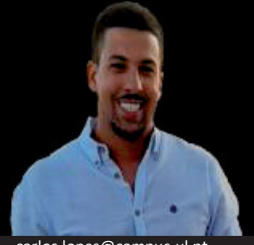# Evolution of Pain Intensity in Patients with Temporomandibular Disorder and / or Bruxism

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Introduction

Temporomandibular disorder (TMD) is the most common cause of orofacial pain of non-dental origin[1], and pain is the symptom most frequently associated with this type of dysfunction, along with functional limitation and joint noise[2,3]. The literature suggests that about 60% of TMD patients are simultaneously diagnosed with bruxism [4].

For the elaboration and evaluation of the treatment plan, as well as for the establishment of priorities, a correct quantification of pain intensity is essential, and for that, tools have been developed over time, of which the Numerical Pain Scale stands out (END)[5]. This scale, used worldwide, is associated with a better execution and ease of filling, thus helping to systematize the information collected, and several studies prove its validity and reliability[6,7].

The objective of this work is to evaluate the evolution of pain intensity using the Numerical Pain Scale, in patients diagnosed with TMD and / or Bruxism before and after conservative treatments.

Materials and methods

Type of longitudinal observational study retrospective to 5 years, carried out from records made in the period between 2015 and 2020, through the consultation of clinical files of patients at a university clinic. The sample consisted of 192 cases of patients diagnosed with TMD and / or Bruxism and who underwent treatments (figure 1). The assessment of pain intensity was performed before and after treatments, using a one-dimensional pain recording scale - Numerical Scale (figure 2).
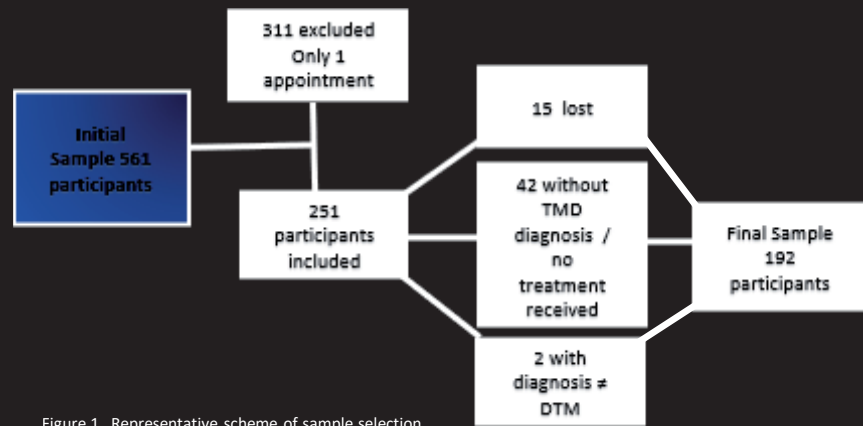

Figure 1 . Representative scheme of sample selection

Figure 2. Representative image of the Numerical Scale (EN) - (Normative Circular nº9, DGS, 2003)

Results

Sample (n) =192,
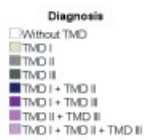Gender ♂- 38 (19,8%) ♀- 156 (80,2%)
Mean age (years) 42,2 ± 18,4

Figure 3 - Charts of characterization of the total sample regarding the diagnosis of TMD and Bruxism

	≠ Final Evaluation - Initial Evaluation (%)		
	Pain in Peak	Pain in Latency	Current Pain
TMD I	-55,8% **	-74,5% **	-66,7% **
TMD II	-63,3% ***	-80,0% ***	-85,7% ***
TMD III	-41,5% ***	-62,2% ***	-66,7% **
TMD I + TMD II	-50,8% **	-78,9% **	-66,7% *
TMD I + TMD III	-41,8% *	-54,7% *	-23,7%
TMD II + TMD III	-58,6% **	-71,8% **	-47,1%
TMD I + TMD II + TMD III	-53,2% ***	-61,4% ***	-64,9% **

Table 1. Evolution of the intensity of pain levels (final - initial) in percentage according to the diagnosis of TMD. Wilcoxon test: * p <0.05; ** p <0.01; *** p <0.001.

	≠ Final Evaluation - Initial Evaluation (%)		
	Pain in Peak	Pain in Latency	Current Pain
Awake Bruxism	-57,5%	-65,4%	-71,9%
Sleep Bruxism	-58,0%	-65,1%	-58,0%
Mixed Bruxism	-58,2%	-86,5%	-74,0%

Table 2. Evolution of the intensity of pain levels (final - initial) in percentage depending on the diagnosis of Bruxism. Wilcoxon test: * p <0.05; ** p <0.01; *** p <0.001
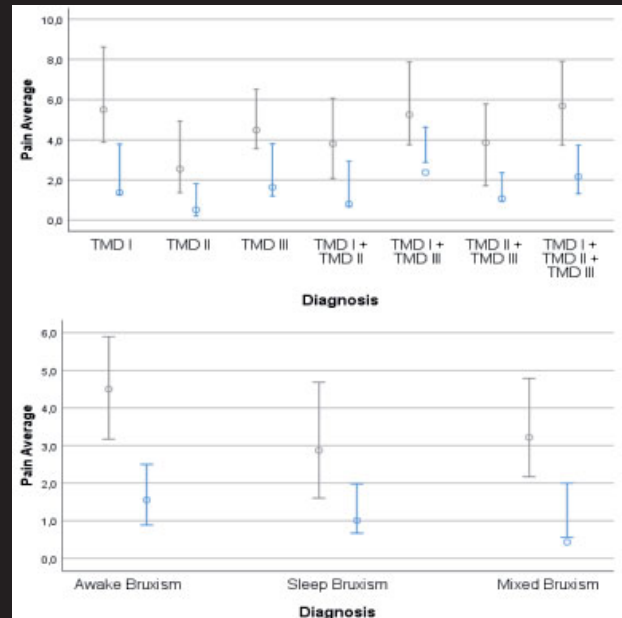

Figure 4 - Graphs representing the mean of Peak Pain (upper extremity), Current Pain (lower extremity) and Latency Pain (circular marker) in the initial evaluation (before the gray treatment) and the final evaluation (after the blue treatment) , in patients diagnosed with TMD and Bruximo.

Discussion

According to the characterization of the sample in relation to gender, it is possible to observe a higher prevalence of signs and symptoms associated with TMD and / or Bruxism, in the female gender (80.2%), which is in accordance with the literature[7]. In relation to the age group, the average age of the participants was 42.2 years (± 18.4), a value identical to that reported by other studies that found that the highest prevalence of this condition (TMD) was between 20 and 40 years [1].

In general, it is possible to observe a reduction in the intensity of pain, both in cases diagnosed with TMD and Bruxism, which goes against what is observed in the literature, where most patients achieved symptom relief with conservative therapy.[1,8, 9]

The present work emphasizes the importance of analyzing pain at peak, latent and current, in order to better characterize the levels of pain reported by patients, as well as to improve the conduct of therapy to be implemented in both pathologies.

Conclusion

There was a reduction in pain intensity after conservative treatment in patients diagnosed with TMD and Bruxism.

Clinical Implications

The pain scale proved to be a one-dimensional instrument for self-assessment of pain intensity, with good clinical applicability, for monitoring treatments for patients diagnosed with TMD and Bruxism.
Conservative treatments seem to have a positive effect on painful symptoms.

References :
1.De Leeuw R, American Academy of Orofacial Pain., American Academy of Orofacial Pain. Orofacial pain: guidelines for assessment, diagnosis, and management. 4th ed. Chicago: Quintessence; 2013. 2. Carrara SV, Conti PCR, Barbosa JS. Termo do 1º Consenso em Disfunção Temporomandibular e Dor Orofacial. Dental Press J Orthod. 2010; 15(3): p. 114-20. 3.Dworkin SF, Huggins KH, LeResche L, et al. Epidemiology of Signs and Symptoms in Temporomandibular Disorders: Clinical Signs in Cases and Controls. The Journal of the American Dental Association 1990;120(3):273-81. 4. Manfredini D, Ahlberg J, Castroflorio T, Poggio CE, Guarda-Nardini L, Lobbezoo F. Diagnostic accuracy of portable instrumental devices to measure sleep bruxism: a systematic literature review of polysomnographic studies. J Oral Rehabil. 2014 Nov; 41(11): 836-42. 5.Hjermstad M, Fayers P, Haugen D, Caraceni A, Hanks G, Loge J et al. Studies Comparing Numerical Rating Scales, Verbal Rating Scales, and Visual Analogue Scales for Assessment of Pain Intensity in Adults: A Systematic Literature Review. Journal of Pain and Symptom Management. 2011;41(6):1073-1093 6.Conti P, De Azevedo L, De Souza N, Ferreira F. Pain measurement in TMD patients: evaluation of precision and sensitivity of different scales. Journal of Oral Rehabilitation. 2001;28(6):534-539 7. Carlsson G, Magnusson T. Management of temporomandibular disorders in the general dental practice. Chicago: Quintessence Publishing Co.; 1999. 8. Jensen M, Turner L, Turner J, Romano J. The use of multiple-item scales for pain intensity measurement in chronic pain patients. Pain. 1996;67(1):35-40. 9. Brown DT, Gaudet EL Jr. Outcome measurement for treated and untreated TMD patients using the TMJ scale. Cranio 1994; 12: 216–222. 8. 2. Guaita M, Högl B. Current Treatments of Bruxism. Current Treatment Options in Neurology. 2016;18(2).