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Prevalence of Temporomandibular Joint Disorder among Dental Students of the University of Baghdad

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Abstract

Introduction Temporomandibular disorder refers to a group of disorders with symptoms including discomfort, limited mobility, muscular pain, and intermittent joint noises. **Objectives** are to assess the cross-sectional prevalence of temporomandibular disorders among dental students at Baghdad University as well as highlight the impact of stress as the main contributor to the joint problem. **Materials and Methods** The study involved 91 undergraduate dentistry students, 26 males, and 65 females. The self-administered questionnaire, which consisted of 20 items and was provided online, was based on two assessments: the Fonseca Anamnestic Index and the Perceived Stress Scale. **Results** The Fonseca questionnaire assessed the prevalence of signs and symptoms of temporomandibular disorders (TMD). The results revealed that 30.8% of total students were classified as being free of TMD, and 69.2% were classified as having TMD, with mild TMD at 42.9%, moderate TMD at 18.7%, and severe at 7.7%. The Perceived Stress Scale PSS evaluation results revealed that the students› stress levels were either low, moderate, or high, accounting for 4.4%, 70.3%, and 25.3%, respectively. **Conclusion** TMD is common among the University of Baghdad students, indicating the significance of stress in the development and/or progression of TMD. The study›s findings are concerning, suggesting more research is needed to uncover risk factors connected with TMD to develop preventative and treatment approaches.

Keywords: TMD; fonseca anamnestic index; undergraduate dental students; the scale of perceived stress.

Introduction

TMD is the third stomatological condition, after tooth caries and periodontal diseases, to be designated as a population concern by the World Health Organization (WHO) (de Resende et al, 2020). Temporomandibular joint disorders TMD refers to a set of conditions that affect the TMJ, jaw muscles, or both. Clinically, it appears as masticatory muscle or TMJ soreness and tenderness, clicking or crepitation of the TMJ during condylar movement, and restriction, deviation, or deflection of mandibular mobility. The face, head, or jaw are frequently involved (Maini and Dua, 2021; Maini and Dua, 2022). TMDs have a complicated and multifaceted etiology. TMD can be caused by a variety of reasons. Predisposing factors are factors that raise the likelihood of TMD. Factors that trigger

the beginning of TMD are referred to as starting elements, whereas factors that impede healing or accelerate the advancement of TMD are referred to as perpetuating factors. In some cases, a single factor may play one or more of these functions (Matos and Radke, 2020). However, the most common etiological factor for TMD is emotional stress. Psychological stress is an integral element of our lives. It is not an uncommon emotional issue that is restricted to institutionalized patients. Stress is a force that we all encounter. Stressors are situations or experiences that cause stress. For example, they can be painful (such as failing an exam) or enjoyable to pupils (making good grades on an exam). It makes no difference to the body whether the stressor is pleasurable or unpleasant. The important point is that the body responds to stress by making demands for readjustment or adaptation (the «fight-or-flight» response. These demands are proportional to the severity of the stressor (Ahuja et al, 2018; Kim and Kim, 2020). Furthermore, when making a diagnosis, it is vital to distinguish between both signs and symptoms. A sign is a clinical finding that the doctor discovers objectively during a clinical examination. A symptom is a description or complaint made by the patient. Although patients are acutely aware of their symptoms, they may be ignorant of clinical signs. For example, a person may describe muscular soreness during mandibular opening yet be completely unconscious of the accompanying joint noises. Although both muscle pain and joint sounds are clinical indications, only the latter is considered a symptom (Ram and Shah, 2020; Atsü et al, 2019). In addition, muscle pain, which can vary from mild soreness to severe discomfort, is perhaps the most prevalent complaint of individuals with masticatory muscle problems. Myalgia is pain felt in muscle tissue that can be caused by increased muscular use. The symptoms are frequently coupled with muscular weariness and tightness (Ayouni et al, 2019). Also, dysfunction is a frequent clinical sign of masticatory muscle diseases. Typically, it manifests as a reduction in the range of mandibular movement. When muscular tissues are damaged from overuse, any contraction or stretching aggravates the discomfort. As a result, to preserve comfort, the patient limits movement to a range that does not increase the amount of discomfort (Pietropaoli et al, 2019; Lomas, 2018). To facilitate evaluation in epidemiologic studies and standardize study samples, many questionnaires addressing major TMD indications and symptoms have been developed. Some of these questions need to be categorized by severity level. The Fonseca questionnaire is the most commonly used method for gathering preliminary data on TMD in the non-patient population. This questionnaire gets data in a period at a minimal cost, and it is simple for the examinees to understand.

Material and Methods

Students at the University of Baghdad/ College of Dentistry participated in an online survey. Students were emailed about the study and given all the information, and they were asked to participate voluntarily participants were fully informed about the study›s aims and the confidentiality of the data, and they were also guaranteed that the data would be used exclusively research purposes and that their refusal to participate would have no impact on their current or future courses of study. The study included 91 fifth-grade undergraduate dental students, 26 males and, 65 females. A self-administered questionnaire with 20 items was designed and distributed online. The questionnaire depended on two assessments: The Fonseca Anamnestic Index and The Perceived Stress Scale (PSS). The Fonseca Anamnestic Index Form is a brief questionnaire designed to check for temporomandibular problems (TMDs). As shown in Table 1, the questionnaire consists of ten questions that assess the existence of discomfort in the TMJ, head, and during chewing, parafunctional behaviors, limitation of movement, joint clicking, perception of malocclusion, and emotional stress. As instructed, the volunteers responded with

«yes», «no» and «sometimes», with only one answer marked for each question. The “Scale of Perceived Stress” PSS is a measure that was established in 1983 to assist in evaluating individual stress levels. It is still a popular choice for helping us understand how different events affect our feelings and perceived stress. The questions in this examination inquire about your feelings and ideas throughout the previous month. In each scenario, you will be asked how frequently you feel or think a certain way. We apply a Likert five scale from zero to five scale for each question (0-never, 1-almost never, 2-sometimes, 3-often, 4-very often). Individual»PSS scores can vary from 0 to 40, with higher levels indicating more perceived stress. Low-stress scores range from 0 to 13. Scores between 14 and 26 indicate moderate stress. Scores ranging from 27 to 40 would be considered significant for perceived stress». Data analysis was done using SPSS V26. Cronbach›s alpha coefficients measure the internal consistency or reliability of survey items. The Descriptive statistic was used to report the frequency of each answer, Independent sample t-test was used for group comparison. ‹Pearson›s correlation coefficient is used to measure the statistical relationship, or association, between two continuous variables.

Results

The questionnaire was found to be reliable by Cronbach›s alpha coefficients for temporomandibular disorders The TMD scales were 0.779, and for Perceived Stress Scale PSS, it was 0.728, considered a satisfactory internal consistency. A total of 91 questionnaires were collected. Males accounted for 28.6% of the total and females accounted for 71.4%. The Fonseca questionnaire assessed the prevalence of signs and symptoms of temporomandibular disorders (TMD). The result revealed that there were 30.8% of total students classified as being free of TMD, and a total of 69.2% classified as having TMD and distributed as follows: Mild TMD 42.9%, Moderate TMD 18.7%, and Severe 7.7% (Figure 1). The result revealed that the most commonly reported symptom is a headache at 63.8%, followed by clenching or grinding teeth at 60.5%, and TMJ clicking while chewing or when you open your mouth at 50.6%. According to the Evaluation Results of the Perceived Stress Scale PSS, the stress levels of the 91 college students surveyed were found to be either low, moderate, or high, accounting for 4.4%, 70.3%, and 25.3%, respectively. Table 2. Pearson›s correlation coefficient measures the statistical relationship, or association, between two continuous variables. Correlation between TMD and PSS variables Statistical significance (two-tailed) was defined as p 0.05. The result can be interpreted as follows: A correlation value of 0.371 between two variables would indicate that a significant and positive relationship exists between the two. A positive correlation signifies that if variable PSS goes up, then TMD will also go up Table 3.

Table (1): The Fonseca Anamnestic Index.

	Questions	No	Sometimes	Yes
1	Is it hard for you to open your mouth?			
2	Is it hard for you to move your mandible from side to side?			
3	Do you get tired /muscular pain while chewing?			
4	Do you have frequent headaches?			
5	Do you have pain on the nape or stiff neck?			
6	Do you have earaches or pain in craniomandibular joints?			
7	Have you noticed any TMJ clicking while chewing or when you open your mouth?			
8	Do you clench or grind your teeth?			
9	Do your feel your teeth do not articulate well?			
10	Do you consider yourself a tense (nervous) person?			

Table (2): Results of the Perceived Stress Scale PSS.

Stress levels	Frequency	Percent %	Valid Percent	Cumulative Percent
low	4	4.4	4.4	4.4
moderate	64	70.3	70.3	74.7
high	23	25.3	25.3	100.0
Total	91	100.0	100.0	

Table (3): Correlation between TMD and PSS variable.

Variables		TMJ mean	PSS mean
TMJ mean	Pearson Correlation	1	.371**
	Sig. (2-tailed)		.000
	N	91	91
PSS mean	Pearson Correlation	.371**	1
	Sig. (2-tailed)	.000	
	N	91	91
**. Correlation is significant at the 0.01 level (2-tailed)			

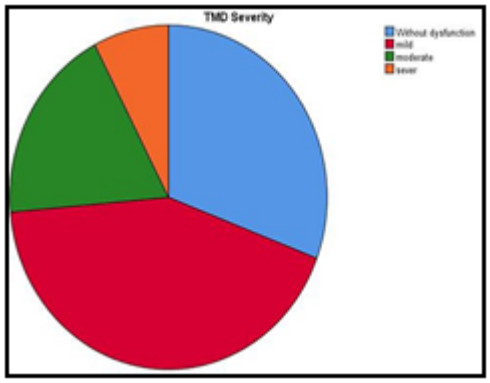

Figure (1): The prevalence of temporomandibular disorders (TMD).

Discussion

The purpose of this study was to assess the prevalence of TMD symptoms among university students, focusing on stress as a predisposing factor. The Fonseca questionnaire was used in this study because it allows for the gathering of a considerable amount of information in a short per period is also easy to understand and has almost no influence on the investigator›s data analyzer. Stress as an influencing factor is evaluated by the perceived stress scale, a classic and popular stress measuring tool. Medical students are in a very demanding environment and are affected by a high degree of stress. High levels of anxiety can affect a student›s academic performance and also increase the risk of other health-related problems (Sójka, et al, 2019; Fateh et al, 2020). For instance, this could be supported by the result of this survey, which showed that the majority of the 5th grade had a moderate to a high level of stress. Garg et al, reported in their study that stress among medical students is a dynamic process since the stressors change with the year of study, which could relay to the certainty that student›s expectations are increasing at a curriculum level, it becomes more prominent (Garg et al, 2017). Among the multiple health problems where stress is the main causative factor, its association with TMD is at the centre of our attention. Subsequently, the Fonseca questionnaire concludes that more than two-thirds of students have temporomandibular disorders (TMD). This result could be overstated to some extent, knowing that dental students, as part of their coursework, have obtained theoretical knowledge about TMD. However, participants with the symptoms of TMD led them to respond to the questionnaire in a more responsible and informed manner. Inherent obstacles, demanding patient care, and career uncertainty are some of the issues that dental students may have and make them more prone to having TMD (Cardall, Rowan, & Bay, 2008; Ahuja et al, 2018; Abdelsalam, Rodriguez, & Brallier, 2020). The most commonly reported symptom associated with TMD is headache, and this agrees with the finding of the systematic review and meta-analysis study. Headache and TMD commonly co-occur, especially in the case of migraines and muscle-related TMD. This link has significant clinical, pathophysiological, and therapeutic consequences (Yakkaphan, et al, 2022). The TMD correlation to primary headaches «migraine, chronic migraine, and tension-type headache» is well documented as a combined condition, with the presence of one increasing the prevalence of the others (Speciali & Dach, 2015). Moreover, the result showed a significant and positive relationship exists between the TMD and PSS variables, which agrees with the finding of Kmeid et al, (2020). There is an association between stress, anxiety, and temporomandibular joint disorder in that psychological factors can

canal parafunctional habits and that they are associated with a lower pressure pain threshold, affecting masticatory muscle tenderness» (Kmeid, et al, 2020). In addition, masticatory muscle activation has been proposed as a stress-related compensatory response. An increase in activity may directly or indirectly result in an overload of the temporomandibular joints and masticatory muscles in TMD patients, producing TMD discomfort as a consequence (Reissmann, et al, 2012). Furthermore, according to the findings of Kim et al, reducing physical stress is required to reduce the prevalence of oral parafunctional habits and TMDs among college students. This can be accomplished by including physical exercise programs, which may assist as a coping strategy and aid in the reduction of physical stress symptoms (Kim & Kim, 2020). Despite numerous studies, the mechanism of TMD is not fully understood. Each clinician who is confronted with a patient complaining of symptoms of TMD needs to address the entire problem to maximize the potential for a successful outcome.

Conclusions

Students at the University of Baghdad have a high prevalence of temporomandibular disorders, indicating that stress plays a role in the onset and progression of TMD. This study›s findings are alarming and necessitate additional research to identify TMD risk factors and develop treatment and prevention strategies.

Conflict of interest

All authors declare that they have no conflicts of interest.

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