

PREVALENCE OF TEMPOROMANDIBULAR DYSFUNCTION (TMD) AMONG UNIVERSITY STUDENTS

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ABSTRACT

Temporomandibular disorders (TMD) refers to group of disorders characterized by pain in the temporomandibular joint (TMJ), the periauricular area, or the muscles of mastication; TMJ noises (sounds) during mandibular function; and deviations or restriction in mandibular range of motion. Temporomandibular disorders are common among all ages. Symptoms have been found more frequently in females than males.

The aim of this study was to use a cross sectional epidemiological study to investigate the prevalence of signs and symptoms of TMD among university students in the permanent dentition, males and females, through clinical examination and self-reported questionnaire.

Data were collected using a pre-structured proforma from 500 students from the Abdul Wali Khan University, Mardan. Meaning and terms used in the proforma were explained to each student by the investigator. Age, gender and history for symptoms of the TMDs like pain in preauricular region, clicking sound, limited mouth opening (less than 40 mm), and chewing difficulty; were filled by the students. Detailed examination for signs of TMDs was done by two investigators. The collected were analyzed using SPSS 16.0. Frequencies and percentages were calculated for all variables. Chi-square test was applied for comparison the variables (TMDs signs and symptoms) gender wise. $P < 0.005$ was considered significant.

Out of 500 participants 50% were males and 50% were females. Only 19% students had signs and symptoms of TMDs. Clicking sound was the most common sign of TMD in both genders. There was no statistical difference between the two genders ($p > 0.005$). Headache and TMJ sound were the most common symptoms in both genders. There was also no statistical difference in symptoms of TMDs between the two genders ($p > 0.005$).

Key Words: Temporomandibular disorders, mandibular range of motion, headache.

INTRODUCTION

Temporomandibular disorders have been recognized as a common orofacial pain condition. The American Dental Association in 1983 suggested that the term Temporomandibular disorders (TMD) refers to a group of disorders characterized by pain in the temporomandibular joint (TMJ), the periauricular area, or the muscles of mastication, TMJ noises (sounds) during mandibular function, and deviations or restriction in mandibular range of motion.¹

Signs and symptoms associated with TMD are a common source of chronic pain complaints in the head and orofacial structures. These complaints can be associated with some generalized musculoskeletal problems and even somatization, anxiety, and depression. The primary signs and symptoms associated with TMD originate from the masticatory structures and, therefore, are associated with jaw function. Patients often report pain in the preauricular areas, face, or temples.² Reports of pain during mouth opening or chewing are common. Some individuals may even report difficulty speaking or singing. TMJ sounds are also frequent complaints and may be described as clicking, popping, grating, or crepitus. In many instances, the joint sounds are not accompanied by pain or dysfunction, and are merely a nuisance to the patient. However, on occasion, joint sounds may be associated with locking of the jaw during opening or closing, or with pain. Patients may even report a sudden change in their bite coincident with the onset of the painful condition.³

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Temporomandibular disorders are common among all age symptoms.² Symptoms have been found more frequently in females than males, but these findings have not always been confirmed. However, the frequencies differ between epidemiologic studies.^{4,5} Additionally various age groups, different examination methods, and gender distribution lead to different results.⁶

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.⁷ Reported prevalence rates vary broadly (from 16% to 50%) reflecting important differences in sample, criteria and methods used for collecting information.^{8,9} 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.¹⁰

The aim of this study was to use a cross sectional epidemiological study to investigate the prevalence of signs and symptoms of TMD among university students in the permanent dentition, males and females, through clinical examination and self-reported questionnaire.

METHODOLOGY

This cross-sectional study was carried out in Abdul Wali Khan University, Mardan from February 2014 to December 2014. A total of 500 students were included in the study by convenient sampling technique. Half were females and half were males. Approval of the hospital ethical committee was taken. Subjects fulfilling the inclusion criteria were invited to take part in the study. The purpose, procedures, risk and benefits of the study were explained to them. An informed consent and their willingness and participation in the study were ensured. They were assured of maintaining confidentiality of their personal and other data collected from them.

Data were collected using a pre-structured proforma. Meaning and terms used in the proforma were explained to each student by investigator. Age, gender and history for symptoms of the TMDs like pain in preauricular region, clicking sound, limited mouth opening (less than 40 mm), and chewing difficulty; were filled by the students. Detail examination for signs of TMDs was done by two investigators.

The collected data were analyzed using SPSS 16.0. Frequencies and percentages were calculated for all variables. Chi-square test was applied for comparison the variables (TMDs signs and symptoms) gender wise. $P < 0.005$ was considered significant.

The sampling were done according to the following criteria;

Inclusion criteria	Exclusion criteria
• Having permanent dentition	• Previous history of orthodontic treatment
• Age above 18 years	• Craniofacial anomalies
• Pakistani nationality	• With missing posterior teeth
• Cooperative students	• History of systemic, musculoskeletal or neurological disorders.

TABLE 1: CHARACTERISTICS OF THE STUDY GROUP

No of students who filled questionnaire	Total=500(100%)
	Males=250(50%) Females=250(50%)
No of students having signs and symptoms of TMDs	Males=35(14%) Females=60(24%)
Mean age (years)	23.21 ± 4.6
Age range (years)	18–35

TABLE 2: FREQUENCY AND PERCENTAGE DISTRIBUTION OF TMD SIGNS ACCORDING TO GENDER

TMD signs	Females (n =60)	Males n = 35	P-value*
TMJ sounds	11(18.3%)	6(17.1%)	0.053
TMJ pain	2(3.3%)	1(2.8%)	0.029
Muscle tenderness	4(6.6%)	2(5.7%)	0.033
Restricted opening	7(11.6%)	3(8.5%)	0.020
Opening deviation	6(8.3%)	3(8.5%)	0.045

*Significant level $P < 0.005$

TABLE 3: FREQUENCY AND PERCENTAGE DISTRIBUTION OF TMD SYMPTOMS ACCORDING TO GENDER

TMD signs	Females (n =60)	Males n = 35	P-value*
Headache	15(25%)	4(11.4%)	0.043
TMJ noise	7(11.6%)	2(5.7%)	0.033
Pain during chewing	10(16.6%)	2(5.7%)	0.013
Difficulty opening	4(5%)	0(0%)	0.018
Jaw locking	1(1.6%)	1(2.85%)	0.051

*Significant level $P < 0.005$

RESULTS

Out of 500 participants 50% were males and 50% were females. Only 19% students had signs and symptoms of TMDs. (Table 1). Clicking sound was the most common sign of TMD in both genders. There was no statistical difference between the two genders ($p > 0.005$). (Table 2) Headache and TMJ sound were the most common symptoms in both genders. There was also no statistical difference between the two genders of the TMD's symptoms ($p > 0.005$). (Table 3)

DISCUSSION

The aim of this study was to evaluate the prevalence of signs and symptoms of TMD in university students through clinical examination and subjective data obtained from questionnaires and compare the findings with other national and international studies.

Temporomandibular joint are not developed until late teen years, so TMDs are unlikely to be found in individual below that age.¹¹ In the present study participants having age more 18 years were included. Orthodontics treatment if not planned properly may lead to TMD. Every effort must be made during orthodontics treatment to achieve centric occlusion with 1 millimeter of centric relation so that condyle seat properly in relaxed position during functional activities.¹² Individuals with prior history of orthodontics treatment were placed in exclusion criteria.

In the current study's results showed that 19% of the population is having TMDs. These results are in agreement with similar results reported by other studies.^{6,7,13,11,14} Farsi⁶ recorded the prevalence of signs and symptoms of temporomandibular disorders (TMD) and oral parafunctions among Saudi children. A questionnaire and a clinical examination of signs and symptoms of TMD were performed on 1940 stratified randomly selected school children. The sample was divided into three groups, 505 with primary, 737 with mixed and 734 with permanent dentition. The prevalence of TMD signs was found to be 20.7% and the most common sign of TMD was joint sounds (11.8%). The second most common sign was restricted mouth opening (5.3%). Muscle and temporomandibular joint (TMJ) pain as well as deviation upon jaw opening appeared infrequently. TMJ sounds were significantly increasing with age ($P < 0.05$). The most common symptoms were headache (13.6%) and pain on chewing (11.1%). The incidence of headache was found to be significantly increasing from primary to permanent dentition ($P < 0.01$). No sex difference in the prevalence of any symptom was reported. These results are in consistence with our results (Table 2 & 3).

Thilander et al⁷ conducted a study using sample of 4724 children (2353 girls and 2371 boys) (5-17 years

old). The registrations included functional occlusion (anterior and lateral sliding, interferences), dental wear, mandibular mobility (maximal opening, deflection), and temporomandibular joint and muscular pain recorded by palpation. Headache was the only symptom of temporomandibular dysfunction (TMD) reported by the children. The results showed that one or more clinical signs were recorded in 25% of the subjects, most of them being mild in character. The prevalences increased during the developmental stages. Girls were in general more affected than boys. Significant associations were found between different signs, and TMD was associated with posterior crossbite, anterior open bite, Angle Class III malocclusion, and extreme maxillary overjet. Although the current study included students above 18 years but results are similar to Thilander's study. Malocclusion effect on temporomandibular disorders was not studied in the present because it is a population based study.

Nourallah¹³ investigated the prevalence of temporomandibular disorders (TMD) in a selected young male Saudi population using 105 dental students as a participants and having a mean age of 23 years within the range of 20-29 years. Almost two-thirds of the individuals had no signs and symptoms of TMD. Thirty per cent of the individuals reported mild dysfunction and 6% had severe symptoms 33% showed mild clinical signs of dysfunction and 3% had signs of moderate dysfunction. Only 1% exhibited severe clinical signs. High prevalence of TMD in Nourallah's study may due to small sample size and ethnic variations.

Abdel-Hakim¹⁴ conducted a study on Secondary school Saudi students participated in a questionnaire about stomatognathic dysfunction symptoms. The adolescents were interviewed about general health, peripheral joint disease, chewing function, oral parafunctions, and symptoms of dysfunction. Thirty-two per cent of participants had at least one dysfunction symptom. Pain on opening was the most common (35.7%), followed by headache (33.6%), and joint sounds (32.2%). Symptoms increased with decline in general health, particularly the health of peripheral joints. Chewing functions were not impaired. Tooth loss did not affect dysfunction symptoms in adolescents, whilst a weak relation was evident between oral parafunctions and symptoms of mandibular dysfunction. In the this study parafunctional habits a tooth loss correlation was not encountered, prevalence in the present is less than Adel-Hakim's study. Different population and sample size may play a role for variation in results.

REFERENCES

- 1 Anderson GC, Gonzalez YM, Ohrbach R, Truelove EL, Sommers E, Look JO, Schiffman EL. Research diagnostic criteria for temporomandibular disorders: Future directions. *J orofac pain* 2010; 24(1): 79-84.

- 2 Okeson JP, Leeuw T. Differential Diagnosis of Temporomandibular Disorders and Other Orofacial Pain Disorders. *Dent Clin Am* 2011; 55: 105-20.
- 3 Grushka M, Ching VW, Epstein JB, et al. Radiographic and clinical features of temporomandibular dysfunction in patients following indirect trauma: a retrospective study. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2013; 104(6): 772-80.
- 4 Gavish A, Halachmi M, Gazit E. Oral habits and their association with signs and symptoms of Temporomandibular disorders in adolescent girls. *J oral Rehabil* 2000; 27: 22-32.
- 5 Gesch D, Bernhardt O, Alte D, et al. Prevalence of signs and symptoms of temporomandibular disorders in an urban and rural German population: Results of a population-based Study of Health in Pomerania. *Quintessence Int* 2009; 35: 143-50.
- 6 Farsi NM: Symptoms and signs of temporomandibular disorders and oral parafunctions among Saudi children. *J Oral Rehabil* 2008; 30: 1200-08.
- 7 Thilander B, Rubio G, Pena L, Mayorga C. Prevalence of temporomandibular dysfunction and its association with malocclusion in children and adolescents: an epidemiologic study related to specified stages of dental development. *Angle Orthod* 2002; 72: 146-54.
- 8 Vojdani M, Bahrani F, Ghadiri P. The study of relationship between reported temporomandibular symptoms and clinical dysfunction index among university students in Shiraz. *Dent Res J* 2012; 9(2): 221-25.
- 9 Bonjardim LR, Gavião MBD, Pereira LJ. Signs and symptoms of temporomandibular disorders in adolescents. *J Braz Oral Res* 2005; 19(2): 93-98.
- 10 Nomura K, Vitti M, Oliveira AS, et al. Use of the Fonseca's questionnaire to assess the prevalence and severity of temporomandibular disorders in Brazilian dental undergraduates. *Braz Dent J* 2007; 18: 163-67.
- 11 Dibbets J. Craniofacial morphology and TMJ disfunction in children. Developmental aspects of TMJ Disorders. Edited by: Carlson DS et al. Monograph 16, Craniofacial Growth Series, Ann Arbor: University Of Michigan; 1985: 151-82.
- 12 Profit WR, Fields HW, Sarvar DM. Contemporary Orthodontics. 5th edition. Elsevier Inc; 2012; 456-57.
- 13 Nourallah H, Johansson A. Prevalence of signs and symptoms of temporomandibular disorders in a young male Saudi population. *J Oral Rehabil* 199; 22: 343-47.
- 14 Abdel-Hakim AM, Al-salam A, Khan N. Stomatognathic dysfunctional symptoms in Saudi Arabian adolescents. *J Oral Rehabil* 1996; 23: 655-61.

CONTRIBUTION BY AUTHORS

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| 1 Munir Khan: | Topic selection, paper writing. |
| 2 Awais Khan: | Data collection also helped in paper writing |
| 3 Umar Hussain: | Data analysis, also helped in topic selection. |