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Prevalence of Depression, Anxiety and Stress in Chronic Temporomandibular Joint Disorders Patients

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Abstract

Introduction: Temporomandibular disorders (TMD), defined as a collection of medical and dental conditions affecting the Temporomandibular joints (TMJs) and/or masticatory muscles and associated structures, have an estimated prevalence in the adult population of around 10%. Symptoms of depression and anxiety have also been considered as risk factors for TMD.

Aims and objective: To evaluate the prevalence of depression, anxiety and stress in patients with a chronic Temporomandibular disorder.

Materials and methods: The sample consisted of 100 patients diagnosed with muscle or joint pain, consistent with the Research Diagnostic Criteria for TMD (RDC/TMD) and was assigned to one of three groups: Muscle pain (MM) group, joint pain (TMJ) group, and mixed group. Variable of interest were derived from the Depression Anxiety Stress Scale (DASS)-42 questionnaire.

Results: The mean (± standard deviation) age for the whole sample was 37.74 ±11.3 years; 86% were women. The overall prevalence of depression was 48.1% and overall prevalence of anxiety was 74%. Patients in the MM group reported the highest prevalence of Depression and Anxiety. Patients in the MM group were significantly more likely to be depressed and anxious compared to patients in the TMJ and Mixed groups.

Conclusion: Elevated levels of stress, depression, and anxiety were reported in a chronic TMD population, especially in those with chronic muscle pain, compared to the general population. These findings emphasize the need for screening for depression, anxiety and other comorbidities in TMD patients suffering from chronic pain.

Keywords: Depression; Anxiety; Stress; Psychometrics

Introduction

The "Temporomandibular Disorders" (TMD) is a collective term used to describe a group of musculoskeletal conditions occurring in the temporomandibular region. These conditions are characterized by pain in the muscles of mastication, the Temporomandibular joint, or both, have an estimated prevalence in the adult population of around 10% [1]. Recent literature suggests that TMD is a multifactorial problem with structural (occlusion), functional (bruxism) and psychological (anxiety, tension) factors, as well as external trauma and arthritic deterioration as interrelated causes.

Several reports have found a positive relationship between psychological distress and TMD. Symptoms of depression and anxiety have also been considered as risk factors for TMD. Indeed, patients with chronic TMD show greater psychological maladjustment when compared to healthy controls. In chronic pain patients, anxiety and depression may deteriorate a patient's capacity to adapt and to develop coping skills that are vital for patients to manage their pain conditions and their lives [2]. Considering the indexed literature and the interactions between psychosocial factors and TMD, the main aim of this study was to investigate the prevalence of depression, anxiety and

stress in chronic TMD patients. It was hypothesized that chronic TMD patients would present with a high prevalence of depression, anxiety and stress [3,4].

Inclusion criteria

- Diagnosis of muscle and/or joint pain, consistent with Research diagnostic criteria/temporomandibular joint disorders (RDC/TMD).
- Pain severity of atleast 3 out of 10 on a Numeric rating scale (NRS).
- Pain duration of atleast 3 months.

Exclusion criteria

- Patients with a secondary diagnosis that was not muscle or joint pain.

Methods

Examination was conducted in chronic TMD patients presenting to outpatient department of oral medicine, Government hospital, Pondicherry. Patients diagnosed with muscle pain, joint pain, or both, consistent with Research Diagnostic Criteria for TMD (RDC/TMD), were initially analyzed. Inclusion criteria were: at least 18 years old;

diagnosis of muscle and/or joint pain; pain severity of atleast 3 out of 10 on a numeric rating scale (NRS); and pain duration of atleast 3 months. Patients with a secondary diagnosis that was not muscle or joint pain were excluded. Following application of the above-mentioned inclusion/exclusion criteria, the final sample included in this study was 100 patients.

At their initial visit, patients were examined at the outpatient department by the oral medicine residents. Diagnosis were consistent with the RDC/TMD. Patients were divided into three groups based on their primary and secondary diagnosis. the first was the Joint pain group I which comprised patients with joint pain only (primary and secondary diagnoses of joint pain or no secondary diagnosis; The second group II was the muscle pain group (MM), which comprised patients with muscle pain only (primary and secondary diagnoses of muscle pain or no secondary diagnosis; the third group III was the mixed group comprised patients with both muscle and joint pain diagnoses.

As part of the study, all participants had already signed a standard consent form allowing the use of their data for teaching and research purposes. All the patients were given depression, anxiety and stress scale -42 items questionnaire (DASS-42) and instructed to rate how much the 42 items have " bothered or distressed them during the past week, including today" on a scale from 0, meaning " Did not apply to me at all" to 4, meaning " applied to me very much, or most of the time". Pain severity was based on an NRS where 0 indicated "no pain at all" and 10 indicated "the worst pain unimaginable."

Statistical Analysis

Preliminary analyses were implemented in the three diagnostic groups (TMJ, MM and Mixed). Age and gender were analysed using independent samples t tests and X^2 test. Differences in the prevalence of depression, anxiety and stress as indicated by the DASS-42 items and gender differences among all three diagnostic groups were calculated by using X^2 tests. Age, pain severity and pain duration were compared within the three diagnostic groups by using ANOVA with Bonferroni corrections.

Results

A total of 100 patients diagnosed with either muscle pain or TMJ pain were included in this study. A total of 54 were female (54%). Patients were assigned to one of the three study groups according to their primary diagnosis and when present, secondary diagnoses. The MM group was comprised of 27 patients, the TMJ group of 26 patients, and the mixed group of 23 patients.

The mean age of the whole sample was 37.74 years; Table 1 shows the mean age breakdown for three diagnostic groups. The patients in the disc group were significantly older than the patients in the other two groups. There were statistically significant differences with regard to gender among the three diagnostic groups. Females were more than the males. The mean pain intensity for the whole sample was 4.26 ± 0.8 (VAS) and the mean pain duration was 24.36 ± 15.1 months. Pain severity was significantly higher in the MM group compared to the disc and mixed groups (p=0.00) there were also statistically significant differences in pain severity when comparing the TMJ group to the mixed group. There were no statistically significant differences (p=0.66) between the three diagnostic groups in pain duration (Table 2).

Parameters		Groups				Total	p-value
		Disc	MM	Mixed	Control		
Age	Mean age	40.96 ±	37.48 ±	38.21 ±	34.08 ±	37.74	0.09
Gender	Male	7 (23.3)	11 (36.7)	4 (13.3)	8 (26.6)	30	-
	Female	19 (27.14)	16 (22.86)	19 (27.14)	16 (22.86)	70	-
Total		26	27	23	24	100	-

Table 1: Demographic profile of study participants among the diagnostic groups.

Parameters	Disc	MM	Mixed	Control	F-value	p-value
Depression	15.04 ± 5.08	18.78 ± 4.77	16.3 ± 4.91	13.04 ± 5.26	5.89	0.001[*]
Anxiety	14.4 ± 4.83	17.18 ± 2.17	15.5 ± 5.6	13.25 ± 4.40	3.71	0.014[*]
Stress	14.70 ± 4.32	17.14 ± 5.02	15.9 ± 4.7	12.46 ± 3.48	5.08	0.003[*]
Pain severity	3.65 ± 0.69	5.07 ± 1.23	4.08 ± 0.60	-	17.2	0.000[**]
Pain Duration	22.38 ± 12.89	24.37 ± 16.24	26.34 ± 16.25	-	0.416	0.66NS
[**] Significant p<0.001, [*]Significant p<0.05						

Table 2: Prevalence of depression, anxiety and stress among the groups.

Prevalence data of the depression, anxiety and stress are reported in Table 2. Comparison among the three diagnostic groups revealed statistically significant differences with the respective p-values of 0.001, 0.014, and 0.003 with the MM group reporting the highest prevalence of all the three parameters and the disc group reporting the lowest prevalence of all three parameters.

Pearson's correlation tests were conducted to assess the relationship between depression, anxiety and stress, and pain severity and duration.

These reports were in Table 3. Correlation analysis revealed that there was a positive correlation found between Pain severity and depression, pain severity and stress. No relationship found between pain severity and anxiety. There was no relationship found between duration of pain and other parameters studied.

Parameters		Depression	Anxiety	Stress
Duration	Pearson Correlation	0.031	-0.005	0.054
	Sig. (2-tailed)	0.79	0.967	0.641
	N	76	76	76
VAS	Pearson Correlation	0.313**	0.159	0.243*
	Sig. (2-tailed)	0.006	0.171	0.035
	N	76	76	76

Table 3: Pearson correlations among all variables studied.

Discussion

A review of chronic TMD patients was conducted to analyze the prevalence of depression, anxiety and stress. The proposed hypothesis, that these three variables would have a high prevalence in TMD patients with chronic pain, was confirmed.

Depression is 'a common mental disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration', and has recently been acknowledged as a major contributor to the global burden of disease [5]. In this study the mean age of the whole sample was 37.8 years, whereas according to Ranjani Shetty et al. prevalence of depression in patients with chronic pain is usually higher in the elderly than in younger individuals [6]. Moreover, women have more symptoms, or a more severe type of depression, than men. Women undergo premenstrual and postmenstrual endocrine changes and compared to men have high levels of monoamino-oxidase (the enzyme needed to degrade neurotransmitters considered important for mood).

Anxiety is a relatively permanent state of worry and nervousness characterized by physical symptoms usually accompanied by compulsive behaviour or attacks of panic. Studies on anxiety and orofacial pain agree that anxiety plays a significant role. Thus, after examining 649 patients with facial pain divided into four diagnostic subgroups, Mongini et al. found that anxiety increases the likelihood of muscle tenderness and that patients with myogenous and facial pain had higher anxiety and muscle tenderness scores [7]. Akhter et al. found association between experience of stressful life events and muscle-related temporomandibular disorders and concluded that myofacial pain is more common in individuals with various types of psychological stress [4].

The above stated study results were in accordance with our study, in which anxiety was prevalent in muscle group than disc group of TMJ disorders.

The positive correlation of depression, anxiety and stress in chronic temporomandibular joint disorders using Dass-42 items were in coherence with the study conducted by Jane Fisher et al. He validated the depression anxiety stress scales (DASS) 21 as a screening instrument for depression and anxiety in a rural community-based cohort of northern Vietnamese women and concluded that 21 items of the DASS21-Vietnamese validation appear to be comprehensible and sensitive to detecting common mental disorders in women [3].

According to kindler et al. depressive symptoms were more strongly related to joint pain compared to muscle pain, whereas anxiety symptoms were more strongly related to muscle pain compared to joint pain. These findings were similar to this study. First, depressive and anxiety symptoms may initiate muscular hyperactivity followed by muscle abnormality and altered muscle mechanics, a sequence in which each state can provoke muscle pain. They may also initiate joint inflammation followed by biomechanical alterations, which provoke joint pain. Second, TMD might be related to abnormal pain processing in the trigeminal system caused by imbalances in common neurotransmitters such as serotonin and catecholamines [8]. Moreover, TMD pain may reflect physical manifestation of anxiety or depression. In concordance with other studies, we found a moderate-to-strong relationship between symptoms of depression or anxiety and signs of TMD.

Even more important is for clinicians to have skills that enable effective biobehavioral interventions to be directed toward managing the pain condition, whether those skills involve making an effective referral or providing professional skills directly. Successful outcomes in chronic orofacial pain management often require a multidimensional approach to treatment because of the complexity of dysfunctions within the trigeminal system [1].

The importance of a multidisciplinary approach for TMD is fundamental and has been extensively reported. In fact, Litt and Porto have reported on the importance of identifying TMD patients who do not respond to standard conservative TMD treatment by itself or in addition to cognitive behavioral coping skills training. The authors

found that the subgroup of TMD patients (16%) who did not respond to treatment reported more psychological symptoms, poor coping skills, and more catastrophizing when compared to TMD patients who responded to treatment [9].

Limitations of the present study include its retrospective design, which prevents the determination of the causal relationship among the variables studied and TMD. In addition, the study design did not allow evaluation of treatment outcome. Prospective studies would also be valuable to explore depression, anxiety and stress in chronic TMD patients.

Conclusion

Among the patients with TMD, the groups who were considered to have anxiety and depression were female patients, patients with deficient social support system, and patients with myofacial pain alone or patients with myofacial pain accompanying an existing TMJ disorder. The existence of anxiety and depression should be considered in addition to musculoskeletal pathologies during the treatment plan of patients with TMJ who have these risk factors. It is essential that this knowledge be transferred to students and general practice dentists who are managing adolescent and adult patients with TM pain.

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