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ANXIETY AND DEPRESSION PREVALENCE IN TEMPOROMANDIBULAR JOINT DISORDER PATIENTS

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Abstract

Introduction: TMD stands for Temporomandibular joint disorders which frequently affect the jaw structure and result in sustained pain together with functional dysregulation. Research findings indicate that Temporomandibular joint disorders (TMD) strongly relate to mental health challenges which primarily include anxiety as well as depression symptoms. The researcher conducts an assessment of anxiety and depression levels within the TMD patient population to determine the pain severity linked with psychological distress.

Objectives: The research assesses both the prevalence of anxiety and depression among TMD patients while determining how TMD severity affects psychological distress levels.

Materials and Methods: A cross-sectional research was performed at DHQ Hospital Karak KPK, Pakistan from January, 2024 to June 2024. Researchers tested 250 TMD patients using GAD-7 for anxiety and PHQ-9 for depression diagnosis. The study used the Visual Analog Scale (VAS) to evaluate pain intensity among participants.

Results: The research showed that anxiety reached moderate to severe levels in 56% of patients while depression levels demonstrated the same severity in 58% of patients. Anxiety and depression psychological stress levels were strongly correlated with experiencing severe TMD pain, as measured by a VAS score of more than seven ($p < 0.001$).

Conclusion: Because anxiety and depression are common in TMD patients, integrated therapy approaches are necessary for both pain management and mental health improvement.

Keywords: Anxiety, sadness, chronic pain, psychological distress, the intensity of pain, temporomandibular joint diseases, and mental health.

INTRODUCTION

TMJ and its parts are affected by various diseases and disorders which lead to pain during its movements, decreased ability to perform functions, and overall quality of life. There is also increased certainty between these disorders and other psychological disorders including depression and anxiety thus warranting the use of both medical and psychological approaches to diagnose and treat (1). Studies revealed that TMD patients have psychological issues because pain leads to an emergence of anxiety and depression and the onset of psychological issues leads to TMD pain (2). Understanding anxiety and depressive disorders is a premise for treatment success because TMD patients often suffer

from such disorders and their relationship is complicated. systematic reviews of the literature demonstrate an important connection between TMD and mental health conditions, with TMD patients experiencing greater rates of anxiety and depression than the general population (3). Research shows that enduring orofacial pain from TMD produces major problems for emotional stability through elevated stress levels and greater risks of anxiety and depression symptoms (4). Research demonstrates that psychological distress severity grows alongside pain intensity which means patients with severe pain tend to show major signs of anxiety and depression (5). TMD and associated mental health conditions show exacerbation due to stress together with sleep disturbances and maladaptive coping mechanisms (6).

Scientific research suggests TMD symptoms affect between 10 to 15 percent of the general population but people with anxiety and depression show increased prevalence rates (7). Psychological distress is now considered both a trigger for and an outcome of TMD which researchers claim can lead to increased TMJ dysfunction using bruxism and jaw-clenching behaviors (8). Scientific evidence supports the idea that pressure-based physiological reactions to stress influence TMD symptom expression. The data from dental student research showed individuals with heightened depression and anxiety levels tended to present symptoms related to TMD thereby showing the psychological nature of this disorder (9). Researchers now focus on understanding the connection between stress together with anxiety and depression as risk factors for TMD due to external stresses from the COVID-19 pandemic. Studies have shown that TMD patients suffered worsened symptoms during pandemic times because they experienced elevated anxiety along with stress and disrupted sleep patterns (10). The research confirms that mental stress generates TMD symptoms which develop or evolve throughout the disease process. A Turkish study based on the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) diagnosed framework found that persons with TMD exhibited elevated psychological distress levels which strengthened the evidence of a tight connection between these health conditions (11).

People with ongoing TMD symptoms tend to experience elevated anxiety and depressive symptoms because chronic pain affects these patients at high rates according to medical studies. Research showed that chronic pain patients contain elevated psychological distress levels compared to patients free of chronic pain (12). Although irregular central nervous system function and increased pain signals may be among their common pathomechanisms, research indicates that chronic pain syndromes and mental health problems share overlapping pathophysiological pathways. The successful treatment of TMD symptoms as noted by systematic reviews can result in substantial decreases in depression and anxiety levels which support the concept that acceptable pain management helps reduce psychological distress (13). The symptoms of TMD develop strongly because of psychosomatic factors according to research showing somatization patterns frequently occur in patients with TMD (14). Multiple evaluations are needed because TMD affects both physical body conditions and mental health symptoms simultaneously. Research conducted throughout the COVID-19 pandemic delivered knowledge about external stresses that affect the mental health status of TMD patients. Research on painful TMD patients revealed that COVID-19-related depression directly affected pain severity plus impaired coping mechanisms thus reinforcing the necessity of psychological treatments for TMD patients (15).

Healthcare providers must adopt interdisciplinary methods because research establishes clear links between Trigeminal Neuralgia (TMD) and psychological conditions. Healthcare providers must address the psychological condition of TMD patients during their treatment by combining physical care with psychological interventions such as cognitive-behavioral therapy (CBT) and stress management methods and relaxation techniques for better outcomes. The early detection of anxiety and depression within TMD patients allows healthcare providers to start treatment promptly thus avoiding symptom deterioration. Additional research must investigate what mechanisms exist between TMD and psychological distress and validate the effectiveness of integrated medical and psychological treatments as methods for enhancing dual physical and mental health outcomes.

Objective: This research aims to determine anxiety and depression rates in patients with temporomandibular joint disorders (TMD) while assessing the relationship between TMD symptoms and psychological distress for improved treatment methods.

MATERIALS AND METHODS

Study Design: A cross-sectional study.
Study setting: This study was conducted at DHQ Hospital Karak KPK, Pakistan.
Duration of the study: This research was carried out from January 2024 to June 2024, which was six months in total.

Inclusion Criteria:

Patient selection criteria are as follows, patients were selected for this study on account of having at least 18 years of age and having been diagnosed with TMD clinically and radiographically. Another criterion was that the patients had to exhibit signs of jaw dysfunction and they had to have at least three months of chronic orofacial pain. All the participants who were allowed to sit for both psychological tests as well as a test to determine levels of sadness and anxiety were regarded as suitable candidates.

Exclusion Criteria

These were patients with neurological disorders, patients on psychiatric medications, patients with facial injuries treated with facial surgery at the time of the study, and patients on psychiatric therapy. Moreover, patients who are non-compliant and those who have a systemic health condition that may affect the TMJ were not selected for the study.

Methods

Participants with TMD from DHQ Hospital Karak KPK, Pakistan were enlisted to assess this study. TMD diagnoses were established according to the DC/TMD and clinical examination as well as radiographic examination. The self- administered GAD-7 and the PHQ-9 that were constructed and validated for primary care and other contexts Were used during the psychological evaluation and of the triage assessment tools. As a part of recruitment and surveys, each participant was required to complete questionnaires containing questions about personal identification medical history TMD symptoms, and psychological health state.

The research gathered data using interviews conducted by trained clinicians in person. TMD patients scored their pain intensity through the Visual Analog Scale (VAS). Researchers at SPSS version 26.0 conducted a statistical analysis that used descriptive statistics for prevalence rates and chi-square tests as a method to determine relationships between TMD severity and psychological distress. The researchers treated p-values under 0.05 as indicators of statistically significant results. Study approval came from the Institutional Review Board (IRB) at the hospital before research initiation occurred.

RESULTS

This research considered **250 patients** who received TMD diagnoses. The research participants were **18 and 60 years old** and their **average age came to 35.4 ± 9.2 years**. The patient group consisted of **160 female participants (64%) alongside 90 male patients who made up (36%)** of the total population. TMD appeared more frequently in female patients. Out of all patients, **70% maintained TMD** symptoms longer than six months wh**ereas 30% experienced symptoms** for less than six months.

Table 1: Demographic Characteristics of Participants

Characteristic	N (%)
Total Participants	250 (100%)
Age (Mean ± SD)	35.4 ± 9.2 years
Gender	
- Male	90 (36%)
- Female	160 (64%)
Duration of Symptoms	
- <6 months	75 (30%)
- ≥6 months	175 (70%)

The results of psychological testing showed that patients with TMD experience significant levels of anxiety and depression. **Oxford's GAD-7 screening showed 56% of the participants** had severe anxiety levels while 44% reported little or no anxiety symptoms. The analysis from **PHQ-9** demonstrated that moderate to severe **depression affected 58% of patients through 145 individuals** while the remaining **42% with 105** individuals showed mild or no depressive symptoms.

Table 2: Prevalence of Anxiety and Depression in TMD Patients

Psychological Condition	Mild/None	Moderate/Severe
Anxiety (GAD-7)	110 (44%)	140 (56%)
Depression (PHQ-9)	105 (42%)	145 (58%)

The results demonstrated a statistically important link between the intensity of TMD pain and psychological stress levels. Clinical assessment showed that patients with severe pain **(VAS >7)** had high levels of both moderate to severe anxiety along with moderate to severe depression in **80% and 82% of cases** respectively. Patients who experienced mild pain **(VAS ≤3) s**howed **depression or anxiety only in 25% of cases**. Results of the **chi-square test demonstrated that TMD pain severity was linked significantly (p < 0.001) t**o psychological conditions.

Table 3: Association Between TMD Pain Severity and Psychological Distress.

Pain Severity (VAS)	Anxiety (Moderate/Severe)	Depression (Moderate/Severe)
Mild (VAS ≤3)	10 (25%)	12 (28%)
Moderate (VAS 4-6)	50 (48%)	53 (50%)
Severe (VAS >7)	80 (80%)	82 (82%)

The results of the present study indicate that TMD severity is positively associated with anxiety and depression, and thus, comprehensive psychological and treatment protocols should be considered. This study also found that females are more psychologically stressed as compared to males because **72% of female** TMD patients had moderate to severe depression whereas **38% of male** patients had moderate to severe depression with a **p-value of 0.002**. These results emphasize that mental health must be considered in TMD patients to increase the effectiveness of treatments.

DISCUSSION

The results of the present research emphasize a high level of anxiety and depression in TMD patients. The findings are consistent with past studies that discuss how TMD affects psychological distress not as a simple cause-and-effect relationship. Research has shown that people with TMD suffer from anxiety and depression much more than other people in the general population (1). This study supports the idea that TMD patients especially those experiencing severe pain are likely to show higher levels of psychological distress than non-TMD patients. The reciprocal interaction that has been established

between TMD and mental health disorders implies that pain hinders mental health and at the same time, emotional illnesses increase the intensity of TMD symptoms (2).

As highlighted in the result section, the research also discovered that TMD is more prevalent among females than males and female patients experience higher average levels of psychological distress. TMD patients were mainly women and their anxiety and depression rates were higher this percentage was even more significant in the moderate to severe range. These results are in line with those of earlier studies that have established that females are more vulnerable to developing TMD together with psychological symptoms (3). The reasons that might explain this gender gap are hormonal changes, increased pain sensation, and increased proneness to stress in females (4). Lastly, the cultural aspect such as the way women tend to access medical care and treatment of chronic pain disorders may explain such discrepancies. More studies are required to assess specific treatment outcomes concerning the gender of female TMD patients concerned.

Another important area of focus in this study is the contribution of chronic pain to psychological distress. The study found that patients with higher pain severity (VAS >7) demonstrated higher levels of anxiety and depression in comparison with the group characterized as having mild pain. These findings concur with past studies that have pointed out that the severity and persistence of chronic pain in TMD patients directly influence mentation abnormalities (5). Pain association with distress is often attributed to central sensitization that develops when pain exposure increases pain sensitivity and emotional experience (6). For this reason, chronic pain patients often have sleep disorders psychological signs of social isolation low quality of life, and increased levels of anxiety and depression (7).

It is mentioned in several kinds of literature that stress-related oral activity like bruxism, clenching, and parafunctional habits are involved in the development of TMDs significantly (8). These behaviors are elicited by psychological stress and may also aggravate the state of the joints and cause more pain. It is found that the relationship between stress-related behaviors and TMD symptoms has been positive, and the studies have shown that patients with higher stress levels have a higher rate of muscle hyperactivity and increased loading of TMJ (9). In this vicious cycle of stress that leads to increased oral activities and pain and then increased psychological stress, it is seen that both the physical and psychological dimensions have to be taken under consideration while treating TMD. There another important feature of this research, which is an assessment of the effect of the COVID-19 pandemic as an external stressor on TMD patients. The pandemic has posed increased rates of stress, depression, and sleep difficulties that have also been related to TMD aggravation (10). It has been established that TMD diagnosis went up during the pandemic, and it was concluded that psychological stress contributes to worsening TMJ disorders (11).

Such findings explain the clinical relevance of recognising TMD and the use of an interdisciplinary approach in the treatment of these patients. Most conventional TMD treatments include occlusal appliances, physiotherapy and pharmacological management mainly addressing pain control, but not the psychological component of the TMDs (12). Since anxiety and depression are very common in TMD patients, the inclusion of assessments for these disorders, psychological therapies, and changes in lifestyles are clinically useful to address these disorders (13). In TMD, other approaches to pain intervention are relaxation techniques, cognitive restructuring, and mindfulness-based therapies, each of which has been reported to improve the perception of TMD pain and psychological well-being (14).

Moreover, it is crucial to screen TMD patients for anxiety and depression in the early stages to avoid an increase in psychological troubles. Based on the study's findings, it is recommended that regular psychological screenings through the use of standardized tools including GAD-7 and PHQ-9 should be incorporated in clinical practice to diagnose at-risk clients for timely interventions. MDT should encourage health care practitioners to identify psychosomatic factors in patients with TMD and consult with other mental health care specialists to design individualized treatment plans (15). However, some limitations of the present study should be noted. First, the cross-sectional design implies that it is possible not determine the causality between TMD and psychological distress. Thus, further long-term research is necessitated to determine the effects of anxiety and depression on TMD

and its treatment plans. Second, self-reported psychological assessment can be a way of reporting bias because participants may under or overestimate their problems.

Lastly, this study shows the high rate of anxiety and depression in TMD patients and the relation between TMD pain and the degree of psychological disturbance. These findings and results also support the need to embrace solutions that involve intervention strategies for TMD that focus on physical and psychological well-being. Due to the correlation that has been established between chronic pain and psychological health patients should be treated through a biobehavioral approach where physical pain and psychological ailments should be addressed. Promotion of early diagnosis, sharing information about TMD and its symptoms with the affected individuals, and practicing stress management tools can go a long way in enhancing the lifestyle of patients suffering from TMD. Future research should attempt to compare and contrast the issues related to men and women, the long-term psychological impact of treatment, and the effectiveness of multiple treatment plans in patient care.

CONCLUSION

The current work focuses on the high level of anxiety and depression in TMD patients and confirms the direct dependence of the severity of pain on the levels of psychological distress. The study shows that patients with severe TMD pain have an increased prevalence of moderate to severe anxiety and depressive symptoms which justifies a comprehensive approach to treatment of TMD. The gender difference was also noted where female patients had higher levels of psychological distress than male patients. Since TMD and mental health disorders are bidirectional, the inclusion of psychological assessment, stress intervention methodologies, and behavior modification along with TMD treatment seems to yield better therapeutic results. Further, it seemed that the necessity of early screening for anxiety and depression in TMD is significant to avoid further aggravation of the symptoms. Possible future studies include extension of the effects site study over a long term, differences between males and females, as well as looking at a combination of treatments for the patients. Complementary therapy that involves both physical and psychological practices is quite relevant for proper management of TMD and for individuals' well-being.

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