Brazilian Dental Science
Ciência Odontológica Brasileira
unesp
UNIVERSIDADE ESTADUAL PAULISTA "JÚLIO DE MESQUITA FILHO"
Instituto de Ciência e Tecnologia
Campus de São José dos Campos

ORIGINAL ARTICLE

Evaluation of the life quality in patients with Temporomandibular Disorders

Avaliação da qualidade de vida em pacientes com desordem temporomandibular

Carolina Oliveira de LIMA[1], Paula Liparini CAETANO[1], Jean Soares MIRANDA[1], Natália Veloso MALTA[1], Isabel Cristina Gonçalves LEITE[2], Fabíola Pêssoa Pereira LEITE[3]

1 – School of Dentistry – Federal University of Juiz de Fora – Juiz de Fora – MG – Brazil.

2 – Public Health Aera – School of Dentistry – Federal University of Juiz de Fora – Juiz de Fora – MG – Brazil.

3 – Dental Materials and Prosthodontics Area – School of Dentistry – Federal University of Juiz de Fora – Juiz de Fora – MG – Brazil.

ABSTRACT

Objective: To evaluate influence of variables gender, diagnosis and severity of types of Temporomandibular Disorder (TMD) on the quality of life of the individual. **Material and Methods:** The sample consisted of one hundred one individuals seeking TMD treatment at the Faculdade de Odontologia/ Universidade Federal de Juiz de Fora. The TMD diagnosis was done through the RDC/TMD: Axis I (Research Diagnostic Criteria/Temporomandibular Disorder). The severity of TMD was established by the Temporomandibular Index (TMI) and the impact on quality of life by the OHIP-14 (Oral Health Impact Profile). The data was tabulated and analyzed by the Mann-Whitney test, T student test and Spearman correlation analysis ($\alpha = 0.05$). **Results:** Most patients had diagnosis of muscular disorder, followed by diagnoses of arthralgia and disk displacement, respectively. All patients had a negative impact on at least one question from OHIP-14. **Conclusion:** Women presented worse quality of life when compared to men. The presence of muscular disorder was related to greater impact on quality of life ($p < 0.05$). The relationship between severity of TMD and quality of life in the muscle sub-index of TMI was observed in all domains of OHIP-14 ($p < 0.05$). In addition, there was positive correlation between TMI and the psychological incapacity.

KEYWORDS

Temporomandibular joint disorders; Quality of life; Facial pain.

RESUMO

Objetivo: Avaliar a influência das variáveis sexo, diagnóstico e gravidade dos tipos de Desordem Temporomandibular (DTM) sobre a qualidade de vida do indivíduo. **Material e Métodos:** A amostra foi constituída por 101 pacientes que procuraram tratamento para Desordem Temporomandibular (DTM) na Faculdade de Odontologia/Universidade Federal de Juiz de Fora. O diagnóstico de DTM foi feito por meio do eixo I do RDC/TMD (Research Diagnostic Criteria/Temporomandibular Disorder). A severidade da DTM foi estabelecida pelo TMI (Índice Temporomandibular) e o impacto na qualidade de vida pelo OHIP-14 (Perfil do Impacto da Saúde Bucal). Os dados foram tabulados e analisados pelos testes de Mann-Whitney e pela correlação de Spearman ($\alpha = 0,05$). **Resultados:** A maioria dos pacientes foi diagnosticada com desordem muscular, seguido pelos diagnósticos de artralgia e de deslocamento de disco, respectivamente. Todos os pacientes apresentaram algum impacto negativo em pelo menos uma pergunta do OHIP-14. **Conclusão:** O gênero feminino apresentou pior qualidade de vida quando comparado ao gênero masculino. A presença de desordem muscular foi relacionada com maior impacto na qualidade de vida ($p<0,05$). A correlação entre gravidade de DTM e qualidade de vida no subíndice muscular do TMI foi observada em todos os domínios do OHIP-14 ($p<0,05$). Além disso, houve correlação positiva entre o TMI e a incapacidade psicológica.

PALAVRAS-CHAVE

Transtornos da articulação temporomandibular; Qualidade de vida; Dor facial.

INTRODUCTION

Temporomandibular Disorder (TMD) is defined as a group of clinical alterations which affect the masticatory muscles, the temporomandibular joint (TMJ) and correlated structures [1-3], reflected mainly by joint noises, deviation or irregular mandibular function and by pain, described as an unpleasant sensorial and emotional experience, associated with actual or potential tissue damage [4-6].

This variety of clinical symptoms shows that there is no single etiological factor responsible for TMD. Thus, its pathogenesis is multifactorial, covering important functional, anatomical and psychosocial elements which may predispose, initiate or perpetuate TMD. Part of TMD signs and symptoms has influence on the basic functions of the mouth, such as chewing, swallowing and speech, leading to a possible functional limitation of these patients. In addition, TMD is considered the most common cause of non-dental pain in the orofacial region and leads to a chronic pain condition and as such, like headaches and back pain, it can greatly influence patients social behavior and psychological state, resulting in a negative impact on daily activities, emotional health and energy level of the affected individual [1-7].

Life quality plays an important role in the etiology of psychosocial and health problems as it is related to the individual's ability to confront and invest on a healthier lifestyle that encompasses the patient's general welfare (physiological, psychological, sexual, professional performance and satisfaction, emotional state and social participation) [6,8,9].

Considering the above, there is evidence to believe that TMD is able to have an impact on the daily activities of individuals, either by functional limitation and/or psychosocial status of the patient. Nonetheless, few studies have documented the use of specific questionnaires regarding TMD impact on patients' life quality. Therefore, this study aimed to evaluate the influence of gender, diagnosis and severity of TMD types on an individual's life quality.

MATERIAL AND METHODS

This study research project was approved by the Ethics Committee of the Federal University of Juiz de Fora (Report no. 188.981/2013).

This cross-sectional study, conducted from May to September of 2013 in which were approached all patients in the first query, from the TMJ Service Clinic, School of Dentistry, Federal University of Juiz de Fora. The inclusion criteria were: presence of orofacial pain and TMD diagnosis. Patients with mental disability, which disabled them to properly answer the questionnaires, illiterate and under treatment TMD patients were excluded from the study. None patient who has met the inclusion criteria refused to participate in research. The sample consisted of 101 volunteers. After the explanation of the research and the agreement of volunteers to participate in it, an Informed Consent Form was signed.

Muscular palpation and TMJs Clinical examination was conducted by a previously calibrated examiner, according to the criteria of the RDC/TMD Index: Axis I [10,11] to diagnose the type of DTM and determining the severity of TMD, according to the Temporomandibular Index (TMI).

Although selection bias may be a problem in epidemiological studies, the recruitment unit of the present study population is a reference center for the city and micro-region, which assist a population with different socioeconomic status, education, age, among other variables confounding. But the information, the bias for diagnostic problems were solved with training a single examiner for applying the RDC.

The TMI is composed of three sub-indices: Functional Index (FI), Muscular Index (MI) and Articular Index (AI). The FI consists of 12

items to characterize the presence of pain or limitation during the mandibular movements. The MI measures the pain associated with palpation of the masticatory muscles and the AI is related to the presence of pain and/or joint noises during palpation of the TMJ and on jaw movements. The TMI score is the mean of the scores for FI, MI and AI, which may range from 0 to 1, in which higher values depict a more severe TMD [12].

After diagnosing and determining TMD severity, its impact on patients' daily activities was evaluated through the instrument Oral Health Impact Profile (OHIP) 14, validated in Portuguese [13]. The OHIP-14 consists of 14 questions, divided into 7 areas: 1 - functional limitation, 2 - physical pain, 3 - psychological discomfort, 4 - physical disability, 5 - psychological disability, 6 - social disability and 7- handicap.

In order to calculate the impact of orofacial pain on life quality of TMD patients, we used the OHIP-14 standard calculating method, using the specific weight to each question. Thus, by adding the final score of all questions, one can obtain values ranging between 0 and 28 points, in which the highest score represents high impact on life quality [14].

Data were tabulated in a spreadsheet for further statistical analysis. The relationship between gender and TMD specific diagnoses with impact on patients' life quality were assessed by using the Mann-Whitney test ($p < 0.05$). A possible correlation between TMD severity, as evaluated by TMI and its sub-indices, and the impact on life quality of the patients was assessed by the Spearman correlation ($p < 0.05$).

RESULTS

In the assessed group, 82 were female (81.2%) and 19 male (18.8%). Regarding age, there was a variation from 16 to 80 years, with mean = 39.2 years old.

Regarding TMD diagnosis, subjects were classified into: group I - muscular disorders; Group II - disc displacement; and group III - arthralgia, arthritis and arthrosis (Table 1).

Table 1 - Patient characteristics according to TMD diagnosis

TMJ Diagnostics	Frequency	
Muscular disorder		
- Miofascial Pain	47 (71.2%)	
- Miofascial Pain with opening limitation	19 (28.8%)	
Disc Displacement	Right Side n (%)	Left Side n(%)
- With reduction	35 (34.7%)	49 (48.5%)
- No reduction with opening limitation	3 (3%)	2 (2%)
- No reduction without opening limitation	3 (3%)	3 (3%)
Arthralgia, arthritis or Osteoarthritis		
- Arthralgia	43 (42.6%)	50 (49.5%)
- Arthritis	0 (0%)	0 (0%)
- Osteoarthritis	0 (0%)	0 (0%)

Regarding the severity of TMD, the values of TMI index and its sub-indices are distributed in Table 2.

Table 2 - Characterization of patients according to TMI index and its sub-indices

Index	Descriptive Measure			
	Minimum	Maximum	Average	Deviation standard
TMD	0.06	0.75	0.41	0.14
Functional (IF)	0.00	0.92	0.58	0.19
Muscular (IM)	0.00	1.00	0.3	0.26
Articular (IA)	0.00	0.75	0.36	0.19

Impact on life quality evaluation form used in this study (OHIP-14) was answered by 94 patients and the results showed a variation from 1.35 to 22.93 points, with mean = 10.22 points.

Table 3 - Mean, standard deviation and p-value (Mann-Whitney) the gender variable, fields and OHIP-14 Total of the patients

Gender	Averages OHIP-14 domain (D.p.)							
	1	2	3	4	5	6	7	Total
Female	0.71 (0.94)	2.44 (1.11)	2.72 (1.14)	1.16 (1.11)	1.72 (1.05)	1.33 (1.25)	1.06 (1.06)	**11.15 (5.54)**
Male	0.39 (0.75)	1.19 (1.29)	1.57 (1.41)	0.45 (0.99)	1.07 (0.95)	0.8 (1.14)	0.74 (1.02)	**6.22 (6.16)**
p-value	0.128	<0.001	0.001	0.001	0.031	0.049	0.185	**0.001**

OHIP 1- Limited function; OHIP 2- Physical pain; OHIP 3- Psychological; OHIP 4 Physical disability; OHIP 5- Psychological disability; OHIP 6- Social disability; OHIP 7- Disability.

The relationship between life quality and gender was statistically significant ($p < 0.05$) for all areas of the OHIP-14, except for functional limitations and handicap, in which the female group presented a worse result, as shown in Table 3.

Data from the correlation of different TMD diagnoses with life quality are given in Table 4.

On the relationship between life quality and TMD severity, it can be said that there is statistical significance between TMI and psychological disability, and the muscular sub index (MI) with OHIP-14 total and its dimensions. However, TMI and the functional and articular sub-indices showed no statistical significance for patients' life quality (Table 5).

Table 4 - Mean, standard deviation and p-value (Mann-Whitney) of muscle and artucular disorder variable, fields and OHIP-14

		Averages domain OHIP-14 (Std)							
	n (%)	1	2	3	4	5	6	7	Total
Muscle Disorder									
No dysfunction	35 (34,7%)	0.26 (0.51)	1.94 (1.12)	2.1 (1.13)	0.62 (0.79)	1.16 (0.88)	0.64 (0.85)	0,59 (0,77)	7,32 (3,99)
With dysfunction	66 (65,3%)	0.86 (1.00)	2.35 (1.29)	2.72 (1.3)	1.25 (1.2)	1.83 (1.09)	1.54 (1.3)	1,22 (1,12)	11,76 (6,27)
p-value		0.003	0.076	0.008	0.013	0.001	0.001	0,007	«0,001
Disc Displacement									
No dysfunction	40 (39,6%)	0.65 (0.97)	2.11 (1.19)	2.41 (1.22)	1.07 (1.24)	1.53 (1.05)	1.33 (1.34)	0,94 (1,12)	10,04 (6,15)
With dysfunction	61 (60,4%)	0.65 (0.88)	2.28 (1.28)	2.57 (1.31)	1.00 (1.04)	1.64 (1.07)	1.16 (1.18)	1,04 (1,01)	10,34 (5,87)
p-value		0.656	0.411	0.384	0.954	0.564	0.614	0,503	0,573
Arthralgia, arthritis and arthrosis									
No dysfunction	39 (38,6%)	0.65 (0.94)	2.05 (1.10)	2.54 (1.22)	0.98 (1.07)	1.59 (1.02)	1.19 (1.18)	1.04 (1.15)	10.05 (5.44)
With dysfunction	62 (61,4%)	0.65 (0.90)	2.31 (1.32)	2.48 (1.32)	1.06 (1.15)	1.6 (1.1)	1.25 (1.28)	0.97 (1.00)	10.33 (6.30)
p-value		0.969	0.251	0.924	0.900	0.936	0.927	0.891	0.845

Table 5 - Correlation of TMI and its sub-indices, fields and OHIP-14 Total of the patients (Spearman)

Índice w	Domains of OHIP-14							
	1	2	3	4	5	6	7	Total
TMD	0.100	0.379	0.085	0.441	0.015	0.065	0.153	0.055
Functional (IF)	0.871	0.599	0.932	0.503	0.305	0.62	0.808	0.854
Muscular (IM)	0.006	0.050	0.004	0.022	<0.001	0.001	0.018	<0.001
Articular (IA)	0.903	0.742	0.91	0.945	0.997	0.845	0.832	0.94

DISCUSSION

The frequencies of TMD diagnosis, in this study, were similar to the studies of Barros et al. [15]. and List and Dworkin [16]. Despite this, Drabovicz et al. [17]. showed disparate sources and compared to previous, because in their sample the disc displacement diagnosis (Group II) was significantly higher than groups I and III. The disagreement between studies may be related to differences in the size and type of samples. In this study 101 individuals of any age group complaining of pain were evaluated, while Fontes et al. [8] analyzed 200 students of 18 and 19 years of age with or without complaints of pain.

TMI sub-indices values found in this study corroborate the literature [12,15], as they assessed quite similar samples comprising individuals with TMD symptoms and seeking treatment.

In the sample observed there was a proportion of 4.3 female patients to one male. And the association between life quality and gender, the results of this study showed statistical significance ($p < 0.05$) for all areas, except for functional limitations and handicap. In addition, women presented the worst result. This, again, is supported by the literature [1,9,15,17]. The high prevalence of TMD in women is related to the fact that they sought more help from health professionals than men, besides having estrogen receptors in TMJs, increased susceptibility to psychosomatic stress and potential influence of hormonal oral contraceptives [2,15,18].

This study showed that pacients with muscle dysfunction have a great impact on an individual's life quality regarding OHIP-14 value, except for physical pain. The lack of statistical significance in relation to physical pain, in this study, can be explained by the availability of analgesics, which facilitates self-medication. Thus, physical pain could be momentarily controlled, making it a less important factor in an individual's life quality impact. Fact of which Barros et al. 15 disagree, attributing this by the fact that OHIP-14 is a subjective indicator.

Regarding the diagnosis of Group II (disc displacement), this study showed no statistical significance between it and OHIP-14 values. It can be explained because patients with muscle disorder normally show more painful symptoms than patients with disc displacement, which in many cases are asymptomatic [19].

In group III, there was no statistical significance between the diagnosis and OHIP-14 values in this study. At this point, disagrees of Barros et al. [15], who found a positive correlation in all areas, except for the psychological discomfort. The differences between studies may be explained by the lack of diagnosis of osteoarthritis and arthrosis in this study sample, which are responsible for causing more intense pain in patients.

With regard to the relationship between life quality and TMD severity, this study's results showed that patients with more severe TMD, according to the muscular index (MI), had an impact on all areas of OHIP- 14 ($p < 0.05$). In addition, there were significant differences between TMI and psychological disability. Findings also evidenced in other studies [15,20].

As previously observed TMD's etiology is multifactorial and leads to a setting of chronic pain, culminating in a negative impact on patients' life quality, as analyzed in this study through OHIP-14 [20,21]. Hence, the DDS must be able to understand this correlation and establish an appropriate treatment plan for each patient, with the aid of multidisciplinary teams, taking the psychological and clinical aspects of the disorders into account in order to alleviate the patient's pain, minimizing its negative impact on the individual's life quality.

However, it is known that the cross-sectional studies there are clearly limits to identify causality. It was not the intention of this study.

CONCLUSION

The relationship between gender and life quality was statistically significant ($p < 0.05$) for all OHIP-14 areas, except for functional limitations and handicap. This fact reveals that the presence of TMD negatively influence the quality of life of the patient. It was also observed that the TMD severity level determines the degree impairment in quality of life. It was also observed that the female group had a worse outcome.

REFERENCES

1. Biasotto-Gonzalez DA, Mendes PCC, de Jesus LA, Martins MD. Quality of life in patients with temporomandibular joint dysfunction: a cross-sectional study Rev. Incs. Ciênc. Saúde. 2009 Apr/Jun; 27(2):128-32.
2. Selaimen C, Brilhante DP, Grossi ML, Grossi PK. Depression and neuropsychological testing in patients with temporomandibular disorders. Ciênc. saúde coletiva. 2007 Dec;12(6):1629-39.
3. Souza SA, Cavalcanti NP, Oliveira LV, Meyer GA. Prevalence of temporomandibular disorders in edentulous subjects rehabilitated with prosthesis total. Rev Odontol UNESP. 2014;43(2):105-110.
4. De Figueiredo VMG, Cavalcanti AL, Farias ABL de, Nascimento SR do. Prevalence of signs, symptoms and associated factors in patients with temporomandibular dysfunction. Acta Scientiarum. Health Sciences. 2009;31(2):159-63.
5. Pedroni CR, Oliveira AS de, Guaratini MI. Prevalence study of signs and symptoms of temporomandibular disorders in university students. J Oral Rehabil. 2003 Mar;30(3):283-9.
6. Silva JAMG, Dibai Filho AV, Machado AA, Oliveira LEM, Navega MT. Correlation between self-esteem and severity of temporomandibular disorders in control and affected subjects. Rev. odontol. UNESP. 2012 Dec; 41(6):377-83.
7. Biasotto-Gonzalez DA, Andrade DV de, Gonzalez TO, Martins MD, Fernandes KPS, Corrêa JCF, et al. Correlation between temporomandibular dysfunction, cervical posture and quality of life. Rev. bras. Crescimento Desenvolv. Hum. 2008 Apr; 18(1):79-86.
8. Kuroiwa DN, Marinelli JG, Rampani MS, Oliveira W, Nicodemo D. Temporomandibular disorders and orofacial pain: study of quality of life measured by the Medical Outcomes Study 36 - Item Short Form Health Survey. Rev Dor. 2011 June; 12(2):93-8.
9. Moreno BGD, Maluf SA, Marques AP, Crivello-Júnior O. Clinical and quality-of-life assessment among women with temporomandibular disorder. Rev bras fisioter. 2009 June;13(3):210-4.
10. Dworkin SF, LeResche L. Research diagnostic criteria for temporomandibular disorders: review, criteria, examinations and specifications, critique. J Craniomandib Disord. 1992; 6(4):301-55.
11. Pereira Júnior FJ, Vieira AR, Prado R, Miasato JF. Epidemiology and etiology of TMD. RGO. 2008;52(2):117-21.
12. Pehling J, Schiffman E, Look J, Shaefer J, Lenton P, Fricton J. Interexaminer reliability and clinical validity of the temporomandibular index: a new outcome measure for temporomandibular disorders. J Orofac Pain. 2002 Fall;16(4):296-304.
13. Slade GD. Derivation and validation of a short-form oral health impact profile. Community Dent Oral Epidemiol. 1997 Aug;25(4):284-90.
14. Allen PF, Locker D. Do item weights matter? An assessment using the oral health impact profile. Community Dent Health. 1997 Sep;14(3):133-8.
15. Barros V de M, Seraidarian PI, Côrtes MI, de Paula LV. The impact of orofacial pain on the quality of life of patients with temporomandibular disorder. J Orofac Pain. 2009 Winter;23(1):28-37.
16. List T, Dworkin SF. Comparing TMD diagnoses and clinical findings at Swedish and US TMD centers using research diagnostic criteria for temporomandibular disorders. J Orofac Pain. 1996 Summer;10(3):240-53.
17. Drabovicz PVSM, Salles V, Drabovicz PEM, Fontes MJF. Assessment of sleep quality in adolescents with temporomandibular disorders. J. Pediatr. 2012 Apr;88(2):169-72.
18. Progiante OS, Ficht DM, Lemos MS, Grossi PK, Grossi ML. Prevalence of temporomandibular disorders and orofacial pain in battered women in Brazilian shelters. Rev. odonto ciênc. 2011;26(3):227-31.
19. Maydana AV, Tesch RS, Denardin OVP, Ursi WJS, Dworkin SF. Possible etiological factors in temporomandibular disorders of articular origin with implications for diagnosis and treatment. Dental Press J. Orthod. 2010 June;15(3): 78-86.
20. Murray H, Locker D, Mock D, Tenenbaum HC. Pain and the quality of life in patients referred to a craniofacial pain unit. J Orofac Pain. 1996 Winter;10(4):316-23.
21. de Lucena IM, Rodrigues LL, Teixeira ML, Pozza DH, Guimaraes AS. Prospective study of a group of pre-university students evaluating

anxiety and depression relationships with temporomandibular disorders. J Clin Exp Dent. 2012 Apr;4(2):102-6.

22. [22] Schierz O, John MT, Reissmann DR, Mehrstedt M, Szentpétery A. Comparison of perceived oral health in patients with temporomandibular disorders and dental anxiety using oral health-related quality of life profiles. Qual Life Res. 2008 Aug;17(6):857-66.

Jean Soares Miranda
(Corresponding address)
Rua Batista de Oliveira, 1096/504 – Granbery, Juiz de Fora/MG
Cep: 36010-532
E-mail: jeansoares@msn.com

Date submitted: 2014 Jun 07

Accept submission: 2015 Sep 14