

Association between Temporomandibular Dysfunction and Depression in People Living with HIV/AIDS

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Abstract

Background: The origin of temporomandibular dysfunction (TMD) is complex and associates with several factors, including emotional states, such as depression, currently considered one of the main etiological factors of TMD. In this context, people living with the Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS) may be susceptible to TMD, since the disease may trigger physical and psychological changes identified as risk factors for TMD by other authors.

Objective: to measure the prevalence of Temporomandibular Dysfunction and its association with the degree of depression in people living with HIV/AIDS and their sociodemographic characteristics.

Method: Cross-sectional, descriptive, exploratory study, developed through the application of Fonseca's instrument for evaluation of TMD and the Beck Depression Inventory (BDI) in people living with HIV/AIDS from the Expert Assistance Service (EAS). For data analysis, one used Fisher's exact test with statistical significance level $p < 0.05$.

Results: The study enrolled 32 subjects, of whom the majority was *pardo* (65.63%), had incomplete elementary school (43.75%), was single (56.25%), with income lower than or equal to the minimum wage (87.5%) and, in this sample, there was a prevalence of TMD in 68.76%, and of depression in 78.14%

Conclusions: There was a prevalence of Depression and Temporomandibular Dysfunction in the majority of the sample, and a signifi-

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cant association between those two diseases. It is necessary nursing interventions in health education and early detection of the signs and symptoms of those diseases in that population.

Keywords

Temporomandibular Joint Dysfunction Syndrome; Depression; HIV.

Introduction

Temporomandibular Dysfunction (TMD) is the general term used to explain the various clinical conditions that affect the masticatory muscles, the temporomandibular joint and associated structures [1-3].

With the available literature, one can see that the TMD etiology may come, indeed, from behavioral and environmental standards, regardless of the individual's genetics, and are likely to intervention [4]. Thus, diagnosis and multiprofessional treatment are two important parts for the effective treatment [2, 5].

Some variables, such as gender and age, influence the clinical expression of TMD, affecting adults more frequently, especially women. Nevertheless, children and the elderly may also present signs and symptoms of TMD [6-8].

The main signs and symptoms of TMD are: orofacial pain, joint sounds, limitation in the range of mandibular movements, headache, earache, ear fullness, hearing loss, perception of tinnitus, vertigo, painful palpation of the temporomandibular structures, sleep disturbances, asymptomatic radiographic changes, standing out, among them, pain, bruxism, depression and stress [9-15].

Chronic diseases can cause or exacerbate mental disorders, as an individual response to the disease, when affecting immunity, or as a side effect of treatment. With the chronicity of AIDS cases, the majority of patients infected with HIV is diagnosed

with one or more mental disorders, a rate of two to three times higher than the general population [16].

The psychological changes often associated with HIV and their predictive factors are mood disorders, anxiety, depression, stress related to the health-disease process, history of psychiatric disorder, drug use and suicide in the family. Social support and early detection of those factors and symptoms of psychological distress, quality of life and adherence to treatment where are essential so that they do not adversely affect the treatment adherence and quality of life of people living with HIV/AIDS (PLHA) [16-22].

Therefore, if PLHA are susceptible to mood disorders, depression and stress because of their health-disease process and, since those factors may trigger TMD, besides others present in the general population, one sought verify the association between depression and TMD specifically for PLHA. To this end, the objective was to measure the prevalence of Temporomandibular Dysfunction and its association with the degree of depression in people living with HIV/AIDS and their sociodemographic characteristics.

Methods

Cross-sectional, descriptive, exploratory study, developed using questionnaires to people living with HIV/AIDS in clinical and outpatient care in an Expert Assistance Service (EAS) located in Caxias - Maranhão.

The Expert Assistance Service (EAS) is a clinic integrated to SUS, for monitoring STD/HIV/AIDS carriers and aims to provide specialized assistance to those individuals, besides performing specific tests and distributing the necessary medication [23].

The sampling type used was the accidental non-probability one and the inclusion criteria were: aged 18 years old or more; having result of the serologic reagent test for HIV, having developed or not the syndrome; using antiretroviral therapy; being at the EAS at the time of data collection; having physical, mental and psychological conditions to participate in the interview; and agreeing to participate. Thus, the exclusion criteria for the study were: individuals under 18 years; those who did not attend the EAS during data collection; those who do not make use of HAART; and those who did not agree to participate.

Data collection occurred in June 2016, through the implementation of a socioeconomic and demographic questionnaire, the Fonseca's instrument for evaluation of TMD and the Beck Depression Inventory (BDI).

The Fonseca's clinical index consists of ten closed questions with three alternatives and classifies individuals by level of severity of TMD, where the participant must tick only one answer. After completing the questionnaire, the alternatives were added (each alternative has a score), and the participants, classified as without temporomandibular dysfunction (0-15 points); mild (20 to 40 points); moderate impairment (45 to 65 points) and severe dysfunction (70 to 100) [24].

That instrument was developed along the lines of the Helkimo's anamnesis Index, and is one of the few instruments available in Portuguese to characterize the severity of symptoms of TMD [25, 26].

Beck and colleagues, in 1961, developed the Beck Depression Inventory (BDI) to assess the severity of depression and, according to its authors, that proved to be a highly reliable instrument. Gorenstein & Andrade were responsible for its translation into Portuguese and validation in 1982 [27].

The BDI consists of 21 categories containing alternatives expressing levels of severity of depressive symptoms. The score for each class varies from zero to three: zero is the absence of symptoms and three, the presence of the most severe symptoms. Regarding the total score (sum of scores for each category), the scores of up to nine points mean absence of depression or minimal depressive symptoms; ten-18 points, mild to moderate depression; 19-29 points, moderate to severe depression; and 30-63, severe depression [27].

Data analysis occurred by constructing absolute and relative frequencies. In order to test the association between the study variables, one used Fisher's exact test and, in the tests, one used the free software R version 3.0.2. The tables and graphs were prepared with Excel software. The level of statistical significance for the tests was $p < 0.05$.

Results

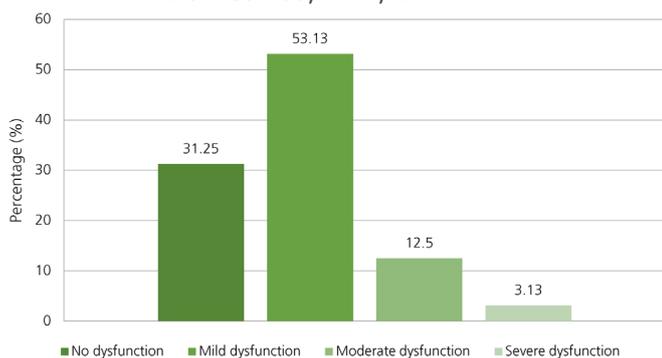
Participants' characterization according to socioeconomic and demographic variables

Regarding gender, there was an equal distribution among subjects: 50% were women, and 50%, men. The predominant color was *pardo* (65.63%), followed by black (18.75%). The majority of the individuals were born in Caxias (53.13%), the others were born in other municipalities. The most common educational attainment was incomplete elementary school (43.75%); 21.88% have completed elementary school and the remaining percentage is distributed among illiterates (12.5%), complete high school (12.5%) and incomplete high school (9.38%). As for the marital status, over half of the sample was single (56.25%), 31.25%, married, 9.38%, widower and 3.13%, divorced. In general, low-income individuals compose the sample, and 87.5% receive income from one minimum wage or less, as **Table 1**.

Table 1. Socioeconomic and demographic characterization of the sample. Caxias, MA, 2016 (n=32).

Variable	N	%
Gender		
Female	16	50.00
Male	16	50.00
Color		
White	3	9.38
Pardo	21	65.63
Yellow	2	6.25
Black	6	18.75
Education		
Illiterate	4	12.50
Incomplete Elementary School	14	43.75
Complete Elementary School	7	21.88
Incomplete High School	3	9.38
Complete High School	4	12.50
Marital Status		
Single	18	56.25
Married	10	31.25
Divorced	1	3.13
Widower	3	9.38
Occupation		
Unemployed	8	25.00
Employed	24	75.00
Family Income		
Up to 1 minimum wage	28	87.50
2 or 3 minimum wages	4	12.50

Figure 1: Prevalence of the Temporomandibular Dysfunction in People Living with HIV/AIDS. Caxias, MA, 2016.



Prevalence of temporomandibular dysfunction

Figure 1 summarizes the TMD scale applied in people living with HIV. The majority had mild dysfunction (53.13%), 31.25% showed no dysfunction, 12.5%, moderate dysfunction and only 3.13% had severe dysfunction.

Prevalence of depression

Figure 2 categorically shows the prevalence of depression among the surveyed individuals. One observes that 21.88% have depression, 40.63% had mild or moderate depression, 28.13% had moderate to severe depression and 9.38% had severe depression condition.

Figure 2: Prevalence of Depression in People Living with HIV/AIDS. Caxias, MA, 2016.

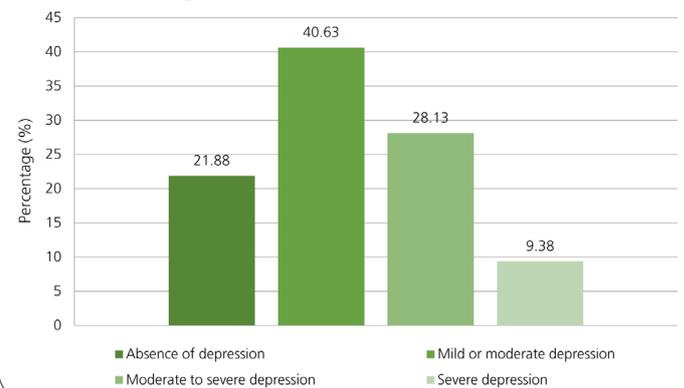
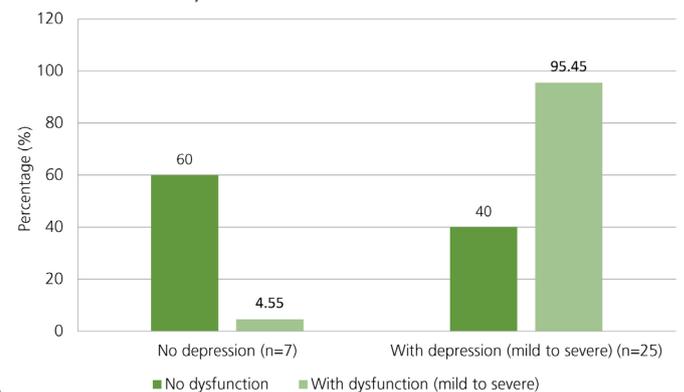


Figure 3: Association between Temporomandibular Dysfunction and Depression in People Living with HIV/AIDS. Caxias, MA, 2016.



Association between the presence of temporomandibular dysfunction and depression

Figure 3 shows the association between TMD and depression in patients with HIV. Through the Fisher's association test, TMD associated with depression ($p=0.001$). Among the individuals who do not have depression (60%), the percentage of individuals with TMD was 4.55% and in the group with depression (40%), the percentage of individuals with severe to mild TMD was 95.45%, that is, individuals with depression are more likely to develop TMD.

Discussion

In the last decade, in Brazil, there was an increase in the detection rate of AIDS cases in young men and a decrease among women, which may result in an increased number of men living with HIV/AIDS in the next years. Moreover, it is noteworthy that the model of masculinity imposed by society contributes to men not to assume the necessary behavioral changes to prevent transmission of the virus [28].

In this study, there was an equal distribution of women (50%) and men (50%). However, in previous studies, the majority of the samples consisted of men, with a frequency varying between 54.6% and 80% [29-35].

Regarding race, the predominant color was *pardo* (65.63%). The historical circumstances and colonization of each region in Brazil may justify the divergence between the most predominant race/ethnicity among individuals, because, despite having various races, each region has a greater amount of some sort of them [28].

Over the years, HIV/AIDS has taken a pauperization feature related to the increase in the number of cases among people with low socioeconomic status: income lower than or equal to the minimum wage and low education [28]. Low education was evident in this population, evidenced by incomplete

elementary school (43.75%) and complete elementary education (21.88%), a reality present in other studies, whose samples had only elementary school or lower education [19, 29, 30, 36].

As for the economic conditions of the individuals, they had, in general, income of a minimum wage or less, a result that is in line with other studies in which the frequency of same-income individuals was 61.1% and 62.2%, respectively [28, 29].

Regarding the presence of TMD in PLHA in the study, there was only a slight dysfunction in most of them (53.13%). Other studies with other populations also found only mild dysfunction signals between subjects and most of them were female [7, 37].

For example, in a sample of 200 elderly of both genders, 61% of the sample had TMD, of which, 43.5% were considered mild, 13%, moderate and 4.5%, severe. When associated with genders, 72.4% of women and 41.1% of men had any symptoms of dysfunction and related the TMD severity to women [7].

Furthermore, in a study with 2,396 college students, the rate of individuals classified with mild TMD was significantly higher than those who presented other categories of severity. Women showed some level of TMD in a higher frequency than men, but there was no significant difference for the same degree of severity between the genders [37].

They also studied the presence of TMD symptoms in college students, and concluded that, in different regions, there may be different levels of TMD in college students, and the northeast region and the southern region are more likely to find students with signs and symptoms of TMD than others [38].

In a retrospective study with 125 medical records of individuals who have or were undergoing treatment in a dental clinic, there was a predominance of women, with a mean age of 35 years, with employment and biggest complaint of pain in the TMJ region and snap [13].

In this study, after application of the BDI, 21.88% of the subjects had no depression, 40.63% had mild depression, 28.13%, moderate depression, and only 9.38% had severe depression. Corroborating this finding, a study with 230 patients at the EAS of Pelotas found a prevalence of depressive symptoms in about 32%, and 14% had mild depression, 14%, moderate depression, and 4%, severe depression, associating the presence of depressive symptoms with gender, age, education, income, employment, social benefits and treatment [21].

One can observe an association between TMD and depression in people living with HIV/AIDS ($p=0.001$), that is, individuals with depression are more likely to develop TMD. That corroborates the found literature.

For example, in a sample of 224 individuals who sought treatment in a university clinic complaining of orofacial pain or for routine care, 27.7% of participants did not have TMD or it was not painful, and 72.3% had chronic painful TMD. With respect to depression levels, the presence of painful TMD and reports of tinnitus significantly increased the probability of moderate and severe levels of depression [39].

Similarly, another study with a sample of 73 individuals aged 18 to 62 years observed that women prevail among TMD patients with chronic symptoms, and the most significant association was between the intensity of muscle symptoms and psychological commitment and that continuity of signs and symptoms of TMD for an extended period can cause manifestations of psychological order [40].

At the end of this study, one may observe that there was a significant association between TMD and depression among PLHA, in which individuals with depression are more likely to develop TMD and those two variables seem to be proportionally related, that is, the higher the level of depression, the greater the risk for TMD.

There was also need for interventions in this population, whether for prevention, promotion and

recovery of health, due to their risk situation, the presence of risk factors found in other studies and their socioeconomic characteristics (low educational attainment and low income, for example), for they indicate low quality of life and low social support for those people.

The findings may contribute to a better understanding of those phenomena in the life of PLHA and collaborate with the development of intervention strategies in that population. Moreover, other studies with a bigger sample of PLHA, different instruments and/or more variables related to TMD and depression are necessary to corroborate those results and verify whether that population is more vulnerable to those diseases than other populations.

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Ethical standards

The Brazilian Research Ethics Committee (CONEP) approved this study, protocol number CAAE 56485915.1.0000.8007.

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Competing and Conflicting interest

The authors declare they have no competing interest.

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