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

A Project Submitted to the College of Dentistry, University of Baghdad, Department of Oral Diagnosis in Partial Fulfillment for the Bachelor of Dental Surgery

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Certification of the Supervisor

I certify that this project entitled “Prevalence of Temporomandibular Joint Disorder Among Dental Students of the University of Baghdad” was prepared by **Abbas Abdulsalam Farhan** under my Supervision at the College of Dentistry/University of Baghdad in partial fulfilment of the graduation requirements for the Bachelor Degree in Dentistry.

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Date: 18/4/2022

Dedication

I would like to dedicate my humble effort to:

My lovely family their affection, love, encouragement and prays of day and night make me able to get success and honor.

To my supervisor.

To all people who supported me and help me.

Acknowledgment

First and foremost, praise and thanks to Allah Almighty for helping me fulfill my dream, for His blessings throughout my work to complete it successfully.

I would like to extend my deepest respect and gratitude to the Dean of the College of Dentistry, University of Baghdad.

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Introduction

Temporomandibular disorder is a group of conditions producing abnormal, incomplete, or impaired function of the temporomandibular joint. Temporomandibular disorder (TMD) is a wide-ranging term used to describe a number of related disorders, involving the temporomandibular joint, masticatory muscles, and occlusion, with common symptoms such as pain, restricted movement, muscle tenderness, and intermittent joint sounds.

The manifestations of myofascial pain and discomfort coincide with moments of tension and stress, which causes muscular hyperactivity, and this tension can lead to parafunctional habits. Thus, psychosocial factors such as anxiety, stress, and depression might be important in the pathogenesis of temporomandibular disorder.

Stress is one of the important factors in the development of temporomandibular disorder. It is assumed that increased levels of test anxiety can affect temporomandibular disorder in students of health professions who routinely take a variety of examinations and assessments in their intense programs.

Different questionnaires covering major TMD signs and symptoms have been elaborated to simplify the evaluation in epidemiologic studies and to standardize research samples. Some of these questionnaires provide that subject be classified by severity degree.

The most common method for obtaining the initial data on TMD among the non-patient population is using the Fonseca questionnaire. This questionnaire collects the data in a short period at a low cost, and it’s easy to understand by the examinees.

Aims of the Study

The primary aim of this study was to evaluate the cross-sectional prevalence of Temporomandibular disorder TMD among dental students at Baghdad University. The secondary aim was to evaluate the prevalence and association of stress with TMD.

CHAPTER ONE

Review of Literature

Review of Literature

1.1. Anatomy of TMJ

The **TMJ** is located just anterior to the external auditory meatus, consists superiorly of the temporalis bone and inferiorly of the mandible,contains an intra articular disk within the joint capsule, and its contractiletissues are the muscles of mastication. As in figure [1.1] **(Gray et al., 2011)**.

A biconcave intra articular disk divides the joint into upper (discotemporal) and lower (disco-mandibular) joint spaces **(Alomar et al., 2007)**.

The articular surfaces of the TMJ are highly incongruent and consist of fibrocartilage, not hyaline cartilage like other synovial joints **(Kuroda et al. 2009)**.

The joint capsule is lined by a synovial membrane, contains synovial fluid, and possesses a lateral ligamentous thickening (temporomandibular ligament) that reinforces the joint **(Alomar et al., 2007)**.

Musculature located in the head, face, and cervical spine contributes to movement and stability of the TMJ **(Boering, 1979)**.

Muscles of mastication are split into two groups: openers and closers. Opening is sometimes referred to as mandibular depression whereas closing is sometimes referred to as mandibular elevation. The lateral pterygoid is the primary opener and is the strongest contributor to both protrusion and medial/lateral deviation of the jaw, both of which are required for normal mastication. Other muscles including the geniohyoid, mylohyoid, and the digastric muscles assist in opening **(Koolstra et al., 2002)**.

The primary closers include the temporalis, masseter, and medial pterygoids. These muscles originate on the cranium and insert on the mandible **(Alomar et al., 2007)**.

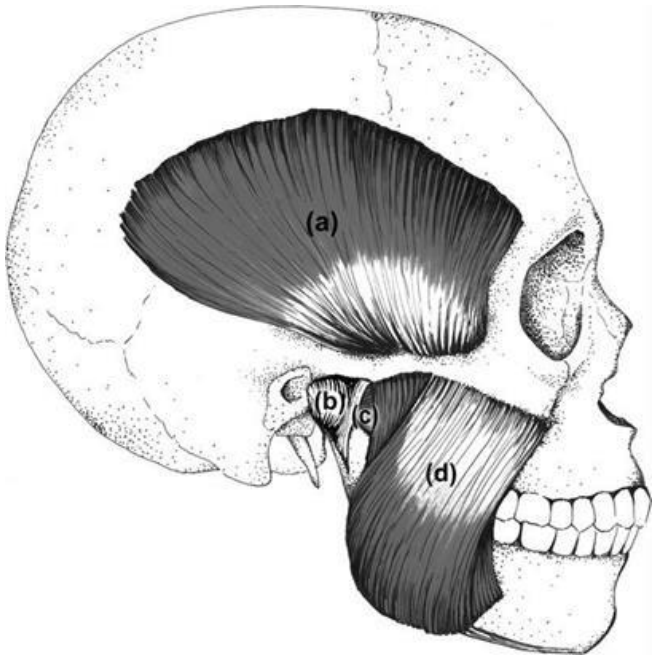

Figure [1.1]: Superficial view of temporomandibular joint (TMJ) anatomy. (a) temporalis muscle, (b) temporomandibular ligament, (c) lateral pterygoid muscle, and (d) masseter muscle.

1.2. Temporomandibular joint disorders TMD

TMJ disorders (TMD) are the group of disorders which affect the TMJ, the jaw muscles, or both. Clinically, it presents as pain and tenderness in thmasticatory muscles or TMJ, clicking or crepitation of the TMJ during condylar movement, and limitation on mandibular movement (restriction, deviation, or deflection). Involvement of the face, head, or jaw is quite often **(Milam et al., 2003)**.

According to a World Health Organization (WHO) report, TMD is the third stomatological disorder, after dental caries and periodontal diseases, to be considered a populational disease **(Knight, 1999)**.

Pain in the area around the temporomandibular joint, can be due to diseases from inside the articulation, from adjacent structures, or from a combination of both **(Magnusson et al., 2005)**.

1.3. Etiological factors for TMD

The etiology of TMDs is complex and multifactorial. Numerous factors can contribute to TMD. Factors that increase the risk of TMD are called predisposing factors. Factors that cause the onset of TMD are called initiating factors, and factors that interfere with healing or enhance the progression of TMD are called perpetuating factors. In some instances, a single factor may serve one or all of these roles **(McNeill et al., 1980; de Leeuw et al., 2008)**.

A review of the scientific literature reveals five major factors associated with TMD. These factors are the occlusal condition, trauma, emotional stress, deep pain input, and parafunctional activities. As in figure [1.2].

Figure [1.2]: Major factors associated with TMD.

1.3.1. The occlusal condition as an etiology of temporomandibulardisorder

Recently many researchers have argued that occlusal factors play little to no role in TMD. Certainly, the research data reviewed above do not present overwhelming evidence for either side of this debate. The relationship of occlusal factors in TMD, however, is an extremely critical issue in dentistry.

If occlusal factors are related to TMD, the dentist is responsible for providing proper therapy, since dentists are the only health care professionals trained to change the occlusion. On the other hand, if occlusal factors are not related to TMD, the dentist should refrain from treating TMD with occlusal changes **(Silvennoinen et al., 1998)**.

1.3.2. Trauma as an etiology of temporomandibular disorder

Trauma seems to have a greater impact on intracapsular disorders than on muscular disorders. Trauma can be divided into two general types: macrotrauma and microtrauma.

Macrotrauma is any sudden force that can result in structural alterations, such as a direct blow to the face. Microtrauma is anysmall force that is repeatedly applied to the structures over a long period of time. Activities such as bruxism or clenching can produce microtrauma to the tissues that are being loaded (i.e., teeth, joints, or muscles) (**Brown et al., 1997)**.

1.3.3. Deep pain input as an etiology of temporomandibular disorder

Deep pain input can centrally excite the brain stem, producing a muscle response known as protective co-contraction. This represents a normal, healthy manner in which the body responds to injury or threat of injury.

Any source of constant deep pain input can represent an etiologic factor that may lead to limited mouth opening and therefore clinically present as TMD. Tooth pain, sinus pain, and ear pain can create this response **(Carlson et al., 1993)**.

1.3.4. Emotional stress as an etiology of temporomandibular disorder

Which is the most etiological factor important to our study because our study is based on the TMD and the relationship of stress lifestyle on TMD.

A common factor that can influence masticatory function is an increasein the level of emotional stress. Stress is described by Hans Selye as "the nonspecific response of the body to any demand made upon it." **(Selye, 1988)**.

Psychological stress is an intricate part of our lives. It is not an unusual emotional disturbance isolated to institutionalized patients. Stress is a force that each of us may experience.

Circumstances or experiences that create stress are known as stressors. For example, to the students they can be unpleasant (like failing an exam) or they can be pleasant (making good grades on an exam). As far as the body is concerned, whether the stressor is pleasant or unpleasant is not important. The significant fact is that the body reacts to the stressor by creating certain demands for readjustment or adaptation (the "fight-or-flight" response). These demands are related in degree to the intensity of the stressor **(Carlson et al., 1993)**.

When a stressful situation is encountered, energy is generated within the body and must be released in some way. There are basically two types of releasing mechanisms. The first is external and is represented by activities suchas shouting, cursing, hitting, or throwing objects, they are not generally well accepted in our society.

A second mechanism by which stress is released is an internal mechanism, in which the person releases the stress internally and develops a psychophysiologic disorder, such as an increase in the tonicity of the head and neck musculature **(Carlson et al., 1993)**.

Increased levels of emotional stress experienced not only increases the tonicity of the head and neck muscles but it can also increase levels of nonfunctional muscle activity, such as bruxism or tooth clenching.

In studies looking for common emotional states among groups of TMD patients, some consistent results have been reported. In most studies high levelsof anxiety appeared to be common. It was not determined whether this anxietywas the cause of symptoms or whether the presence of the symptoms increasedthe anxiety **(Monteiro et al., 2011)**.

Another emotional state that has been related to TMDs is depression. Although some studies suggest differently, depression may play a significant role in certain TMDs. It is not likely that depression will cause a TMD, but it is very common that patients who suffer with chronic pain will experience depression. When TMD symptoms and depression coexist **(Kanehira et al., 2008)**.

1.4. Prevalence of TMD

The prevalence of at least one sign of TMD, pain-related or nonpainful, is reported to be as high as 40% to 75%, making it the second most common musculoskeletal condition after chronic back pain. TMD is most commonly reported in young to middle-aged adults (age 20 to 50 years). Timed is more common in females **(Meyer et al., 1990; Acharya, 2003; Prashant et al., 2012)**.

1.5. Gender Difference in Prevalence of Temporomandibular Disorders

Females had TMD signs and symptoms more frequently than males. This can be explained by the influence of estrogens, which, besides their effect on the female reproductive system, can also affect the functioning of the whole body in multiple ways **(Berger et al., 2015)**.

Estrogens, with their effect on the limbic system (responsible for behavior and emotional status), lower pain's threshold of pain and intensify itsperception **(Sun et al., 2019)**.

The occurrence of TMD is highly correlated with psychological factors—the patient's personality traits. In women with temporomandibular joint disorders, the following manifestations have been observed: an increase in local symptoms and worse mental condition (stress, signs of depression, negativity, reduced ability to cope with stressful situations, suicidal tendencies)**(Kim et al., 2015)**.

The fact that TMD concerns mostly women is an argument for the potential role of estrogens in their pathomechanism, peaking at the age of 20-45 years **(Bueno et al., 2018)**.

In the gestation period and during the menstrual cycle, hormonal fluctuations produce painful sensations in patients with TMD **(wang et al., 2006; Eyster, 2016)**. Fluctuations in estrogen levels at the childbearing age may intensify myofascial pain while the high level of estrogens in pregnant women predisposes to gingival hyperplasia and periodontitis. In turn, low levels of estradiol during menopause contribute the development of TMJ degeneration, osteoporosis and alveolar bone resorption **(Robinson et al., 2020)**.

1.6. Signs and symptoms of TMD

The clinical signs and symptoms of masticatory dysfunction can be grouped into categories according to structures that are affected:

- the muscles
- the temporomandibular joints (TMJs)
- the dentition **(De Leeuw, 2008)**

In evaluating a patient, it is important to identify both signs and symptoms clearly. A sign is an objective clinical finding that the clinician uncovers during a clinical examination.

A symptom is a description or complaint reported by the patient. Patients are acutely aware of their symptoms, yet they may not be aware of their clinical signs. For example, a person reports muscle tenderness during mandibular

opening yet is totally unaware of the joint sounds that are also present. Both the muscle tenderness and the joint sounds are clinical signs, but only the muscle tenderness is considered a symptom **(De Leeuw, 2008)**.

There are two major symptoms that can be observed: pain and dysfunction.

1.6.1. Pain

Certainly, the most common complaint of patients with masticatory muscle disorders is muscle pain, which may range from slight tenderness to extreme discomfort. Pain felt in muscle tissue is called myalgia, which can arise from increased levels of muscular use. The symptoms are often associated witha feeling of muscle fatigue and tightness **(Lund et al., 1995)**.

Another very common symptom associated with masticatory muscle pain is headache. Since there are numerous types of headaches.

1.6.2. Dysfunction

Dysfunction is a common clinical symptom associated with masticatory muscle disorders. Usually, it is seen as a decrease in the range of mandibular movement. When muscle tissues have been compromised by overuse, any contraction or stretching increases the pain. Therefore, to maintain comfort, the patient restricts movement within a range that does not increase the level of pain **(Schroeder et al., 1991)**.

CHAPTER TWO

Subjects and Methods

Subjects and Methods:

2.1. The sample

Online survey data was collected from the University of Baghdad College of Dentistry students. Students were contacted and given all the information about the study, and they were asked to participate on a voluntary basis. All the participants were fully informed about the aims of the study and about the confidentiality of the data, and they were also assured that the data would be used only for the purpose of the research and that their refusal to participate would not affect their current and future courses of study in any way. Every precaution will be taken to protect the privacy of research subjects and the confidentiality of their personal information.

The study sample consisted of 91 undergraduate dental students, 26 males and 65 females, in the 4^{th} and 5^{th} stages. The self-administered questionnaire consisting of 20 questions was prepared and distributed online to collect the data between December 2021 and January 2022.

2.2. Methods

The questionnaire depended on two assessments:

1. The Fonseca Anamnestic Index.
2. The Perceived Stress Scale (PSS).

2.2.1. The Fonseca Anamnestic Index

The Form of the Fonseca Anamnestic Index is a simple and quick questionnaire used for screening temporomandibular disorders (TMDs). The questionnaire is formed of ten questions, evaluating for the presence of pain in TMJ, head and while chewing, parafunctional habits, limitation of movement, joint clicking, perception of malocclusion, and emotional stress as in the table [2.1].

Table [2.1]: The Form of 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?			

The volunteers answered with “yes”, “no”, and “sometimes” and only one answer to be marked for each question as instructed

2.2.2. Perceived Stress Scale

PSS is an assessment that have been designed to help measure individual stress levels, The tool, while originally developed in 1983, remains a popular choice for helping us understand how different situations affect our feelings and our perceived stress. The questions in this assessment ask about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question.

For each question we use scale from 0-5 (0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often).

The questions are:

1. In the last month, how often have you been upset because of something happened unexpected?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and stressed?
4. In the last month, how often have you felt confident about your ability to handle your personal problems?
5. In the last month, how often have you felt that things were going your way?
6. In the last month, how often have you found that you could not cope With all the things that you had to do?
7. In the last month, how often have you been able to control irritations in your life?
8. In the last month, how often have you felt that you were on top of things?
9. In the last month, how often have you been angered because of things that what happened that was outside of your control?
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Determining PSS score by following these directions:

- First, reverse scores for questions 4, 5, 7, and 8. On these 4 questions, change the scores like this:
  0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0.
- Now add up scores for each item to get a total. Total score is_____
- Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress.

- Scores ranging from 0-13 would be considered low stress.
- Scores ranging from 14-26 would be considered moderate stress.
- Scores ranging from 27-40 would be considered high perceived stress.

The Perceived Stress Scale is interesting and important because your perception of what is happening in your life is most important. Consider the idea that two individuals could have the exact same events and experiences in their lives for the past month. Depending on their perception, the total score could put one of those individuals in the low stress category and the total score could put the second person in the high stress category.

CHAPTER THREE

Results

Result:

The questionnaire was found to be reliable Cronbach's alpha coefficients for temporomandibular disorders TMD scales were 0.779, and for the Perceived Stress Scale PSS were 0.728 consider a satisfactory internal consistency.

A total of 91 questionnaires answer were collected, males accounted for 28.6% of the total and females accounted for 71.4%. **Figure [3.1]**.

Students in the fifth grade represent 57.14%, while students in the fourth grade represent 42.9%.

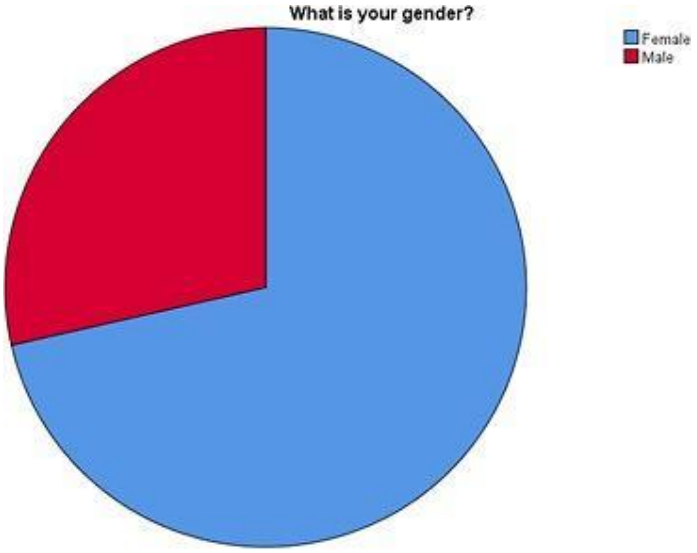

Figure [3.1]: Participates in the questionnaires.

The Fonseca's questionnaire assessed the prevalence of signs and symptoms of temporomandibular disorders (TMD) result revealed there was a 30.8% of total students classified as being free of TMD, and a total of 69.2% classified as having TMD with Mild TMD 42.9%, Moderate TMD 18.7% and Sever 7.7%. **Table [3.1], figure [3.2].**

Table [3.1]: The prevalence of temporomandibular disorders (TMD)

		Frequency	Percent	Cumulative Percent
Valid	Without dysfunction	28	30.8	30.8
	Mild	39	42.9	73.6
	Moderate	17	18.7	92.3
	Sever	7	7.7	100.0
	Total	91	100.0	

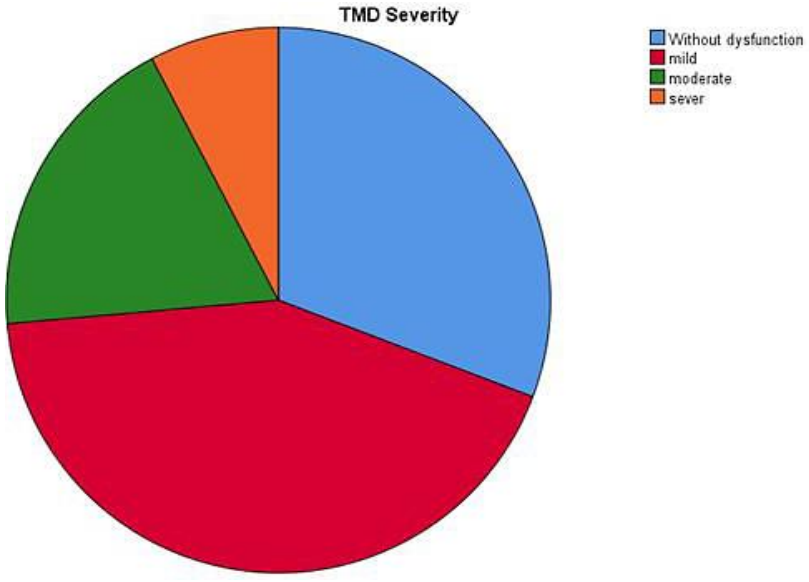

Figure [3.2]: The prevalence of temporomandibular disorders (TMD).

Group Comparisons

Results for Temporomandibular Disorders (TMD) among female students show a percent of female with mild TMD 41.5%, moderate TMD 18.5% and 9.2% with sever TMD, and male students have a higher percentage of mild and moderate TMD, at 46.2% and 19.2%, respectively. **Table [3.2] figure [3.3]**

Table [3.2]: Group Comparisons for Temporomandibular Disorders (TMD)

What is your gender?			Frequency	Percent	Valid Percent	Cumulative Percent
Female	Valid	Without dysfunction	20	30.8	30.8	30.8
		mild	27	41.5	41.5	72.3
		moderate	12	18.5	18.5	90.8
		sever	6	9.2	9.2	100.0
		Total	65	100.0	100.0	
Male	Valid	Without dysfunction	8	30.8	30.8	30.8
		mild	12	46.2	46.2	76.9
		moderate	5	19.2	19.2	96.2
		sever	1	3.8	3.8	100.0
		Total	26	100.0	100.0	

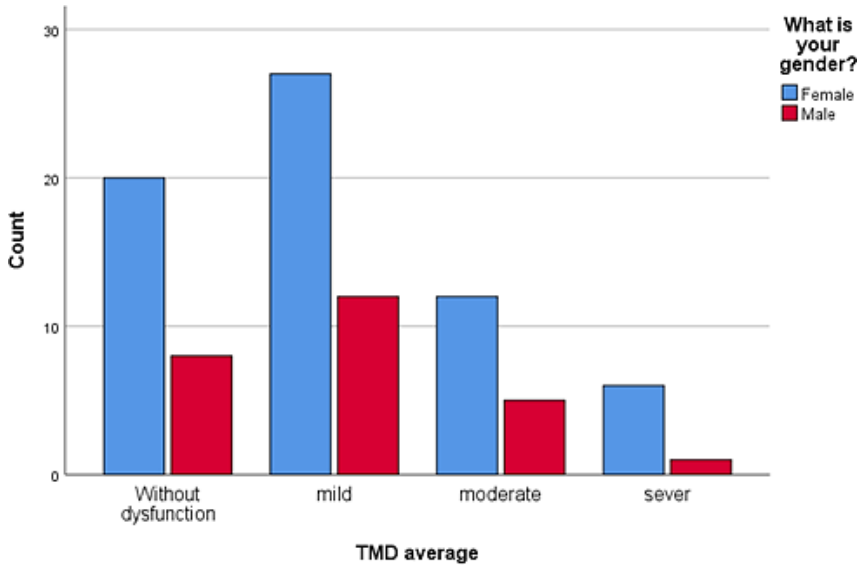

Figure [3.3]: Group Comparisons for Temporomandibular Disorders (TMD).

Regarding gender differences in the TMD degree, an independent sample t-test was used for two group comparisons, and the result revealed thatthe TMD mean value in females was 2.06 higher than the males' mean value of 1.96. **Table [3.3]**.

Table [3.3]: An independent sample t-test was used for two group comparisons

	What is your gender?	N	Mean	Std. Deviation	Std. Error Mean
TMD severity	Female	65	2.06	.933	.116
	Male	26	1.96	.824	.162

The descriptive statistics compression of female and male answers to Fonseca’s ten questions shows a high mean value for female and male answersto questions. Do you consider yourself a tense (nervous) person? At 6.77 and 5.19, respectively.

Female students have a high mean value for both questions, do you have frequent headaches? And do you clench or grind your teeth?

Male students have a high mean value for questions, have you noticed any TMJ clicking while chewing or when you open your mouth? And do you clenchor grind your teeth? **table [3.4]**

Table [3.4]: Descriptive Statistics Compression of Female and Male Answers to Fonseca's Ten Questions

What is your gender?		N	Minimum	Maximum	Mean	Std. Deviation
Female	Is it hard for you to open your mouth?	65	0	5	1.08	2.071
	Is it hard for you to move your mandible from side to side?	65	0	10	1.15	2.464
	Do you get tired /muscular pain while chewing?	65	0	10	3.31	3.674
	Do you have frequent headaches?	65	0	10	4.62	3.782
	Do you have pain on the nape or stiff neck?	65	0	10	3.23	3.896
	Is it hard for you to move your mandible from side to side?	65	0	10	2.00	3.283
	Have you noticed any TMJ clicking while chewing or when you open your mouth?	65	0	10	3.85	4.309
	Do you clench or grind your teeth?	65	0	10	4.46	4.062
	Do your feel your teeth do not articulate well?	65	0	10	2.54	3.965
	Do you consider yourself a tense (nervous) person?	65	0	10	6.77	3.472
	Valid N (listwise)	65				
Male	Is it hard for you to open your mouth?	26	0	5	1.15	2.148
	Is it hard for you to move your mandible from side to side?	26	0	5	.77	1.840
	Do you get tired /muscular pain while chewing?	26	0	10	2.31	3.234
	Do you have frequent headaches?	26	0	10	3.65	3.888
	Do you have pain on the nape or stiff neck?	26	0	10	2.69	3.530
	Is it hard for you to move your mandible from side to side?	26	0	10	1.54	3.088
	Have you noticed any TMJ clicking while chewing or when you open your mouth?	26	0	10	4.62	4.674
	Do you clench or grind your teeth?	26	0	10	4.04	4.005
	Do your feel your teeth do not articulate well?	26	0	10	1.73	3.447
	Do you consider yourself a tense (nervous) person?	26	0	10	5.19	4.578
	Valid N (listwise)	26				

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 [3.5], figure [3.4]**

Table [3.5]: The Perceived Stress Scale PSS average

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	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	

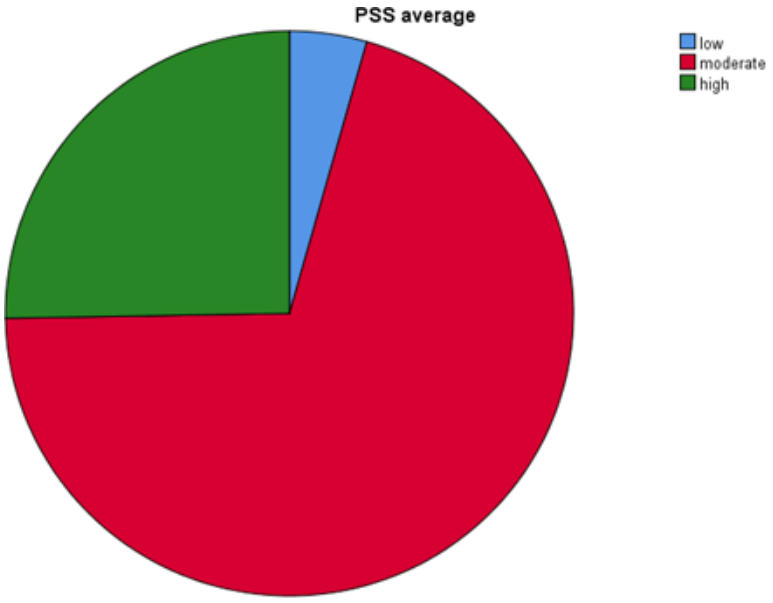

Figure [3.4]: The Perceived Stress Scale PSS average.

Group Comparisons

Female students, as compared to each other, have a higher percentage of low and high stress than male students, at 4.6% and 26.2%, respectively. And male students have a more moderate Stress percent, at 73.1%. **Table [3.6] figure [3.5]**.

Table [3.6]: The group comparisons between males and females

PSS average						
What is your gender?			**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Female	Valid	low	3	4.6	4.6	4.6
		moderate	45	69.2	69.2	73.8
		high	17	26.2	26.2	100.0
		Total	65	100.0	100.0	
Male	Valid	low	1	3.8	3.8	3.8
		moderate	19	73.1	73.1	76.9
		high	6	23.1	23.1	100.0
		Total	26	100.0	100.0	

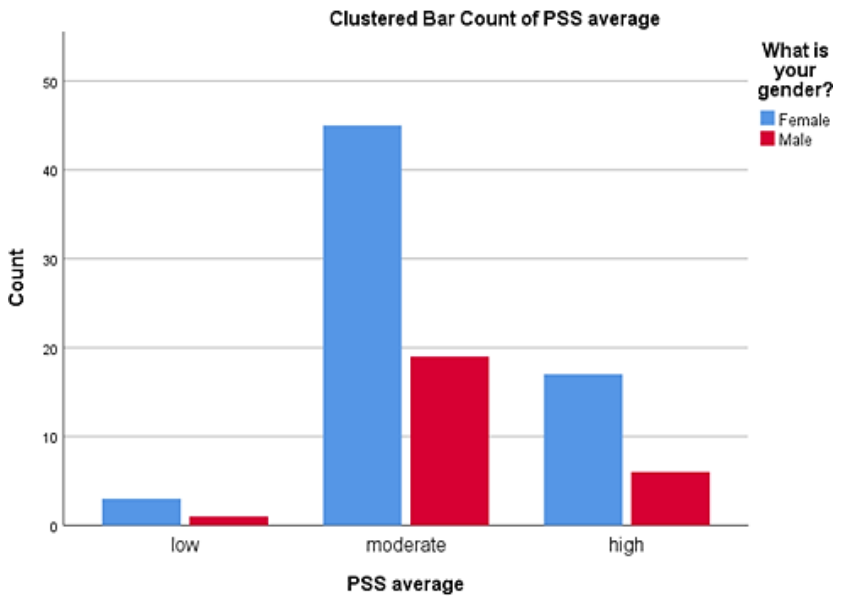

Figure [3.5]: The group comparisons between males and females.

Regarding gender differences in the PSS scale degree, an independent sample t-test was used for two group comparisons, and the result revealed that the PSS mean value in females was 2.22 higher than the males' mean value of 2.19. Table [3.7].

Table [3.7]: An independent sample t-test was used for two group comparisons

Group Statistics					
	What is your gender?	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
PSS average	Female	65	2.22	.515	.064
	Male	26	2.19	.491	.096

The descriptive statistics compression of female and male answers to PSS ten questions shows a high mean value for female answers to questions. In the last month, how often have you felt nervous and stressed?

Male students have a high mean value for questions, in the last month, how often have you been upset because of something that happened unexpectedly? Table [3.8]

Table [3.8]: Descriptive Statistics Compression of Female and Male Answers to PSS Ten Questions

What is your gender?		N	Minimum	Maximum	Mean	Std. Deviation
Female	What is your gender?	65	1	1	1.00	.000
	In the last month, how often have you been upset because of something that happened unexpectedly?	65	0	4	2.71	1.100
	In the last month, how often have you been upset because of something that happened unexpectedly?	65	0	4	2.57	1.131
	In the last month, how often have you felt nervous and stressed?	65	1	4	3.06	.864
	In the last month, how often have you felt confident about your ability to handle your personal problems?	65	0	4	1.60	.932
	In the last month, how often have you felt that you were unable to control the important things in your life?	65	0	4	1.78	1.053
	In the last month, how often have you found that you could not cope with all the things that you had to do?	65	0	4	2.40	.997
	In the last month, how often have you been able to control irritations in your life?	65	0	4	1.72	.992
	In the last month, how often have you felt nervous and stressed?"	65	0	4	2.06	.882
	In the last month, how often have you been angered because of things that happened that were outside of your control?	65	0	4	2.58	1.102
	In the last month, how often have you felt confident about your ability to handle your personal problems?"	65	0	4	2.46	1.238
	Valid N (listwise)	65				
Male	What is your gender?	26	2	2	2.00	.000
	In the last month, how often have you been upset because of something that happened unexpectedly?	26	0	4	2.54	1.392

	In the last month, how often have you been upset because of something that happened unexpectedly?	26	0	4	2.08	1.230
	In the last month, how often have you felt nervous and stressed?	26	0	4	2.46	1.240
	In the last month, how often have you felt confident about your ability to handle your personal problems?	26	0	4	1.96	1.183
	In the last month, how often have you felt that you were unable to control the important things in your life?	26	0	4	2.00	1.131
	In the last month, how often have you found that you could not cope with all the things that you had to do?	26	0	4	1.92	1.017
	In the last month, how often have you been able to control irritations in your life?	26	0	4	2.31	1.087
	In the last month, how often have you felt nervous and stressed?"	26	0	4	2.35	1.129
	In the last month, how often have you been angered because of things that happened that were outside of your control?	26	0	4	2.27	1.373
	In the last month, how often have you felt confident about your ability to handle your personal problems?"	26	0	3	1.85	.925
	Valid N (listwise)	26				

Pearson's correlation coefficient

Is the test statistics that measures the statistical relationship, or association, between two continuous variables. Correlation between TMD and PSS variable. $p<0.05$ was considered as statistically significant (two-tailed). **Table [3.9], figure [3.6]**.

Table [3.9]: Correlation between TMD and PSS variable

		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).**			

The result 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.

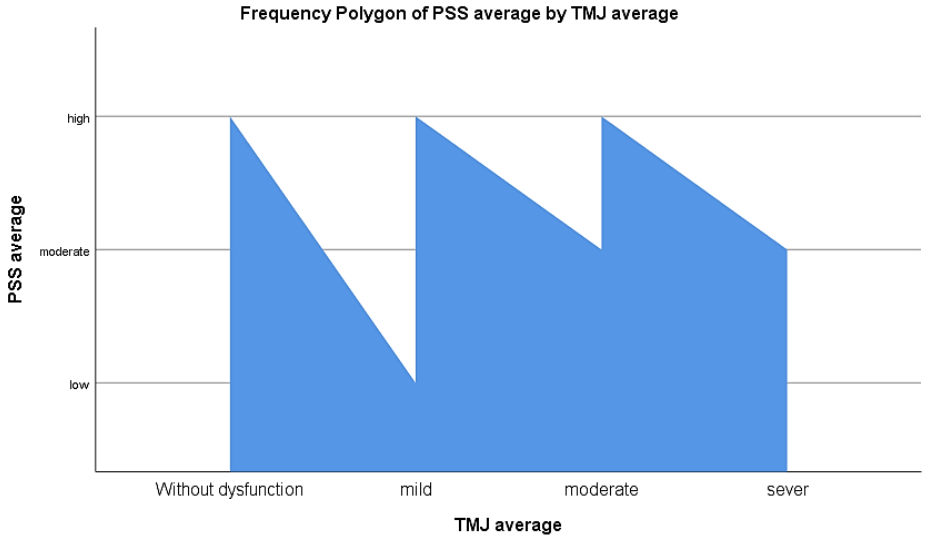

Figure [3.6]: Correlation between TMD and PSS variable.

CHAPTER FOUR

Discussion

Discussion:

This study aimed to evaluate the prevalence of signs and symptoms of TMD in university students through frequency distribution of data obtained using a questionnaire. The Fonseca's questionnaire was utilized in this study because it ensures collection of a large quantity of information in a relatively short period. It is also easy to understand and has almost no influence on the investigator data analyzer.

In our study, the prevalence of TMD in females was more than that of males. This is similar to the results done in the previous studies by **Graue *et al.*, Solberg *et al.*, Klineberg *et al.*, Shiau and Chang**.

Patients with TMD generally suffer from different kinds of pain. TMD-related orofacial pain is generally seen as chronic regional pain in the form of headaches or earaches **(Bagis et al., 2012)**.

Our questionnaire identified females who commonly complain of having frequent headaches and male students have TMJ clicking while chewing or when opening their mouth in agree with the finding of Ahuja et al. **(Ahuja et al., 2018)**.

Medical students are in a very demanding environment and are affectedby 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 **(Sreeramareddy et al., 2007)**.

A psychosocial disorder should be regarded as a very important comorbid condition contributing to TMD onset. Nevertheless, clinicians should promptly assess the somatization or depression conditions of patients with high pain intensity or pain-related disability to provide them with a multiple approach therapy including both psychological support and physical treatment **(Fillingim et al., 2013)**.

The result of our study shows a significant and positive relationship exists between the TMD and PSS variables, which agrees with the finding of **Kmeid *et al.*** there is an association between stress, anxiety, and temporomandibular joint disorder is that psychological factors are able to produce oral parafunctional habits, and that they are associated with a lower pressure pain threshold, affecting masticatory muscle tenderness **(Kmeid et al.,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.

CHAPTER FIVE

Conclusions

Conclusions:

TMD is of a high prevalence among students of the University of Baghdad, which signify the role of stress in the development and/or progression of TMD. The findings of this study are alarming and entailing further investigations to identify risk factors associated with TMD in order to establish measures for prevention and treatment.

REFERENCES

References: