Prevalence of Temporomandibular Disorders Among Dental Students of College of Dentistry-Hawler Medical University.

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Background: Temporomandibular disorders (TMD) are a group of conditions affecting the jaw joint and the muscles that control jaw movement, can cause pain and discomfort in the jaw, face, and neck, and affect a person's ability to speak, chew, and swallow.

Aim: The present study is aimed to specify the prevalence of temporomandibular joint disorder among dental students of Hawler Medical University.

Method: The research conducted involved a group of 120 dental students, with an equal number of males and females from Hawler Medical University. The required data were collected by developing a particular questionnaire by modifying Fonseca's questionnaire. The study was performed during a period of one month from January to February. Visual Analogue Scale (VAS) was used to determine the severity of the pain and dysfunction in the participant's muscles.

Results: More than 75% of the participants had no deviation. In 65.8% of the students, class 1 occlusion was observed. Trauma was observed in just 12.5% of the participants. Bite and bruxism habits were observed in 24.2% and 10% of the students respectively. Moreover, 30% of students had disturbed sleep. Severe TMJ pain was reported in 4.2% and 0.8% of females and males respectively.

Conclusion: The occurrence of TMD among males was less than among females. Most of the participants had mild TMJ pain. There was a significant association between symptoms of TMD and para-functional habits.

Keywords: Temporomandibular disorder, Temporomandibular joint, Fonseca's questionnaire.

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INTRODUCTION

Temporomandibular disorders (TMD) is a collective term that defines a subgroup of painful orofacial disorders, involving complaints of pain in the Temporomandibular joint (TMJ) region, fatigue of the craniocervical facial muscles, especially mastication muscles, limitation of mandible movement, and presence of articular clicking. TMD has multiple causes such as stress, dental issues, posture changes, muscle dysfunction, and TMJ structure changes. [1] The most commonly cited TMD factors include psychological, structural, and postural factors can disrupt the balance of the stomatognathic system, affecting dental occlusion, masticatory muscles, and TMJ . [2]

TMJs are probably the most common findings one observes when examining a patient for masticatory dysfunction. In most cases, the examination process includes a detailed clinical interview and a comprehensive physical inspection, physical examination must include an investigation of the mandibular active range of motion, standardized TMJ, and masticatory and cervical muscle palpation, as well as inspection of articular joint sounds. [3]

TMD is a serious issue among university students, as they encounter numerous stressors that may lead to emotional burden.

Previous literature has documented that TMD and oral parafunctions are more prevalent in individuals who experience emotional stress. Moreover, the prevalence of TMD symptoms has been observed to be higher in university students compared to older individuals and populations residing in rural areas.[4] However, there is a lack of sufficient data on the prevalence of TMD symptoms among dental students of Hawler Medical University in Kurdistan region of Iraq in general, and specifically among postgraduate university students. In this regard, the present study is aimed to specify the prevalence of temporomandibular disorders among dental students of Hawler Medical University.

METHODS

The present study was conducted by creating a case sheet to collect data through clinical examination and questionnaires from dental students at Hawler Medical University's College of Dentistry. The applied questionnaire was developed by modifying Fonseca's questionnaire. The required data were collected from 120 students out of a total of 540 students. The participants were comprised of 60 males and 60 females, with an average age of 20 years.

The study was conducted from 4th of January to 1st of February, and the data was collected at the dental chair of the departments of Hawler Medical University's College of Dentistry. To ensure the accuracy of the data collection process, the researchers were trained by their supervisor to conduct clinical examinations. In this regard, the process of muscle palpation with controlled finger pressure was done to determine pain severity and dysfunction. The VAS Scale was used to assess the severity of pain and dysfunction. Overall, the study aimed to gather information on the prevalence of temporomandibular disorders among dental students at Hawler Medical University's College of Dentistry. The data collected through the case sheet study and clinical examinations will provide valuable insights into the causes and potential treatments for these disorders.

RESULTS

The findings indicated that the average age of participants was 20.66±1.85 years, with the youngest being 18 and the oldest 30 years old. The results indicate that half of the students were male and the rest were female. Based on the Wilkes classification for internal derangement of TMJ, the participants of this study were devided in five different stages (Figure 1).

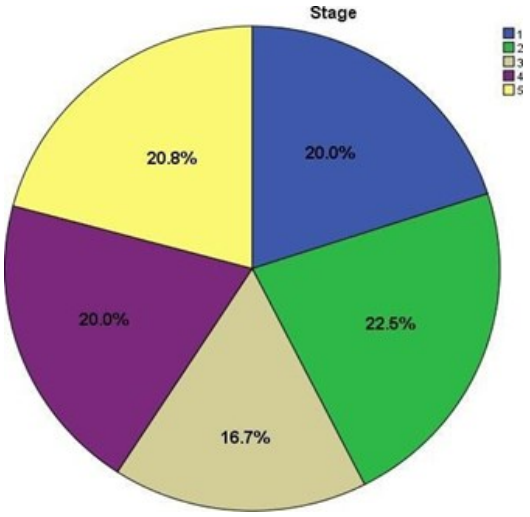

Figure 1. Different stages of TMJ among the participants

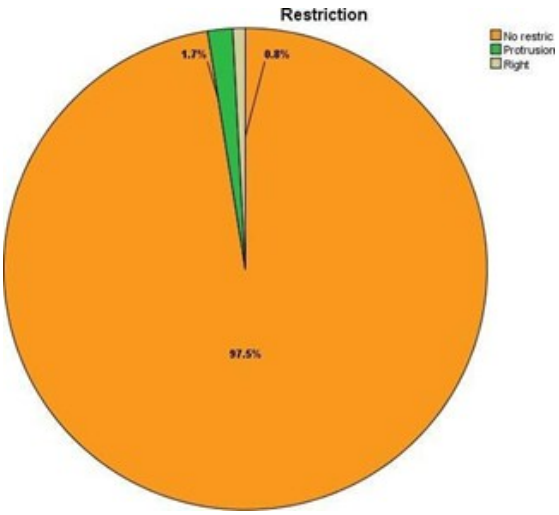

Figure 2. The students' restriction

Figure (2) shows that only 0.8% of the participants with TMD had right restriction,

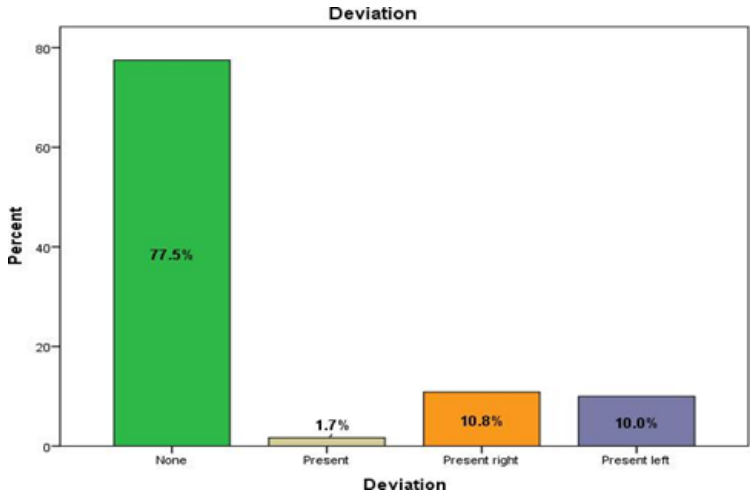

Figure 3. The observed deviation

and 1.7% had protrusion restriction and 97.5% had no restriction.

As could be seen in figure (3), the prevalence of signs in TMD patients was as follow, 10.8% had a right deviation, 10% had a left deviation, 1.7% had a deviation, and 77.5% had no deviation.

In terms of trauma type, 8.3% of the trauma was of micro type and 4.2% of macro type, and the rest had no trauma (Figure 4). The results showed that 0.8% of the males and

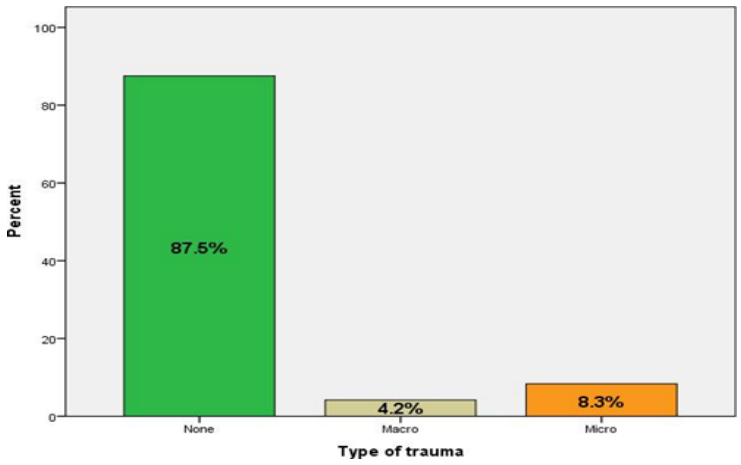

Figure 4. Types of trauma

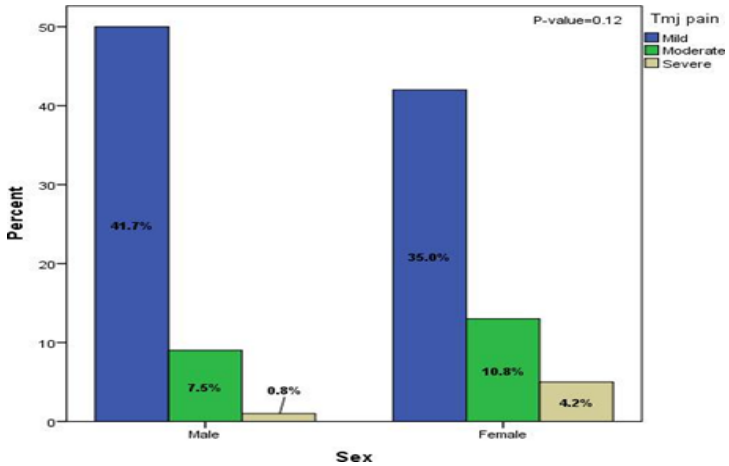

Figure 5. TMJ pain in both male and female students

4.2% of the females experienced severe TMJ pain, 7.5% of the males and 10.8% of the females experienced moderate TMJ pain, and mild TMJ pain was experienced by 41.7% of the males and 35% of the females (Figure 5).

Their mean stage was 2.99±1.44, ranging from stage 1 to stage 5. Their mean Temporomandibular Joint (TMJ) pain was 1.93±2.25, ranging from 0 to 9. Their mean mouth opening was 34.90±2.08, ranging from 25 to 40, their mean jaws frozen was 1.23±1.46, ranging from 0 to 7, their mean daily pain was 1.86±2.47, ranging from 0to 8, and their mean chewing was 0.91±1.51, ranging from 0 to 7 (Table 1).

Table 1. The students' data regarding their age, stage, TMJ pain, mouth opening, frozen jaws, daily pain, and chewing

	Age	Stage	TMJ pain (VAS scale)	Mouth opening	Frozen jaws	Daily pain	Chewing
Mean ±SD	20.66 ±1.858	2.99 ±1.441	1.93 ±2.257	34.90 ±2.080	1.23 ±1.464	1.86 ±2.474	0.91 ±1.517
Mini-Maxi	18-30	1-5	0-9	25-40	0-7	0-8	0-7

As can be seen from table (2) joint sounds, functional manipulation, mobility, wear, and missing data were analyzed in a sample of 120 students. The most frequent joint sound was clicking, that was observed in 20 students (16.7%). Clicking left and clicking right were observed in 12 students each (10.0%). Other joint sounds, including crepitus, were reported by fewer students. Functional manipulation was observed in 19 students (15.8%), with various combinations of muscle involvement. Mobility was present in only 2 students (1.7%), while wear was present in 13 students (10.8%). Missing data were reported by 29 students (24.2%). These findings suggest that joint sounds and functional manipulation are relatively common in this population, while mobility is rare. Wear and missing data were also observed in some students.

The study found that a significant proportion of the students reported experiencing various forms of pain. Headaches were reported by 52.5% of students, with 16.7% experiencing them frequently and 35.8% experiencing them sometimes. Otalgia was reported by 18.3% of students, with 7.5% experiencing it frequently and 10.8% experiencing it sometimes. Chewing gum pain was reported by 36.7% of students, with 21.7% experiencing it frequently and 15% experiencing it sometimes. Only a small proportion of students reported reaching a point of no drug effect or experiencing jaw lock. A significant proportion of students (76.7%) did not experience any of these pains (Table 3).

Table (4) presents the severity of TMJ pain, daily pain, chewing pain, and frozen jaws among the students. TMJ pain was mild in the majority of students (76.7%), with only 5% experiencing severe pain. Daily pain was also mild in most students (77.5%), with 8.3% experiencing severe pain. Chewing pain was mild in 93.3% of students, and frozen jaws were mild in 94.2% of students.

DISCUSSION

This study aimed to evaluate the prevalence of TMD among the students of Hawler Medical University College. The results of this study revealed the presence of at least mild TMD among the participants, with pain as the most common symptom in the muscles of mastication. Most of the cases with severe TMJ pain had continuous stress. Moreover, the prevalence of TMD in females was more than in males. The findings of this study have been reported by similar ones previously. [5,6]

The high prevalence of TMD among females could be due to the physiologic

Table 2. The students' data regarding joint sound, functional manipulation, mobility, wear, missing, and high spot

Specification	Frequency (N)	Percentage (%)
Joint sounds		
No sound	62	51.7
Clicking Right/ Clicking Left	20	16.7
Clicking Left	12	20.0
Clicking right	12	20.0
Functional manipulation		
Medial pterygoid R/Medial pterygoid L/lateral pterygoid R/ lateral pterygoid L	19	15.8
Lateral pterygoid R	11	9.2
Lateral pterygoid R/ Lateral pterygoid L	10	8.3
Mobility		
Absent	118	98.3
Wear		
Absent	107	89.2
Missing		
Present	29	24.2
Absent	91	75.8
High spot		
Absent	117	97.7
Total	120	100.0

Table 3. The students' experience of pain

Pain	Frequency (N)	Percentage (%)
Headache	63	52.5
Otalgia	22	18.3
Chewing gum pain	44	36.7
Reach the point of no drug effect	2	1.6
Psychology	92	76.7
Jaw lock	16	13.3

Table 3. The students' experience of pain

Pain	Severity	Frequency (N)	Percentage (%)
TMJ pain	Mild	92	76.7
	Moderate	22	18.3
	Sever	6	5.0
Daily pain	Mild	93	77.5
	Moderate	17	14.2
	Sever	10	8.3
Chewing pain	Mild	112	93.3
	Moderate	6	5.0
	Sever	2	1.7
Frozen jaws	Mild	113	94.2
	Moderate	6	5.0
	Sever	1	0.8

uniqueness such as regular hormonal variations, different characteristics of the connective tissue, and muscular structure and stress (7). The most common symptoms reported in this study included difficulty in mouth opening, masticatory pain, pain in the auricular region, clicking in the TMJ during chewing, or mouth opening. Moreover, emotional stress is considered to be an important characteristic of TMD. This finding is in accordance with the previous investigations as emotional stress influences changes in muscular activity and occlusion (8).

This data corroborates the relationship between emotional stress and the development of TMDs and are of great importance in the early diagnosis and management of these disorders. So, students in health and science colleges are more probable candidates for developing TMDs (9). It may be due to the curriculum of these institutions possessing a greater study load which could directly lead to greater levels of anxiety and stress. Some authors have reported that parafunctional habits are one of the most important factors in the etiology of TMDs, (10). The other factors that were added to the questionnaire included trauma and previous history of treatment for TMDs. There was a significant association between a history of trauma and the presence of TMDs, and this result is similar to the previous findings which linked head and neck trauma with TMJ symptoms such as joint pain, restricted mouth opening, and tenderness of the masticatory muscles (11).

The present study's primary results reveal that among the participants belonging to stages 1 to 5, 49% had non-tender muscle palpitations. Furthermore, 58% of the participants did not exhibit any habits, and 87.5% had not experienced any prior traumas. Conversely, 70% of the participants had normal sleep patterns, and all of these factors were significantly associated with the absence of tenderness in the muscles of mastication. It is noteworthy that among the students, 51% reported experiencing tenderness in one of their muscles of mastication. The diagnosis of myogenous TMD appears to be significantly influenced by the masseter muscle, as evidenced by the highest odds ratio for myogenous TMD being associated with pain induced by palpation of the masseter muscle. Our results are in line with the study by Silva et al (2005) who showed that the masseter muscle is the most sensitive site in myofascial TMD pain patients (12). Our study indicated that 24.2% of students had bruxism which is associated with muscle tenderness. The majority of evidence on the TMD bruxism relationship supports the association between bruxism and symptoms of muscle pain or fatigue. The presence of

morning masticatory muscle pain or fatigue is regarded as a diagnostic criterion for sleep bruxism, as demonstrated by other study (13).

Emotional overload may trigger teeth clenching, leading to circulatory changes in the muscles of mastication and compression of pain receptors due to an increase in the fluid within the muscle compartment. So, Stress appears to play a pivotal role, as evidenced by 30.0% of students in our study experiencing stress and depression. Several authors have suggested that parafunctional habits constitute one of the key etiological factors in the development of TMDs, as noted by previous study (10). According to the findings of our study, 35% of the muscles subjected to functional manipulation did not exhibit tenderness, whereas 70% of the participants reported tenderness upon palpation of either the medial pterygoid or lateral pterygoid muscle. This study revealed a significant association between headaches and muscle pain, providing further evidence of the well-established comorbidity between headaches and TMD. Consistent with these findings, noted a clinical correlation between the two disorders. (14)

The current study revealed that 93% of the participants experienced mild pain while chewing, and this was significantly associated with 21% of students who reported that their symptoms of pain began when they started chewing gum. Of the participants in our study, on the other hand, 81.7% of the participants in our study did not report any otalgia. Among those who did experience otalgia, there was no association with TMD, as they did not exhibit any symptoms of TMJ pain, muscle pain, or clenching.

CONCLUSION

In conclusion, the prevalence of signs and symptoms of TMD was found to be higher in females than in males. Clinical examination, including TMJ pain assessment and muscle palpation, was employed to diagnose TMD, with most students exhibiting mild TMJ pain. Para-functional habits were found to be significantly associated with signs and symptoms of TMD, as concluded by this study. Furthermore, a majority of the students experienced stress during exams. So, conducting more detailed longitudinal studies is necessary for this population to

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