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ANXIETY LEVELS IN TEMPOROMANDIBULAR DISORDER PATIENTS AND NORMAL SUBJECTS

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Abstract

Aim the purpose of study was to analyze the role of anxiety and depression in TMDs.

Materials and Methods:*200* individuals were included in the study who were divided into group 1 with 100 individuals presenting with signs and symptoms of TMD and group 2 with 100 normal individuals as controls. Hospital anxiety depression scale was used to calculate the anxiety scores. Fischer's *t* test was used to compare the anxiety scores between the two groups.

Statistical Analysis: The results were tabulated and Fischer's exact test was carried out to analyze the data using IBM SPSS Statistics 19 for Windows (SPSS Inc., Chicago, IL, USA).

Results: 81% of individuals in group 2 and 42% in group 1 individuals had normal anxiety scores. 45% of the individuals in group 1 and 17% in group 2 had borderline anxiety scores. 13% of group 1 individuals and 1.6%of group 2 individuals demonstrated high anxiety scores.These results were statistically significant**.**

Conclusion: Individuals with TMD exhibited higher levels of anxiety scores whereas significant number of control subjects exhibited normal anxiety scores.

Key words: Anxiety, depression, temporomandibular disorder

INTRODUCTION

The human masticatory system is an extremely complicated mechanism consisting of jaw basal bone, ligaments, muscles and teeth. It is widely accepted that the etiology of temporomandibular joint disorders (TMDs) is multifactorial and commonly related to a number of dental, medical and mental conditions; such as occlusion, posture, Parafunctional habits, restorations, orthodontic treatment, emotional stress, trauma, anatomy of the disk, pathophysiology of the muscles, genetic and psychosocial factors (especially stress), age, and gender [1, 2]. Typical signs and symptoms of TMD are pain (in masticatory muscles or in TM joint itself), joint sounds, limitation in mouth opening, bruxism, mandibular deviation and chewing disability. The mentioned symptoms may exist alone or in combination [2]. Approximately 60-70% of the general population will have at least one of the signs of TMD at some stage in their lives; however, only about 5% actually seek treatment.[3] TMD

is the most common cause of orofacial pain of non- dental origin.[4] Its etiology is multifactorial and still poorly understood.[5] Apart from orofacial pain and alteration in jaw mechanics, TMD patients demonstrate enhanced pain sensitivity and psychological dysfunction due to impairment in CNS mediated regulatory processes [6]. Furthermore, physical and emotional stress along with altered adrenergic receptor mediated responses due to gene polymorphisms can increase the chances of developing TMD[7] TMJ dysfunction is linked with and accompanies specific psychopathological conditions, including hypochondria, conversion disorders and depression [8] Studies in different clinical settings have shown an association between anxiety, depression, and TMD [9-10].

This has led to a multidisciplinary approach including the psychological component in the management of TMD. Taking these into consideration a study was attempted to analyze the role of anxiety and depression in TMDs and investigate the prevalence rates of anxiety in individuals affected with TMD.

MATERIALS AND METHODS

Subjects

A sample of 200 patients (120 female and 80 male), with age ranging from 18 to 30 years, were selected from the department of oral medicine and radiology Govt dental college srinagar **Fonseca.**

Anamnestic Questionnaire

The Fonseca Anamnestic Questionnaire is a modified version of the Helkimo Anamnestic Index and is one of the first instruments to be confirmed as reliable in identifying TMD signs and symptoms [11-12]. The Fonseca Anamnestic Questionnaire has a 95% correlation with the Helkimo Anamnestic Index ($r = 0.6169$, $P < 0.05$) and 95% reliability in application and allows rapid, inexpensive collection of a great deal of information. It is easy to complete and does not bias the answers of respondents [12]. It consists of ten questions, with answers options of no, sometimes, and yes. The items include questions on the presence of TMJ pain, head and neck pain, pain while chewing, parafunctional habits, limitation of joint movement, perception of malocclusion, and emotional stress [12].

HAD scale

The HAD was developed by Zigmond and Snaith in 1983, We selected this scale because it is used to identify and measure the intensity of anxiety and depression in nonpsychiatric environments, as in the present population.

The scale consists of 14 items divided into two scales. Seven items measure anxiety (HADS-A), and seven measure depression (HADS-D). Thus, the concepts of anxiety and depression are separated [13]To complete the questionnaire, the participant selects the answer choice that is closest to what he/she felt during the previous week. Each item is scored from 0 to3, depending on the response, and the maximum score is 21 points for each scale. In both scales a score of 0-7 indicates absence of anxiety or depression, 8-10 indicates possible anxiety or depression, 11 or higher indicates presence of anxiety or depression [13-14].
Thus, an individual could have no, either, or both anxiety and depression. Several studies, in a wide variety of clinical populations, found that HAD had good sensitivity, specificity, and internal consistency in assessing anxiety and depression symptoms [13].

Table 1: Anxiety score in subjects with TMD (males and females).

ANXIETY DEPRESSION SCORE				
	0 to 7	8 to 10	11 to 21	
Gender				Total
Male	18(45%)	17(42.5%)	5(12.5%)	40(100%)
Female	24(40%)	28(46.7%)	8(13.3%)	60(100%)
Total	42(42%)	45(45%)	13(13%)	100(100%)

Table 2: Anxiety score in subjects without TMD (males and females).

ANXIETY SCORE				
	0 to 7	8 to 10	11 to 21	Total
Gender				
Male	32(80%)	7(17.5%)	1(2.5%)	40(100%)
Female	49(81.7%)	10(16.7%)	1(1.62%)	60(100%)
Total	81(81%)	17(17 %)	2(2%)	100(100%)

Table 3: Comparison of anxiety scores in subjects with TMD and control subjects.

ANXIETY SCORES						
	Males			**Females**		
	0-7	**8-10**	**11-21**	**0-7**	**8-10**	**11-21**
Group 1	18	17	5	24	28	8
Group 2	32	7	1	49	10	1
p	**<0.001**	**<0.001**	**<0.0001**	**<0.001**	**<0.0010**	**<0.002**

∗Significant difference for *P* value in Fischer's exact "*t*" test.

Group 1: subjects with temporomandibular disorders. Group 2: control subjects.

Table 4: Overall anxiety scores between TMD and control subjects.

ANXIETY SCORES				
	0-7	**8-10**	**11-21**	**Total**
Group 1	42	45	13	100
Group 2	49	17	2	100
Total	91	62	15	200

< 0.0001.

Group 1: subjects with temporomandibular disorders. Group 2: control subjects.

RESULTS

100 subjects presenting with signs and symptoms of TMD were included in group 1 and 100 subjects without any signs and symptoms of TMD were included as controls (group 2).

In 100 subjects of group 1, the age ranged from 20 to 39 years with a mean of 24.8 years. In group 2, the age ranged from 23 to 42 years with a mean of 26.1 years. In group 1, there were 40 males and 80 females and, in group 2, there were 40 males and 80 females. The anxiety levels in male and female subjects with TMD and without TMD are shown in Tables 1 and 2, respectively.Analysis of the results of group 1 and group 2 reveal that the majority of the subjects (both male and female) in group 2 had normal anxiety levels when compared to group 1 subjects (Table 3). Subjects with borderline abnormal anxiety (scores of 8–10) and abnormal anxiety (scores of 11–21) levels were more in group 1 in comparison with group 2 subjects. These results showed a statistically significant difference with regards to anxiety levels between group 1 and group 2 subjects
(Tables 3 and 4) with *P* value <0.0001.

DISCUSSION

Excessive tension can lead to constant dental clamping, which alters local circulation in muscles and ion exchange in cell membranes. These lead to accumulation of lactic and pyruvic acids, which contributes to stimulation of pain receptors [15-16]. A possible explanation for the association between TMD and headache is that headaches are related to muscle activity, so activity involving the head and neck is probably important in the etiology of many headaches. The presence of noise in TMJ may be due to incorrect positioning of the articular cartilage, which displaces the mandibular condyle superiorly when the mouth is opened, resulting in a click [16]. Most of the present participants with anxiety and depression were women, as was the case in other studies
[17-18]. As compared with men, women are more likely to report depressive symptoms and have a higher rate of psychosomatic illnesses [19]. We found that TMD was significantly associated with

anxiety and depression levels, which accords with the results of several studies [20-21-22]. Kindler et al. [23] found that individuals with depression symptoms have an OR of 2.1 (95% CI: 1.5-3.0; $P <$ 0.001) for pain on palpation of the TMJ and that depressive symptoms may be specific to the development of joint pain, while symptoms of anxiety are specific to muscular pain. Slade et al. (31) followed 171 participants for up to 3 years: 8.8% were diagnosed with first-onset TMD.
Furthermore, depression, perceived stress, and mood were associated with pain sensitivity and increased the risk of TMD by a factor of two to three. Liao et al. [24] found that TMD incidence in individuals with depression was 2.65 times that of those without depression. Individuals subject to stress may develop parafunctional habits and muscle tension, which lead to development of TMD [15-16]. Thus, parafunctional components, especially those that increase muscle tension, and changes in emotional states are good indicators of jaw pain in people with TMD, which suggests that anxiety and depression are etiological factors in TMD.

CONCULISION

The present study revealed a higher incidence of borderline abnormal and abnormal anxiety scores in TMD subjects in comparison with normal subjects. Multifactorial etiology of TMD necessitates the clinician to pay attention to the psychological attributes of the patient. A thorough history emphasizing the psychological aspects of patient's day to day life may reveal significant information regarding the anxiety and stress levels. Unless these factors are taken into
consideration, the management strategies for TMD may become inefficient and increase the chances of treatment failure. It is important for the clinician treating TMDs to appreciate the role of anxiety and stress in causation of TMD.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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