

Prevalence of Temporomandibular Disorders and its Correlation with Depression among University Students in Bhopal

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Abstract

Background: Temporomandibular disorders (TMDs) is used to describe a number of related disorders involving the temporomandibular joints, masticatory muscles, and occlusion. This study was done to determine the level of depression among University students in Bhopal. **Materials and Methods:** The study group comprised of 600 participants of either gender aged from 17 years to 25 years, attending the outpatient Department of Oral Medicine and Radiology, People's College of Dental Sciences and Research Centre, Bhopal. The results of the two questionnaires were compared to determine the relationship between depression levels and severity of TMD pain by means of the Chi-square test. **Results:** The study showed that symptoms of TMD were remarkably prevalent among the 200 (33.3%) students out of 600 sample representative of the students of people's university. Prevalence was highest (23.0%) among the student of age group 21–24 years. Second, TMD is more common in female students as compare to male. **Conclusion:** It is likely seen that students in the professional colleges are under greater stress and general. In conclusion, within the limitations of this study, the following conclusions may be drawn: first, TMD is of a high prevalence among students of the people's University, TMD and its associated symptoms are frequent among students of health and science studies, which signify the role of stress in the development and/or progression of TMD. More studies are required to identify risk factors associated with TMD to establish measures for prevention and treatment.

Keywords: Anxiety, Depress, Epidemiology questionnaires, Prevalence, Temporomandibular joint disorders.

INTRODUCTION

Temporomandibular disorders (TMDs) are a collective term that defines a subgroup of painful orofacial disorder, involving complaints of pain in temporomandibular joint (TMJ) region, fatigue of the cranio cervical facial muscles, limitation of mandibular movement, presence of articular clicking and adjacent structures with traumatic, neoplastic, and/or musculoskeletal disorders as etiology.^[1]

TMD is a very common problem affecting up to 33% of individuals within their lifetime. Several studies have reported that TMD are most prevalent between the ages 22–40 years; after then it decreases by age 60 years.^[2] Various studies have reported that prevalence of TMD, among adolescent students, ranged from 30% to 75%.^[3]

It has also been reported that 50–60% population has one sign of some functional disturbance of masticatory system.^[4] Available evidence indicates that stress leads to increased activity of masticatory muscles which results in TMD. The

presence of psychological stress among university students was appreciated in many studies which varied from 56%^[5] to 58%.^[6] It has been reported that females are slightly more prone to TMD, quoting reasons such as depression, stress, and anxiety.

Due to high variability of complaints, TMD is diagnosed by associating signs and symptoms. The most common symptom is pain around ear and the second most common symptom is clicking sound.

TMD is a common orofacial pain disease, which affects a significant percentage of the population, yet its diagnosis and management remain a challenge.^[7]

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Numerous studies have been conducted to correlate the relationship of occlusal imbalances with TMD; some approving the former, while others unable to establish a relationship between them. Whatever the etiology, late diagnosis of TMD may result in irreversible and destructive effects on the TMJ. An oral physician, being adept in history recording as well as sensitive in detecting mood changes, is an invaluable tool in early detection and management of this complicated entity. Hence, this study is being undertaken to evaluate TMD prevalence and its possible relationship with depression among the university students.

MATERIALS AND METHODS

This study was performed under 600 students in the Department of Oral Medicine and Radiology, PCDS College and Hospital, Bhopal. Before commencement of the study ethical clearance was obtained from the ethical committee to the institution. A case history Performa was used to record detailed history. Then each patient was analyzed using the questionnaire Becks Depression Inventory.

Detailed intraoral examination with emphasis on type of occlusion, conditions of restorations/appliances will be noted.

A psychologic evaluation would be attempted, by recording a Performa using Questionnaire of Becks Depression Inventory.^[8]

Statistical analysis

Statistical analysis was done using Statistical Package for the Social Science Version 20; Chicago Inc., USA. Data comparison was done by applying specific statistical tests to find out the statistical significance of the comparisons. Quantitative variables were compared using mean values and qualitative variables using proportions. The results of the two questionnaires were

compared between depression and severity of TMD by the Chi-square test. Significance level was fixed at $P \leq 0.05$.

RESULTS

(Table 1) shows level of depression by Beck's depression inventory according to age. It was categorized from mild to extreme depression. Out of 600 student, 255 (42.5%) were normal without any depression and 345 were with depression. Out of 345 students of depression, most of 141 (23.5%) had mild mood disturbance, 75 (12.5%) had borderline clinical depression, 112 (18.7%) had moderate depression, 14 (2.3%) had severe, and 3 (0.5%) had extreme depression. There was statistically no significant difference found in level of depression by Beck's depression inventory according to age ($P = 0.209$).

(Table 2) shows level of depression by Beck's depression inventory according to gender. Out of 600 students, 255 (42.5%) were normal without depression and 345 were with any form of depression. One hundred and fourteen (19.0%) male had mild mood disturbance as compare to 27 (4.5%) females. Forty-two (7.0%) male have borderline clinical depression as compare to 33 (5.5%) females, 84 (14.0%) had moderate depression as compare to 28 (4.7%) females, 11 (1.8%) male had severe depression as compare to 3 (0.5%) females, and 2 (0.3%) male had extreme depression as compare to 1 (0.2%) female. There was statistically highly significant depression in level of depression by Beck's depression inventory according to gender ($P = 0.001$).

(Table 3) shows association between TMDs severity and level of depression. Out of 141 students with mild mood disturbance, 34 (5.7%) were without dysfunction, 85 (14.2%) were with mild dysfunction, 20 (3.3%) with moderate and 2 (0.3%)

Table 1: Level of depression by Beck's depression Inventory according to age

Age Groups (Year)	Level of depression					
	Normal	Mild mood disturbance	Borderline clinical depression	Moderate depression	Severe depression	Extreme depression
17-20 Year	77(12.8%)	37(6.2%)	13(2.2%)	23(3.8%)	4(0.7%)	1(0.2%)
21-24 Year	178(29.7%)	104(17.3%)	62(10.3%)	89(14.8%)	10(1.7%)	2(0.3%)
Total	255(42.5%)	141(23.5%)	75(12.5%)	112(18.7%)	14(2.3%)	3(0.5%)
Chi Square Value	7.157					
Significance 'p' Value	0.209(NS)					

Table 2: Level of depression by Beck's depression Inventory according to gender.

Gender	Level of depression					
	Normal	Mild mood disturbance	Borderline clinical depression	Moderate depression	Severe depression	Extreme depression
Male	205(34.2%)	114(19.0%)	42(7.0%)	84(14.0%)	11(1.8%)	2(0.3%)
Female	50(8.3%)	27(4.5%)	33(5.5%)	28(4.7%)	3(0.5%)	1(0.2%)
Total	255(42.5%)	141(23.5%)	75(12.5%)	112(18.7%)	14(2.3%)	3(0.5%)
Chi Square Value	21.387					
Significance 'p' Value	0.001(HS)					

Table 3: Association between Temporomandibular disorders severity and level of depression.

Level of depression	Prevalence of Temporomandibular disorders			
	Without Dysfunction	With Mild Dysfunction	With Moderate Dysfunction	With Severe Dysfunction
Normal	138(23.0%)	103(17.2%)	12(2.0%)	2(0.3%)
Mild mood disturbance	34(5.7%)	85(14.2%)	20(3.3%)	2(0.3%)
Borderline depression	7(1.2%)	40(6.7%)	25(4.2%)	3(0.5%)
Moderate depression	16(2.7%)	47(7.8%)	42(7.0%)	7(1.2%)
Severe depression	3(0.5%)	8(1.3%)	2(0.3%)	1(0.2%)
Extreme depression	2(0.3%)	1(0.2%)	0(0.0%)	0(0.0%)
Total	200(33.3%)	284(47.3%)	101(16.8%)	15(2.5%)
Chi Square Value	148.535			
Significance 'p' value	0.001(HS)			

with severe dysfunction. Out of 112 students with moderate depression, 47 (7.8%) were with mild dysfunction, 42 (7.0%) with moderate and 7 (1.2%) with severe dysfunction. Out of 14 students with severe depression, 8 (1.3%) were with mild dysfunction, 2 (0.3%) with moderate, and 1 (0.2%) with severe dysfunction. Statistically highly significant association was found between TMDs severity and level of depression ($P = 0.001$).

DISCUSSION

The results of the present study showed that symptoms of TMD were remarkably prevalent among the 200 (33.3%) students out of 600 sample representative of the students of people's university. Prevalence was highest (23.0%) among the student of age group 21–24 years. A study conducted by Pedroni *et al.*, also show the agreement with results reported on a sample of university students in Brazil.^[9] It is accepted that the prevalence of TMD symptoms among university students, 21–25 years old, is higher than among older subjects,^[10] also higher than population of rural areas.^[11]

This study demonstrated that pain in or around the ears was the most common symptom in the sample investigated, which was also observed in a previous study reported by Abdel-Hakim.^[12] Clicking was the second most common symptom, whereas, other studies demonstrated this to be the most common symptom.^[5]

The result of our study are similar with result of previous investigators including Conti *et al.* (1996); Pedroni *et al.*, Roda *et al.* (2007) with respect to the fact TMD are more common in females.^[9] The findings of the present study pointed to some significant differences in the prevalence of TMD symptoms between the two sexes, with the females showing a higher prevalence of pain in or around the ears than males, but there was no difference in other symptoms, which is in accordance with previous studies.^[8,13] Trauma had a significant effect on developing TMD among the investigated sample, this is similar to previous findings which linked head-and-neck trauma with TMD symptoms, mainly as: Joint pain, limitation of mouth opening and masticatory muscle tenderness.^[14,15] Students in the health and science colleges had a significantly higher risk

of developing TMD. A possible explanation is that the curricula of the health and science colleges entailed a greater study load; also admission to these colleges is more competitive than their humanitarian counterparts. It is likely that students in the former colleges are under greater stress and general anxiety. This study demonstrated a significant relationship between psychological and emotional factors and TMD. This finding is in agreement with those of previous reports by Conti *et al.* (1996), Speculand *et al.* (1984), Filho *et al.*^[16] which arrived at similar conclusion.

A possible explanation is that students of the health colleges are more aware than others of the commonality of the TMJ click in the population and its relationship to TMD, thus they would seek an early treatment of significant symptoms like trismus, joint locking, and pain on chewing and in or about the ears. Hence, it is very essential to make health science students aware toward their health matters and pay more scrupulous attention to preventive issues and practices.

CONCLUSION

The present study was carried out with the aim to record the prevalence of TMDs and its correlation with depression among University students in Bhopal. The objectives were to establish the correlation between the severity of the TMDs and to correlate the level of depression with TMD. Patients were subjected to through clinical and questionnaire's evaluation.

The study showed that symptoms of TMD were remarkably prevalent among the 200 (33.3%) students out of 600 sample representative of the students of people's university. Prevalence was highest (23.0%) among the student of age group 21–24 year. From the present study, it was also found that TMD is more common in female students as compare to male.

It is likely seen that students in the professional colleges are under greater stress and general. In conclusion, within the limitations of this study, the following conclusions may be drawn: first, TMD is of a high prevalence among students of the people's University, TMD and its associated symptoms are frequent among students of health and science studies, which signify the role of stress in the development and/or

progression of TMD. More studies are required to identify risk factors associated with TMD to establish measures for prevention and treatment.

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