

The Impact of Orofacial Pain on the Quality of Life of Patients with Temporomandibular Disorder

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***Aims:** To evaluate the relationships between gender, diagnosis, and severity of temporomandibular disorders (TMD) with self-reports of the impact of TMD on the quality of life. **Methods:** Eighty-three individuals seeking TMD treatment at the Dental School of Pontifical Catholic University Minas from May to August 2005 were evaluated by a single examiner who was trained and calibrated for diagnosis according to criteria of Axis I of the Research Diagnostic Criteria for TMD (RDC/TMD). The severity of TMD was established by the Temporomandibular Index and the impact on quality of life by the Oral Health Impact Profile (OHIP 14). Complete data were available for 78 of the 83 initial patients and evaluated by the Mann-Whitney test and Spearman correlation analysis. **Results:** Except for one patient, all individuals showed some impact related to physical pain. Of the seven aspects evaluated on the OHIP 14, women presented a greater impact than men only for functional limitations (Mann-Whitney, $P < .05$). Patients presenting with diagnoses of muscular disorders (group I) or osteoarthritis (group III) reported a greater impact than those without ($P < .05$). The Spearman test demonstrated a significant correlation between impact on quality of life and severity of TMD ($P < .05$). **Conclusion:** Orofacial pain had a great impact on the quality of life of individuals with TMD, without group difference between genders. The presence of muscular disorders (group I) and osteoarthritis (group III) was related to greater impact on quality of life, which was not observed for diagnoses of disc displacement (group II). A correlation between severity of TMD and impact on quality of life was clearly observed. J OROFAC PAIN 2009;23:28–37*

Key words: orofacial pain, quality of life, temporomandibular disorder

Temporomandibular disorders (TMD) is a collective term that involves several clinical problems affecting the masticatory muscles, temporomandibular joints (TMJ), and associated structures.¹ TMD are frequently associated with chronic pain² and thus have great influence on the social behavior and psychological status of patients,³ incur a high financial cost to society,^{4–6} and greatly limit the functioning of patients⁷ in a manner similar to that of a headache or back pain. Studies have demonstrated that the impact caused by TMD on the quality of life of patients is greater than recurrent periodontitis or the need

for replacement of removable complete dentures;⁸ therefore, the social, psychological, and functional impact should be considered in the diagnosis and treatment of these disorders.^{7,9,10}

Some investigators, using subjective indicators of general^{8,9,11–16} and oral health,^{3,5–7,10,17–26} have demonstrated that TMD may have a great impact on quality of life. However, the relationship between this impact and the specific diagnosis and severity of TMD or a patient's gender has not been fully explored.

In many instances, the perception and feelings of patients regarding their oral health are ignored. Clinicians dealing with patients suffering from chronic pain must evaluate its impact on the lives of these individuals, but must also consider how beneficial the treatment can be in terms of improving their overall quality of life.⁷ Therefore, the utilization of instruments to evaluate the impact of TMD on the quality of life of patients is fundamental to establishing treatment needs and evaluating success.

The aim of the present study was to evaluate the relationships between gender, diagnosis, and severity of TMD with self-reports of the impact of TMD on the quality of life.

Materials and Methods

Ethical Concerns

This study was reviewed and approved by the Institutional Review Board of the Pontifical Catholic University (PUC) of Minas Gerais (protocol 2004/128). All patients read, understood, and signed an informed consent form and received free and unconditional treatment.

Examination and Evaluation of Patients

All patients referred to or waiting for specialized treatment at the orofacial pain and TMD clinics at the Dental School of PUC Minas during the period of May to August 2005 were evaluated by a single trained and calibrated examiner. Patients lacking the cognitive capacity to answer a questionnaire or provide other information relative to their condition and those who did not agree to participate were excluded. Clinical examination was performed according to Axis I of the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) index,²⁷ and the information collected was recorded on a proper form that was previously validated in Portuguese.²⁸ In addition

to the clinical diagnosis, the severity of TMD was assessed by the Temporomandibular Index (TMI).²⁹ The TMI is composed of three subindexes: the Function Index (FI), the Muscle Index (MI), and the Joint Index (JI). The FI includes 12 items used to characterize pain or limitations related to mandibular range of motion and deviation of the mandible during opening movements. The MI measures pain associated with the palpation of selected intra-, and extraoral masticatory muscles at a total of 20 sites. The JI measures pain evoked by digital palpation of the temporomandibular joint (TMJ) and the incidence of TMJ sounds. The specific definition of each examination item and the operational definitions for the measurements included in the TMI are described for the RDC/TMD. Examination sites with no pain or deviations are scored as zero; those sites positive for pain or deviations are scored as one. The subindexes (FI, MI, and JI) are calculated by dividing the sum of the positive findings for each subindex by the total number of items examined. The overall TMI score is the average of the scores for the FI, MI, and JI. The TMI and three subindex scores each vary between zero and one, with one being the highest score possible and reflecting more severe cases.

At the completion of the evaluation, the same examiner completed the Oral Health Impact Profile (OHIP) 14 form validated in Portuguese,³⁰ based on the original reduced version of the OHIP.³¹ The final sample (n = 78) of patients was composed of volunteers who were examined and had answered all 14 questions of this version of the OHIP without using the alternative answer "I don't know." Due to the low socio-cultural level of participants, this indicator was applied by means of interview. In order to assure understanding of the frequencies, enhance differentiation among possible responses, allow higher reliability of reports of interviewees, and reduce the possibility of implicit memory bias in the response of participants (remembering only the first or last response), the interviewer showed a card with all possible answers to each interviewee and read them at the onset of the interview.³⁰ The version presented by these authors was slightly changed; the words "your teeth and dentures" present in the original questionnaire were replaced by the words "your joints." Additional explanations were also offered so that the reference to the TMJ was clear to the interviewee, thus avoiding reports of symptoms related to their natural teeth or prostheses and considering only those related with the TMJ and oral movement. The word "mouth" was

Table 1 Comparative Analysis Among the Three Examiners for the Items of Interest

Measurement	Examiner	Descriptive measurements					ICC
		Minimum	Maximum	Median	Mean	SD	
FI	1	0.25	0.83	0.54	0.60	0.17	0.583
	2	0.33	0.92	0.50	0.55	0.16	
	3	0.33	1.00	0.62	0.61	0.16	
MI	1	0.00	0.90	0.40	0.47	0.28	0.708
	2	0.00	1.00	0.55	0.53	0.31	
	3	0.00	1.00	0.43	0.47	0.31	
JI	1	0.00	0.50	0.13	0.16	0.18	0.488
	2	0.00	1.00	0.25	0.26	0.25	
	3	0.00	0.63	0.20	0.20	0.20	
TMI	1	0.13	0.66	0.41	0.39	0.16	0.816
	2	0.14	0.89	0.43	0.45	0.20	
	3	0.17	0.80	0.43	0.42	0.19	

n = 20; 1 = examiner 1; 2 = examiner 2; 3 = examiner 3.

maintained as in the original version to refer to pain conditions involving the muscles of mastication. Therefore, only reports of problems related to the muscles and joints were considered during the interview. Moreover, the expression “nearly never” was added to the words “hardly ever” in order to improve understanding in the Portuguese language and to consider the sociocultural and typical language expressions of each region. Similarly, the expression “many times” was added to the words “fairly often.” These changes were tested during the interviewing of 20 individuals during training and calibration of the examiner. Frequencies were assigned the following values: never, 0; hardly ever or nearly never, 1; occasionally, 2; fairly often or many times, 3; very often, 4; I don’t know, exclusion of the entire questionnaire. The final score was obtained by the standard method of calculation of the OHIP 14 and proportionally increased with an increased perception of impact by the individual.^{31,32}

Training and Calibration of the Examiner

A pilot study was initially performed prior to the main study for training, calibration, and testing inter-examiner agreement. For evaluation of these aspects, two coauthors experienced with this subject were invited to join the main researcher. The three investigators were trained by reading and discussing the examination protocol of Axis I of the RDC/TMD index,²⁷ and also by watching an instructional video of this same index that detailed all procedures employed in the clinical examination. The pressure of palpation was standardized

with the aid of an electronic scale as suggested in the literature.²⁷ Thereafter, the three examiners performed clinical examinations on each other and then on two volunteers in order to establish and discuss the diagnostic criteria. Examinations were performed at the Dental School clinic; examiners used personal protective equipment following the biosecurity regulations of the institution. Data observed by each examiner were compared and discussed to assure that the three examiners completed the entire examination protocol in a similar manner. In a second part of the pilot study that was also aimed at calibration, another 20 patients, with or without signs and symptoms of TMD, who were seeking treatment at the clinics of the Dental School of PUC Minas were randomly selected for clinical evaluation; the three examiners were not informed of each patient’s status. Data obtained by each examiner for the TMI and its items were compared by the Intraclass Correlation Coefficient (ICC) (Table 1).

Intra-examiner Agreement

Intra-examiner agreement was evaluated by re-examination of nine patients at 1 to 2 weeks after the first examination. The agreement of TMI values and its items between examinations was assessed by the ICC.

Statistical Analysis

The relationship between patient gender, specific diagnoses of TMD, and the impact of TMD on the patient’s quality of life was evaluated by the

Table 2 Comparison Between Two Measurements Obtained for the Same Sample by the Same Examiner

	Descriptive measurements					ICC
	Minimum	Maximum	Median	Mean	SD	
FI ₁	0.0	0.7	0.4	0.4	0.3	0.953
FI ₂	0.0	0.8	0.3	0.4	0.3	
MI ₁	0.1	1.0	0.6	0.5	0.3	0.936
MI ₂	0.2	1.0	0.7	0.6	0.3	
JI ₁	0.0	0.8	0.3	0.3	0.2	0.807
JI ₂	0.0	0.6	0.3	0.3	0.2	
TMI ₁	0.1	0.7	0.4	0.4	0.2	0.940
TMI ₂	0.1	0.7	0.4	0.4	0.2	

n = 9. FI₁ = Functional Index on the first examination; FI₂ = Functional Index on the second examination; MI₁ = Muscular Index on the first examination; MI₂ = Muscular Index on the second examination; JI₁ = Joint Index on the first examination; JI₂ = Joint Index on the second examination; TMI₁ = Temporomandibular Index on the first examination; TMI₂ = Temporomandibular Index on the second examination.

Table 3 Characterization of Patients According to Diagnosis of Disc Displacement

Disc displacement	Right side		Left side	
	n	%	n	%
With reduction	15	18.1	26	31.3
Without reduction, with limitation of mouth opening	0	0.0	0	0.0
Without reduction, without limitation of mouth opening	2	2.4	2	2.4
Absent	66	79.5	55	66.3
Total	83	100.0	83	100.0

Table 4 Characterization of Patients According to Diagnosis of Arthralgia, Arthritis, or Arthrosis

Diagnosis	Right side		Left side	
	n	%	n	%
Arthralgia	27	32.5	29	35.0
Osteoarthritis of TMJ	3	3.6	4	4.8
Osteoarthrosis of TMJ	1	1.2	4	4.8
Absent	52	62.7	46	55.4
Total	83	100.0	83	100.0

Mann-Whitney test. The relationship between the severity of TMD, as evaluated by the TMI and its impact on the quality of life of patients, was evaluated by Spearman correlation analysis.^{33,34} All results were considered significant at $P < .05$.

Results

Inter-examiner Agreement

The results presented in Table 1 reveal the ability of the three examiners to assign similar values for the TMI and its items in the first section of this study.

The ICC values indicate acceptable agreement of

the three examiners for the MI and TMI items but discrepancies for the FI and JI indices.

Table 2 reveals the results obtained by the same examiner (VMB) for the TMI and its items. The ICC values indicate very good to excellent intra-examiner agreement.

Sample Characterization

In the group of patients, 69 were female (83.1%) and 14 were male (16.9%); thus the ratio of women to men was 4.9:1. The age ranged from 15 to 70 years, with a mean (\pm SD) of 36.5 ± 13.5 years.

Patients were classified according to the clinical diagnoses of Axis I of the RDC/TMD index²⁷;

Table 5 Percent Distribution of Responses to Each Question of the OHIP and the Percentage of “Positive Responses”

Statement	Response						Positive responses (%)
	4	3	2	1	0	NK	
1. Have you had trouble pronouncing any words because of problems with your mouth or joint?	9.6	8.5	25.3	7.2	47.0	2.4	43.4
2. Have you felt that your sense of taste has worsened because of problems with your mouth or joint?	2.4	4.8	21.7	7.2	62.7	1.2	28.9
3. Have you had painful aching in your mouth or joint?	43.4	30.1	18.1	2.4	6.0	0.0	91.6
4. Have you found it uncomfortable to eat any foods because of problems with your mouth or joint?	25.3	30.1	24.1	7.2	13.3	0.0	79.5
5. Have you been self-conscious because of your mouth or joint?	48.2	21.7	20.5	1.2	8.4	0.0	90.4
6. Have you felt tense because of problems with your mouth or joint?	28.9	16.9	27.7	3.6	21.7	1.2	73.5
7. Has your diet been unsatisfactory because of problems with your mouth or joint?	13.2	18.1	18.1	14.5	34.9	1.2	49.4
8. Have you had to interrupt meals because of problems with your mouth or joint?	1.2	6.0	26.5	12.1	54.2	0.0	33.7
9. Have you found it difficult to relax because of problems with your mouth or joint?	28.9	19.3	27.7	10.8	13.3	0.0	75.9
10. Have you been a bit embarrassed because of problems with your mouth or joint?	7.2	6.0	12.1	3.6	71.1	0.0	43.4
11. Have you been a bit irritable with other people because of problems with your mouth or joint?	14.5	7.2	15.7	7.2	54.2	1.2	37.4
12. Have you had difficulty doing your usual jobs because of problems with your mouth or joint?	7.2	13.3	22.9	13.3	43.3	0.0	43.4
13. Have you felt that life in general was less satisfying because of problems with your mouth or joint?	12.0	18.1	21.7	3.6	42.2	2.4	51.8
14. Have you been totally unable to function because of problems with your mouth or joint?	2.4	6.0	4.8	10.9	75.9	0.0	13.2

0 = Never; 1 = Hardly ever or nearly never; 2 = Occasionally; 3 = Fairly often or many times; 4 = Very often; NK = I don't know.

Positive responses = Sum of responses scored with 2, 3 and 4. The term “positive response” might be considered as “problem experienced occasionally to very often.”

seven patients (8.4%) did not present alterations in any of the three diagnostic groups. Evaluation of group I diagnoses (muscular) revealed that 42 patients (50.6%) presented myofascial pain, 22 (26.5%) exhibited myofascial pain with limitation of mouth opening, and 19 patients (22.9%) did not present muscular disorders. The distributions of groups II (disc displacement) and III (arthralgia, arthritis, and arthrosis) are presented in Tables 3 and 4, respectively.

Concerning the severity of TMD, the TMI ranged from 0.02 to 0.83 points, with a mean of 0.41 ± 0.18 . Evaluation of the items revealed means of 0.39 ± 0.18 for FI, 0.54 ± 0.28 for MI, and 0.32 ± 0.22 for JI.

Impact of orofacial pain on quality of life and its relationship with gender, diagnosis, and severity of TMD

The questionnaire used to evaluate the impact on quality of life was answered by all 83 patients evaluated, five of whom were excluded due to their response of “I don't know.”

The percent distribution of responses to the questionnaire and the percent of problems experienced occasionally to very often (sum of the percent distributions for the responses “occasionally,” “fairly often,” and “many times/very often”) are shown in Table 5.

Table 6 presents the descriptive measurements of the OHIP and its aspects, as well as their relationship with gender and diagnosis.

Only one patient (1.3% of the sample) did not present any impact and presented a total score of zero. Consequently, 98.7% of the sample had some negative impact in at least one aspect. Of the seven aspects evaluated on the OHIP 14, in six there was no statistically significant difference in impact on quality of life between genders, although women presented a greater impact than men for functional limitations (Table 6). There was a statistically significant difference in impact on quality of life for patients diagnosed into groups I (muscular disorder) and III (arthralgia/arthritis/arthrosis) of the RDC/TMD. This difference was not observed for group II (disc displacement).

Table 6 OHIP Values and Their Relationship with Gender and Diagnosis

Quality of life	Descriptive measurement		Relationships																
			Gender			Diagnosis (RDC/TMD)													
			F/M	Mean		Group I			Group II			Group III							
				SD	SD	SD	P	P/A	Mean	SD	P	P/A	Mean	SD	P	P/A	Mean	SD	P
Global OHIP	11.46	5.06	F	11.80	4.65	.143	P	8.49	5.38	.013*	P	11.46	5.49	.740	P	9.24	4.70	<.001*	
			M	9.78	6.41	(F = M)	A	12.21	4.67	(P > A)	A	11.40	4.33	(P = A)	A	13.58	4.41	(P > A)	
OHIP 1	1.02	0.93	F	1.10	0.91	.013*	P	0.53	0.90	.004*	P	0.95	0.88	.684	P	0.67	0.83	.002*	
			M	0.47	0.89	(F > M)	A	1.13	0.91	(P > A)	A	1.05	1.01	(P = A)	A	1.30	0.93	(P > A)	
OHIP 2	2.64	1.03	F	2.73	1.00	.122	P	2.19	1.00	.013*	P	2.60	1.10	.777	P	2.32	1.04	.003*	
			M	2.29	1.07	(F = M)	A	2.80	0.99	(P > A)	A	2.75	0.89	(P = A)	A	2.97	0.90	(P > A)	
OHIP 3	2.57	1.12	F	2.60	1.06	.818	P	2.31	1.32	.302	P	2.57	1.17	.920	P	2.37	1.11	.072	
			M	2.61	1.41	(F = M)	A	2.68	1.05	(P = A)	A	2.64	1.05	(P = A)	A	2.81	1.09	(P = A)	
OHIP 4	1.26	1.10	F	1.32	1.09	.142	P	0.76	0.89	.033*	P	1.08	0.98	.105	P	0.93	1.01	.008*	
			M	0.93	1.13	(F = M)	A	1.40	1.11	(P > A)	A	1.50	1.22	(P = A)	A	1.55	1.10	(P > A)	
OHIP 5	1.66	1.02	F	1.81	1.06	.251	P	1.38	1.10	.116	P	1.84	1.16	.335	P	1.39	0.94	.003*	
			M	1.40	0.97	(F = M)	A	1.84	1.01	(P = A)	A	1.59	0.86	(P = A)	A	2.07	1.04	(P > A)	
OHIP 6	1.06	1.16	F	1.26	1.17	.708	P	0.81	0.80	.088	P	1.32	1.25	.564	P	0.93	0.98	.038*	
			M	1.12	1.06	(F = M)	A	1.36	1.21	(P = A)	A	1.10	0.99	(P = A)	A	1.52	1.23	(P > A)	
OHIP 7	1.08	1.15	F	1.14	1.11	.495	P	0.83	0.99	.336	P	1.32	1.23	.052	P	0.77	0.96	.009*	
			M	0.96	1.35	(F = M)	A	1.19	1.19	(P = A)	A	0.79	0.94	(P = A)	A	1.43	1.23	(P > A)	

Mann-Whitney test, *statistically significant ($P < .05$), $n = 78$. OHIP 1 = Functional limitations; OHIP 2 = Physical pain; OHIP 3 = Psychological discomfort; OHIP 4 = Physical disability; OHIP 5 = Psychological disability; OHIP 6 = Social disability; OHIP 7 = Handicap; F = Female; M = Male; P = Presence of diagnosis; A = Absence of diagnosis.

Several correlations between quality of life and the TMI were significant (Table 7). The global OHIP and some of its dimensions (functional limitations, physical pain, and psychological disability) presented significant correlations to the TMI and all of its sub-indexes. A unique negative correlation was observed between OHIP 7 (handicap) and JI.

DISCUSSION

Despite the fact that no subjective indicator of quality of life may be taken as a “gold standard,” these indicators along with objective ones can aid in the diagnosis and treatment planning of patients.³⁵ The main reason for the infrequent utilization of these indicators is the difficult selection of questionnaires, since no studies have compared them in different clinical situations.³⁶

Subjective indicators can be classified as pertaining to general or oral health. The proven psychometric properties and possibility of comparison among populations with different problems (eg, TMD and back pain) are advantages of subjective indicators for general health. On the other hand, subjective indicators of oral health tend to be more sensitive for detecting slight changes in specific conditions^{7,37-39} and might allow a more

detailed evaluation of the disability caused by TMD.¹⁷ The potential validity of the OHIP for evaluation of patients with TMD²⁵ and its previous utilization for this purpose^{7,10,25,26} contributed to the adoption in the present study of a version previously validated in Portuguese.³⁰ Moreover, the indicator should be able to specify groups differing from each other with regard to the clinical conditions or severity, for which the OHIP was designed.³⁸

Inter-examiner Agreement

The ICC values presented in Table 1 correspond with the previously observed difficulty in achieving inter-examiner agreement during TMD examinations^{27,29,40-42}. For convenience, examiner 3 (VMB) was elected as the single examiner for the main study.

Intra-examiner agreement observed for TMI and its items was similar to that reported by Wahlund, List, and Dworkin,⁴¹ although difficulty of examiner agreement during TMD evaluation has been observed,^{27,41} and reports of pain during palpation can vary across examinations, even when performed on the same day.^{29,42} The very good and excellent intra-examiner agreement demonstrates the reproducibility and reliability of TMD examinations performed by examiner 3 during this research.

Table 7 OHIP Values and Their Relationship with Severity of TMD

Quality of life	Temporomandibular Index and subindexes			
	TMI	FI	MI	Jl
Global OHIP	0.358 *(.001)	0.258 *(.011)	0.343 *(.001)	0.191 *(.048)
OHIP 1	0.467 *(.000)	0.298 *(.004)	0.431 *(.000)	0.281 *(.007)
OHIP 2	0.415 *(.000)	0.412 *(.000)	0.344 *(.001)	0.206 *(.036)
OHIP 3	0.152 (.093)	0.040 (.364)	0.126 (.138)	0.201 *(.040)
OHIP 4	0.211 *(.033)	0.132 (.364)	0.116 (.138)	0.24 *(.018)
OHIP 5	0.329 *(.002)	0.294 *(.005)	0.323 *(.002)	0.192 *(.047)
OHIP 6	0.247 *(.015)	0.161 (.081)	0.247 *(.015)	0.074 (.262)
OHIP 7	0.189 (.050)	0.124 (.141)	0.282 *(.007)	-0.029 (.600)

P values in parentheses. Spearman correlation test, * statistically significant ($P < .05$), $n = 78$.

Sample Characterization

Regardless of the type of sample, either population-based or not, women are more frequently affected and present more severe signs and symptoms of TMD than men.^{2,43-47} In addition, the female to male ratio of 4.9:1 observed in the present study was similar to the ratio of 5:1 reported by other investigators.^{10,18}

The mean age of patients evaluated in the present study (36.5 years) was similar to the mean age in most reports evaluating patients referred to specialized clinics for TMD treatment.^{7-13,15-16,18,20-21,22-24,48-49}

Some patients referred to TMD clinics, although reporting symptoms of TMD, cannot be classified according to the diagnoses of Axis I of the RDC/TMD index. This index does not include specific criteria for conditions such as muscle spasm, myositis, muscle contracture, polyarthritis, and acute traumatic lesions because of the difficulty in achieving reliable operational diagnostic criteria for these conditions or due to the low prevalence reported in the literature.²⁷ The frequencies of diagnoses in the present study were similar to those observed by List and Dworkin.⁴⁸ However, they were different from those reported by investigators evaluating patients of Asian descent,^{21,23-24,49} who found a lower prevalence of diagnoses in Asians as compared to non-Asians in all diagnostic groups of the RDC/TMD index. The diagnosis of disc displacement without reduction and limitation of mouth opening, although in agreement with the examination protocol of Axis I of the RDC/TMD index, should be considered with caution, since no joint imaging was performed to confirm this diagnosis. After revision and discussion of the examination criteria proposed in this index, it was stated that this diagnosis should be discarded if no

images could be examined for confirmation.²⁷ However, the possibility of such diagnoses is still considered in international reports even without utilization of imaging, which may decrease the validity of such reports.

The values of the TMI and its items (FI, MI, and Jl) observed in the present study are similar to the report of Pehling et al,²⁹ possibly due to the evaluation of similar samples, including individuals with symptoms seeking TMD treatment.

Impact of Orofacial Pain on Quality of Life and Its Relationship with Gender, Diagnosis, and Severity of TMD

Of the 78 questionnaires included in this evaluation, only one presented an OHIP score of zero, which characterized the absence of any impact of pain on quality of life. Therefore, 98.7% of the sample reported some impact; this is similar to the proportion reported by Voog et al⁶ and Reisine and Weber,¹¹ but higher than that observed by Macfarlane et al⁵ and Bush and Harkins.¹³ The former⁵ reported a lower frequency than the present study, probably due to evaluation of a population-based sample instead of patients searching for treatment. On the other hand, even though Bush and Harkins¹³ specifically evaluated patients with reports of orofacial pain, they employed the general health Pain Disability Index, which tends to be less sensitive to slight alterations of specific conditions as compared to specific indicators of oral health, such as the OHIP.^{7,17,37-39}

If the simplified method for calculation of the OHIP, which considers “fairly often” and “very often” as positive responses, was used similarly to Murray et al,⁷ the frequencies of positive responses would be very similar to those reported by these authors for questions 1, 6, 9, 10, 11, 13, and 14.

For questions 4 and 5, higher frequencies of positive responses were observed than reported by Murray et al.⁷ On the other hand, the frequency of positive responses to question 8 in the present study was lower. The other questions (2, 3, 7, and 12) in the OHIP 14 were not included in the OHIP 30 questionnaire used by Murray et al.⁷

As shown in Table 5, 45% or more of the patients responded with 0 (“never”) or 1 (“hardly ever”) on 9 of 14 items of the OHIP 14 questionnaire. Nevertheless, the percentage of patients reporting problems experienced occasionally to very often in all 14 questions was much higher than that observed by Slade,³¹ reflecting the more severe effect on quality of life in the present sample. In addition, the mean global OHIP 14 score (11.46) presented in the present study (Table 6) was higher than the means presented by Slade³¹ (1.64 for the entire sample and 2.64 for the group with a perceived need for dental treatment).

Although Luo et al²⁶ also employed the OHIP 14 to evaluate the impact of orofacial pain on quality of life, direct comparison of their outcomes with the present study is difficult due to differences in culture and age between samples, as well as in diagnostic criteria and classification of orofacial pain. Regardless, the mean OHIP 14 score in their musculoligamentous/soft tissue orofacial pain group (12.13) was similar to ours (11.46) and higher than the mean score in their control group (2.91). In general, in accordance with the present results, Luo et al²⁶ observed that quality of life was greatly affected in the group of patients with TMD.

The reporting of impacted daily activities at work, school, or home (sum of responses scored with 4, 3, 2, 1 to question 12 in Table 5) by 56.7% of patients was similar to the observations of previous investigators.^{16,23} Most studies^{11,16,20–22} have found that mastication is the functional activity most affected in patients with TMD. In the present study, only 13.3% of the sample reported that their diet had never been impaired due to problems with the mouth or joint; 86.7% reported some discomfort while eating (question 4 in Table 5). It is thus likely that patients presenting with TMD and orofacial pain who are searching for specialized treatment actually experience limitations to their daily activities that impair their quality of life.

Since this was a case series study, the data should be carefully interpreted. The patients studied may represent a group of more severe cases with greater impairment of quality of life; thus, their outcomes might not be extrapolated to the

population.¹³ Kino et al²⁴ stated that self-reporting might lead to inaccuracies. However, alternatives that might be applied in epidemiological studies are not available. Nevertheless, the results of the present study support previous investigations that demonstrated the substantial impact of orofacial pain on the quality of life of patients.⁷

Taking the limitations of this study into account, especially the low number of men, which reflects the well-known higher prevalence of TMD in women, the present findings do not support the view that TMD has a greater impact on women’s daily activities leading them to search for specialized treatment more frequently, since there was no indication of differences between men and women in six of seven aspects of their quality of life (Table 6); this finding corroborates a previous study by John et al.²⁵ The fact that women account for most cases of patients searching for TMD treatment should be further investigated.

The relationship observed between the presence of muscular disorders as well as arthralgia, arthritis, or arthrosis (Table 6) and greater impact on quality of life was not observed by Kino et al.²⁴ However, it should be mentioned that the questionnaire employed by Kino et al (LDF-TMDQ – Limitations of Daily Functions for TMD Questionnaire) does not address all aspects related to well-being and quality of life; it considers only functional limitations and thus overlooks other aspects that might be influenced by orofacial pain. The OHIP 14 questionnaire includes social, emotional, and psychological aspects that are not found in the LDF-TMDQ. However, Bush and Harkins¹³ observed that patients with muscular disorders presented a significantly greater impact on their quality of life when compared to those with disc disorders. The greater impact reported by patients with diagnoses of muscular disorders and arthralgia, arthritis, or arthrosis as shown in Table 6 might be supported by the clinical observation that patients with these diagnoses usually present more painful symptoms. These symptoms may consequently cause greater limitations compared to patients with disc displacement, who may often be asymptomatic, especially in cases of disc displacement with reduction.²⁵ In addition, the psychological profile of patients with arthralgia and muscular disorders seems different from that of individuals with disc displacement, possibly due to the impact of pain on depression and somatization.⁵⁰

Patients presenting with more severe TMD according to the TMI and its items exhibited greater impact on their daily activities in the present study;

this was similar to the report by Murray et al.⁷ This moderate and positive correlation between objective and subjective indicators of oral health does not agree with the weak correlation reported by other authors,^{36,51} possibly due to differences in samples and methodologies. The perceived health/disease status of patients was bad enough to encourage them to search for specialized treatment; this is further supported by results observed in a clinical examination of the severity of TMD conducted by Broder et al.³⁹ In contrast to the present study, that study evaluated individuals who were not searching for treatment but also observed a positive correlation for all aspects of the OHIP 49, demonstrating the sensitivity of this subjective indicator to variations in clinical oral health status.

Thus, patients with more severe TMD tend to report a worse quality of life as compared to those with milder symptoms. The success of TMD treatment, ie, reduction of signs/symptoms and reestablishment of function, should be confirmed by subjective indicators of oral health, which may certainly be considered as an additional parameter for evaluation. However, within this context, subjective indicators of health should demonstrate that they are sensitive enough for detection of slight clinical changes.

Conclusions

Based on the results of the present study, the following can be concluded:

1. Orofacial pain appears to have some impact on the quality of life of patients with TMD. The aspects of physical pain and psychological discomfort presented the highest means. On the other hand, the lowest means were observed for functional limitations and handicap.
2. Despite their more frequent search for treatment, women presented a similar impact to men on most aspects of quality of life.
3. Diagnoses of groups I (muscular disorder) and III (arthralgia/arthritis/arthrosis) of the RDC/TMD index were related to a greater impact on quality of life. On the other hand, diagnoses of group II (disc displacement) were not.
4. A moderately positive correlation was observed between quality of life and severity of TMD, demonstrating that increased OHIP 14 scores were accompanied by increased scores for TMI and its items.

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