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Research Article

**STUDY TO DETERMINE THE TEMPOROMANDIBULAR
DISORDERS PREVALENCE AMONG DENTAL STUDENTS OF
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Abstract:

Temporomandibular disorders (TMD) is a group of conditions that cause abnormal, incomplete or impaired functions of the temporomandibular joint.

Aim: The aim of the study was to assess the temporomandibular disorders (TMD) prevalence in dental students.

Study Design: A Cross-Sectional Study.

Place and Duration: In the Faisalabad Medical University, Faisalabad for one year duration from March 2019 to March 2020.

Methods: This study includes the TMD questionnaire and scale, which includes convenient examples of 400 undergraduate of both sexes. A descriptive statistical analysis was carried out. The experimental sample shows the results of 400 students, 110 in TMD groups and 290 in the control group.

Results: Stress was very important and was the main cause of TMD. BDS IV year students were more stressed (56.25%). The most common sounds were clicking sound (8.8%), and the affected muscle was a lateral pterygoid (27%) and occurred in women. Therefore, TMDs are not self-limiting and do not dissolve over time. They can increase over time as stress levels increase.

Conclusion: The study found that the incidence of temporomandibular disorders was 23.6% in 400 dentist populations. Stress was the most important value caused by the temporomandibular disorder. TMJ sound was significantly correlated with symptoms of TMJ dysfunction.

Key words: Muscles, helkimo index, temporomandibular joint, temporomandibular disorder.

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INTRODUCTION:

Temporomandibular disorders (TMD) is a group of conditions that cause abnormal, incomplete or impaired functions of the temporomandibular joint¹. Temporomandibular disorder (TMD) is a broad term used to describe a range of related disorders, including temporomandibular joint (TMJ), migraine and obstruction, with general symptoms such as pain, limited movement, muscle sensitivity and sounds². TMD consists of clinical symptoms, including imbalances between the structures of the stomatognathic system, including masticatory muscles, TMJ and related structures. The most common symptoms of TMD, voice at the TMJ site, and the most common symptoms of TMJ are limited and painful jaw movements and pain in TMJ³⁻⁴. (Helkimo reviewed the study of mandibular dysfunction in patients who were not symptomatic). TMD trauma, bruxism, malocclusion, poor posture, emotions, arthritis, stress and so on are the reason has been suggested and of these factors, stress is one of the most important and has been shown to affect the common population as well as the student population⁵⁻⁶. Therefore, a questionnaire was planned to determine the incidence of temporomandibular disorders in dental students. This study included a TMD questionnaire and scale to confirm the severity of clinical symptoms and pain. Specific target TMD symptoms were analyzed, including pain, tenderness, joint dysfunction and a limited number of mandible movements. In addition to the overall severity of the symptoms of the temporomandibular disorder, psychological factors and stress were also examined. These parameters were divided into categories by age, sex and duration of the problem in dental students. The purpose of this study was to determine the frequency of signs and symptoms of temporomandibular disorders in the dentist population using questionnaires and clinical studies, and analyze data for a statistically significant relationship.

MATERIALS AND METHODS:

This is a cross-sectional study involving students and graduates of both sexes was held in the Faisalabad Medical University for one year duration from March 2019 to March 2020.

The estimated sample size of 400 students between the ages of 17 and 28 was randomly selected. The aims and benefits of the study were explained to the participants and informed consent was obtained. A pre-structured questionnaire on demographic characteristics was prepared. The clinical examination was carried out using diagnostic instruments containing an oral mirror, William's probe, divider, ruler and stethoscope as well as divider and ruler for measuring the intermediate distance.

Inclusion criteria

1. Dental students
2. No toothache.

Exclusion criterion

1. Students with clinically diagnosed TMD and severe ear pathology were excluded from the study.

The minimum sample size for the study was 320 according to the formula, so the sample size was 400. The subjects were also orally asked about stress conditions and sounds in joints and awareness of bruxism. Opening patterns of mouth, sounds of condylar movement, palpation of muscles and joints were the main features of functional testing. The interincisal gap between the mouth wide open and the vertical overbite is measured to the nearest millimeter. The stethoscope was used to distinguish and confirm four sound types in the temporomandibular joint and occlusal sounds. Muscle and joint tenderness has been confirmed by bilmanual palpation. The participant was asked to distinguish between discomfort and pain. Pain was only determined as tenderness.

The Helkimo Index required a questionnaire-based questionnaire to record symptoms and subjective signs. Contains the answers to 'Yes' or 'No' and the severity of the measured pain in scale. [Table A]

Data collection and analysis

Questionnaires were received using the Helkimo index (1979) and analyzed. Table A: Index of clinical function by code

Code: 0 points = dysfunction group 0 = no clinical symptoms = Di 0

1 to 4 points = dysfunction group 1 = minor dysfunction = Di I

5 - 9 points = group 2 dysfunction = moderate dysfunction = Di II

10-13 points = group 3 dysfunction = severe dysfunction = Di III

15-17 points = dysfunction group 4 = severe dysfunction = Di III

20-25 points = dysfunction group 5 = severe dysfunction = Di III

Symptoms of temporomandibular joint dysfunction (TMJ)

1. Abnormal mobility
2. Changed function
3. Pain during function
4. Muscle pain
5. TMJ pain

Impaired mobility, vertically or horizontally

IED: 30–39 mm mobility slightly distorted 4-6 mm motion slightly distorted

IED: ≤ 29 mm heavy impaired movement ≤ 3 mm substantial impaired movement

IED: ≥ 40 mm normal range ≥ 7 mm normal range.

Sample Size Estimation:

Sample size = $(Z^2 \times [p] \times [1-p]) / C^2$ Where Z = Z value for the confidence level chosen p = Percentage having a particular disease / problem etc. and it is expressed as a percentage C = Confidence interval (CI) expressed, expressed as a decimal.

To determine whether there is a relationship between the occurrence of symptoms and signs of TMJ dysfunction, stress factors in TMD, chi-square test using SPSS software were used. Frequencies were calculated based on collected data. Chi-square tests and correlation coefficients were used to establish significant relationships between

variables. The null hypothesis was that stress did not cause temporomandibular disorders in dental students.

RESULTS:

The frequency of symptoms from the questionnaire shows that 400 people (dental students) are aware of the symptoms. In the study group, 110 students (27.5%) had signs and symptoms, i.e. headache, neck pain, jaw sound, forehead, shoulder, face, eyes, and ears pain, limited mouth opening, stress pain. 382 students (76.4%) were asymptomatic. 80 affected women accounted for 16% of the female population, and only 38 (7.6%) males had symptoms. [Table 1]

[Table 1]

	Males	%age	Females	%age
Asymptomatic	100	75.8%	190	70.9%
With signs and symptoms	32	24.2%	78	29%
Total	132		268	

Stress was of great importance and was the main cause of TMD because students graduated from higher education. Clinical symptoms, such as temporomandibular joint pain, worsen when students are under stress. BDS IV year students have (60.3%) TMDs, then third year students (49.07%), then first year students (43.75%) and least stress was (40%) in second year students. [Table 2]

Pain raises in Stress or not. Table 2

Classes	Yes	No	Chi-Square Value
BDS I	42(43.75)	54(56.25)	23.52 P = <0.001 HS
BDS II	40(40)	60(60)	
BDS III	53(49.07)	55(50.10)	
BDS IV	64(60.3)	42(39.6)	

In the clinical trial, the most common sounds in TMD were clicking sound, which were 4% in men and 8.8% in women, followed by popping, grating and snapping sound. The clinical sign is not a significant value when comparing student sex (p = 0.86). [Table 3]

Symptoms in male and female given in Table 3

Classes	Male	Female	Chi-Square value
Popping	07(1.4)	11(2.2)	1.24 P = 0.869 NS
Snapping	06(1.2)	07(1.4)	
Clicking	20(4)	44(8.8)	
Grating	12(2.4)	19(3.8)	
Asymptomatic	104(26)	170(42.5)	

Among them, the most common symptom was headache, which was quite pronounced (p <0.001 HS), which means that TMD was commonly associated with headache in 53.9% of BDS IV year students and less representative headache in the second year BDS students, i.e. 39.8%. [Table -4]

Whether you have headache. Table 4

Classes	Yes	No	Chi-Square value
BDS I	45(45)	55(55)	31.70 P = <0.001 HS
BDS II	31(39.8)	47(60.2)	
BDS III	49(45.79)	58(54.2)	
BDS IV	65(53.9)	50(43.47)	

During the study, many students were aware of the sound produced by TMJ. A significant p-value = <0.005 indicating that TMD is associated with abnormal jaw sounds in symptomatic students. [Table 5]

Does your jaw make sound? Table 5

Classes	Yes	No	Chi-Square value
BDS I	26(26.5)	72(73.4)	10.90 P = <0.005 Significant
BDS II	17(16.1)	88(83.8)	
BDS III	23(23)	77(77)	
BDS IV	25(25.7)	72(74.2)	

Students were having the history of pain in ears, joint, lower teeth, upper teeth, face, eyes, forehead, shoulder, neck, which is of radiating, dull or Sharp, intermittent or constant, gradual or sudden had recorded. 40% in BDS IV year Students and least 19.5% in BDS II year student. It is highly significant value $p < 0.001$ showing TMD in students. [Table 6]

Whether you suffer rigidity or slow movement of mandible facial pain. Table 6

Classes	Yes	No	Chi square value
BDS I	20(25)	60(75)	52.00 P = <0.001 HS
BDS II	22(19.5)	91(80.5)	
BDS III	32(29.9)	75(70.1)	
BDS IV	40(40)	60(60)	

In the study group, students suffer when they open their mouths and chew hard food. There were 22.9% who reported decline in opening of mouth and dysfunction for IV year students and at least 8.3% decrease for BDS II students. Mouth opening has a significant value in TMD $p = < 0.005$. Table 7

Whether it hurt or have locked mandible when you open wide or chew. Table 7

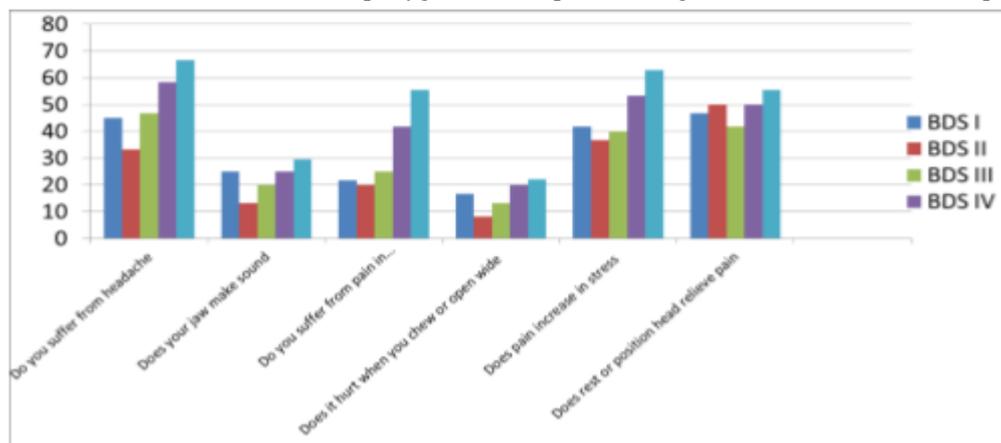
Classes	Yes	No	Chi square value
BDS I	19(18.9)	82(81.2)	10.90 with P = <0.005 significant
BDS II	09(8.3)	99(91.7)	
BDS III	15(15.8)	80(84.2)	
BDS IV	22(22.9)	74(77.1)	

The evaluation showed clenching and grinding of teeth. TMD was not significant at $p = 0.269$. [Table -8]

Do you clench or grind your teeth. Table 8

Classes	Yes	No	Chi square value
BDS I	21(19.1)	89(80.9)	5.18 with P = 0.269 NS
BDS II	28(26.4)	78(73.58)	
BDS III	07(8.97)	71(91.01)	
BDS IV	18(16.98)	88(83.02)	

Women were more affected than men because of estrogen levels and a tendency to stress. The most common tenderness in muscles were lateral pterygoid (27%), posterior digastric (7.5) and masseter superficial (5.2%).

**Graph 1: Distribution of Signs and symptoms of TMD in dental students.**

People who reported bruxism more often had tenderness to the superficial muscles of the masseter (8.7% and 1.9%, $P < 0.05$) and reduced opening (8.7% and 2.2%, $P < 0.05$).

The analysis of frequency data for men and women revealed many important differences. Stress and headache were more commonly reported by women (15.4% vs. 9.5%, $p < 0.05$). The responses to the questionnaire did not show a significant difference in the subjective awareness of voices between men and women. A clinical study showed that women had smaller mouth opening than men ($P < 0.01$) and a higher frequency of voice in TMJ ($P < 0.001$). Women showed a higher incidence of muscle tenderness, especially in pterygoid lateral muscles.

DISCUSSION:

This study determined the occurrence of temporomandibular disorders in dentistry using a questionnaire based on a self-reported questionnaire. A wide range of clinical criteria for TMJ disorder was considered, but stress was the most common factor⁸⁻⁹. In the study group, 110 students (23.6%) had signs and symptoms, namely headache, jaw sound, pain in neck, forehead, shoulder, face, eyes, ears, limited mouth opening, stress pain. According to research by Mutlu et al. In 2002, and Rani et al. In 2017, 488 students (81.3%) showed no symptoms, but Modi et al showed less prevalence¹⁰⁻¹¹. According to a study by Johansson in 2003, Sweden with a predominance of temporomandibular disorders in females (19%) compared to men (17%)¹². McFarlane TV et al. In 2002, they conducted a study of patients with medical practice in Great Britain and found that the incidence of orofacial pain was higher in women (30%) than in men (21%). Goulet et al. In 1995, they carried out a retrospective study in France and found jaw pain and concluded that women show the frequency of disorders in all age groups. In this study, 63.3% of surveyed students said they were under stress and had signs and symptoms of temporomandibular disorder¹³. As workload and postural abnormalities increase during testing, they may cause temporomandibular disorders in students. The results of this study were in line with several previous studies. It is believed that increased levels of stress cause bad habits such as bruxism and even excessive chewing of gum. They cause excessive muscle fatigue and cramps, followed by pain¹⁴. Most people with symptoms knew only one symptom. According to research by Gopal et al., The click sound, which was 2.67% in men and 6.67% in women followed by grating then popping and snapping sound¹⁵. A fairly visible headache ($p < 0.001$ HS) means that TMB is associated with headache, which accounts for 70% of MDS students and less in the second year of BDS 39.8 % and pain at maximum opening, which is accompanied by other symptoms more often. These findings confirm the results of the development of pain in people with experimental bruxism similar to those reported by patients with functional disorders. The study identified the incidence of temporomandibular disorders in dental students. More research is needed to identify the symptoms that pose the greatest threat to the dentist student population to reduce the risk of spontaneous recovery.

CONCLUSION:

The study found that the incidence of temporomandibular disorders was 23.6% in 400 dentist populations. Stress was the most important value caused by the temporomandibular disorder. TMJ sound was significantly correlated with

symptoms of TMJ dysfunction. Women showed a higher incidence. People with bruxism were more likely to have tenderness and limited opening in the masseter muscles. TMDs are not subject to self-limitation and do not subside over time. They can increase over time as stress levels increase.

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