ISSN : 2949 - 9100

International Journal of Health and Dentistry Care (IJHDC)

IJHDC : Health and Dental Publication
Available Online at: www.ijhdc.com
Volume – 2, Issue – 4, July - August - 2023, Page No. : 17 - 22

Temporomandibular disorders with Depression and Anxiety among students – A cross sectional study.

[1]Simoen L, Faculty of Medicine and Health Sciences, Centre of Special Care in Dentistry, Unit Orofacial Pain and Temporomandibular Disorders, Oral Health Sciences, Ghent University, Corneel Heymanslaan, Ghent, Belgium.

[2]Van den Berghe L, Faculty of Medicine and Health Sciences, Centre of Special Care in Dentistry, Unit Orofacial Pain and Temporomandibular Disorders, Oral Health Sciences, Ghent University, Corneel Heymanslaan, Ghent, Belgium.

[3]Jacquet W, Department of Oral Health Sciences ORHE, Faculty of Medicine and Pharmacy, Vrije University Brussel, Laarbeeklaan, Brussels, Belgium.

Corresponding Author: Simoen L, Faculty of Medicine and Health Sciences, Centre of Special Care in Dentistry, Unit Orofacial Pain and Temporomandibular Disorders, Oral Health Sciences, Ghent University, Corneel Heymanslaan, Ghent, Belgium.

Citation This Article: Simoen L, Van den Berghe L, Jacquet W, "Temporomandibular disorders with Depression and Anxiety among students – A cross sectional study", IJHDC – July – August - 2023, Volume. – 2, Issue - 4, P. No. 17 – 22.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

TMDs are a group of disorders involving the masticatory muscles, tempo romandibular joint (TMJ), and associated structures. Depression and anxiety are thought to be major contributing factors in the development of TMDs. So, the aim of the study is to correlate Tempo romandibular disorders with Depression & Anxiety among participants of dental students.

Materials and Methods: This observational study was done on 100 dental students from dental Institute. Case history taking and clinical examination of Temporomandibular joint was carried out during May - June 2022. The patients were then categorized according to their signs and symptoms and psychological evaluation was done for emotional conditions such as anxiety and depression for all of them using Hamilton Anxiety Rating Scale and Hamilton Depression Rating Scale.

Results: The major TMJ related signs and symptoms seen in study population are pain morning stiffness (11%), deviation (40%) and clicking sound (68%). Statistically significant correlation was found between TMD signs and symptoms (deviation and clicking sound) and anxiety and depression.

Conclusion: Temporomandibular disorders, anxiety and depression can be co-existent or be considered as interrelated factors.

Keywords: TMD, Anxiety, Symptoms.

Introduction

The American Academy of Orofacial Pain defines TMD as a group of disorders involving the masticatory muscles, tempo romandibular joint (TMJ), and associated structures. It is usually characterized by pain in the masticatory muscles and/or TMJ, articular noises, and limitation of mandibular movements[1].

It is generally accepted that the temporomandibular disorders (TMDs) are of multifactorial etiology in nature[2]. Due to the complexity of the masticatory system, TMD symptoms may be caused by different physiological and/or psychosocial factors.[4]

It is observed that emotional conditions, such as anxiety and depression, may change the pain threshold and increase the frequency, intensity, and duration of parafunctional habits, which is also responsible for the hyperactivity of masticatory muscles and TMJ overload, potentiating the onset of the disorder[1].

Among psychological factors, anxiety and depression are the most common symptoms found in the general population at some stage of life. Anxiety can be described as an emotional state with psychological and physiologic components, a normal reaction to certain situations that may become pathologic, depending on the intensity of the emotion[1]. Whereas Depression is another common and serious psychological illness that negatively affects how one feels, the way one thinks and how one acts.

The prevalence of TMD symptoms among the general population is around 40% worldwide[2].With high incidence of TMDs in individuals aged 18 to 40 years, while women have four times the odds of having TMDs than men[5].Studies have evaluated that psychological health complaints such as anxiety and depression are highly prevalent, both in the community and in the medical professionals. High levels of anxiety and depression can affect a student's academic performance and also increase the risk of other health-related problems[6]. Hence evaluation and its co-relation would be vital.

Considering that Anxiety and Depression are associated with TMD signs and symptoms, and as there are no published studies observing the signs and symptoms of TMD in accordance to anxiety and depression among students of dental institute, hence it was felt necessary to find similar co-relation among participants of dental institute. Hence, the aim of this study is to evaluate co-relation between TMD symptoms, depression and anxiety in students of dental institute.

Materials and methods

Study design and subjects

The study was approved by the Institutional Ethics Committee of Dental College and Research Centre and carried out between May 2022 and June 2022.

Inclusion Criteria

In this cross-sectional study, the participants aged between 20 to 25 years were well informed about the study and the written consent was obtained from the willing participants.

Exclusion Criteria

Participants with history of serious neurological disorders, systemic disorders, cervical spine injuries and postural deformities or a comorbidity condition such as malignant disease were excluded from the study.

Case history was recorded with the focus on symptoms of temporomandibular joint disorders (TMD) and then the Demographic data was also obtained. The sample size was drawn by using the given formula: 59

$$n \geq \left(\frac{Z_{1-\alpha/2} + Z_{1-\beta}}{\frac{1}{2}\log_e \frac{1+r}{1-r}} \right)^2 + 3$$

In our study, 100 participants were evaluated.

Clinical Examination

Clinical examination of Temporomandibular (TMJ) Joint was performed by an expert clinician from the Department of Oral Medicine and Radiology, Dental Institute, under the following sections for every included participant (American Academy of Orofacial Pain Guidelines):

TMJ sounds: Presence of joint clicking/crepitation in opening, closing or lateral movements of mandible was recorded.

TMJ pain: TMJ pain was determined by palpation of TMJ in the preauricular region.

Muscle tenderness: The following muscle sites were palpated bilaterally: the anterior, middle and posterior portions of the temporal muscle, superficial and deep portions of the massager muscle and the medial pterygoid muscle.

Mouth opening: The patient was asked to open his mouth as wide as possible and the examiner measured and evaluated the mouth opening of the participant using Vernier caliper.

Psychological Evaluation

Anxiety**:** It was evaluated by Hamilton Anxiety Rating Scale (HARS). The scale consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety and somatic anxiety. Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where <17 indicates mild severity, 18–24 mild to moderate severity and25–30 moderate to severe[7].

Depression**:** It was evaluated by Hamilton Depression Rating Scale (HDRS). The original version contains 17 items (HDRS17) pertaining to symptoms of depression experienced over the past week. Method for scoring varies by version. For the HDRS17, a score of 0–7 is generally accepted to be within the normal range (or in clinical remission), while a score of 20 or higher (indicating at least moderate severity) is usually required for entry into a clinical trial[8].

Results

100 dental students were included in the present study. of the included participants, 65 were females and 35 were males and their age ranged between 22 to 25 years. Fig 1 shows prevalence of TMJ related signs and symptoms in study population. The major TMJ related signs and symptoms seen in study population are pain morning stiffness (11%), deviation (40%) and clicking sound (68%).

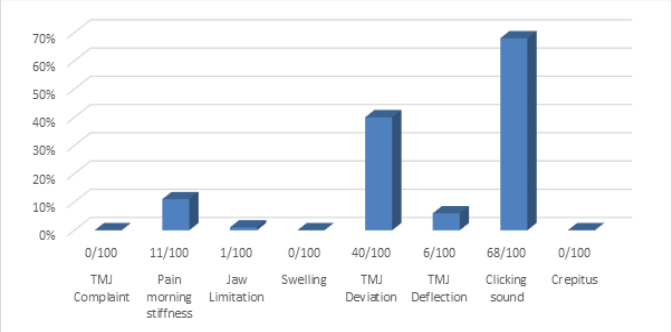

Figure 1: Prevalence of TMJ related signs and symptoms in study population

The dental students in our study were evaluated for anxiety using Hamilton Anxiety Rating Scale (HARS). Fig 2 shows distribution of dental participants according to the HARS

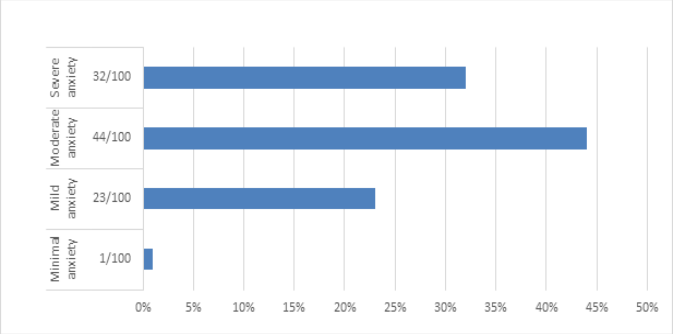

Fig 2: Distribution of study patients based on HARS scale distribution categories

The dental participants in our study were also evaluated for depression using Hamilton Depression Rating Scale (HARS). Fig 3 shows distribution of dental participants according to the HDRS.

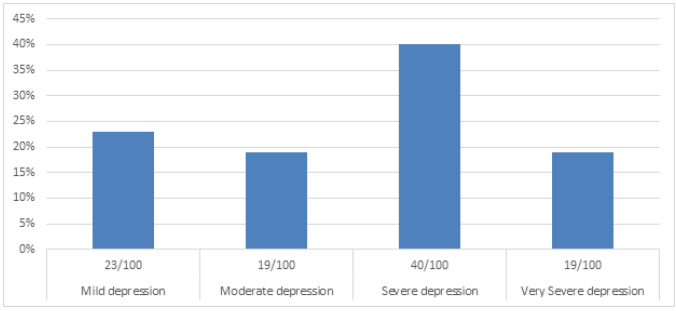

Fig 3: Distribution of study patients based on HDRS scale distribution categories

Correlation of TMJ signs and symptoms with depression and anxiety was done and statistically significant association was found for Deviation and Clicking Sound. (Table 1 and table 2)

Table 1: Correlation of TMJ signs and symptoms with anxiety according to HARS scale

TMJ signs and symptoms	No/minimal anxiety	Mild anxiety	Moderate anxiety	Severe anxiety	Spearman 'r' correlation quotient
Clicking sound	0	6	31	31	0.567
Jaw deviation	1	6	18	15	0.112

Table 2: Correlation of TMJ signs and symptoms with depression according to HDRS scale.

TMJ signs and symptoms	Mild depression	Moderate depression	Severe depression	Very severe depression	Spearman 'r' correlation quotient
Clicking sound	4	11	35	18	0.642
Jaw deviation	4	6	18	12	0.332

Discussion

This study was aimed to correlate TMDs with anxiety and depression as many studies have shown that people with emotional conditions like anxiety and depression have TMDs. In the present study, more than half of the dental students experienced more than one symptom of TMDs. There is a high incidence of TMDs in under graduate students[2,6]. In a study by Calixtre et al, undergraduate physical therapy students with mean age of 20.87 years showed 70.6 % prevalence of TMD signs and symptoms (2). In another study by Sojka et al, more than one third medical students with age ranged between 18 to 32 years presented Signs and symptoms of TMDs[6]. Though Tempo romandibular disorders are multi factorial in etiology, psychological factors such as anxiety and depression are thought to be one of the common causes. Many studies suggest anxiety and depression to be a potential cause in the development of TMDs in medical and dental students. The present study compared TMD signs and symptoms with both the psychological conditions i.e anxiety and depression and

the results suggest that anxiety is the factor that is strongly associated with TMD signs and symptoms.

Although studies comparing TMD signs and symptoms with anxiety and depression are scarce, Chuinsiri et al[5] also suggested that anxiety is more strongly associated with TMDs than depression. This is in line with the findings from previous studies using different methodology[1,3,5]. According to the study by Bastos et al, various instruments were used to measure anxiety. Its results showed that most of the anxious individuals had TMDS, according to HADS 75%, STAI-S 55.6%, STAI-T 54.9% AND BAI 63.9% (1). According to Atsu et al[3] and Chuinsiri et al[6], state anxiety showed increased TMJ signs and symptoms especially pain.

Another psychological factor that affects TMD signs and symptoms is Depression. As measured by HDRS, depression was significantly correlated with TMD signs and symptoms, a finding that supports those of other studies[4,5]. According to a study by Saeed et al[4], a substantial number of TMD patients had moderate to severe depression as assessed by Beck's Depression Inventory. A study by Chuinsiri et al found weak correlation between TMD pain and depression[5].

Although similar studies have not been done, there were few limitations. We could not assess the chronicity of the TMDs as the participants in our study were of young age group. Further research is also required for the correlation of severity of anxiety and depression with chronicity of TMDs.

Conclusion

In our study, correlation was found between Tempo romandibular disorders and anxiety and depression. TMJ signs and symptoms such as clicking sound and deviation had high correlation with anxiety and depression. Importance of the psychological factors for the development of TMD grows every day and is potentiated by the inability of proving any other valid etiological factors. It may be attributed to emotional factors like depression and anxiety which increase parafunctional activity and/or muscle tension that can elicit tenderness or pain of the masticatory muscles correlated with TMJ sounds. As anxiety and depression are closely related, identifying which disorder is more relevant to the development of TMDs is a challenge.

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