

To Determine Frequency of Anxiety and Depression in Temporomandibular Joint Disorders

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ABSTRACT

Background: Temporomandibular disorder (TMD) is a general term that refers to disorders associated with the temporomandibular joint (TMJ) and the masticatory muscles. Due to the complexity of the masticatory system, TMD symptoms may be caused by different physiological and/or psychosocial factors, such as malocclusion and occlusal interferences, alterations in the masticatory muscles, direct trauma to the jaw or TMJ, micro trauma caused by continuous parafunctional habits

Aim: To determine frequency of anxiety and depression in temporomandibular joint disorders.

Methods: Cross sectional study design was conducted in the Department of Oral and Maxillofacial surgery, Mayo Hospital Lahore for a period 6 months. a total 365 cases fulfilling inclusion criteria was enrolled in study from Oral and Maxillofacial surgery Mayo Hospital Lahore. Informed written consent was taken from patients and then their data according to variables in proforma was recorded. Anxiety and depression was measured by researcher himself according to operational definition.

Results: The mean age of cases was 28.95 ± 6.71 years with minimum and maximum age of 18 and 40 years. In this study there were 185(50.68%) male and 180(49.32%) female cases. The mean Hospital Anxiety and Depression (HAD) score was 12.15 ± 11.75 with minimum and maximum score as 0 and 42. Anxiety and depression was seen in 180(49.32%) of the cases while 185(50.68%) of the cases did not have anxiety and depression.

Conclusion Through the findings of this study it is found that the frequency of Anxiety and depression is very much high. So we should formulate proper treatment strategy with the help of psychiatry department to cope this issue. No doubt it will help to improve their prognosis and better quality of life.

Keywords: Physical therapy specialty, Electromyography, Facial pain, Temporomandibular joint, Anxiety, Depression

INTRODUCTION

Temporomandibular joint disorders(TMD) is a general term that refers to disorders associated with the temporomandibular joint (TMJ) and muscles of mastication in stomatognathic system and the associated structures¹. The most common presenting symptom is pain, which causes the patient to seek immediate treatment. Management is directed towards the cause. Frequently presented causes include trauma, inflammation, aging, parafunctional habits, infections, neoplasms, and stress; these are always considered in the differential diagnosis of TMJ pain². It is reported that 60-70% of people suffer from at least one of the symptoms of temporomandibular disorder (TMD) in their life while only 5% need treatment³. Some of the evidences have suggested that myofascial pain, functional somatic syndromes are critical conditions of muscle pain which may result from the psychosocial factors^{1,3}.

It is generally accepted that the etiology of temporomandibular joint disorders (TMD) is multifactorial, and is related to a number of dental and medical conditions, such as posture, changes in occlusion, parafunctional habits, altered physiology of muscles, braces, restorative procedures, emotional stress, gender, trauma, anatomy of the disc, genetic and psychosocial factors and age⁴.

Global Australia research indicates that students have 19.2% and 67.4% respectively incidence of mental health issue and symptoms. Such levels were substantially higher than those of the population at large. Disability was associated with psychological distress and lower academic achievement. The predictors of distress found were full-time status, financial tension, age between the ages of 18 and 34, being female, and their graduation in a subsequent undergraduate year⁵.

A study reported 280(61.4%) patients had anxiety or depression⁶ while another study also reported that psychological stress was noted in 29.64% of the cases⁷.

This study is aimed to determine frequency of anxiety and depression in temporomandibular joint disorders in local population having TMD. As no local study is available and international data is lacking consensus with regard to huge variation of frequency of anxiety and depression in patients of TMD i.e.29.64% to 61.4%⁶. In this study we intend to have statistics from our population of TMD patients, to formulate proper treatment strategy with the help of psychiatry department.

The objective of this study is to determine frequency of anxiety and depression in temporomandibular joint disorders.

OPERATIONAL DEFINITION

Temporomandibular joint disorder: It was diagnosed if patient has any 3 or more of the following complains

- Headaches (often mimicking migraines), earaches, and pain on (Visual Analogue Scale) VAS > 3
- Pain brought on by yawning, opening the mouth widely or chewing On VAS > 3
- Pain in masticatory muscles (on VAS >3)
- A clicking or popping sound when you open or close your mouth at least 30% of the time among total number of mouth opening
- Jaws that "get stuck", lock or go out (if the mouth opening <30mm)
- Deviation of mouth opening
- Limited mouth opening

Assessment of anxiety and depression: Hospital Anxiety and Depression (HAD) scale was used that consists of 14 items divided into two scales. Seven items measure anxiety (HADS-A), and seven measure depression (HADS-D). Thus, the concepts of anxiety and depression are separated. Translated Urdu version was used to calculate the scores. Anxiety and depression was labeled if score is > 7 together.

MATERIAL AND METHODS

This cross sectional study design was conducted in the Department of Oral and Maxillofacial Surgery, Mayo Hospital

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Lahore for a period of 6 months after approval of Ethical Review Board from Feb 23, 2018 till Aug 23, 2018. A total of 365 patients were taken in this study, the sample size is estimated using frequency of anxiety and depression in reference studies (61.4%)⁶ at 95% confidence level and 5% precision level. Sampling technique used was non-probability consecutive sampling. All patients 18-40 years of age of either gender with diagnosis of temporomandibular joint disorder were included in the study.

Exclusion criteria

- Patients with known psychiatric disorder, previous TMJ surgery
- Patients with previous surgery of maxillofacial region
- Patients having any trauma or death in family in past 6 months

Data collection procedure: A total 365 cases fulfilling inclusion criterion was enrolled in study from Oral and Maxillofacial surgery Mayo Hospital Lahore after getting Ethical approval. Informed written consent was taken from patients and then their data according to variables in proforma was recorded. Anxiety and depression was measured by researcher himself according to operational definition. All data was recorded by researcher himself on attached proforma.

Data analysis procedure: SPSS version 20 was used to enter and analyze the data. Mean ± S.D was used for quantitative data like age and HADS score. Frequency (%) was used for categorical data like gender, anxiety and depression. Data was stratified for age, gender, duration of TMD, education status, economic status. Post stratification Chi-square test was applied to address the effect modifiers. P-value ≤ 0.05 was considered as significant.

RESULTS

The mean age of cases was 28.95 ± 6.71 years with minimum and maximum age of 18 and 40 years (Table 1).

Table-1: Descriptive statistics of age (years)

Age in years	
Mean	28.95
S. D	6.71
Range	22.00
Minimum	18.00
Maximum	40.00

A total of 198 (54.25%) patients were 18-29 years old and 167(45.75%) were 30-40 years old. In this study there were 185(50.68%) male and 180(49.32%) female cases. There were 212(58.08%) cases whose disease was < 6 months and 153(41.92%) cases had disease from more than 6 months. A total of 74(20.27%) cases were illiterate, 93(25.48%) had primary, 70(19.18%) cases had middle and 128(35.07%) cases had matriculation or above education. According to socio economic status, 111(30.41%) of the cases had <10, 000, 139(38.08%) of the cases had 10-50,000 and 114(31.51%) cases had > 50,000 Rs. The mean HADS score was 12.15±11.75 with minimum and maximum score as 0 and 42 (Table 2).

Table-2: Descriptive statistics of HADS

HADS	
Mean	12.15
S. D	11.75
Range	42.00
Minimum	0.00
Maximum	42.00

Anxiety and depression was seen in 180(49.32%) of the cases while 185(50.68%) of the cases did not have anxiety and depression. When data was stratified for age group, frequency of anxiety and depression was seen in 95(52.8%) cases who were 18-29 years old and in 85(47.2%) of the cases whose age was 30-40 years of age. The frequency of Anxiety and depression was statistically same in both age groups, p-value > 0.05 (Table 3). When data was stratified for gender, frequency of anxiety and depression was seen in 97(53.9%) male and in 83(46.1%) of female cases. The frequency of Anxiety and depression was statistically same in both genders, p-value >0.05 (Table 4). The frequency of anxiety and depression was seen in

106(58.9%) cases who had duration as <6 months and in 74(41.1%) of cases who had duration from ≥ 6 months. The frequency of Anxiety and depression was statistically same regardless of duration, p-value >0.05 (Table 5). The frequency of anxiety and depression was seen in illiterate, primary passed, middle passed and in cases who had passed matriculation or above as 35(19.4%), 42(23.3%), 38(21.1%), 65(36.1%) respectively. The frequency of Anxiety and depression was statistically same regardless of education status, p-value > 0.05 (Table 6). The frequency of anxiety and depression was seen in cases that had socio economic status as < 10,000 (30%), who had 10,000-50,000 (37.8%) and who had > 50,000. The frequency of Anxiety and depression was statistically same regardless of socioeconomic status, p-value > 0.05 (Table 7).

Table-3: Comparison Anxiety and depression with respect Age groups (years)

Age groups	Anxiety and depression		Total
	Yes	No	
18-29	95(52.8%)	103(55.7%)	198(54.2%)
30-40	85(47.2%)	82(44.3%)	167(45.8%)
Total	180(100.0%)	185(100.0%)	365(100.0%)

Chi square = 0.309 p-value = 0.578

Table-4: Comparison anxiety and depression with respect gender

Gender	Anxiety and depression		Total
	Yes	No	
Male	97(53.9%)	88(47.6%)	185(50.7%)
Female	83(46.1%)	97(52.4%)	180(49.3%)
Total	180(100.0%)	185(100.0%)	365(100.0%)

Chi square = 1.459 p-value = 0.227

Table-5: Comparison anxiety and depression with respect to duration of TMD

Duration of TMD	Anxiety and depression		Total
	Yes	No	
<6 months	106(58.9%)	106(57.3%)	212(58.1%)
≥6 moths	74(41.1%)	79(42.7%)	153(41.9%)
Total	180(100.0%)	185(100.0%)	365(100.0%)

Chi square = 0.095 p-value = 0.758

Table-6: Comparison anxiety and depression with respect to educational status

Educational status	Anxiety and depression		Total
	Yes	No	
Illiterate	35(19.4%)	39(21.1%)	74(20.3%)
Primary	42(23.3%)	51(27.6%)	93(25.5%)
Middle	38(21.1%)	32(17.3%)	70(19.2%)
Matric or above	65(36.1%)	63(34.1%)	128(35.1%)
Total	180(100.0%)	185(100.0%)	365(100.0%)

Chi square = 1.568 p-value = 0.667

Table-7: Comparison anxiety and depression with respect to socioeconomic status

Socioeconomic status	Anxiety and depression		Total
	Yes	No	
<10000	54(30.0%)	57(30.8%)	111(30.4%)
10000-50000	68(37.8%)	71(38.4%)	139(38.1%)
>50000	58(32.2%)	57(30.8%)	115(31.5%)
Total	180(100.0%)	185(100.0%)	365(100.0%)

Chi square = 0.086 p-value = 0.858

DISCUSSION

Temporomandibular disorders (TMDs) are now recognized as a group of bio psychosocial illnesses characterized by chronic painful conditions and dysfunctions in the muscles of mastication and temporomandibular joint (TMJ)⁷. TMDs affect 5–10% of the population many earlier studies of different populations have recorded a higher prevalence of TMD among women^{8,9,10} and it is estimated to incur \$1 billion in health care costs. The pathogenesis of TMD is complex with many risk factors including trauma to the TMJ area, factors related to anatomy, psychosocial profile along with sensitization of pain carrying pathways causing TMD¹¹.

Given the positive relationship between TMD and psychological factors, higher levels of anxiety and depression should result in a lower maximum opening of the mouth, reduced functionality and a greater number of tender points, as well as increased electrical activity in the masticatory muscles

Genetic basis for the development of TMD has been suggested by studies involving twins and member of the family¹². TMD patients may present with joint pain, headache, ear ache, clicking and popping sounds, and restricted or altered jaw movements. Apart from these

symptoms, TMD patients demonstrate enhanced sensitivity to pain and impairment in CNS mediated regulatory processes¹³.

Furthermore, physical and emotional stress along with altered adrenergic receptor mediated responses due to gene polymorphisms can increase the chances of developing TMD. Today's lifestyle is very stressful. People who are extremely busy in different forms of work are unconsciously exposing themselves to harmful effects of stress. Introduction of stress has changed the demographics of patients with TMD¹⁴.

Treatment outcomes in painful TMD patients are influenced by psychological factors. Different clinical studies have shown a strong association of TMD with anxiety and Depression. In order to manage the psychological component of TMD a Multidisciplinary approach is used¹⁵.

The role of psychological factors varies in many cases according to the TMD diagnostic subgroup. In particular, a high incidence of exposure to stressful life events and elevated levels of anxiety and stress related somatic symptoms have been reported in TMD patients. Findings regarding depression have been less consistent. Researchers have concluded that TMD is associated with elevated levels of anxiety and depression but others have denied it relation. On the whole it can be said that in case of psychological profile being not identified, minute amounts of stress do exist in patients of TMD¹⁶.

Consensus regarding percentage of psychological factors that cause TMD is yet to be established, it is imperative that we consider these factors for proper diagnosis and management. In order to manage the psychological component of TMD a Multidisciplinary approach is used. Furthermore, there are variable psychological factors which depend upon cause of the diagnostic subgroup. Considering a bigger picture close association of these factors are seen in Myogenic TMD¹⁷.

In current study the mean age of cases was 28.95±6.71 years with minimum and maximum age of 18 and 40 years. In this study there were 185(50.68%) male and 180(49.32%) female cases. The mean HADS score was 12.15±11.75 with minimum and maximum score as 0 and 42. Anxiety and depression was seen in 180(49.32%) of the cases while 185(50.68%) of the cases did not have anxiety and depression. A study reported higher statistics as found in current study i.e. 280(61.4%) patients had anxiety or depression¹⁸ while another study also reported that psychological stress was noted in 29.64% of the cases⁷. This statistics is lower as reported in current study.

Recently a study was done to investigate the prevalence of suicidal ideation (SI), depression, and anxiety in patients with a chronic temporomandibular disorder (TMD). The main result of the study has showed that the mean (±standard deviation) age for the whole sample was 35.76±12.6 years; 88.3% were women. The overall prevalence of SI was 8.4% for "thoughts of ending your life", 28.5% for "feeling hopeless about the future", and 20.5% for "having thoughts of death and dying". The overall prevalence of depression was 30.4% and overall prevalence of anxiety was 28.9%. The highest prevalence of SI was reported in the MM group. These findings emphasize the need for screening for suicidality and other co-morbidities in TMD patients suffering from chronic pain¹⁸. We also found younger age groups i.e. 28.95 ± 6.71 but we found higher male ratio.

Taking into account the connection between stress and psychological disorders such as anxiety and depression, a difference in electrical activity in the masseter and temporal was noted according to the Anxiety depression level¹⁹.

Interestingly In several trials in patients with Orofacial distress, psychopathologies have been shown to be more closely linked to muscle disorders than TMJ disorders²⁰⁻²¹

The correlation of psychosocial dysfunction with persistent Orofacial pain is well known. Acute TMJ symptoms are persistent in up to 12 percent of patients. Psychosocial factors have been shown to affect pain severity rather than the outcomes of tests in patients with chronic Orofacial pain²²⁻²³.

Similarly another study was performed to compare the anxiety scores between TMD patients and normal subjects. The main findings of the study illustrated that 80% of individuals in group 2 and 44% in group 1 individuals had normal anxiety scores. Individuals in group 1 had 45% and group 2 had 19% borderline anxiety scores. There were 11% of group 1 individuals and <1% of group 2 individuals demonstrated high anxiety scores²⁴.

CONCLUSION

Through the findings of this study it is found that the frequency of Anxiety and depression is very much high. So we should formulate proper treatment strategy with the help of psychiatry department to cope with this issue. No doubt it will help to improve their prognosis and better quality of life.

Conflict of interest: Nil

Author contribution: **AH:** Data Analysis & Interpretation, **EUH:** Research Concept and Design, **UH:** Final approval, **WA:** Collection & assembly of data, **SI:** Writing the Article, **MN:** Critical Revision of the Article

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