

Association between Symptoms of Temporomandibular Disorders and Gender, Morphological Occlusion, and Psychological Factor in Dental Student's

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Abstract

Introduction: Temporomandibular disorders (TMD), is a collective term that embraces a number of clinical problems that involve the masticatory muscles, the temporomandibular joint, and the associated structures. The etiology of TMD in children and adolescents is considered multifactorial in nature and has been related to trauma, malocclusion, and oral parafunctional habits such as bruxism, nail biting, and non-nutritional sucking.

Purpose: The aim of this study was to investigate the prevalence of TMD in a sample of Dental students and its relationship to gender, occlusion, and psychological factors.

Materials and Methods: A total number of 150 subjects, aged 18-25 years were included in the study. The TMD degree was evaluated using an anamnestic questionnaire. Morphologic occlusion was evaluated according to angle classification. The level of anxiety was self-rated by using Zung self-rating scale.

Results: The results of this study imply that 23% of the subjects had mild to moderate degree TMD. Significant association could not be found between TMD and gender or occlusion. TMD was found to have statistically significant association with anxiety.

Conclusion: A high-prevalence of mild TMD was found in this student population. Various studies show that the anxiety had a statistically significant association with TMD. The present study suggests the importance of psychological screening of young adults as an adjunct to confirm the diagnosis of TMD so as to early treatment.

Keywords: Anxiety, Gender, Occlusion, Sex, Temporomandibular disorder

INTRODUCTION

Temporomandibular disorders (TMD), is a collective term that embraces a number of clinical problems that involve the masticatory muscles, the temporomandibular joint (TMJ), and the associated structures.¹ TMD is the most common cause of orofacial pain of a non-dental origin, having a multifactorial etiology. The major etiologic factors associated with TMJ as revealed by scientific literature² are occlusal disturbance, trauma, emotional stress, and parafunctional habits.

Most recently the combination of biologic and psychological aspects in etiologic theories about TMD has been termed as biopsychosocial.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.

The purpose of this study was to find out the prevalence of TMD in dental students and its relationship to gender, occlusion, and psychological factor i.e., anxiety.

MATERIALS AND METHODS

Subjects

This study was carried out in VSPM's Dental College with the Ethical Committee approval consisting sample of 150 students with age ranging from 18 to 25 years was randomly selected from among the student population. After obtaining informed consent patient's clinical examination, was carried out. The presence and severity of TMD was determined using a self-administered anamnestic questionnaire (modified version of Helkimo's anamnestic index) composed of 10 questions regarding common TMD symptoms.

Anamnestic questionnaire

1. Do you have difficulty in opening your mouth?
2. Do you have difficulty in moving or using your jaw?
3. Do you have tenderness or muscular pain when chewing?
4. Do you have frequent headaches?
5. Do you have neck ache or shoulder pain?
6. Do you have pain in or about the ears?
7. Are you aware of noises in the jaw joints?
8. Do you consider your bite "normal"?
9. Do you use only one side of your mouth when chewing?
10. Do you have morning facial pain?

The scoring system was as follows:

- A score of "0" - the absence of symptoms; a score of "1" - an occasional occurrence,
- A score of "2" - presence of dysfunction, and a score of "3" - severe pain or bilateral symptoms. (The score of "3" could only be given for questions 4, 6, and 7).

The sum of the scores was used to group the subjects into four categories as follows:

- TMD free: Score 0-3, mild TMD: Score 4-8, moderate TMD: Score 9-14, severe TMD: Score 15-23.
- Occlusion examination: Morphologic occlusion was evaluated according to angles classification (molar Classes I, II, and III).

Zung self-rating anxiety scale (SAS)

The level of anxiety was self-rated by using SAS. It was designed by William WK Zung to quantify the level of anxiety for patients experiencing anxiety related symptoms. It has 20 questions. Each question is scored on a scale of 1-4 (none or a little of the time, some of the time, a good part of the time, most of the time). There are 15 questions worded toward increasing anxiety levels and 5 questions worded toward decreasing anxiety levels.

The scores range from 20 to 80.

Normal range: 20-44, mild to moderate: 45-59, marked to severe: 60-74, extreme: 75-80.

Patients with congenital anomalies, trauma to TMJ are excluded from the study.

Statistical Analysis

Data were computerized and it was used for analysis. The percentages of subjects with TMD (of different grades of severity), malocclusion, anxiety, in both genders were calculated. Association between TMD degree and gender, occlusion, anxiety was tested using the Chi-square test. The significance level was set at $P < 0.05$.

RESULTS

Out of the 150 students 47 were male and 103 were female (Table 1). The number of female was greater than male, but statistically not significant. The association between TMD and occlusion shown in Tables 2 and 3. The majority of the subjects who had mild to moderate levels of TMD exhibited class I occlusion which was statistically not significant. According to our results, 23% of the subjects had TMD, but it was of mild to moderate degree. TMD was found to have statistically significant association with anxiety $P = 0.0023$ (Table 4).

DISCUSSION

In this study, 23% out of 150 subjects had some degree of TMD. Bonjardim *et al.*,³ using the same questionnaire to evaluate TMD in university students, reported 50%

Table 1: Relationship between TMD degree and gender

TMD degree	Percentage of n	
	Male	Female
TMD free	40 (32)	82 (67)
Mild	7 (26)	19 (73)
Moderate	0	2 (1.94)
Severe	0	0
Total	47 (31.33)	103 (68.66)

Chi-square=0.64, $P=0.42$, TMD: Temporomandibular disorders

Table 2: Relationship between TMD degree and occlusion

Molar class	Percentage of n			
	TMD free	Mild	Moderate	Severe
Class I	98 (85.96)	15 (13.15)	1 (0.877)	0 (0)
Class II	17 (65.38)	8 (30.7)	1 (3.86)	0 (0)
Class III	8 (80)	2 (20)	0	0 (0)
Total	123 (82)	25 (16.66)	2 (1.33)	0 (0)

Chi-square=2.88, $P=0.09$, TMD: Temporomandibular disorders

Table 3: Relationship between TMD degree and male and female occlusion

Degree	Male occlusion (percentage of n)			Female occlusion (percentage of n)		
	I	II	III	I	II	III
TMD free	34 (89.47)	5 (83.33)	2 (66.66)	67 (83.57)	11 (68.75)	5 (71.42)
Mild	4 (10.52)	1 (16.66)	1 (33.33)	11 (13.75)	5 (31.35)	2 (28.57)
Moderate	0 (0)	0 (0)	0 (0)	2 (2.5)	0 (0)	0 (0)
Severe	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	38 (80.85)	6 (12.76)	3 (6.38)	80 (77.66)	16 (15.5)	7 (6.79)

Male Chi-square=0.46, P=0.49; Female Chi-square=1.81, P=0.17; Combined Chi-square=3.07, P=0.08. TMD: Temporomandibular disorders

Table 4: Relationship between TMD degree and anxiety

Anxiety level	Percentage of n			
	TMD free	Mild	Moderate	Severe
Normal	115 (85.18)	19 (14.74)	1 (0.74)	0 (0)
Mild to moderate	8 (53.33)	6 (40)	1 (6.66)	0 (0)
Marked to severe	0	0	0	0 (0)
Extreme	0	0	0	0 (0)
Total	123 (80)	15 (10)	2 (1.33)	0 (0)

Chi-square=9.28, P=0.0023. TMD: Temporomandibular disorders

subjects had some degree of TMD, thus our value is slightly lower than that. Bonjardim *et al.*³ found that although the prevalence of TMD in young adults was high, the severity of the condition in this age group was low. In this study only 10%, of subjects presented as mild and 1.33% of subjects presented as a moderate degree of TMD and, consequently, needed care and treatment. This data lead us to suggest that TMD evaluation must be discerningly performed in order to identify those who actually could benefit from some intervention.

Out of the 150 students 47 were male and 103 were female (Table 1). The percentage of women (20.38%) with TMD is higher than that of men (14.86%); however, this difference was not statistically significant. The findings are similar to those as reported by Widmalm *et al.*⁴ and Bonjardim *et al.*³ that the higher prevalence of TMD signs and symptoms in females, with the disorder reported as being 3-6 times more common in women than in men.

In this study, no statistically significant association between morphologic occlusion and TMD degree was found (Tables 2 and 3). Present study results agree with that of several studies that have also failed to find strong evidence to support of the theory that occlusion plays a role in the etiology of TMD, particularly as the sole cause or the dominant factor.^{3,5}

The most common occlusal feature as reported by McNamara *et al.*,⁶ which have been associated with specific diagnostic group of TMD condition are skeletal anterior open bite, overjet >6-7 mm, retruded cuspal position/intercuspal position slightly >4 mm, unilateral lingual cross

bite, five or more missing posterior teeth. According to McNamara *et al.*,⁶ relationship of TMD to occlusion is minor.

Present study has a statistically significant association between TMD degree and anxiety (Table 4). These outcomes are in agreement with Bonjardim *et al.*³ stated that the anxiety plays an important role in TMD, acting as a predisposing or aggravating factor. Furthermore, anxiety may be an important factor in the perception of pain, with anxious subjects paying more attention to pain and thereby amplifying the perceived intensity. This possibility has been confirmed by other studies, which indicate that anxiety is related to increased pain. There is currently considerable evidence that stress and psychosocial factors play an important role in TMD. These disorders are often associated with psychological complaints (Fatigue, sleep disturbance, anxiety, and depression). Gatchel *et al.*⁷ also reported that, various physiological disorders specially stress and depression can precipitate TMD. Altered emotional state and para functional behavior specially which increase muscle tension can lead to TMD.⁸

CONCLUSION

Present study has a high prevalence of TMD symptoms in the sample, even though the majority of the cases were classified as mild degree and anxiety was associated with TMD symptoms. Although a larger percentage of female than male had some symptoms of TMD, the difference was not statistically significant. Morphologic malocclusion (molar class, Angle's classification) was not associated with the presence of TMD symptoms. The present study suggests the importance of psychological screening of young adults as an adjunct to confirm the diagnosis of TMD so as to early treatment.

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