Self-Reported Data on Sleep Quality and Psychologic Characteristics in Patients with Myofascial Pain and Disc Displacement Versus Asymptomatic Controls

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Purpose: The aim of this research was to compare the differences between patients with myofascial pain and disc displacement and asymptomatic individuals based on aspects of psychologic status and sleep quality. *Materials and Methods:* One hundred thirty patients (81 women, 49 men; mean ages: 30.0 and 31.0 years, respectively) with temporomandibular disorder were selected, and 64 control subjects (32 women, 32 men; mean ages: 27.2 and 27.5 years, respectively) were included in the investigation over a period of 1 year. Clinical diagnosis of 65 patients with myofascial pain and 65 patients with disc displacement with or without limitation and joint pain was determined according to the Research Diagnostic Criteria for Temporomandibular Disorders. The Pittsburgh Sleep Quality Index (PSQI) was used to evaluate sleep quality. Psychologic status was assessed using Symptom Checklist-90-Revised (SCL-90-R). Chi-square, Kolmogorov-Smirnov, one-way analysis of variance, and Tukey Honestly Significant Difference post hoc multiple comparison or Tamhane T² tests were used for statistical analysis. **Results:** There was a significant difference between patients with myofascial pain and disc displacement regarding somatization and paranoid ideation. No statistically significant difference was found between patients with disc displacements and controls in all dimensions of the SCL-90-R. Total score for the PSQI was statistically significantly different between patients with myofascial pain and controls; no significant differences were found between patients with disc displacement and those with myofascial pain or controls regarding the PSQI. Conclusion: To manage patients with myofascial pain, psychologic assessments including sleep quality should be considered. Int J Prosthodont 2012;25:348-352.

Temporomandibular disorder (TMD) represents a collective term embracing a number of clinical problems that involve masticatory muscles, the temporomandibular joint, or both.¹ The etiology of these disorders continues to be a point of controversy.² Reported data suggest that TMD is a chronic pain condition that shares many features with other chronic pain conditions, such as headaches, back pain, and irritable bowel syndrome.^{3,4} It has been stated that depression and somatization have been heavily implicated in TMD.^{5,6} In one longitudinal treatment outcome study, sleep disorders were also implicated as perpetuating factors in nonresponding TMD patients.^{2,7-10} Consequently, neuropsychologic assessment in TMD studies has received increased attention, and the multifactorial etiology of TMD and the complete examination of all physical, emotional, and behavioral factors involved in the disease are increasingly emphasized.¹¹

The comparison of psychologic variables and sleep quality in patients with myofascial pain (MFP) and temporomandibular joint pain has been reported in several studies,^{2,8-12} but the psychologic profiles of patients with different TMD subgroups were seldom reported, and sleep quality has not yet been compared in TMD subgroups.

The objective of this research was to identify differences in sleep quality and psychologic characteristics between patients with MFP and disc displacement (DD).

Materials and Methods

One hundred thirty patients (81 women, 49 men; mean ages: 30.0 and 31.0 years, respectively; age range: 19 to 45 years) with TMD and 64 control subjects (32 women, 32 men; mean ages: 27.2 and 27.5

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years, respectively) were included in this investigation over a period of 1 year.

The groups were formed by consecutive patients with complaints of orofacial pain (patient groups) and individuals without acute or chronic pain complaints of the orofacial region (control group). Controls were selected from patients attending dental check-ups and receiving dental restorative procedures at the Faculty of Dentistry, Selcuk University, Konya, Turkey.¹³ The 65 patients with MFP and 65 patients with DD with or without limitations were determined according to the Research Diagnostic Criteria for Temporomandibular Disorders. Of the 65 patients with DD, 31 had intra-articulary pain in at least one joint and 34 had no pain in any joint. The severity and longevity of MFP and intra-articulary pain were not assessed in this study.

Patients with acute muscle spasms, myositis, polyarthritis, and acute traumatic injuries were excluded from the study. In addition, medical and/or dental emergencies, metabolic diseases, neurologic disorders, vascular diseases, neoplasia, history of psychiatric disorders, and treatments such as physical therapy and acupuncture were also excluding factors. Patients taking medications such as analgesics and anti-inflammatories, muscle relaxants, anticonvulsants, and antidepressants that could affect the central nervous system were excluded. Finally, patients reporting major visual, auditory, or motor impairments and patients with an inability to participate in the interview because of comprehension difficulties were also excluded.⁸

The authors individually interviewed all subjects by using valid and reliable psychiatric instruments, including the Pittsburgh Sleep Quality Index (PSQI)¹⁴ and Symptom Checklist-90-Revised (SCL-90-R).¹⁵ Both instruments have been standardized, and their validity and reliability for the Turkish population has been assessed.^{16,17} The SCL-90-R was developed by Derogatis¹⁵ as a relatively brief selfreporting psychometric instrument. It consists of 90 items, 9 primary symptom dimensions, and 3 global indices. It is designed to evaluate a broad range of psychologic problems and symptoms of psychopathology. Symptom dimensions include somatization, obsessive-compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. The global measures are referred to as the Global Severity Index and the Positive Symptom Total; the Positive Symptom Distress Index was not used in this study. The Positive Symptom Total gives the number of self-reported symptoms and is derived by counting the number of items endorsed with a positive (non-zero) response.

The Global Severity Index is an average grading of all items except those left blank, and an increase in the general symptom index denotes increased stress arising from individual psychiatric symptoms and is the most reliable index of the SCL-90-R.

The PSQI was used for the evaluation of sleep quality. The PSQI is an 18-item self-reporting measure used to appraise general sleep quality that provides information regarding subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, use of sleep medication, and daytime dysfunction. The PSQI has demonstrated test-retest stability and internal consistency and provides valid and reliable assessment of overall sleep quality and disturbance.¹⁴

Patients provided written informed consent to participate in this study, and the ethical committee of the Faculty of Dentistry, Selcuk University, approved it.

Statistical Analysis

All statistical analyses were performed using SPSS version 13.0 (IBM). The chi-square test was used to assess sociodemographic variables (sex, age). Kolmogorov-Smirnov, one-way analysis of variance, and Tukey Honestly Significant Difference post hoc multiple comparison or Tamhane T² tests were used as appropriate for statistical analyses. Two-tailed forms were used. Differences were considered significant at P < .05 for all tests.

Results

The sample comprised 64 control subjects, 65 patients with MFP, and 65 patients with DD. No significant difference was found among the three groups regarding age. A significant difference was found related to sex: MFP was found to be significantly greater in women.

Analysis of variance showed a group effect (Table 1). However, the Tukey post hoc test revealed significant differences only between patients with MFP and controls in all measures of the SCL-90-R. There was a significant difference between patients with MFP and DD regarding somatization and paranoid ideation. No statistically significant differences were found between patients with DD and controls in any of the SCL-90-R measures.

There were significant differences among the groups for PSQI scores (Table 2). Subjective sleep quality, sleep latency, habitual sleep efficiency, sleep disturbances, and PSQI total score were significantly different between patients with MFP and controls. No significant differences were found between patients with DD and those with MFP or controls.

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SCL-90-R*	MFP (n = 65)	DD (n = 65)	Control (n = 64)	F	Р
Somatization ^a	61.4 ± 9.1	57.0 ± 10.1	56.0 ± 9.8	11.671	.000†
Obssesive-compulsive ^b	56.5 ± 11.2	56.2 ± 11.9	54.1 ± 10.0	4.626	.004 [†]
Interpersonal sensitivity ^c	58.4 ± 11.2	58.2 ± 10.8	55.7 ± 11.3	4.297	.006 [†]
Depression ^d	60.4 ± 0.95	59.6 ± 10.3	57.2 ± 9.8	6.229	.001 [†]
Anxiety ^e	57.2 ± 11.7	56.8 ± 11.2	55.8 ± 10.3	5.937	.001 ⁺
Hostility ^f	55.6 ± 9.86	55.2 ± 9.7	54.1 ± 11.3	4.306	.006 [†]
Phobic anxiety ^g	52.0 ± 10.2	51.9 ± 9.7	50.3 ± 11.1	4.379	.006 [†]
Paranoid ideation ^h	50.2 ± 10.7	52.8 ± 9.4	52.1 ± 10.9	5.563	.001 ⁺
Psychoticism ⁱ	55.0 ± 9.8	54.3 ± 10.7	53.5 ± 10.1	4.883	.003 [†]
Global Severity Index ^j	58.7 ± 10.4	57.3 ± 11.2	56.1 ± 9.9	7.296	.000†
Positive Symptom Total ^k	49.2 ± 26.1	37.0 ± 19.5	36.8 ± 19.8	5.512	.001 ⁺

 Table 1
 Comparison of SCL-90-R Scores and Analysis of Variance for the Three Groups

*Post hoc results: ^aBetween MFP and DD (P = .003), MFP and control (P = .001); ^bbetween MFP and control (P = .044); ^cbetween MFP and control (P = .044); ^cbetween MFP and control (P = .035); ^gbetween MFP and control (P = .044); ^bbetween MFP and control (P =

[†]Statistically significant.

PSQI*	MFP (n = 65)	DD (n = 65)	Control ($n = 64$)	F	Р
Subjective sleep quality ^a	1.30 ± 0.73	1.21 ± 0.78	0.81 ± 0.69	2.803	.042 [†]
Sleep latency ^b	1.64 ± 1.08	1.15 ± 0.94	0.66 ± 0.75	6.161	.001 ⁺
Sleep duration	0.79 ± 1.08	0.64 ± 0.86	0.38 ± 0.61	1.128	.306
Habitual sleep efficiency ^c	0.67 ± 1.02	0.33 ± 0.69	0.13 ± 0.34	3.202	.025†
Sleep disturbances ^d	1.67 ± 0.74	1.30 ± 0.64	1.19 ± 0.54	3.547	.016 [†]
Use of sleep medication	0.18 ± 0.46	0.18 ± 0.58	0.09 ± 0.53	0.782	.506
Daytime dysfunction	1.03 ± 0.85	0.82 ± 0.95	0.81 ± 0.90	1.544	.206
PSQI total score ^e	7.27 ± 3.80	5.64 ± 3.53	4.06 ± 2.50	6.148	.001 ⁺

 Table 2
 Comparison of PSQI Scores for the Three Groups

*Post hoc results: ^aBetween MFP and control (P = .050); ^bbetween MFP and control (P = .050); ^cbetween MFP and control (P = .029); ^dbetween MFP and control (P = .015); ^ebetween MFP and control (P = .001).

+Statistically significant.

Discussion

The importance of psychologic issues in TMD is reflected in several studies. However, several authors have reported that not all TMDs are linked to psychologic distress. Recent studies comparing the two most common manifestations of TMD (masticatory muscle pain and temporomandibular joint pain) have revealed that patients with MFP are more psychologically distressed than patients with temporomandibular joint pain.^{2,3,10,11} It was also stated that while the pain level and duration are equivalent between these two groups, those with MFP were more psychologically distressed and revealed more dysfunctional adaptation than patients with temporomandibular joint pain. These data suggest that pain itself does not necessarily contribute to psychologic distress.¹¹ Therefore, patients should not be classified based on pain alone. TMD represents a collective term embracing several clinical problems, but the psychologic profiles of patients with different types of TMD were seldom evaluated in the literature. Patients with MFP and DD were compared in this study because these disorders are the most common subgroups of TMD. Yap et al⁶ compared depression and somatization in patients with MFP only, DD only, other joint conditions (arthralgia, osteoarthrosis, osteoarthritis), MFP and DD, MFP and other joint conditions, and DD and other joint conditions. They found that patients with MFP and other joint conditions had significantly

higher levels of depression and somatization than patients diagnosed with DD alone. Significant differences have been found for depression scores between patients with DD and those with other joint conditions and patients with muscle disorder as well as other joint conditions.¹² In this study, there was a significant difference between patients with MFP and asymptomatic individuals in all dimensions of the SCL-90-R; no significant differences were found between patients with DD and asymptomatic individuals for psychologic variables. These observations are consistent with the literature.^{12,13,18} There was a significant difference between those with MFP and DD regarding somatization and paranoid ideation, and this confirms the findings of Yap et al.⁶ A significant difference was also found between patients with masticatory muscle pain and temporomandibular joint pain for somatization and paranoid ideation.^{9,10}

In the current study, subjects with MFP were more likely to have physical and psychologic symptoms. The cause of different difficulties in physical functions experienced by patients with MFP may be associated with underlying psychiatric problems. Within the limitations of this study, although MFP may be a somatic expression of psychiatric and psychosocial disturbance, DD seems to be an organic disturbance. However, DD with and without intra-articulary pain and MFP were compared in this study. Therefore, the previous statement should be confirmed by a study comparing MFP and DD with intra-articulary pain or without intra-articulary pain. Furthermore, because it is difficult to prove which starts first, longitudinal investigations are necessary to understand the correlation between MFP and psychiatric problems. Based on neurophysiology data, depression and somatization are most likely consequences of long-term pain.¹⁹

Poor sleep quality is a common clinical characteristic of patients with chronic pain.²⁰⁻²² It was stated that patients with TMD also complain frequently of sleep disturbances.^{23,24} It has also been shown that patients with MFP reported significantly poorer sleep than patients with temporomandibular joint pain.^{10,21} The difference in sleep quality between patients with subgroups of TMD has not been presented yet in the literature. The PSQI total score was significantly higher in patients with MFP than controls in this study. There was a significant difference between patients with MFP and controls regarding subjective sleep quality, sleep latency, habitual sleep efficiency, and sleep disturbance. No significant differences between patients with DD and those with MFP or controls were noted in this study. According to these findings, sleep disturbance may be a risk indicator for the development of MFP, or MFP may be a risk indicator for the

development of a sleep disorder. However, the data related to sleep were ambulatory recordings and collected in absence of validation. Furthermore, the PSQI is a good tool but has some limitations. Data may have been influenced by comorbidities or familial history. Longitudinal and polysomnographic investigations are necessary to identify the cause-effect relationship between sleep disturbance and MFP. Headaches upon waking can also be a more reliable clue for the correlation of sleep disorders and MFP.²⁵

Conclusions

Within the limitations of this study, patients with MFP and asymptomatic individuals are considerably different regarding psychologic features and sleep quality. Furthermore, patients with MFP are more susceptible to somatization and paranoid ideation than those with DD. To manage patients with MFP, psychologic assessments including sleep quality should be considered.

References

- McNeil C. Temporomandibular Disorders—Guidelines for Classification, Assessment and Management, ed 2. Chicago: Quintessence, 1993:11–14.
- Ferrando M, Andreu Y, Galdón MJ, Durá E, Poveda R, Bagán JV. Psychological variables and temporomandibular disorders: Distress, coping, and personality. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2004;98:153–160.
- Dworkin, SF, Von Korff M, LeResche L. Multiple pains and psychiatric disturbance. An epidemiologic investigation. Arch Gen Psychiatry 1990;47:239–244.
- Grossi ML, Goldberg MB, Locker D, Tenenbaum HC. Irritable bowel syndrome patients versus responding and nonresponding temporomandibular disorder patients: A neuropsychologic profile comparative study. Int J Prosthodont 2008;21:201–209.
- McCreary CP, Clark GT, Oakley ME, Flack V. Predicting responce to treatment for temporomandibular disorders. J Craniomandib Disord 1992;6:161–169.
- Yap AUJ, Tan KBC, Chua EK, Tan HH. Depression and somatization in patients with temporomandibular disorders. J Prosthet Dent 2002;88:479–484.
- Grossi ML, Goldberg MB, Locker D, Tennebaum HC. Reduced neuropsychologic measures as predictors of treatment outcome in patients with temporomandibular disorders. J Orafac Pain 2001;15:329–339.
- Selaimen CM, Jeronymo JC, Brilhante DP, Grossi ML. Sleep and depression as risk indicators for temporomandibular disorders in a cross-cultural perspective: A case-control study. Int J Prosthodont 2006;19:154–161.
- Bertoli E, de Leeuw R, Schmidt JE, Okeson JP, Carlson CR. Prevalence and impact of posttraumatic stress disorder symptoms in patients with masticatory muscle or temporomandibular joint pain: Differences and similarities. J Orofac Pain 2007;21: 107–119.
- Lindroth JE, Schmidt JE, Carlson CR. A comparison between masticatory muscle pain patients and intracapsular pain patients on behavioral and psychosocial domains. J Orofac Pain 2002;16:277–283.

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- Rugh JD. Psychological components of pain. Dent Clin North Am 1987;31:579–594.
- Huang GJ, LeResche L, Critchlow CW, Martin MD, Drangsholt MT. Risk factors for diagnostic subgroups of painful temporomandibular disorders (TMD). J Dent Res 2002;4:284–288.
- Dworkin SF, LeResche L. Research diagnostic criteria for temporomandibular disorders: Review, criteria, examinations and specifications, critique. J Craniomandib Disord 1992;6:301–355.
- Buysse DJ, Reynolds CF 3rd, Monk TH, Berman SR, Kupfer DJ. The Pitssburgh Sleep Quality Index: A new instrument for psychiatric practice and research. Psychiatry Res 1989;28:193–213.
- 15. Derogatis LR. Symptom Checklist-90-R. Minneapolis: National Computer System, 1979.
- Dağ İ. Belirti tarama listesi (SCL–90-R)'nin üniversite öğrencileri için güvenirliliği ve geçerliliği. Türk Psikiyatri Dergisi 1991;2:5–12.
- Ağargün YM, Kara H, Anlar Ö. Pitsburg Uyku Kalitesi İndeksinin geçerlilik ve güvenirliği. Türk Psikiyatri Dergisi 1996;7:107–111.
- Celić R, Pandurić J, Dulcić N. Psychologic status in patients with temporomandibular joint disorders. Int J Prosthodont 2006; 19:28–29.
- Wang K, Svensson P, Sessle BJ, Cairns BE, Arendt-Nielsen L. Painful conditioning stimuli of the craniofacial region evokes diffuse noxious inhibitory controls in men and women. J Orofac Pain 2010;24:255–261.

- Brousseau M, Manzini C, Thie N, Lavigne G. Understanding and managing the interaction between sleep and pain: An update for the dentist. J Can Dent Assoc 2003;69:437–442.
- Yatani H, Studts J, Cordova M, Carlson CR, Okeson JP. Comparison of sleep quality and clinical and psychologic characteristics in patients with temporomandibular disorders. J Orofac Pain 2002;16:221–228.
- Vazquez-Delgado E, Schmidt JE, Carlson CR, DeLeeuw R, Okeson JP. Psychological and sleep quality differences between chronic daily headache and temporomandibular disorders patients. Cephalgia 2004;24:446–454.
- Carlson CR, Reid KI, Curran SL, et al. Psychological and physiological parameters of masticatory muscle pain. Pain 1998; 76:297–307.
- 24. Bailey DR. Sleep disorders. Overview and relationship to orofacial pain. Dent Clin North Am 1997;41:189–209.
- 25. Rompré PH, Daigle-Landry D, Guitard F, Montplaisir JY, Lavigne GJ. Identification of a sleep bruxism subgroup with a higher risk of pain. J Dent Res 2007;86:837–842.

Literature Abstract

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Long-term outcome of cemented versus screw-retained implant-supported partial restorations

The purpose of this study was to compare the long-term outcomes and complications of cemented versus screw-retained implant restorations in partially edentulous patients. The study included 38 consecutive patients with bilateral posterior edentulism. Implants were placed, and cemented or screw-retained restorations were randomly assigned to the patients in a split-mouth design. Follow-up examinations (up to 15 years) were performed every 6 months in the first year and every 12 months in subsequent years. The parameters evaluated and recorded at each recall visit included ceramic fracture, abutment screw loosening, metal framework fracture, Gingival Index, and marginal bone loss. A total of 221 implants were followed, with no implant failure recorded during the follow-up period (mean follow-up: 66 ± 47 months for screw-retained restorations [range: 18 to 180 months] and 61 ± 40 months for cemented restorations [range: 18 to 159 months]). Ceramic fracture occurred significantly more frequently (P < .001) in screw-retained restorations ($38\% \pm 0.3\%$) than in cemented restorations ($32\% \pm 0.3\%$) than in cemented restorations ($9\% \pm 0.2\%$). There was no metal framework fracture in either type of restorations (0.09 ± 0.3). The mean marginal bone loss was significantly higher (P < .001) for screw-retained restorations (1.4 ± 0.6 mm) than for cemented restorations (0.69 ± 0.5 mm). The authors concluded that the long-term clinical and biologic outcomes of cemented implant-supported restorations were superior to that of screw-retained restorations.

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