

PAIN INTENSITY AND DEPRESSION LEVEL IN CHRONIC TEMPOROMANDIBULAR DISORDERS PATIENTS

Intensidade da dor e nível de depressão em pacientes com disfunção temporomandibular crônica

 Raul Elton Araújo Borges^a,  Luana da Rocha Alves Mendonça^a,
 Bruno César de Vasconcelos Gurgel^a,  Angelo Giuseppe Roncalli^a,  Patrícia dos Santos Calderon^a

ABSTRACT

Aim: The aim of this study was to assess the correlation between pain intensity and the level of depression in patients with chronic temporomandibular disorders (TMD).

Materials and methods: Fifty-five volunteers diagnosed by the Research Diagnostic Criteria (RDC/TMD) were assessed for pain intensity and level of depression. Pain intensity and level of depression were assessed using a visual analysis scale and Beck depression inventory, respectively. Data analysis was conducted using confidence intervals and Pearson's chi-square test ($p < 0.05$).

Results: The results demonstrated that non-depressed individuals (43.6%) showed a mean pain intensity of 28.27mm, those with mild depression (38.2%) 34.24mm, and those moderate depression (18.2%) 50.7mm. Statistical analysis showed that there was a positive and significant correlation between pain intensity and level of depression ($p=0.004$). **Discussion:** This study found a positive correlation between pain intensity and depression level in chronic TMD patients. However, it has not been elucidated yet how TMD are correlated to depression and in which way depression can influence its onset and perpetuation. **Conclusion:** The level of depression may play an important role in the intensity of chronic pain, therefore, a multidisciplinary intervention seems to be important for the treatment success.

Keywords: Temporomandibular joint disorders. Facial pain. Depression.

RESUMO

Objetivo: Este estudo objetivou avaliar a correlação entre a intensidade da dor e o nível de depressão em pacientes com disfunção temporomandibular (DTM) crônica.

Materiais e métodos: Cinquenta e cinco voluntários diagnosticados pelos Critérios de diagnóstico para pesquisa das disfunções temporomandibulares (RDC / DTM) foram avaliados quanto à intensidade da dor e nível de depressão. A intensidade da dor e o nível de depressão foram avaliados por meio da escala analógica visual e do inventário de depressão de Beck, respectivamente. A análise dos dados foi realizada usando intervalos de confiança e teste do qui-quadrado de Pearson ($p < 0,05$).

Resultados: Os resultados demonstraram que os não deprimidos (43,6%) registraram média de intensidade de dor de 28,27mm, os com depressão leve (38,2%), 34,24mm, e os com depressão moderada (18,2%), 50,7mm. A análise estatística mostrou que houve correlação positiva e significativa entre a intensidade da dor e o nível de depressão ($p=0,004$). **Discussão:** Este estudo encontrou uma correlação positiva entre a intensidade da dor e o nível de depressão em pacientes com DTM crônica. No entanto, ainda não foi elucidado como a DTM está relacionada à depressão e de que forma a depressão pode influenciar seu aparecimento e perpetuação. **Conclusão:** O nível de depressão pode desempenhar um papel importante na intensidade da dor crônica, portanto, uma intervenção multidisciplinar parece ser importante para o sucesso do tratamento.

Palavras-chave: Transtornos da articulação temporomandibular. Dor facial. Depressão.

^a Federal University of Rio Grande do Norte (UFRN), Center of Health Science, Department of Dentistry, Natal, RN, Brazil.

Corresponding author: Dra. Patrícia dos Santos Calderon - E-mail: patriciascalderon@yahoo.com.br

Received: 04/08/2021 **Accepted:** 21/09/2021



INTRODUCTION

Temporomandibular disorders (TMD) patients may be affected by several psychosocial factors such as anxiety, stress, depression and other emotional disorders¹⁻³, which can affect the prognosis of treatment⁴. Indeed, these factors should not be seen as the cause of physical disorders, but as modifying factors that affect and interact with the pathology⁵.

The emotional and psychological factors that affect some TMD patients must be considered in the diagnosis and treatment of the TMD, since these may be critical for the success of the therapy^{6,7}. Consequently, the professional should be aware of these factors, since TMD are complex disorders resulting from a multifactorial cause, including genetic and environmental domains⁸.

One of the reasons for treatment failure, related to chronic pain is the lack of a diagnosis of depression as an influencing factor⁹. Several previous studies have reported that anxiety, stress, and depression are involved in the etiology of TMD. However, there is little scientific evidence demonstrating any association between pain intensity and these factors^{4,9}. Therefore, the aim of the present study was to assess if there is any correlation between pain intensity and the level of depression in chronic TMD patients.

MATERIAL AND METHODS

This cross-sectional study was approved by the Human Ethics Research Committee of the Federal University of Rio Grande do Norte, Brazil (protocol number: 504/2011). The sample was selected among consecutive patients seeking for treatment, complaining of pain in the orofacial region, in the period from 2011 to 2013. Informed consent was obtained from each patient.

The inclusion criteria comprised patients who had been experiencing orofacial pain for the last six months, diagnosis of TMD using the RDC/TMD, absence of treatment for the disorder. The exclusion criterion was the use of analgesic medication in progress.

The sample consisted of 55 chronic TMD patients. Fifty-two (94.5%) were female and three (5.5%) were male. The mean age was 38 years old (12 to 80). Patients were diagnosed for TMD using the RDC/TMD axis I questionnaire, applied by one calibrated examiner. Axis I assess symptoms and signs through an anamnestic questionnaire and clinical examination, which allows establishing the classification of TMD. Pain intensity was assessed using a visual analysis scale (VAS) of 100mm, considering the average pain during the last week. The level of depression was assessed using the Beck Depression Inventory (BDI) questionnaire.

Statistical analyses were carried out using the Statistical Package for Social Sciences software, version 17.0 (SPSS Inc., Chicago, IL, USA). Associations between age and the level of depression (BDI), as well as between TMD subtypes and the level of depression (BDI), were assessed by Pearson's chi-square test. The association between pain intensity (VAS) and the level of depression (BDI) was analyzed using confidence intervals.

RESULTS

There was no statistically significant association between age and the level of depression ($p=0.48$) when comparing teenagers (up to 18 years), young adults (between 19 and 34 years), adults (between 35 and 60 years) and elderly (over 60 years) (Table 1).

Table 1: Results of Pearson's chi-square tests used to evaluate the age' distribution in the groups.

Age Group	N	%
Until 18 years	3	5,5
Between 19 and 34	21	38,2
Between 35 and 60	27	49,1
Above 60	4	7,3

Four patients were diagnosed with muscular TMD (RDC - group I) (7.3%), 12 as articular TMD (RDC - group II or III) (21.8%) and 39 with mixed TMD (RDC - group I and II or III) (70.9%). Based on Pearson's chi-square test, there was no statistically significant association between the type of TMD and the level of depression ($p = 0.546$) (Table 2).

The mean pain intensity in the sample was 35mm (SD=29.25mm). According to the BDI criteria, 24 patients (43.6%) were classified as not depressed, 21 patients (38.2%) as mild depression, and 10 patients (18.2%) as moderate depression. Table 2 displays the values of pain intensity and the depression level for the whole sample. Statistical analysis of the mean values of confidence interval revealed a dose-response relationship between pain and depression, it means that there was an increase in the level of pain as depression level increases in severity.

Table 2: Results of Pearson's chi-square tests and confidence interval were used to evaluate pain intensity and depression level for entire sample.

Depression Level	N (%)	Pain intensity	SD	CI 95%
No depressed	24 (43.6)	28,27	22,38	18,82 – 37,72
Mild depression	21 (38.2)	34,24	31,97	19,68- 48,79
Moderate depression	10 (18.2)	52,70	33,34	28,85- 76,55

Due to the correlation between the pain intensity and depression level, bivariate analysis and linear regression were performed. To do so, depression level was quantified using the absolute score obtained from the BDI. In this test, a positive correlation and a statistically significant association were found ($p=0.004$). The test also demonstrated that 14.5% of the variation in pain could be explained by depression ($R^2=0.145$) (Figure 1).

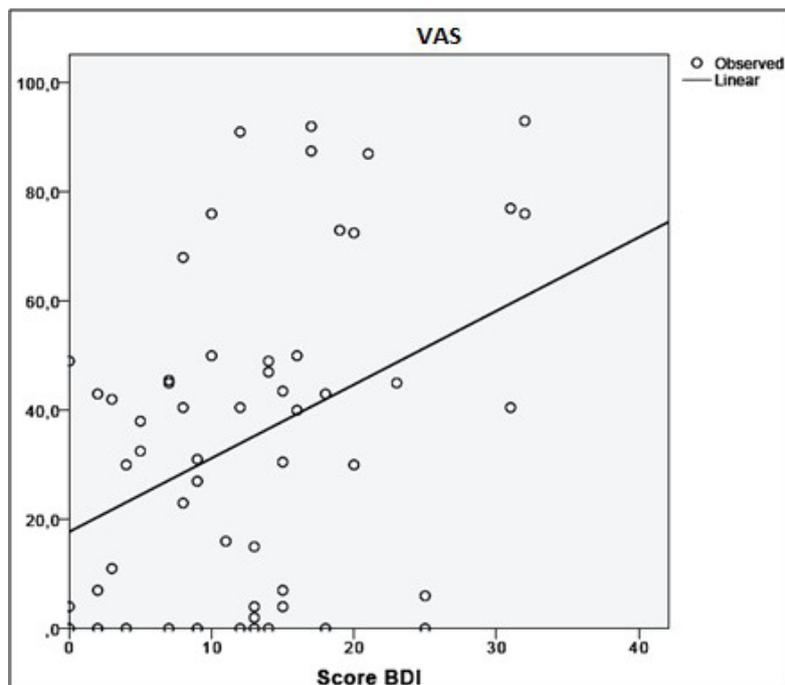


Figure 1: Scatter plot considering depression as the independent variable. Equation: $VAS = 17.723 + 1.349 BDI$.

DISCUSSION

A little is known about the relationship between TMD and their neurophysiological origins. It has not yet been elucidated how TMD are related to depression and in which way depression can influence its onset and perpetuation, since some studies have demonstrated such associations¹⁰. This study found a positive correlation between pain intensity and depression level in chronic TMD patients.

The BDI was the criteria adopted in the present study to assess the depression level, it does not generate clinical psychiatric diagnoses. However, it does identify the level of cognitive, emotional, and behavioral impairment, and assesses how these factors can contribute to the development or maintenance of chronic pain. Therefore, the BDI is scientifically acceptable for the assessment of the level of depression⁴.

Psychosocial factors can play an important role in TMD, particularly when the condition is classified as chronic. One study has suggested that individuals with depression experience more severe pain than those who are not depressed due to increased vulnerability to negative cognitions and increased fear in reaction to disease susceptibility¹¹. Another study has reported a high rate of psychiatric disorders among chronic TMD patients, and depression was described as the most common disorder among these⁸.

Kindler et al.¹⁰, in 2012, explained the relationship between depression and an increased risk for muscle or joint pain is plausible for at least two reasons: depression may initiate muscular hyperactivity followed by muscle abnormality and altered muscle mechanics, a sequence in which each state can provoke muscle pain and they may also initiate joint inflammation followed by biomechanical alterations, which can cause joint pain. Besides, TMD might be related to abnormal pain processing in trigeminal system caused by imbalances in common neurotransmitters such as serotonin and catecholamines¹⁰.

In our study, pain intensity exhibited a positive correlation and a statistically significant association with the level of depression. Kindler et al.¹⁰ and Al-Khotani et al.¹² also found a positive relationship between TMD and depression. Even using other measuring instruments, patients diagnosed with depression reported pain more intensely than non-depressives, so it can be inferred that there is a strong indication that depression has influenced or is associated with pain intensity TMD^{6,8,11}. Moreover, our results demonstrated that 14.5% of the variation in pain was explained by depression, thus, it was possible to conclude that the level of depression can play an important role in chronic pain intensity.

Psychological treatment strategies were not usually reported as an option for chronic TMD patients, besides there were not any standardized management for these patients². It should be noted, according to our results, that multidisciplinary treatment should be focused on the patient's physical and psychosocial needs. Furthermore, it is important to choose biological and/or psychosocial interventions based on the needs of the patient.

CONCLUSION

The level of depression may play an important role in the intensity of chronic pain, therefore, a multidisciplinary intervention seems to be important for the treatment success.

CONFLICT OF INTERESTS

The authors declare that they have no conflict of interest.

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