm were also observed on the dominant side in two examinations of participants with and without dyskinesia (44).

On another level, participants without dyskinesia were shown in three investigations to have equal kinematics on both sides (45). Despite the fact that the scapular resting position differed (46). Two investigations looked at the relationship between the side of dyskinesia and the dominant side when asymptomatic swimmers and boxers with neck pain reported dyskinesia on the non-dominant side. It was more closely associated with the breathing side of swimmers and the side of boxers who were punching repeatedly than it was with supremacy (47).

In addition, a study of symptomatic individuals found that women had higher scapular upward rotation on the side that wasn't their dominant side (48). A possible cause of dyskinesia in athletes is repetitive eccentric loading on the shoulder, which results in posterior capsule tightening and a restriction in the internal rotation range of motion, changing the scapular kinematics on the side receiving repetitive loading rather than the dominant side (49).

The observed variations in motion and posture patterns probably don't have a single cause, but rather are the result of a number of different factors. In fact, it has been demonstrated that a number of variables that could affect the scapular position are side dependent. Adapted dominance methods have been highlighted at the neuro-control level; motions on the dominant side are produced with lesser joint torques compared to the non-dominant side. For elevation in the scapular plane, a study measured significantly different shoulder muscle activations on the dominant and non-dominant sides.

Additionally, more consistent usage of the dominant shoulder results in muscle and ligament adaptations. The observed disparities in scapular pattern between male and female populations could be attributed to variations in morphology, strength, and motor control. 2 We are unable to pinpoint how each of these characteristics specifically affects the ultimate scapular motion based on the results of this investigation (50).

Dentists' job satisfaction appears to be influenced by organizational issues as well. Given that many dentists spend 30 to 40 hours a week at work, the dental office represents a possible setting for health promotion. Work is therefore important for their overall situation and well-being. Office employees' screen effect on the trapezius, which changed scapular kinematics, has been linked to the prevalence of scapular dyskinesia and ergonomic risk level (51).

Table (4): Mean values of SHIS and posterior scapula tilting at active humeral elevation position of the four groups

Variables	Group A	Group B	Group C	Group D	F-value	P-value
SHIS	53.6 ± 2.2	49.5 ± 2.1	45.5 ± 2.1	41.5 ± 2.1	95.28	0.001*
posterior scapula tilting at active humeral elevation position At rest Dominant	90.6±1.2	89.5± 0.9	88± 0.7	86.5± 1	58.18	0.001*
Non-dominant	89.5± 1	88.3± 1	86.9± 0.8	85.4± 1.3	45.18	0.001*
P-value	0.001*	0.001*	0.001*	0.001*		
% of change	1.2%	1.3%	1.25%	1.27%		
At 45o Dominant	88±0.6	87.3± 0.9	86± 0.9	84.6± 0.8	55.79	0.001*
Non-dominant	87.1± 0.7	86.1± 0.8	84.9± 0.9	83.5± 0.9	53.58	0.001*
P-value	0.001*	0.001*	0.001*	0.001*		
% of change	1%	1.4%	1.3%	1.3%		
At 90o Dominant	86.4±0.6	85.5± 0.9	84.1± 0.7	82.8± 0.8	64.34	0.001*
Non-dominant	85.2± 0.7	84.2± 0.8	83± 0.8	81.7± 0.9	54.25	0.001*
P-value	0.001*	0.001*	0.001*	0.001*		
% of change	1.4%	1.5%	1.3%	1.3%		
At 120o Dominant	84.6±0.8	83.4± 0.7	82.3± 0.6	81± 0.8	72.36	0.001*
Non-dominant	83.6± 0.9	82.3± 0.7	81.2± 0.8	79.9± 1	54.57	0.001*
P-value	0.001*	0.001*	0.001*	0.001*		
% of change	1.2%	1.3%	1.3%	1.36%		

Table (5): Kruskal –Wallis test for biomechanical factors related to work of the four groups

Biomechanical factors related to work	Group A	Group B	Group C	Group D	p-value
Prolonged sitting (yes)	27	27	27	27	1
Prolonged standing (yes)	27	27	27	27	1
Prolonged walking (yes)	0	0	0	0	1
Twisting (yes)	27	27	27	27	1
Bending neck or wrist (yes)	27	27	27	27	1
Lifting (yes)	0	0	0	0	1
Climbing (yes)	0	0	0	0	1
Turning (yes)	27	27	27	27	1
Use of small equipment (yes)	27	27	27	27	1
Use of large equipment (yes)	0	0	0	0	1
Stable constant gripping of equipment (yes)	27	27	27	27	1
Repetitive movements (yes)	27	27	27	27	1
Exposure to chemicals, toxins, or gases (yes)	27	27	27	27	1
Frequency of changing equipment (yes)	27	27	27	27	1

Table (6): Kruskal –Wallis test for psychosocial and environmental work factors of the four groups

Psychosocial factors	Group A	Group B	Group C	Group D	p-value
Sudden weakness (yes)	0	0	0	27	0.001
Unusual fatigue or drowsiness (yes)	0	0	0	27	0.001
Dissatisfaction with the frequency of breaks (yes)	27	27	27	0	0.001
Trouble sleeping (yes)	27	27	27	0	0.001
Social isolation (yes)	27	27	27	0	0.001
Heavy workload (yes)	27	27	27	0	0.001
Environmental work factors					
Insufficient lighting in your room (yes)	0	0	0	0	1
Unsuitable clinic furniture (yes)	0	0	0	0	1
Weight of your tools (light)	27	27	27	27	1
Height of your tools (low)	27	27	27	27	1
size of your room					
Small	27	27	0	0	0.001
Medium	0	0	27	27	

The most important risk factors for scapular dyskinesia in dentists include long working hours, an inability to choose the proper size dental instrument, and a demanding job. Shoulder pain was related to gender when it occurred. Shoulder and wrist problems were related to age and years of employment. Job demand was linked to the onset of WMSDs in the neck, shoulder, elbow, and wrist/hand areas in terms of psychosocial aspects. Regular exercise as part of a healthy lifestyle seemed to be associated with a decreased incidence of comorbid symptoms such as the neck, elbow, and wrist/hand discomfort (52).

For the shoulder, elbow, and wrist/hand, the prevalence of musculoskeletal diseases was higher on the right side than on the left. As they must maintain access to various sections of the mouth while holding their wrist in an uncomfortable position. Small tool handling necessitates unusual arm and shoulder positions to reach particular areas of the mouth, which unavoidably raises shoulder strain (51).

The prolonged shoulder abduction (>45°) with the elbow flexed and pronated with isometric and eccentric contraction, fatigue, and strain of the deltoid, supraspinatus trapezius, and serratus anterior, and long duration of the procedures may all be associated with WMSD in the shoulder area (53).

Studies about upper quadrant musculoskeletal disorders in various occupations with ergonomic risk factors, such as prolonged static position and repeated upper limb-based activities for long hours as bus drivers, workers on sewing machines, and mechanics, described the prevalence of upper body pain as being associated with age under 30, female gender, having a diagnosis of an MSD or a systemic illness, working for more than 10 years, higher work-rest ratios, and high physical exertion (54). Additionally, 53% of bus drivers have dyskinesia, which has been linked to unilateral upper quadrant musculoskeletal pain that has been explained by repetitive neck and shoulder motions over an extended period of time and overuse (55,56).

While other research noted that those who perform mentally demanding but light physical jobs are likely to experience a higher prevalence of musculoskeletal illnesses, some studies revealed that sustained or repeated postures are associated with both acute and chronic musculoskeletal complaints (57). A study that looked at two separate job demands in mechanics to see if it was repetitive activity with low loading or repetitive activity with high loading found that the latter resulted in higher DASH scores. However, despite the fact that it was not statistically significant, the results clearly highlight the risk of repeating variable loads, which is a particularly difficult aspect of dental treatment (58).

Age affects shoulder Humerothoracic (HT) ROM decreases with age for abduction and external rotation, but increases with age for internal rotation abnormal scapular motion impairs shoulder function (59).

According to a different study, compared to the normal healthy 20-year-old group, the normal healthy 50-year-old group showed much less depression, downward rotation, and posterior tilt (60). Through the use of bone pins on healthy volunteers, the significance of posterior tiling was also shown, which may help to clear the humeral head and the rotator cuff tendons from underneath the anterior surface of the acromion during elevation (61).

There was no variation in muscle thickness across the different age groups in the other scapular muscles, but there was a substantial decline in lower trapezius muscle thickness with aging. Aging may not have an impact on the scapular muscle's function or the coordination of the deltoid and scapular muscles' activity (62).

The scapular rotations in the sagittal (posterior tilting angle) and coronal (upward rotation angle) planes both decreased with age, notably at 90 degrees of shoulder abduction, and the posterior tilting angle appeared to deteriorate more noticeably than the upward rotation angle (63).

It has been hypothesized that mental strain may have a negative impact on physical capability in terms of fatigue and recuperation. Across the country, musculoskeletal problems were screened using a modified version of the Nordic scale (64). The greatest prevalence of MS discomfort was found in dentists who maintained the same position for extended periods of time without changing (65). In the workplace, physical and mental issues are reportedly factoring in sick days (66). Regarding clinic size and the SHIS, no statistically significant difference could be detected (67).

Previous studies have demonstrated that work-related elements including a heavy physical and mental workload can disrupt sleep. On the other hand, sleep disturbances can have a significant impact on worker safety and occupational health. Musculoskeletal diseases are often linked to poor sleep. According to a recent Swedish study, dentists with multi-site discomfort, poor sleep, and high levels of stress perform worse at work (68).

With no disparity in reporting by gender or correlation with age, 31% and 48.1% of individuals, respectively, reported poor sleep quality and high levels of stress. Shoulders were the most frequently affected area, with a prevalence of regular pain ranging from 6.4 to 46.5%. 33 percent of people reported having less work capacity. Insufficient sleep,

a lot of stress, and pain across multiple sites were linked to diminished job capacity (69).

Dental procedures that frequently cause pain to the patient and the nature of the clinical job all contribute to the high degree of stress that is present in the field. Stress and MS pain were also influenced by time constraints and the frequently unfavorable environment at work brought on by problematic interpersonal connections (70).

The SHIS questionnaire was widely utilized in studies to examine general health status. The positive health of the carers and changes in such health over time was accurately assessed by the SHIS (71,72,73). The unbalanced postures that might result from a strong workload, such as playing the violin, can compromise the cervical range of motion, cervical core strength, and scapular stability. This study demonstrates a substantial difference in violinists' cervical core strength and extension range of motion. Additionally, scapular dyskinesia was visible at the 0°, 45°, and 90° right-side inferior angles of the scapula (74).

5. Conclusion:

According to the findings of the current study, dentists' dominant side shows signs of scapular stabilizer dysfunction, specifically at the level of the inferior angle of the scapula and medial border of the scapula, which manifests as an asymmetrical scapular position at rest and dyskinetic scapula during movements. Overuse, frailty, poor posture, or a combination of all three may be to blame for this.

Teaching dentists' proper posture to use while working in a sitting or standing position is so crucial. Additionally, performing scapular muscular stretching and strengthening exercises frequently will aid in minimizing early muscle aches and tiredness brought on by long practice sessions and, eventually, will stop the scapula from becoming dysfunctional. As a result, dentists are advised to establish effective treatment procedures and health promotion initiatives.

Pre-diploma training should professionally teach knowledge about the extent of ergonomics and prophylaxis, as well as health and safety precautions at the workplace, and post-diploma training should perfect this knowledge in many ways. The ergonomic principles should guide the design and layout of dentists' offices, and innovative tools should be used to maintain proper working posture (correct position, good view, and group work).

To ensure the effectiveness of the organism while performing this particular task, the dentist must be conscious of physical activity. Physical activity boosts muscular strength enhances coordination and speed of movement, and promotes the flexibility of tendons, ligaments, and connective tissues while lowering the risk of overuse injuries and degenerative changes to the locomotor organs. Individual choices for this exercise should be made based on suggestions and available options. More investigation is now required to better understand how Scapular dyskinesis affects dentists, particularly with regard to the termination or reduction of professional practice, as well as to develop practical ways to lessen Scapular dyskinesis among them.

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