

Depression and Somatization in Patients with Temporomandibular Disorders in a Population-Based Cross-Sectional Study in Southern Brazil

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Purpose: To assess the prevalence of depression and somatization in patients with temporomandibular disorders (TMD) in a Brazilian population-based cross-sectional survey. **Materials and Methods:** A total of 1,643 subjects were assessed for TMD using the Research Diagnostic Criteria for Temporomandibular Disorders Axes I and II and were assessed for depression and somatization using the Graded Chronic Pain Scale. The data were cross-tabulated for comparison between TMD subjects and controls. **Results:** TMD subjects had significantly worse depression and somatization levels than controls in the RDC/TMD Axis II. The levels were also worse in most Axis I TMD groups (muscle disorders and arthralgia/osteoarthritis/osteoarthrosis). **Conclusion:** TMD subjects had worse depression and somatization, particularly in diagnostic groups with higher pain/disability levels. *Int J Prosthodont* 2019;32:248–250. doi: 10.11607/ijp.6209

Studies of depression and somatization in temporomandibular disorders (TMD) have been mostly restricted to clinical patient populations. Population studies on the prevalence of depression and somatization in general population TMD subjects and in the different TMD diagnostic groups using valid methodologies are still missing.¹

MATERIALS AND METHODS

Population and Research Design

This population-based cross-sectional study evaluated depression and nonspecific physical symptoms/somatization with or without pain in a nonclinical TMD population compared to controls without TMD.² Subjects (men and women 18 to 65 years of age) were registered in the Brazilian Public Health System (SUS) in the city of Maringá, Brazil (357,077 inhabitants). Clinical examinations (ie, extra- and intraoral) using the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) Axis I were carried out by a single trained clinical examiner after assessment of clinical

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Submitted October 27, 2018;
accepted October 31, 2018.
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Table 1 Categorical Data Analyses of Temporomandibular Disorders (TMD) Subjects vs Controls Based on Axes I and II of the Research Diagnostic Criteria for TMD: Cross-Tabulation with Depression and Nonspecific Physical Symptoms With or Without Pain on the Graded Chronic Pain Scale (GCPS)

GCPS	TMD, Axis II (n = 595)	Control, Axis II (n = 1,048)	TMD Axis I, Group I (n = 484)	Control, Axis I, Group I (n = 1,159)	TMD Axis I, Group II (n = 126)	Control, Axis I, Group II (n = 1,517)	TMD Axis I, Group III (n = 470)	Control, Axis I, Group III (n = 1,173)
Depression (0 to 4), n								
Mild (< 0.535)	224	657	174	707	60	821	191	690
Moderate (0.535 to < 1.105)	176	271	143	304	41	406	141	306
Severe (1.105+)	195	120	167	148	25	290	138	177
<i>P</i>	.000*		.000*		.318		.000*	
Nonspecific physical symptoms without pain (0 to 4), n								
Mild (< 0.428)	215	719	184	750	66	868	198	736
Moderate (0.428 to < 0.857)	156	215	118	253	31	340	120	251
Severe (0.857+)	224	114	182	156	29	309	152	186
<i>P</i>	.000*		.000*		.314		.000*	
Nonspecific physical symptoms with pain (0 to 4), n								
Mild (< 0.500)	158	697	138	717	51	804	168	687
Moderate (0.500 to < 1.000)	210	251	156	305	47	414	141	320
Severe (1.000+)	227	100	190	137	28	299	161	166
<i>P</i>	.000*		.000*		.039		.000*	

The total number of patients was 1,643. For RDC/TMD Axis I, Group I = muscle pain; Group II = disc displacement; Group III = arthralgia/osteoarthritis/osteoarthritis. For RDC/TMD Axis II, subjects with a GCPS score of 0 were considered controls, and those with scores of I, II, III, and IV were considered TMD subjects.

*Significant (linear-by-linear association, $P < .001$).

history using the RDC/TMD Axis II and SUS medical records. Eligible subjects were excluded if they had clinical records of or self-reported systemic diseases or disorders, chronic or acute pain conditions, or chronic use of medication affecting the central nervous system (CNS). Detailed description of the inclusion and exclusion criteria can be found in a previous publication.² Overall, 1,643 individuals were selected (65.9% women, mean age = 32.70 ± 10.26, 70.1% Caucasian, 75.1% with Brazilian medium income, and 79.9% with high school education or higher).

Questionnaires

In both the TMD and control groups, Axis I of the RDC/TMD was used for clinical diagnosis of TMD, and Axis II was used to assess pain impact and socioeconomic, demographic, behavioral, and psychologic conditions (ie, depression and nonphysical symptoms/somatization). Subjects with TMD in Axis I were classified as: Group I = muscle pain; Group II = disc displacement; and Group III = arthralgia/osteoarthritis/osteoarthritis. Those without a TMD diagnosis for each group were the controls. In addition, subjects underwent Axis II examination for the classification of pain intensity and disability using the Graded Chronic Pain Scale (GCPS): Grade 0 = absence of pain in the last 6 months; Grade I = low-intensity pain; Grade II = high-intensity pain; Grade III = moderate functional limitation; and Grade IV = severe functional limitation.³ Subjects with a GCPS grade of I

to IV were considered TMD patients, while those with a GCPS grade of 0 were considered controls.²

Student *t* test was used for continuous data analysis, and linear-by-linear association test was used for categorical data analyses.

RESULTS

Tables 1 (categorical data) and 2 (continuous data) show cross-tabulations between depression and nonspecific physical symptoms with and without pain on the GCPS vs the RDC/TMD Axes I and II classifications. There was a very high statistical difference ($P < .001$) in the RDC/TMD Axis II classification comparing TMD subjects to controls, showing much higher levels of depression and nonspecific physical symptoms/somatization both with and without pain. In the RDC/TMD Axis I analysis, muscle pain, as well as arthralgia/osteoarthritis/osteoarthritis (ie, Groups I and III, respectively), had significantly ($P < .001$) higher levels of depression and nonspecific physical symptoms both with and without pain scores compared to controls. On the other hand, in subjects with disc displacement (Group II), no significant difference was found in either depression or nonspecific physical symptoms/somatization without pain when compared to controls. A marginal significant difference was found only in nonspecific physical symptoms/somatization with pain ($P < .05$). These results were identical in both the continuous and categorical analyses of all data.

Table 2 Continuous Data Analyses of Temporomandibular Disorders (TMD) Subjects vs Controls Based on Axes I and II of the Research Diagnostic Criteria for TMD: Cross-Tabulation with Depression and Nonspecific Physical Symptoms With or Without Pain on the Graded Chronic Pain Scale (GCPS)

GCPS	TMD, Axis II (n = 595)	Control, Axis II (n = 1,048)	TMD Axis I, Group I (n = 484)	Control, Axis I, Group I (n = 1,159)	TMD Axis I, Group II (n = 126)	Control, Axis I, Group II (n = 1,517)	TMD Axis I, Group III (n = 470)	Control, Axis I, Group III (n = 1,173)
Depression (0 to 4)								
Mean (SD) score	0.91 (0.72)	0.51 (0.47)	0.92 (0.70)	0.54 (0.52)	0.71 (0.59)	0.65 (0.60)	0.85 (0.69)	0.58 (0.54)
<i>P</i>	.000*		.000*		.267		.000*	
Nonspecific physical symptoms without pain (0 to 4)								
Mean (SD) score	0.75 (0.71)	0.30 (0.39)	0.75 (0.72)	0.34 (0.45)	0.49 (0.53)	0.46 (0.58)	0.67 (0.70)	0.37 (0.49)
<i>P</i>	.000*		.000*		.514		.000*	
Nonspecific physical symptoms with pain (0 to 4)								
Mean (SD) score	0.94 (0.68)	0.40 (0.40)	0.94 (0.70)	0.45 (0.45)	0.70 (0.57)	0.59 (0.58)	0.84 (0.69)	0.50 (0.49)
<i>P</i>	.000*		.000*		.047		.000*	

The total number of patients was 1,643. SD = standard deviation. For RDC/TMD Axis I, Group I = muscle pain; Group II = disc displacement; Group III = arthralgia/osteoarthritis/osteoarthritis. For RDC/TMD Axis II, subjects with a GCPS score of 0 were considered controls, and those with scores of I, II, III, and IV were considered TMD subjects.

*Significant (Student *t* test, *P* < .001).

DISCUSSION

TMD patients measured by both Axes I and II of the RDC/TMD had significantly worse depression and nonspecific symptoms/somatization with or without pain levels than asymptomatic controls. The secondary depression and nonspecific symptoms/somatization caused by TMD were directly related to the higher pain intensity found in TMD subjects with muscle pain and arthralgia/osteoarthritis/osteoarthritis compared to those with disc displacement with lower pain intensity.

This is in line with the current literature. A recent review has shown that chronic TMD is marked by psychologic distress (ie, somatization and depression, affective distress, fear of pain, fear of movement, and catastrophizing) and characteristics of pain amplification (ie, hyperalgesia and allodynia). This psychologic distress and pain amplification contribute to chronic TMD development, and the interactions among these factors make pain management difficult.⁴ Another longitudinal multicenter study has also found that depression and somatization increase the risk of developing TMD by approximately 31% and 38%, respectively, confirming the present findings.⁵ However, most studies did not use the RDC/TMD as a diagnostic tool for TMD or did not use both Axes I and II; therefore, longitudinal studies still must be conducted using the RDC/TMD Axes I and II or the Diagnostic Criteria for TMD⁶ to confirm the findings of this cross-sectional study.

CONCLUSIONS

TMD subjects in the general population had worse depression and somatization than controls, particularly in diagnostic groups with higher pain/disability levels.

ACKNOWLEDGMENTS

The authors are not affiliated currently or within the last 5 years with any company, affiliates, or products. This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES) – Finance Code 001. The authors report no conflicts of interest.

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