




Impact of temporomandibular disorders on quality of life

O impacto das disfunções temporomandibulares na qualidade de vida

El impacto de las disfunciones temporomandibulares en la calidad de vida

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Abstract

Introduction: Temporomandibular dysfunction (TMD) may have a major impact on quality of life. **Objective:** Thus, this integrative review assessed the impact of TMD on quality of life. **Method:** An electronic and manual search was conducted to identify studies that evaluated the impact of TMD on an individual's quality of life. After the inclusion and exclusion criteria were met, seven articles were included and evaluated according to the quality of evidence using the Newcastle-Ottawa assessment. **Results:** The selected studies used different instruments to diagnose temporomandibular joint disorders and measure the quality of life. Only three studies used the RDC/TMD. As for quality of life, the most used instrument was the SF-36, followed by Br-MPQ and WHOQOL-Bref. **Conclusion:** The findings show that there is a negative impact of temporomandibular dysfunction on quality of life, especially regarding its severity. However, further studies are needed to confirm these results.

Keywords: Temporomandibular Joint Disorders. Facial Pain. Quality of Life.

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Resumo

Introdução: A disfunção temporomandibular (DTM) pode ter um grande impacto na qualidade de vida das pessoas. **Objetivo:** Esta revisão integrativa avaliou o impacto da DTM na qualidade de vida da população. **Método:** Uma busca eletrônica e manual foi realizada para identificar estudos que avaliaram o impacto da DTM na qualidade de vida. Após os critérios de inclusão e exclusão serem estabelecidos, seis artigos foram incluídos e avaliados de acordo com a qualidade de evidências utilizando o Newcastle-Ottawa. **Resultados:** Os estudos selecionados utilizaram instrumentos distintos para diagnóstico da DTM e da mensuração da qualidade de vida. Os instrumentos de diagnóstico de DTM foram o Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD), índice Anamnético de Fonseca, índice de Helkimo e índice Anamnético de Fonseca juntamente com RDC/TMD. Quanto à qualidade de vida, o instrumento mais utilizado foi o SF-36, seguido de Br-MPQ e WHOQOL-Bref. **Conclusão:** Os achados mostram que existe um impacto negativo da DTM na qualidade de vida, principalmente quanto a sua gravidade. Entretanto, futuras pesquisas são necessárias para confirmar esses resultados

Palavras-chave: Transtornos da Articulação Temporomandibular. Dor Facial. Qualidade de Vida.

Resumen

Introducción: La disfunción temporomandibular (DTM) puede tener un gran impacto en la calidad de vida de las personas. **Objetivo:** Esta revisión integrativa evaluó el impacto de la DTM en la calidad de vida de la población. **Método:** Se realizó una búsqueda electrónica y manual para encontrar estudios que evalúen el impacto de la DTM en la calidad de vida. Después de establecer los criterios de inclusión y exclusión, seis artículos fueron incluidos y evaluados según la calidad de evidencias utilizando la escala Newcastle – Ottawa. **Resultados:** Los estudios seleccionados utilizaron diversos instrumentos para el diagnóstico de la DTM y para medir la calidad de vida. Los instrumentos de diagnóstico de la DTM fueron Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD), índice Anamnético simplificado de Fonseca, índice de Helkimo e índice Anamnético simplificado de Fonseca con RDC/TMD. Respecto a la calidad de vida, el instrumento más utilizado fue el SF-36, seguido de Br-MPQ y WHOQOL-Bref. **Conclusión:** Los resultados mostraron que existe un impacto negativo de la disfunción temporomandibular en la calidad de vida, principalmente respecto a su gravedad. No obstante, futuras investigaciones son necesarias para confirmar esos resultados.

Palabras clave: Trastornos de la Articulación Temporomandibular. Dolor Facial. Calidad de Vida.

Introduction

Temporomandibular dysfunction (TMD) involves musculoskeletal pain, disorders of mandibular movement patterns and/or impairment of functional movement [1-5]. It is also recognized as the most common non-odontogenic chronic condition of orofacial pain, in which pain is its main characteristic and the main reason for seeking treatment [6-15]. In addition to pain that is mostly aggravated by chewing and mandibular functions, individuals with TMD have asymmetric mandibular movements, joint noises and headache. In cases of constant and recurrent pain in the masticatory muscles, temporal region and/or

the joint region itself, TMD may become a chronic condition; in these cases, although not risky, quality of life may be negatively affected [6, 16-18]. Therefore, the use of instruments to assess the impact of TMD on quality of life is important to determine treatment needs and subsequent therapeutic successes [4].

In examining the literature, we only found one systematic review by Dahlström and Carlsson [19] showing that TMD has a negative impact on oral health-related quality of life, and we then realized that TMD could also affect overall quality of life. Therefore, this integrative review was performed to assess this issue.

Materials and methods

Focus question

This study was conducted to answer the question: “What is the impact of temporomandibular dysfunction on overall quality of life?”

Search strategy

The following databases were searched: PubMed, LILACS, SciELO, Cochrane, as well as a manual search of the reference lists of selected studies to include articles that met the eligibility criteria. Only articles published between 2000 and 2017 were included. A search strategy was adapted for use in each database, and the keywords used for the search were: “Temporomandibular joint disorders” (MESH), “Facial pain” (MESH) AND “Quality of life” (MESH); “Temporomandibular Joint Disorders” (DECS), “Facial Pain” (DECS) AND “Quality of Life” (DECS). We also searched for articles from the references of the selected articles and in gray literature. Studies were identified first by reading titles and abstracts, then followed by full-text reading of potentially eligible studies.

Inclusion and exclusion criteria

Articles were selected according to the following inclusion criteria: articles published after 2000, in Portuguese or English, and addressing cross-sectional, case-control and/or cohort studies that related TMD and overall quality of life.

We excluded the articles that were a literature review, case report and/or case series that evaluated TMD in individuals with degenerative diseases, such as juvenile idiopathic arthritis, and individuals with dentofacial deformities. Articles that evaluated only chronic TMD, populations of children and adolescents under 18, and that used quality of life instruments specific for determining impact of oral health were also excluded [20, 21].

Main outcome

The main outcome was to determine the impact of TMD on quality of life.

Quality assessment

Quality assessment for cross-sectional studies was performed using the Newcastle- Ottawa Quality Assessment Scale, as recommended by the Cochrane Collaboration Guidelines for the evaluation of nonrandomized studies [22,23].

Studies were evaluated in three categories (selection, comparability, and results) based on the incorporation of design elements associated with decreased bias. The study received stars (*) if it complied with the scale [23].

Results

Study selection

The search strategy yielded a total of 205 articles; 19 articles were selected for full-text reading, and 13 were excluded for not meeting the eligibility criteria; five evaluated TMD and quality of life. In patients with degenerative diseases, four used specific instruments to determine the impact of oral health on quality of life, two were case series, one was a case report and one evaluated a population under 18 years. At the end, a total of 6 articles were included, as illustrated in Figure 1. A total of 463 patients were included in the studies.

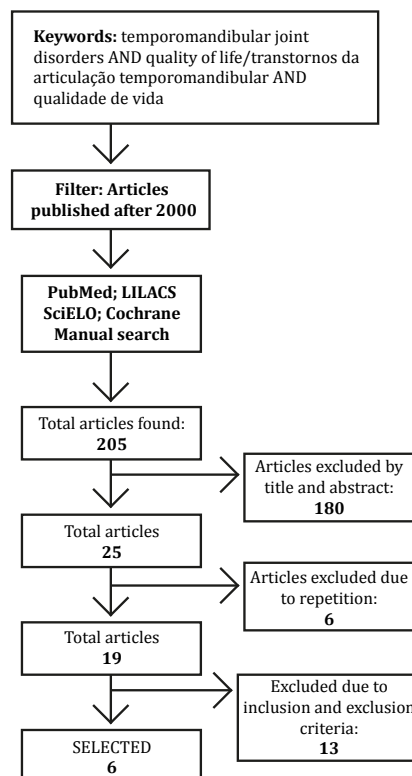


Figure 1 – Study selection.

Description of the studies

In the articles reviewed (Table 1), TMD was evaluated using the following instruments: RDC/TMD [11], Fonseca Anamnestic Index [24, 25] and Helkimo Index [26]. One study did not specify the instrument used to assess TMD [27], and another used the Fonseca Anamnestic Index along with RDC/TMD [28]. The studies measured quality of life with the following instruments: SF-36 [11, 24, 26] Br-MPQ [27] and WHOQOL-Bref [28].

One of the articles divided the sample into three different subgroups: patients with TMD complaints for less than 1 year (subgroup 1), patients with TMD complaints for 1 to 3 years (subgroup 2) and patients with TMD complaints for more than 3 years (subgroup 3) [11]. Subsequently, two studies [11, 28] classified the patients according to RDC/TMD criteria: group A – myofascial pain; group B – disk displacement; and group C – arthralgia, osteoarthritis and osteoarthrosis.

All articles concluded that there was a negative impact on the quality of life of patients with TMD, especially regarding the social, psychological and mental aspects of the individuals; one article also concluded that there was a relation between TMD severity and worsening of quality of life [11]. No article described sample calculation.

Results for quality of life

The SF-36 instrument [29, 30], used by most of the selected studies to measure quality of life, is currently one of the most used instruments in

literature; it is composed of 36 items in 8 domains, of which 4 correspond to physical aspects (functional capacity, physical ability, general health and pain) and 4 to mental aspects (emotional aspect, social aspect, mental health and vitality) [11]. Of the four studies that used SF-36 to measure quality of life [11, 24, 25, 26], three showed that the vitality domain had the worst score among TMD patients [11, 23, 24], and one compared patients who had TMD for less than one year (group I), for 1 to 3 years (group II) and for more than 3 years (group III) [11]. There was a statistically significant difference between patients in group I versus group III, with physical functioning and pain scores being worse in group III patients; no such difference was found between group II and III patients.

Another instrument to assess quality of life was Br-MPQ [27], which analyzes the findings regarding the impact of pain on the individual's life. The authors reported that the impact of pain on daily living activities, the subtypes sleep (68.18%) and appetite/eating (63.64%) showed the highest percentages of responses with some degree of impairment ($p > 0.05$). In addition, 77.27% of individuals with TMD had difficulty tolerating pain ($p > 0.05$) [26].

One study used the quality of life instrument WHOQOL-Bref [28], which consists of 26 questions divided into four domains: physical, psychological, social and environmental [28, 31]. The results showed an association between the social domain of quality of life in the disk displacement group, with and without reduction with limited opening in the RDC-TMD.

Table 1 – Data extracted from included studies

Characteristics of article		Characteristics of sample		Details of methods		Details of results	
Author and year of publication	Study design	Demographic characteristics	Questionnaires	Methods	Analyses	Results	Conclusion
Biasotto-Gonzalez et al., 2008 [24]	Cross-sectional study	Brazil n: 98 54 women 48 men 18-33 years	Fonseca Anamnestic Index; SF-36 (Brazilian version)	Total participants: 98 Application of SF-36 to evaluate the impact on quality of life. Analysis of head and neck posture by Alcmagem software ^o .	Kolmogorov-Smirnov test Chi-square test Spearman's correlation	TMD severity: Mild in 68.36%; Moderate in 23.47%; and Severe in 8.16%. There was impairment in the vitality and pain domains; emotional and social aspects were the most preserved domains.	There was a higher prevalence of Mild TMD. Regarding the cervical angle, there was an increase with severity of TMD, worsening quality of life in this population.
Biasotto-Gonzalez et al. 2009 [25]	Cross-sectional study	Brazil initial n: 302 final n: 160 80 women 80 men 18-36 years	Fonseca Anamnestic Index SF-36	Out of 302 patients: 80 men and 80 women MTD – Fonseca Anamnestic Index; Quality of life – SF-36.	Chi-square test.	Of all study participants, 38.75% had no TMD, 41.87% had mild dysfunction and 14.37% had moderate dysfunction. There was impairment of mental characteristics such as vitality and emotional aspects. Functional capacity was the most preserved domain in the sample	There was a direct influence of degree of TMD on quality of life in symptomatic participants.
Moreno et al. 2009 [26]	Cross-sectional study	Brazil n: 45 women	Helkimo index VAS Fischer pain meter SF-36	45 women participated, divided into two groups. Group I: 27 women diagnosed with TMD. Inclusion: Helkimo Index of III, parafunctional habit of teeth clenching. Group II: 18 women Healthy volunteers Exclusion: musculoskeletal disease, history of TMD symptoms or any other treatment.	Descriptive statistical analysis; Non-parametric Mann-Whitney test.	Women with TMD: Most severe symptoms were headache, neck pain, teeth clenching and difficulty sleeping. There was lower pain threshold in the masseter, anterior temporal, upper trapezius and sternocleidomastoid muscles and worse quality of life in all evaluated domains, when compared to the group of women who did not have TMD.	Women with TMD had greater intensity of pain symptoms, teeth clenching, difficulty sleeping, and pain sensitivity in chewing and neck muscles, thus having a worse quality of life compared to women without TMD.
Oliveira et al., 2003 [27]	Cross-sectional study	Brazil n: 22 20 women 2 men 17-55 years	Pain questionnaire Br-MPQ	The study included 22 patients with a dental diagnosis of TMD. All volunteers had a history of TMD pain for at least six months, with more than one unsuccessful treatment attempt. Assessment of the impact of pain on the patient's quality of life was analyzed using the Br-MPQ questionnaire.	Chi-square test	The results showed that TMD pain affected work (59.09%), school (59.09%), sleep (68.18%) and appetite/eating (63.64%) activities.	TMD pain had a negative impact on the patient's quality of life, and the questionnaire used, although not specific, allowed it to be properly evaluated.

(To be continued)

(Conclusion)		Characteristics of article	Characteristics of sample	Details of methods	Details of results
Resende et al., 2013 [28]	Cross-sectional study	Brazil n: 43 Mean age: 36.48 years.	Fonseca Anamnestic Index; RDC/TMD; GHQ WHOQOL – BREF	Initially, 150 patients with signs and symptoms of TMD. The Fonseca Anamnestic Index was applied and only 60 were selected. The RDC/TMD questionnaire was then applied and 43 were selected. Patients were divided into three groups: Group I: myofascial pain Group II: disk displacement; Group III: arthralgia, osteoarthritis and osteoarthritis. 43 participants answered the General Health Questionnaire (GHQ) and WHOQOL-BREF questionnaires.	An association was found between minor psychiatric disorders and severe TMD; strong association with mild TMD. Considering TMD classifications and severity together, only the GHQ “death wish” item was reported for severe muscle TMD. Regarding quality of life, there was an association between disk displacement with reduction in social domain. Physical domains were associated with TMD classification and severity, and the association was strong between muscle and joint TMD and mild TMD
Tjakkes et al., 2010 [11]	Cross-sectional study	Netherlands n: 95 90 women 5 men	MFQ SF-36 HADS GHQ	Evaluation method used: mandibular function impairment questionnaire (MFQ); Short Form 36; Hospital Anxiety and Depression Scale (HADS) and the General Health Questionnaire (GHQ). Sample divided into three subgroups: Subgroup I: patients with complaints for less than a year; Subgroup II: patients with complaints for one to three years Subgroup III: patients with complaints for more than three years	Patients with painful TMD for less than one year. Better score when compared to population norm. Long duration of pain. Mental health score and function limitation due to emotional problems were not seriously affected by reduced physical health. Social functioning seemed to be considerably affected.

Quality assessment

Quality assessment revealed that, out of a total of 9 stars (*) that could be awarded to articles according to each item, three studies received 4 stars [11, 26, 28] and were rated moderate, and three received 3 stars [24, 25, 27] and were classified as low quality (Table 2).

Table 2 – Newcastle-Ottawa quality assessment

Identification of study Newcastle-Ottawa quality assessment				
References	Type of study	Selection	Comparability	Results
Biasotto-Gonzalez et al., [24]	Cross-sectional	*	*	*
Biasotto-Gonzalez et al., [25]	Cross-sectional	*	*	*
Moreno et al., [26]	Cross-sectional	**	*	*
Oliveira et al., [27]	Cross-sectional	*	*	*
Resende et al., [28]	Cross-sectional	**	*	*
Tjakkes et al., [11]	Cross-sectional	**	*	*

Discussion

TMD has been the subject of both clinical and epidemiological studies, not only in investigations regarding treatment, but also to find out how much does this disease, which is becoming increasingly common among people, negatively affects quality of life [32-36]. The results of this review showed that TMD has a negative impact on people's quality of life.

Different results were reported regarding the diagnostic classification of TMDs found in the participants, and this discrepancy was due to the use of different assessment and diagnostic instruments and to the way data was collected. Studies which evaluated patients from specialized clinics or who sought treatment [11, 28] had more patients with moderate or severe TMD, while patients from a population that was not seeking treatment [24, 26] showed a more pronounced percentage of mild TMD. Defining exactly how data will be collected and which population will be studied is of utmost importance for the analysis of the final results, since results found in a population seeking specific treatment for dysfunction

are not considered valid for the general population. This issue should be analyzed in future studies.

It is known that systemic and/or degenerative diseases, and musculoskeletal diseases as well, might be a confounding factor in the diagnosis of TMD, since they have a multifactorial etiopathogenesis [8, 37, 38]. Along the same line, it is clear from scientific literature that only three articles included in this review considered systemic, degenerative and/or musculoskeletal diseases as exclusion factors [24, 26, 28]. The other studies did not report these diseases as such.

An important issue that has been suggested is the standardization of the instruments for TMD assessment and diagnosis, since it is very difficult to compare studies that diagnosed TMD more fully, such as those with the use of RDC/TMD [28, 39], with studies that used simpler diagnostic instruments. Only three articles used the RDC/TMD, which were also the studies that obtained the best classification in the quality assessment according to the Newcastle-Ottawa instrument [22]. According to these studies, the presence of muscle disorders (group I), osteoarthritis (group III) and orofacial pain had a major impact on the quality of life of individuals with TMD. In addition, the long duration of pain seriously affected social functioning [11, 28].

Despite the differences in the studies regarding the instruments used for TMD diagnosis and quality of life measurement, homogeneity could be observed, since we used a rigorous methodological design in the quality assessment of the studies performed, by the application of the Newcastle-Ottawa Scale [22, 40]. However, the risk of bias due to the small number of articles included cannot be excluded.

The results of our integrative review showed that TMD has a negative impact on quality of life, especially regarding its severity, seriously affecting social functioning [41]. A limitation of this review was that, of the six studies eligible for inclusion in this review, no study reported sample calculation. Quality assessment revealed that three articles were at risk of bias. The adequate methodological design of the studies, as well as sample calculations to define the sample size, with the objective of internal and external validations, will be necessary in future studies to confirm the results obtained in this review.

Conclusion

TMD has a negative impact on quality of life, especially regarding its severity. Important questions were reported on the standardization of the instruments used for TMD diagnosis and assessment, and also on the confounding factors caused by the non-exclusion of individuals with systemic/degenerative and musculoskeletal diseases in the samples studied. Due to the small number of studies available, further research is needed.

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