

# A Cross Sectional Study of Prevalence of Temporomandibular Disorders in University Students

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**Abstract- Aim** – To investigate the prevalence of temporomandibular joint disorder (TMD) among university students.

**Material and methods** – In this cross sectional prospective study, the sample consisted of 310 students (105 male and 205 female) with an age range from 18-25 years. The prevalence and severity of TMD was determined using a self reported anamnestic questionnaires. The symptoms were transposed into a severity classification according to the number and frequency of positive responses. Data was evaluated by the chi-square test between TMD severity and gender.

**Results** – The result showed that 45.16% of students reported some level of TMD: 34.83% mild TMD; 8.38% moderate TMD; 1.96% severe TMD. No significant relationship was found between gender and TMD severity.

**Conclusion** – A high prevalence of TMD was found in this student population, however most of cases were mild. The relationship between gender and TMD severity was not statistically significant. Despite suffering from TMD students were not aware of their disorders.

**Index Terms**- Temporomandibular Disorder, Prevalence, Epidemiology

## I. INTRODUCTION

Temporomandibular joint (TMJ) function has been the subject of considerable study for over a century, and despite voluminous literature, the multifactorial etiology of temporomandibular dysfunction is even today a cryptic issue [1]. Temporomandibular disorder (TMD) is a collective term that defines a subgroup of painful orofacial disorders involving complaints of pain on the temporomandibular joint (TMJ) region and fatigue of craniocervicofacial muscles, especially mastication muscles, limitations of mandibular movement and presence of articular clicking. The multifactorial TMD etiology is related to emotional tension, occlusal interferences, teeth loss, postural deviation, masticatory muscular dysfunction, internal and external changes in TMJ structure and the various associations of these factors [2,3]

Due to high prevalence and variability of complaints, TMD is diagnosed by associating signs and symptoms as some characteristics may be frequent even in a non-patient population. Reported prevalence rates vary broadly (from 26% to 50%) reflecting important differences in sample, criteria and methods used for collecting information. Different questions covering

major TMD signs and symptoms have been collaborated to simplify the evolution in epidemiologic studies and to standardize research samples. The anamnestic and clinical indexes proposed by Helkimo's (1974) were obtained from clinical observation. Based on Helkimo's (1974) indexes, Fonseca (1992) developed his anamnestic question that classifies TMD signs and symptoms as mild, moderate or severe or free TMD. The author obtained a reliability of 95% and a good correlation with Helkimo's index ( $P < 0.05$ ). Other advantages of Fonseca (1992) questions are self administration, short-time of application and low cost [4].

This study evaluated, using the Fonseca (1992) questions the prevalence and severity of TMD in Indian medical and dental undergraduates. The characterisation of volunteers would help understanding its prevalence in the Indian university population.

## II. MATERIALS AND METHODS

The sample consisted of 310 medical & dental students (105 males and 205 females) from PIMS university, Ahmednagar, in western India. A list of all the students was obtained from the student section & the subjects were randomly selected. Written consent form was taken & subjects participated for this study voluntarily. Their age ranged from 18 to 25 years, with no history of systemic, musculoskeletal or neurological disorders. None of the students had any history of orthodontic treatment.

The questionnaire proposed by Fonseca (1992) was used to classify TMD severity in the study population because it is highly efficient in obtaining epidemiological data. The Fonseca's questionnaire follows the characteristics of a multidimensional evaluation. It is composed of 10 questions, which includes checking for the presence of pain in the temporomandibular joint, head & back, while chewing, parafunctional habits, movement limitations, joint clicking, perception of malocclusion & sensation of emotional stress. The subjects were informed that the 10 questions should be answered with "yes", "no" & "sometimes" & that only one answer should be marked for each question. There was no time limit for completion. That way, there would be no reasons for the subjects to give induced answers.

## III. DATA ANALYSIS

The Fonseca's questionnaire contains an anamnestic index and the subjects were classified as having mild TMD, moderate

TMD, severe TMD or free of TMD (Table 1). The scoring system was as follows: A score of '0' indicated the absence of symptoms; a score of '1' was given for a report of an occasional occurrence, a score of '2' was given for each response indicating the presence of dysfunction, and a score of '3' indicated severe pain or bilateral symptoms [5]. Positive answers (yes and sometimes) were summed. The percent means were compared between genders and severity degree by chi square test. Significance level was set at 5 %.

IV. RESULTS

The result obtained from the anamnestic index showed that the subjects classified as being free of TMD was marginally higher than that of subjects with other TMD severity level (mild, moderate & severe) (Table 2). The results considering TMD alone, 140 students (45.16%) had some degree of disorder; 108 students (34.83%) had mild TMD, 26 students (8.38%) had moderate TMD and 6 students (1.96%) had severe TMD (Fig. 1). The subjects classified as mild TMD was significantly higher (34.83%) (P < 0.05) than that of severe & moderate.

The results showed that the percentage of women free of TMD & mild TMD (55.12% & 36.58%) was slightly higher than men (54.28 % & 31.48%) respectively but this difference was not statistically significant ( Fig .2 )

The association between TMD degree & Age group is shown in (Table 3). These subject showed no significant difference in TMD symptoms in different age group in our sample.

Table 1. Grading of TMD Degree

Score	Categories
0-3	TMD free
4-8	Mild TMD
9-14	Moderate TMD
15-23	Severe TMD

Table 2. Distribution of the University Students According to Gender and TMD Degree

TMD Degree	Male		Female		Total	
	N	(%)	n	(%)	n	(%)
Free of TMD	57	54.28	113	55.12	170	54.83
Mild	33	31.48	75	36.58	108	34.83
Moderate	12	11.42	14	6.82	26	8.38
Severe	3	2.85	3	1.46	6	1.96

Chi square value – 3.378

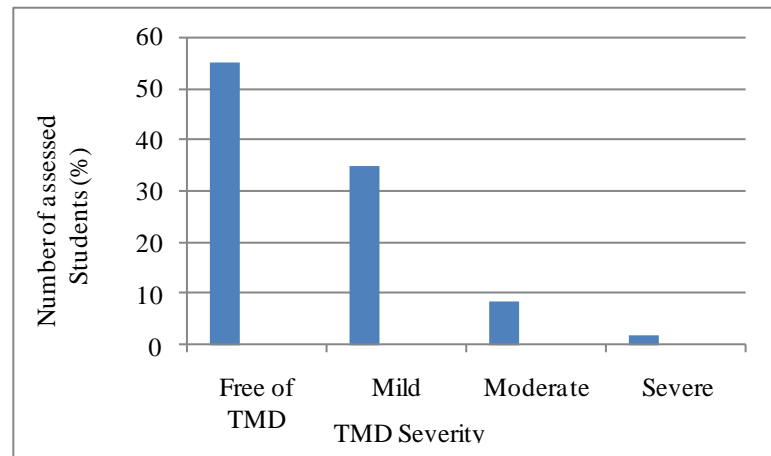


Fig 1: Histogram Showing the Prevalence of TMD Symptoms in Investigated Sample

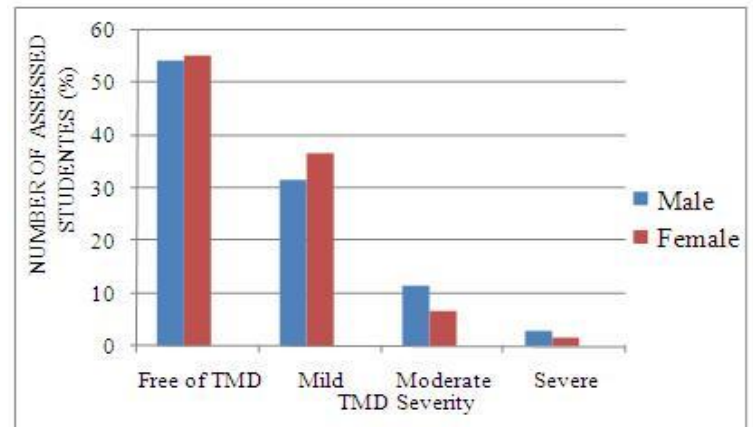


Fig 2: Histogram Showing the Gender wise Distribution of TMD Symptoms

Table 3. Distribution of TMD Symptoms According To Age Group

Age group	Free of TMD		Mild		Moderate		Severe		Total
	n	(%)	n	(%)	n	(%)	n	(%)	
18-20	49	28.82	41	37.96	6	23.07	1	16.66	97
21-22	90	52.94	53	49.07	15	57.69	1	16.66	159
23-25	31	18.23	14	12.96	5	19.23	4	66.66	54

V. DISCUSSION

The results of the present investigation showed that the symptoms of TMD were remarkably prevalent among the student community at PIMS university, India.

The investigations in the present study revealed 45.16% subjects had some degree of TMD. Similar results are found by Conti PC (1996) 42%, Shian, Chang (1992) 41%, Bonjardim (2009) 50%, Otuyemi (2000) 30% [5,6,7,8]. However Pedroni et al (2003) 68%, Schiffman (1990) 75%, Grosfeld et al (1985) 72% related a greater amount of subjects with TMD [9,10,11].

The difference could be due to racial, ethical and social background of the sample size.

The mild TMD was the most prevalent category for both the sexes in Indian university graduates. Dekon (2002), Pedroni (2003), Bonjardim (2009), Oleveria (2006), Nomura (2007) also found similar results using the Fonseca questionnaire [2,5,9,12,13]. Fonseca advocated that subject classified as moderate and severe TMD must be referred to a specialized health centre on a specialist. Thus, according to our results almost 15% of the college student must be referred to treat their TMD signs and symptoms. The lack of sex differences in reported symptoms of TMD as revealed by this study tends to agree with other investigators Otuyemi (2000), Bonjardim (2009), Oleveria (2006), although, Pedroni (2003), Nomura (2007), Conti PC (1996), Ryalat (2009), Vojdani (2012) etc found a higher prevalence of TMD in women [1,2,5,6,8,9,13,14]. The higher prevalence in women according to some authors has been attributed to fluctuating levels of female sex hormones.

## VI. CONCLUSION

Considering the limitation of this study the following conclusion were drawn.

The prevalence of TMD in Indian university students was similar to that reported by other studies found in literature reviewed. The subjects (male and female) classified as mild TMD were numerous in our sample. There was no statistically significant difference between TMD severity and gender. The present study being a cross sectional observation, should be followed by a longitudinal study in the near future.

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