Psychological Status and Oral Health-Related Quality of Life of Patients with Temporomandibular Joint Disorder: A Cross-Sectional Clinical Study

Temporomandibular Eklem Bozukluğu Olan Hastaların Psikolojik Durumu ve Ağız Sağlığı ile İlişkili Yaşam Kalitesi: Kesitsel Bir Klinik Çalışma

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ABSTRACT Objective: The aim of this study is to examine the association of psychological factors such as stress, anxiety, and depression with the quality of life in patients with temporomandibular disorder (TMD). **Material and Methods:** This cross-sectional clinical study was carried out on 375 patients with temporomandibular joint disorder in Oral and Maxillofacial Surgery Clinic of Afyonkarahisar University of Health Sciences Faculty of Dentistry. While the stress level of the participants was evaluated with the Perceived Stress Scale-14, the levels of anxiety and depression were evaluated using the Beck Anxiety and Beck Depression Scales. Participants' quality of life was evaluated using the Oral Health Impact Profile-14 (OHIP-14). SPSS for Windows 21.0 program was used for statistical analyses. Results were evaluated in 95% confidence interval, at p<0.05 and p<0.001 significance levels. **Results:** The OHIP-14 scale mean score of the participants was 17.42. In this study, the highest scores were observed in the OHIP-14 sub-dimensions of "physical pain (3.97±2.22)" and "psychological disturbance (3.02±2.09)". Both the total OHIP-14 score and the OHIP-14 sub-dimension scores increased significantly as the levels of stress, anxiety and depression increased (p<0.05). **Conclusion:** These study findings revealed that stress, anxiety, and depression level were positively and strongly correlated with quality of life in patients with TMD. Therefore, it should be taken into consideration in the psychosocial parameters in the treatment of the disease and improving the quality of life.

Keywords: Stress; anxiety; depression;
        temporomandibular joint disorder;
        quality of life

ÖZET Amaç: Bu çalışmanın amacı, temporomandibular bozukluğu (TMB) olan hastalarda stres, anksiyete ve depresyon gibi psikolojik faktörlerin yaşam kalitesi ile ilişkisini incelemektir. **Gereç ve Yöntemler:** Bu kesitsel klinik çalışma, Afyonkarahisar Sağlık Bilimleri Üniversitesi Diş Hekimliği Faklütesinin Ağız ve Çene Cerrahisi Kliniğinde temporomandibular eklem bozukluğu olan 375 hasta üzerinde gerçekleştirildi. Katılımcıların stres düzeyleri Algılanan Stres Ölçeği-14 ile değerlendirilirken, anksiyete ve depresyon düzeyleri Beck Anksiyete ve Beck Depresyon Ölçekleri ile değerlendirildi. Katılımcıların yaşam kalitesi ise Ağız Sağlığı Etki Profili-14 [Oral Health Impact Profile-14 (OHIP-14)] ile değerlendirildi. İstatistiksel analizler için SPSS 21.0 programı kullanıldı. Sonuçlar %95'lik güven aralığında, p<0,05 ve p<0,001 anlamlılık düzeyinde değerlendirildi. **Bulgular:** Katılımcıların OHIP-14 ölçeği ortalama puanı 17,42 idi. Bu çalışmada, en yüksek puanlar "fiziksel ağrı (3,97±2,22)" ve "psikolojik rahatsızlık (3,02±2,09)" OHIP-14 alt boyutlarında gözlendi. Stres, anksiyete ve depresyon düzeyleri arttıkça hem toplam OHIP-14 puanı hem de OHIP-14 alt boyut puanları anlamlı olarak arttı (p<0,05). **Sonuç:** Bu çalışma bulguları, TMB hastalarında stres, anksiyete ve depresyon düzeyinin yaşam kalitesi ile pozitif ve güçlü bir şekilde ilişkili olduğunu ortaya koymuştur. Bu nedenle hastalığın tedavisinde ve yaşam kalitesinin yükseltilmesinde psikososyal parametreler dikkate alınmalıdır.

Anahtar Kelimeler: Stres; kaygı; depresyon;
        temporomandibular eklem bozukluğu;
        yaşam kalitesi

Temporomandibular disorders (TMDs) are described as a group of disorders including masticatory muscles, the temporomandibular joint (TMJ), and related structures. Chronic pain, jaw muscle aches, de- creased jaw mobility, and TMJ noise are the most common signs and symptoms of TMD.[1] TMD has a multifactorial etiology that involves parafunctional behaviors, occlusal disharmony, stress, anxiety,

trauma and microtrauma, postural imbalances, mandibular instability, abnormal psychological conditions.[2] It is estimated that 50-70% of the world's population at some point in their life exhibits signs or symptoms in TMD, and in view of the period, 20-25% of the population has TMD symptoms.[3]

Several factors, involving sleep disorders and physical, occlusal, and emotional stress, may harm the adaptive capacity of the stomatognathic system and increase the risk of the TMD.[4]

Studies have examined emotional factors such as depression and anxiety not only as causes of TMD but also as triggers of other TMD-related signs and symptoms.[5] Anxiety and stress can cause signs and symptoms of TMD, such as pain, muscle hyperactivity, and TMJ inflammatory and/or degenerative changes. Also, stress and anxiety often impair sleep quality, slowly decreasing the individual's productive capacity and impacting their quality of life in a progressively negative process.[6]

Quality of life is one of the most critical problems for patients with TMD. Pain is seen not only as a significant factor affecting the quality of life of patients with TMD but also as the primary reason patients seek care.[7,8] Like any other form of orofacial pain, such as acute dental pain and trigeminal neuralgia, TMD pain can be annoying and disturbing.[9] This can cause harmful effects on patients' social behavior and psychological state. On the other hand, psychological and psychosocial disorders in TMD patients can negatively alter the course of the disease and treatment outcomes. TMDs have been shown to have a negative impact on patients' quality of life, particularly oral health-related quality of life (OHRQoL).[10,11] Potential effects of psychological factors such as stress, anxiety, and depression on OHRQoL in TMD patients have not been thoroughly investigated. The purpose of this study is to explore the relationship between the psychological status of patients with TMD and their quality of life.

MATERIAL AND METHODS

This cross-sectional evaluation involved 375 adults who sought treatment at the Clinic of the Oral and Maxillofacial Surgery, Faculty of Dentistry, Afy-

onkarahisar Health Sciences University in 2020. The study protocol was approved by the ethics committee of the university (date: 03.07.2020, no: 2020/323). The research was done in complete compliance with the Helsinki Declaration. Written informed consent was received from all participants. The Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) was used to evaluate patients.[12] Patients over 18 years old who were diagnosed with TMD based on DC/TMD diagnostic criteria were included in the study. Exclusion criteria included mental disability, neurological dysfunction, systemic muscle conditions (e.g., fibromyalgia, inflammatory joint disease), malignancy, pregnancy, and current use of medications that might affect the central nervous system. A single calibrated oral and maxillofacial surgeon examined all patients and conducted all questionnaires and tests to patients. Four questionnaires have been used for the present study.

BECK ANXIETY INVENTORY

The signs of anxiety were assessed using the Beck Anxiety Inventory. This scale measures anxiety symptoms as somatic, cognitive and emotional and consists of 21 items.[13] The validation and reliability analysis of the Turkish version of the scale was carried out by Ulusoy et al.[14] The instrument consists of a self-report questionnaire of 21 multiple-choice questions, presented in terms of specific anxiety symptoms, about how the participant has felt over the last week. Each symptom has a score between 0 and 3; higher scores suggest higher levels of anxiety symptoms. By summing up all symptom scores, anxiety total score between 0 and 63 is obtained.

PERCEIVED STRESS SCALE-14

The 14-item Perceived Stress Scale (PSS-14) designed by Cohen et al. was used to assess the degree of stress.[15] PSS-14 is the most commonly used psychological tool for assessing stress perception. The validation and reliability analysis of the Turkish version of the scale was carried out by Eskin et al.[16] Consisting of 14 items, the instrument measures the degree of stress perception of the individual in daily situations. The scale includes questions with a positive and a negative focus on stres. Every item is

scored between 0 and 4, and the total PSS score of 0 to 56 points is obtained by summing up all items. The higher the score, the greater the perceived stres.

BECK DEPRESSION INVENTORY

The participants' depression levels were assessed by Beck Depression Inventory (BDI). The validation and reliability analysis of the Turkish version of the scale was carried out by Hisli et al.[17] This scale assesses the patient's psycho-emotional disposition towards the underlying world by identifying 21 issues in the patient's mental state over the past 24 hours. The questions were responded by participants using the four-point scale (0-3). By adding all the answers a total score has been obtained.

ORAL HEALTH IMPACT PROFILE-14

OHRQoL of TMD patients was evaluated with Oral Health Impact Profile-14 (OHIP-14) Scale. The short form OHIP-14 was derived from the original 49-item OHIP form developed by Slade and Spencer.[18] It consists of 7 components and 14 questions in total, and each component has two questions. Every question tests a frequency ranging from 'never' (score zero) to 'very much' (score 4) with five possible responses. Scale score varies from 0 to 56, and high scores show more frequent impacts.

STATISTICAL EVALUATION

SPSS-20 (Statistics Package for Social Sciences) program was used for statistical analysis.

The consistency of variables with the normal distribution was checked by Kolmogorov-Smirnov tests. T-test and One-way ANOVA analysis was used when variables showing normal distribution (parametric), the Mann-Whitney U test and Kruskal-Wallis analysis test was used when variables not showing normal distribution (non-parametric). In addition, Pearson correlation analysis was used in the analysis of measurable data with each other. Results were assessed at a 95% confidence interval, at $p<0.05$ and $p<0.001$ levels of significance.

▎ RESULTS

Socio-demographic characteristics of the participants are given in Table 1. Sixteen point eight percent of the participants were male and the male to female ratio was about 1/5. Twenty eight percent of the participants were between the ages of 20-29. Approximately half of the participants were single and divorced. Twenty six point four percent of the participants were primary school graduates, 52.8% were of normal weight and 32% were students.

SOCIODEMOGRAPHIC CHARACTERISTICS AND QUALITY OF LIFE

The mean OHIP-14 score of the participants was 17.42. The change of OHIP-14 scale scores according to the socio-demographic characteristics of the participants is shown in Table 1. There was no substantial difference between the quality of life points of the female and male participants. The quality of life of participants younger than 20 years old was significantly poorer than those aged 20-40 years old ($p<0.005$). The quality of life of the participants did not differ in terms of marital status. The quality of life of university graduates was higher than those of primary, secondary, and high school graduates ($p<0.005$). The quality of life of those who were overweight was higher than those of normal weight and obese ($p<0.001$). The quality of life of the participants varied significantly according to their profession ($p<0.005$). The quality of life of government official was higher than the students, housewives, and workers. Similarly, the quality of life of retirees was higher than students and workers.

ANXIETY STATUS AND QUALITY OF LIFE

Based on their anxiety levels, the participants were split into 4 groups: Minimal anxiety; 0-7 points (36%), mild anxiety; 8-15 points (27.2%), moderate anxiety; 16-25 points (16.8%), and severe anxiety; 26-63 points (20%). The relation between participants' anxiety levels and quality of life is given in Table 2. As anxiety level scores increased, OHIP-14 scores increased significantly. The mean OHIP-14 score of the minimal anxiety group was 10.17 while the mild anxiety group was 16.38, the moderate anxiety group was 20.14, and severe anxiety group was 29.60. According to the level of anxiety, both OHIP-14 total score and OHIP-14 scale sub-dimensions scores were significantly different ($p<0.001$). As the

Demographic data	n	%	OHIP-14 Mean±SD	p value	Post hoc p value
TABLE 1: Socio-demographic characteristics and quality of life of the participants.					
Gender					
Female	312	83.2	12.95± 8.93	p=0.000**	1-2;p=0.000
Male	63	16.8	18.32± 11.14		
Age					
< 20 years old	84	22.4	20.21±10.24	p=0.031*	1-2; p=0.038
20-29 years old	105	28	16.88±8.73		1-3; p=0.004
30-39 years old	96	25.6	15.43±11.04		
40 and over	90	24.0	17.56±13.33		
Marital status					
Married	186	49.6	16.22±10.85	p=0.059	
Single	168	44.8	18.28±10.27		
Divorced	21	5.6	21.14±15.85		
Education status					
Primary school	99	26.4	16.96±13.21	p=0.033*	1-4; p=0.038
Secondary school	111	29.6	19.16±10.71		2-4; p=0.002
High school	123	32.8	17.65±9.96		3-4; p=0.014
University/Faculty	39	10.4	12.69±7.24		
Postgraduate	3	0.8	20±0.00		
BMI					
<18.5kg/m^2 (weak)	24	6.4	16.50±11.97	p=0.000**	2-3; p=0.000
18.5-24.9 kg/m^2 (normal)	198	52.8	19.03±9.74		3-4; p=0.000
25-29.9 kg/m^2 (overweight)	114	30.4	13.47±9.72		
> 30 kg/m^2 (obese)	39	10.4	21.38±15.80		
Occupation					
Student	120	32	19.10±10.42	p=0.017*	1-4; p=0.002
Housewife	96	25.6	17.40±11.92		1-6; p=0.025
Worker	51	13.6	19.23±13.22		2-4; p=0.041
Government official	57	15.2	13.68±8.69		3-4; p=0.008
Self-employment	18	4.8	15.00±9.16		3-6; p=0.029
Retired	9	2.4	10.66±6.26		
Unemployed	24	6.4	18.50±9.56		
Total	375	100	17.42±10.98		

OHIP-14: Oral Health Impact Profile-14; SDs: Standard deviations; BMI: Body mass index; *:p<0.05; **:p<0.001.

OHIP-14	Total (n=375) Mean±SDs	Minimal anxiety (n=135) Mean±SDs	Mild anxiety (n=102) Mean±SDs	Moderate anxiety (n=63) Mean±SDs	Severe anxiety (n=75) Mean±SDs	p value
TABLE 2: Comparison of quality of life according to the anxiety levels of the participants.						
1. Functional limitation	1.84±2.05	1.04±1.52[a]	1.55±1.63[b]	2.19±2.12[c]	3.4±2.39[d]	0.000**
2. Physical pain	3.97±2.22	3.08±2.19[a]	3.97±1.91[bc]	4.57±2.27[cd]	5.08±1.99[d]	0.000**
3. Psychological discomfort	3.02±2.09	1.62±1.50[a]	3.11±1.89[b]	3.80±1.63[c]	4.76±1.91[d]	0.000**
4. Psychological disability	2.19±2.13	1.15±1.69[a]	2.26±1.95[bc]	2.19±1.88[c]	3.96±2.13[d]	0.000**
5. Physical disability	2.35±2.13	1.20±1.64[a]	2.17±1.81[b]	2.95±1.90[c]	4.16±2.12[d]	0.000**
6. Social disability	2.57±2.22	1.40±1.67[a]	2.26±1.52[b]	2.90±2.08[c]	4.84±2.25[d]	0.000**
7. Handicap	1.49±1.81	0.68±1.07[a]	1.08±1.17[b]	1.61±1.63[c]	3.40±2.31[d]	0.000**
OHIP-14 global score	17.42±10.98	10.17±8.13[a]	16.38±6.43[b]	20.14±8.74[c]	29.6±10.74[d]	0.000**

OHIP-14: Oral Health Impact Profile-14; SDs: Standard deviations; **: In each line, different superscripts indicate statistically significant difference between groups (p<0.001).

TABLE 3: Comparison of quality of life according to the depression levels of the participants.					
	Total (n=375)	Normal depression (n=168)	Mild depression (n=102)	Moderate depression (n=87)	Severe depression (n=18)	
OHIP-14	Mean±SDs	Mean±SDs	Mean±SDs	Mean±SDs	Mean±SDs	p value
1. Functional limitation	1.84±2.05	0.96±1.41[a]	2.32±2.14[b]	2.82±2.342[b]	2.66±1.64[b]	0.000**
2. Physical pain	3.97±2.22	3.51±2.13[a]	4.20±2.38[b]	4.34±2.16[b]	5.16±1.38[b]	0.001*
3. Psychological discomfort	3.02±2.09	1.71±1.51[a]	3.61±1.82[b]	4.37±1.85[c]	5.33±1.53[d]	0.000**
4. Psychological disability	2.19±2.13	1.30±1.70[a]	2.58±2.14[b]	3.20±2.24[c]	3.33±1.94[d]	0.000**
5. Physical disability	2.35±2.13	1.50±1.81[a]	2.64±2.09[b]	3.27±1.93[c]	4.16±2.68[c]	0.000**
6. Social disability	2.57±2.22	1.42±1.60[a]	3.14±2.11[b]	3.75±2.00[c]	4.33±3.28[c]	0.000**
7. Handicap	1.49±1.81	0.87±1.30[a]	1.50±2.01[b]	2.34±1.89[c]	3.16±1.82[c]	0.000**
OHIP-14 global score	17.42±10.98	11.28±7.49[a]	19.97±11.26[b]	24.06±9.55[c]	28.16±11.23[c]	0.000**

OHIP-14: Oral Health Impact Profile-14; SDs: Standard deviations; *:In each line, different superscripts indicate statistically significant difference between groups (p<0.05); **:In each line, different superscripts indicate statistically significant difference between groups (p<0.001).

anxiety level increased, the scores of all dimensions of the OHIP-14 scale increased.

DEPRESSION STATUS AND QUALITY OF LIFE

The relationship between the levels of depression of the participants and the quality of life was given in Table 3. According to their depression levels, participants were split into 4 groups: Minimal depression; 0-9 points (44.8%), mild depression; 10-16 points (27.2%), moderate depression; 17-19 points (23.2%), and severe depression; 30-63 points (4.8%). The mean OHIP-14 score of the minimal depression group was 11.28, while the mild depression group was 19.97, the mid-level depression group was 24.06, and the severity of the depression group was 28.16. Both total OHIP-14 scores and OHIP-14 sub-dimension scores of the participants differed significantly according to their depression levels (p<0.001, p<0.005 respectively). The level of quality of life decreased as the level of depression increased.

PERCEIVED STRESS STATUS AND QUALITY OF LIFE

Participants were classified into three classes according to their stress levels: Minimal stress; 0-13 points (8.8%), moderate stress; 14-27 points (61.6%) and severe stress; 28-56 points (29.6%). The relation between participants' stress levels and quality of life is given in Table 4. The mean OHIP-14 score of the minimal stress group was 7.54, while the moderate stress group was 15.22 and the severe stress group was 24.94. The quality of life scores of the participants differed significantly according to the stress level (p<0.001). Participants with higher stress scores had poorer quality of life.

TABLE 4: Comparison of quality of life according to the stress levels of the participants.				
	Total (n=375)	Minimal stress (n=33)	Moderate stress (n=231)	Severe stress (n=108)	
OHIP-14	Mean±SDs	Mean±SDs	Mean±SDs	Mean±SDs	p value
1. Functional limitation	1.84±2.05	1.09±1.25[a]	1.44±1.76[a]	2.91±2.37[b]	0.000**
2. Physical pain	3.97±2.22	2.90±2.46[a]	3.76±2.06[b]	4.72±2.27[c]	0.000**
3. Psychological discomfort	3.02±2.09	0.63±0.65[a]	2.58±1.77[b]	4.64±1.82[c]	0.000**
4. Psychological disability	2.19±2.13	0.90±1.95[a]	2.09±2.19[b]	2.78±1.87[c]	0.000**
5. Physical disability	2.35±2.13	0.54±0.79[a]	1.93±1.82[b]	3.75±2.23[c]	0.000**
6. Social disability	2.57±2.22	0.90±1.01[a]	2.20±1.94[b]	3.83±2.41[c]	0.000**
7. Handicap	1.49±1.81	0.63±1.16[a]	1.24±1.60[a]	2.27±2.12[b]	0.000**
OHIP-14 global score	17.42±10.98	7.54±5.79[a]	15.22±9.25[b]	24.94±11.16[c]	0.000**

OHIP-14: Oral Health Impact Profile-14; SDs: Standard deviations; **:In each line, different superscripts indicate statistically significant difference between groups (p<0.001).

TABLE 5: Correlations of PSS-14, Beck anxiety, Beck depression and quality of life.

		PSS-14	Beck Anxiety	Beck Depression	OHIP-14
PSS-14	Pearson Correlation	1	0.621**	0.677**	0.504**
	Sig. (2-tailed)		0.000	0.000	0.000
	N	375	375	375	375
Beck Anxiety	Pearson Correlation	0.621**	1	0.647**	0.663**
	Sig. (2-tailed)	0.000		0.000	0.000
	N	375	375	375	375
Beck Depression	Pearson Correlation	0.677**	0.647**	1	0.519**
	Sig. (2-tailed)	0.000	0.000		0.000
	N	375	375	375	375
OHIP-14	Pearson Correlation	0.504**	0.663**	0.519**	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	375	375	375	375

OHIP-14: Oral Health Impact Profile-14; PSS-14: Perceived Stress Scale; **Correlation is significant at the 0.01 level (2-tailed).

Correlation of stress, anxiety, and depression levels of the participants with OHRQoL scores are given in Table 5. Accordingly, it was seen that stress, anxiety, and depression levels showed a positive correlation both with each other and with OHIP-14 score. Anxiety and depression levels have increased as the stress level has increased. In addition, as stress, anxiety, and depression levels increased, the OHIP-14 score increased significantly.

DISCUSSION

Today's general view is that although there is less evidence of an etiological factor, psychological and psychosocial variables are very critical for understanding TMD.[19] It can be suggested that TMD is likely to affect people's quality of life, particularly OHRQoL, especially when chronic.[20] Differences in the quality of life of TMD patients according to socio-demographic characteristics as well as their psychological conditions such as stress, anxiety, and depression were evaluated in this study. TMD has been shown to have a substantial negative impact on OHRQoL in previous studies.[21-24] Almoznino et al. showed that TMD patients suffered more than impaired OHRQoL compared to controls.[24] In their study, the mean severity of OHIP-14 was 12.50 in the TMD group and 9.58 in the control group. Schierz et al. reported that the mean score of OHIP-14 was 14 in patients diagnosed with TMD.[25] Miettinen et al. reported that the OHIP mean score was 15.7 in this type of pathology.[1] Another study showed that the mean

score of OHIP-14 in TMD patients was 20.5.[26] These differences may result from population differences or methodological differences such as inclusion criteria. The findings of this study which based on DC/TMD criteria were similar to the literature, and the mean OHIP-14 score of TMD patients was 17.42.

A variety of studies have explored the gender role of patients with TMD in the OHRQoL. In this study, there was no significant difference between female and male participants' quality of life scores. Although TMD patients have a high female/male ratio, studies have typically shown that there are no major differences between women and men in OHRQoL, similar to this study findings.[21,27] There are different results in the literature regarding the effect of age on quality of life in TMD patients. In the present study, the quality of life of participants younger than 20 years old was significantly poorer than those aged 20-40 years old (p<0.005). Bayat et al. reported that age does not have a significant effect on TMD patients.[23] Dahlstrom and Carlsson reported that elderly patients with TMD tend to show fewer signs and symptoms, similar to our findings.[21]

Stress has been identified as an etiological element in TMD in previous studies. Stress, according to these findings, can impact somatic hyperactivity in the masticatory muscles, causing changes in muscles and/or joints, followed by pain and functional limitations.[28] In the present study, as the stress level of TMD patients increased, the total OHIP-14 score and OHIP-14 subcomponent scores increased significantly.

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Studies have revealed that TMD has a significant negative impact on patients' OHRQoL.[3] The results of the study revealed that stress, anxiety and depression significantly impair quality of life in relation to TMD. Similar to the literature, the study results showed that the quality of life deteriorated significantly with the increase in anxiety and depression levels. Anxiety is based on emotional response and manifests in varying degrees. Bayat et al. reported that anxiety had a major impact on patients with TMD on OHRQoL.[23] In studies investigating the effects of psychosocial disorders on TMD patients, John MT reported the only somatization as an important factor, while Miettinen reported that depression and somatization were important factors.[1,11] The association of TMD symptoms with psychosocial factors was investigated by Rantala et al., and an important relationship between somatization and myofascial pain was found.[29] Ekici reported that TMJ pain was strongly associated with sleep quality and the quality of sleep decreased as the level of pain increased.[30] It is also known that chronic pain adversely affects the quality of life.[8] In this study, physical pain and psychological discomfort scored highest in OHIP-14, 3.97 and 3.02, respectively. The most often recorded OHIP-14 components have been physical pain and psychological discomfort in other studies in the literature, similar to the results of this study.[31] Chronic pain, the most common TMD symptom, causes psychological disorders such as anxiety, stress, or depression. As a result of physical and social disability caused by TMD, individuals' working capacity and productivity decrease and they may experience loss of income.[32] Emotional stress may also lead most patients to seek psychological assistance.[33] Sleep disruption due to pain and stress can lead to sleep apnea and insomnia. TMD patients' sleep quality is severely harmed by unfavorable emotional situations such as stress, anxiety, and depression.[34] TMD-associated pain and stress have a detrimental effect on systemic health and quality of life, which cause negative consequences in daily social activities, social functions, emotional and cognitive balance, sleep, and physical activities at school or work.[35]

The limitations of this study are the fact that the evaluations are made with self-reported questionnaires. The fact that the number of samples is relatively high, the selection of cases with DC/TMD diagnostic criteria reveals the strengths of the research.

CONCLUSION

These study findings revealed that psychological factors such as stress, anxiety, and depression have a strong relationship with the quality of life in TMD patients. Psychosocial influences may play a much larger role than assumed in forming quality of life. Psychological factors, which play a major role in the etiology of TMD, the progression of the disease, can affect the quality of life both directly and indirectly with its effects on other factors such as pain and sleep. Therefore, it should be taken into consideration in physiological parameters as well as psychosocial parameters in the treatment of the disease and improving the quality of life.

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