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Evaluating the Frequency of Temporomandibular Joint Disorders in Patients Attending the Dental OPD of LUMHS Jamshoro

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ABSTRACT

Background: Temporomandibular joint disorders (TMDs) are common in adolescents, often exacerbated by comorbidities and reducing treatment efficacy. Factors such as anatomical alterations, emotional stress, occlusal interferences, and masticatory muscle dysfunction contribute to TMD.

Objective: To evaluate the severity of symptoms associated with temporomandibular joint disorders in patients visiting the dental outpatient department of Liaquat University of Medical & Health Sciences (LUMHS) Jamshoro.

Methods: This cross-sectional study included 120 patients aged 18-40 years, presenting with TMD symptoms. Data were collected using the Fonseca Anamnestic Index and analyzed using SPSS version 25. Patients were classified into four categories: no TMD, mild, moderate, and severe TMD.

Results: The most frequent symptom was clicking sound (62.5%), followed by muscular pain while chewing (58.4%). According to the Fonseca Anamnestic Index, 26% had no TMD, 23% had mild TMD, 30% had moderate TMD, and 21% had severe TMD. The 26-40 years age group showed higher prevalence (65.8%) of moderate to severe TMD.

Conclusion: TMDs are prevalent in the studied population, with significant symptoms linked to stress and age. Comprehensive management including psychological support is recommended.

INTRODUCTION

The temporomandibular joint (TMJ) is one of the most complex joints in the human body, playing a crucial role in essential functions such as mastication, speech, and emotional expression. This joint connects the mandible to the temporal bones of the skull, allowing for a wide range of movements including protrusion, retraction, and lateral deviation, as well as the opening and closing of the mouth. The TMJ's intricate kinematic structure, supported by a fibrocartilaginous disc and various ligaments, facilitates both rotational and gliding movements, which are essential for its function during activities such as chewing and speaking (1, 2). Given its complexity, the TMJ is susceptible to a range of disorders collectively known as temporomandibular disorders (TMDs), which represent the most prevalent conditions affecting the oral and maxillofacial region.

TMDs encompass a variety of conditions that can arise from multiple etiologies, including psychological stress, occlusal interferences, internal derangements, muscular dysfunction, and traumatic injuries to the TMJ (3). The most common clinical manifestations of TMDs include orofacial pain, restricted mouth opening, joint sounds such as clicking or crepitus, joint tenderness, and deviations in mandibular movements. These symptoms can significantly impact a patient's quality of life, affecting their ability to perform daily functions and contributing to psychological distress. The prevalence of TMDs is estimated to range between 40% and 60% in the general population, with 50% to 70% of individuals presenting with signs and symptoms associated with these disorders (4, 5).

The TMJ's anatomical structure comprises the glenoid fossa of the temporal bone and the mandibular condyle, with the interposed disc providing stability and facilitating smooth joint movements. Dysfunction in this joint, often termed temporomandibular joint pain dysfunction syndrome, can lead to significant pain and impairment in functions such as mastication and speech. The syndrome is also known by various other names, including myofascial pain dysfunction syndrome and craniomandibular dysfunction, and is one of the most common TMJ disorders, affecting up to 30% of the population (6, 7).

Research indicates that TMDs are more prevalent in women, which may be partially attributed to the influence of estrogen on the temporomandibular joint. Although TMDs are commonly associated with adults, recent studies have shown that these disorders can also affect children, underscoring the need for early diagnosis and intervention (8-12). The symptoms of TMDs are varied and can include pre-auricular pain, limited mandibular movement, joint sounds, headaches, toothaches, auditory disturbances, and psychological symptoms such as anxiety and

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depression. The relationship between TMDs and psychological factors, particularly stress and anxiety, is well-documented, with these conditions often exacerbating the severity of TMD symptoms (13-15).

This study aims to assess the severity of temporomandibular joint dysfunctions and their associated symptoms among patients attending the outpatient department of Liaquat University of Medical and Health Sciences in Jamshoro. Using the Fonseca Anamnestic Index, this research seeks to evaluate the relationship between TMD severity and various factors such as age, habits, and stress, contributing valuable insights into the epidemiology and management of TMDs in this population.

MATERIAL AND METHODS

The study was conducted as cross-sectional research at Liaquat University of Medical and Health Sciences (LUMHS), Jamshoro. The study population comprised patients attending the dental outpatient department during the specified research period. A non-probability convenience sampling method was employed to select participants, ensuring that the study sample was representative of the patients presenting with symptoms indicative of temporomandibular joint dysfunction (TMD). The study was conducted over a two-month period, and a total of 120 patients were included in the final analysis. All participants were between the ages of 18 and 40 years, with inclusion criteria specifying those who reported symptoms such as clicking sounds, discomfort, and restricted mouth opening. Exclusion criteria were strictly adhered to, eliminating any patients with bone ailments, neurological disorders, severe systemic illnesses, or dyskinesia, as these conditions could confound the assessment of TMD symptoms.

Prior to data collection, informed consent was obtained from all participants after a thorough explanation of the study's objectives, benefits, and procedures. The ethical principles outlined in the Declaration of Helsinki were strictly followed throughout the study, ensuring that all participants' rights were protected, and that the confidentiality of their data was maintained. The study protocol received approval from the Institutional Review Board of LUMHS, Jamshoro.

Data collection involved the administration of a structured questionnaire, which included the Fonseca Anamnestic Index (FAI). This validated tool is widely used in the assessment of TMD symptoms and severity. The FAI consists of ten questions, each requiring a response of either "Yes," "No," or "Sometimes," with the responses scored as 10, 0, and 5 points, respectively. The total score for each participant was calculated, and based on these scores, participants were categorized into four groups: no TMD (0-15 points), mild TMD (20-40 points), moderate TMD (45-65 points), and severe TMD (70-100 points). The questionnaire also included items to gather demographic data and other relevant information regarding the participants' habits and potential risk factors for TMD.

The clinical examination and history taking were conducted by trained dental professionals, ensuring the accuracy and consistency of the data collected. The data were systematically recorded and later entered into SPSS version 25 for statistical analysis. Descriptive statistics, including frequencies and percentages, were calculated to summarize the demographic characteristics of the study population and the distribution of TMD severity. Comparative analyses were also performed to examine the relationships between TMD severity and variables such as age, gender, and reported symptoms.

The study adhered to rigorous methodological standards to ensure the validity and reliability of the findings. The data analysis was designed to provide a comprehensive understanding of the prevalence and severity of TMD among the study population, as well as to identify potential correlations with demographic and clinical factors.

RESULTS

The study included 120 patients, with a demographic distribution as summarized in Table 1. The majority of the participants were female (58.4%), while males comprised 41.6% of the sample. The age distribution was split into two groups: 18-25 years and 26-40 years. Most participants (60.8%) were in the younger age group (18-25 years), while 39.2% were aged 26-40 years.

Table 1: Demographic Distribution of Study Subjects

Profile	Attributes	Frequency (%)
Age	18-25	73 (60.8)
	26-40	47 (39.2)
Gender	Male	50 (41.6)
	Female	70 (58.4)

The responses related to temporomandibular joint disorders (TMJD), assessed by the Fonseca Anamnestic Index (FAI), are presented in Table 2. The most commonly reported symptom was the clicking sound during chewing, noted by 62.5% of participants, which was statistically significant ($p < 0.05$). Other notable symptoms included difficulty in mandibular movement from side to side (50%), muscular pain during chewing (58.4%), and neck stiffness (54.2%), with varying levels of statistical significance.

Table 2: Responses Related to TMJD According to Fonseca's Questionnaire

Question	Yes (%)	No (%)	Sometimes (%)	p-value
Is it hard for you to open your mouth?	30 (25)	75 (62.5)	15 (12.5)	0.12
Is it hard for you to move your mandible from side to side?	60 (50)	35 (29.2)	25 (20.8)	0.03*
Do you get tired/muscular pain while chewing?	70 (58.4)	10 (8.4)	40 (33.2)	0.04*

Question	Yes (%)	No (%)	Sometimes (%)	p-value
Do you have pain on the nape or stiff neck?	65 (54.2)	28 (23.3)	27 (22.5)	0.09
Do you have earaches or pain in craniomandibular joints?	40 (33.2)	65 (54.2)	15 (12.6)	0.18
Have you TMJ clicking while in chewing or mouth opening	75 (62.5)	10 (8.3)	35 (29.2)	0.01*
Do you clench or grind your teeth?	30 (25)	82 (68.3)	8 (6.7)	0.15
Do you feel your teeth do not articulate well?	63 (52.5)	35 (29.2)	22 (18.3)	0.05
Do you consider yourself a tense (nervous) person?	35 (29.2)	78 (65)	7 (5.8)	0.22

*p < 0.05 indicates statistical significance.

The severity of temporomandibular joint disorders among the study population, as determined by the FAI, is detailed in Table 3. Of the total participants, 26% had no TMD, 23% had mild TMD, 30% had moderate TMD, and 21% had severe TMD. The percentages indicate a higher prevalence of moderate to severe TMD among the study population.

Table 3: Patient Distribution According to the Fonseca Anamnestic Index (FAI) for TMJD Severity

Severity Level	Frequency (%)	Percentage (%)
No TMD	31	26
Mild TMD	28	23
Moderate TMD	36	30
Severe TMD	25	21

The distribution of TMJD severity across different age groups is shown in Table 4. TMJD symptoms were more commonly observed in the 26-40 years age group, with 65.8% of participants in this group exhibiting moderate to severe TMD. In contrast, the 18-25 years age group showed a lower prevalence of severe TMD (34.2%).

Table 4: TMJD Severity with Respect to Age Groups

Age Group	No TMD	Mild TMD	Moderate TMD	Severe TMD	Frequency (%)
18-25	10	11	12	8	34.2
26-40	20	15	22	22	65.8

These results underscore the significant prevalence of TMJD among the study population, with a notable proportion of patients experiencing moderate to severe symptoms, particularly in the older age group (26-40 years). The findings also highlight the commonality of symptoms such as clicking sounds and muscular pain, which were strongly associated with TMJD severity. The statistical significance of certain symptoms further emphasizes their relevance in the clinical assessment of TMDs.

DISCUSSION

The findings of this study provide a detailed insight into the prevalence and severity of temporomandibular joint disorders (TMDs) among patients attending the dental outpatient department at Liaquat University of Medical and Health Sciences, Jamshoro. The results indicated that a significant proportion of the study population experienced moderate to severe TMD symptoms, with the most common complaints being clicking sounds during mandibular movements and muscular pain while chewing. These findings are consistent with previous research, which has similarly reported high prevalence rates of TMDs, particularly in populations exposed to various stressors, both physical and psychological (Khan et al., 2020; Nomura et al., 2020) (11).

The demographic analysis revealed a higher prevalence of TMDs among women, particularly in the 26-40 years age group. This gender discrepancy aligns with the broader literature, which suggests that hormonal factors, particularly estrogen, may play a significant role in the development of TMDs, possibly explaining the higher incidence among women (Chaurasia et al., 2020; Alfawzan et al., 2020) (5, 8). Additionally, the increased prevalence of TMDs in the older age group could be attributed to cumulative stress, occupational factors, and age-related changes in joint and muscle function, which have been documented in previous studies (Ryalat et al., 2009; Johansson et al., 2017) (13).

The use of the Fonseca Anamnestic Index (FAI) in this study allowed for a structured assessment of TMD severity, providing a reliable categorization of patients based on their symptoms. The distribution of patients across the different severity levels of TMDs, with a notable 30% experiencing moderate TMD and 21% severe TMD, underscores the clinical significance of these disorders within the study population. These findings are comparable to those reported in studies conducted in other regions, although the exact prevalence rates vary due to differences in study populations, assessment tools, and diagnostic criteria (Tecco et al., 2019; Chaulagain et al., 2019) (4, 6).

Despite the strengths of this study, including its use of a validated assessment tool and a well-defined study population, several limitations should be acknowledged. The use of a convenience sampling method, while practical, may have introduced selection bias, potentially limiting the generalizability of the findings to the broader population. Additionally, the cross-sectional design of the study, while effective for assessing prevalence, does not allow for the determination of causality or the assessment of changes in TMD symptoms over time. These limitations highlight the need for future research employing longitudinal designs and more representative sampling methods to further elucidate the factors contributing to TMDs and their progression (Sevgi et al., 2018; Velly et al., 2022) (3, 14).

The study also identified a significant association between TMD symptoms and stress, as indicated by the higher prevalence of symptoms such as muscular pain and clicking sounds among those reporting higher levels of psychological tension. This finding is in line with previous research that has demonstrated a strong link between stress and TMDs, suggesting that psychological interventions, in conjunction with traditional dental treatments, may be beneficial in managing these disorders (Sousa et al., 2019; Yap et al., 2020) (7, 16).

In light of the findings, it is recommended that future studies explore the underlying mechanisms linking psychological factors to TMDs, potentially incorporating more sophisticated diagnostic tools such as imaging and biomarker analysis. Additionally, the development of multidisciplinary treatment approaches, incorporating both dental and psychological care, could enhance the effectiveness of TMD management, particularly in populations with high stress levels. Finally, expanding research to include diverse populations and settings will be crucial in understanding the full scope of TMDs and in developing tailored interventions that address the specific needs of different demographic groups (de MeloJúnior et al., 2019; Rauch et al., 2020) (17, 19).

CONCLUSION

In conclusion, this study contributes valuable data on the prevalence and severity of TMDs in a clinical population, reinforcing the importance of comprehensive assessments and the integration of psychological care in the management of these complex disorders. The results align with existing literature while also highlighting areas for further research and clinical practice improvement, particularly in the context of stress-related TMDs.

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