

FREQUENCY AND SEVERITY OF TEMPOROMANDIBULAR DISORDERS AMONGST DENTAL STUDENTS OF KHYBER COLLEGE OF DENTISTRY

¹FAHAD QIAM, ²AREEBA NIAZI, ³MUSLIM KHAN, ⁴ATTA UR REHMAN

ABSTRACT

Temporomandibular joint disorders are a diverse group of diseases that affect the TMJ joint and are equally prevalent among patients as well as the non-patient population. The objective of this study is to assess the prevalence and severity of temporomandibular disorders amongst dental undergraduate students of Khyber College of Dentistry, Peshawar. This cross sectional analytical study was carried out amongst first, second, third and final year BDS students using the Fonseca Questionnaire. Mean \pm SD was calculated for score obtained. Frequencies were calculated for categorical variables such as gender, year of study and grade of the temporomandibular disorders. Stratification of grade of temporomandibular disorders was done with regards to gender and year of study using the Pearson chi square test to check for level of significance (p -value < 0.05). A total of 300 proformas were given, out of which 201 were returned. A male to female ratio of 1:1.79 was seen. 60.7% of the sample reported no TMD's, mild TMD's were seen in 31.3% and only 2% were classified as having severe TMD's. More males presented with mild and moderate TMD's and the prevalence of TMD's increased with the advancing year of study (p -value < 0.05). It is concluded that majority of the dental students (60.7%) did not suffer from TMD's. More male students suffered from mild to moderate TMD's, whereas females suffered exclusively from severe TMD's. There was an increased prevalence of TMD's as students progressed from first to final year BDS.

Key Words: Temporomandibular disorders, Temporomandibular joint dysfunction syndrome, Dental student.

INTRODUCTION

Temporomandibular disorders (TMD's) are a group of pathologies that affect the temporomandibular joints and its associated structures which include muscles, ligaments as well as the dental occlusion.^{1,2} TMD's is an all encompassing term for a variety of diseases that include internal derangement, osteoarthritis, chronic recurrent dislocation, ankylosis, neoplasia, and infection.^{3,4} These disorders are most common among the 20-45 years age group with a proclivity towards the female gender.^{5,6} Temporomandibular disorders are very common among the population, with approximately 60-70% of all adults reporting at least one sign of TMD's throughout their life.^{7,8}

The etiology of TMD's has several components which may work alone or in tandem. These factors include genetics, stress, changes in dental occlusion, muscular dysfunction and systemic conditions which may manifest in the temporomandibular joint.^{9,10} The TMD's may present as joint sounds which may be painful, limitation and/or deviation in jaw opening, protrusion and lateral excursive moments, as well as orofacial pain.¹¹ As TMD's may present in a variety of ways, several instruments are used to quantify its severity so that appropriate therapy can be initiated. Among them, the most widely used are the Fonseca anamnestic questionnaire and the Diagnostic Criteria for Temporomandibular Disorders (DC-TMD) assessment instrument.¹² TMD's are quite common among undergraduate dental students and the key etiological factor in play is considered to be stress, both psychological and due to innate nature of dentistry.¹³ Studies conducted worldwide show that dental students exhibit a high prevalence of TMD's, although data from Pakistan is relatively scarce on this matter.^{2,10,12}

The objective of this study is to assess the prevalence and severity of temporomandibular disorders amongst dental undergraduate students of Khyber College of Dentistry, Peshawar. This first of a kind study conducted in Khyber Pakhtunkhwa will help to provide local data regarding the prevalence of temporomandibular disorders. These disorders have the potential to cause severe mental and physical handicaps to its affectee's,

¹ Dr Fahad Qiam, BDS, FCPS, Department of Oral and Maxillofacial Surgery, Khyber College of Dentistry, Peshawar University Campus Email: fahad.qiam@gmail.com Cell: 0333-9292973

Corresponding Author: House-127, Street-1, Sector D-1, Phase-1, Hayatabad, Peshawar

² Dr Areeba Niazi, 3rd Year BDS Student, Khyber College of Dentistry, Peshawar Email: areebaniazi.96@yahoo.com

³ Dr Muslim Khan BDS, FCPS, MHPE, Associate Professor Oral and Maxillofacial Surgery, Khyber College of Dentistry, Peshawar Email: muslim177@hotmail.com Cell: 0300-5846906

⁴ Dr Atta ur Rehman, BDS, FCPS, Associate Professor Oral and Maxillofacial Surgery, Khyber College of Dentistry, Peshawar Email: dratta80@yahoo.com Cell: 0345-9355309

Received for Publication: August 8, 2017
Revised: August 29, 2017
Approved: August 30, 2017

therefore their prompt diagnosis is essential in limiting long term harm and disability to its patients. Moreover, its etiology includes several elements that can be eliminated or greatly reduced, and thus if identified will contribute to decreasing the burden of this disease among the local population.

METHODOLOGY

This cross sectional analytical study was carried out following approval from the institutional ethical approval committee at Khyber College of Dentistry, Peshawar. The study sample consisted of first, second, third and final year Bachelor of Dental Surgery (BDS) students who are studying at Khyber College of Dentistry. The prevalence and severity of temporomandibular disorders was assessed using the Fonseca questionnaire.¹² The reliability of the Fonseca questionnaire to evaluate TMD's in this sample was assessed using the Cronbach's alpha test which yielded a value of 0.752, thus deeming it suitable for use in this sample. A total of 300 proformas were distributed (75 for each year). The collected data was analyzed using SPSS version 20. Mean ± SD was calculated for score obtained. Frequencies were calculated for categorical variables such as gender, year of study and grade of the temporomandibular disorders. Stratification of grade of temporomandibular disorders was done with regards to gender and year of study. The Pearson chi square test was used to assess the level of significance, if any between year of study, gender and grading of the temporomandibular disorders. (critical p-value <0.05).

RESULTS

A total of 300 proformas were distributed and 201 were returned, giving a response rate of 67%. Females comprised 64.2% of the sample and males accounted for the remaining 35.8%, thus giving a male to female ratio of 1:1.79.

According to the Fonseca Grading, out of 201 par-

ticipants, 60.7% of students reported no TMD's. Mild and moderate TMD's were seen in 31.3% and 6% of the sample respectively. Only 2% of the sample was found to have severe TMD's. After stratifying TMD's according to the year of study, it was found that the prevalence of mild and moderate TMD's increased slightly, but it was not statistically significant. However after grouping mild, moderate and severe TMD's together, it was found that the prevalence of TMD's was increasing significantly with as students progressed from 1st year to Final year BDS (p-value = 0.02), (gamma value = 0.14).

An overwhelming majority of the sample reported no difficulty in mouth opening (92%) and lateral excursive movements (94%), while 24.9% reported muscular pain during chewing and 20.4% mentioned suffering from frequent headaches occasionally. Over 70% of the sample reported no pain on nape/stiff neck, no teeth clenching and lack of proper articulation of teeth. TMJ clicking on opening or chewing was reported among 15.4% of the students. Only 4.5% of the students reported earache or pain in the craniomandibular joints and 49.2% said they occasionally considered themselves as tense. The details of the distribution are given in Table 1.

An analysis of gender cross-tabulation with the Fonseca Grading of TMD's revealed that there was no case of severe TMD's amongst males, and all cases of severe TMD's were found amongst females. Males were more likely to present with mild (34.7% versus 29.4%) and moderate TMD's (9.7% versus 3.9%) as compared to females. More males presented with TMD's (p-value = 0.02) as compared to females (p-value = 0.148). The details of the distribution are given in Table 2.

DISCUSSION

This cross sectional analytical study, carried out amongst dental students of Khyber College of Dentistry, provided a snapshot of the prevalence of TMD's in

TABLE 1: SCORING OF ITEMS OF THE FONSECA QUESTIONNAIRE BY DENTAL STUDENTS

Item	Yes		No		Sometimes	
	n	%	n	%	n	%
Hard to open mouth	6	3.0	185	92.0	10	5.0
Hard to move mandible side to side	3	1.5	189	94.0	9	4.5
Muscular pain while chewing	12	6.0	139	69.2	50	24.9
Frequent headaches	36	17.9	124	61.7	41	20.4
Pain on nape/Stiff neck	18	9.0	147	73.1	36	17.9
Earache or pain in craniomandibular joints	9	4.5	173	86.1	19	9.4
TMJ clicking while chewing or opening	31	15.4	138	68.6	32	15.9
Clenching or grinding of teeth	13	6.4	143	71.1	45	22.3
Teeth do not articulate well	21	10.4	147	73.1	33	16.4
Consider yourself a tense person	33	16.4	69	34.3	99	49.2

TABLE 2: CROSS TABULATION OF GENDER WITH GRADING OF TEMPOROMANDIBULAR DISORDERS

Gender	Grade									
	No TMD		Mild TMD's		Moderate TMD's		Severe TMD's		Total	
	n	%	n	%	n	%	n	%	n	%
Male	40	55.5	25	34.7	7	9.7	0	0	72	100
Female	82	63.5	38	29.4	5	3.9	4	3.1	129	100

Peshawar, or more specifically, in the oldest and largest public sector dental school in the entire province. This study is the first among contemporary literature to find TMD's more common amongst male students. Studies conducted by Pedroni et al¹⁴, Garcia et al¹⁵, and Otuyemi et al¹⁶ all found overwhelming female predilection. A detailed clinical examination and mental health assessment needs to be done of the males in this study sample to elicit reasons why the findings of this study are not conforming to the scientific literature worldwide.

Nomura et al¹⁰ in their study conducted on 218 Brazilian dental undergraduates found that 53.2% of their students exhibited TMD's which is higher than the findings of this study (39.3%). Their sample was female predominant (male to female ratio 1:1.27). Mild TMD was seen in 35.78% of the sample whereas 11.93% showed moderate and 5.5% exhibited severe TMD's. Similar percentages were also exhibited by the sample population of this study. Females showed a greater prevalence as compared to males (63.1% versus 40.6%). This is in contrast to the findings of this study as females showed a prevalence of 36.4%, whereas males showed a prevalence of 44.4%. What makes this finding interesting is the female predominance of the sample, which may lead one to believe that there could be under-reporting of stress or that the Fonseca Questionnaire findings need to be supplemented with a full clinical examination of oral cavity and temporomandibular joints to determine the reliability of the sample's self reported assessment.¹⁷

Kassab et al¹⁸ in their study conducted on 150 dental students in Aljouf University, Saudi Arabia found a 20.6% prevalence of TMD's. More TMD's were seen amongst 1st and 2nd year BDS students as compared to 3rd and 4th year students (61.3% versus 38.7%), which is in contrast to the findings of this study. The reason for such findings was postulated to be lack of orientation of 1st and 2nd year students with the type of courses and intensity of studies. They found myofascial pain dysfunction as the most common TMD amongst their sample, followed by internal joint derangement and arthritis. As clinical examination and assessment was not included in this study, a comparison of these findings could not be made. While Kassab utilized the items

used by the Fonseca Questionnaire, it did not utilize its grading or interpretation to quantify the severity of TMD's among its sample. An item wise comparison shows that TMJ sounds, para-functional habits, facial and jaw pain and pain in movement of the mandible were the most commonly reported signs and symptoms of TMD's. These findings are in conformity with this study.

Wahid et al¹⁹ conducted a study on 137 students enrolled in various medical and allied programs (Medicine, Dentistry, Pharmacy and Physical therapy) of University of Faisalabad. Their sample consisted exclusively of female students; therefore a gender wise comparison was not possible. Their study reported that 7.9% of students exhibited no TMD's. An equal frequency of mild and moderate TMD's was seen (44.3%). Only 3.6% showed severe TMD's. There is wide disparity between their study findings and the data accrued by this study with regards to prevalence of moderate TMD's and absence of TMD's, which can be explained by the smaller sample size, absence of males in their study, inclusion of other medical allied specialty students and under-reporting of signs & symptoms by the sample population of this study. Wahid et al¹⁹ did not note any significance between the mean scores across the four medical programs but overall, medicine students scored higher mean scores than other students with regards to severity of TMD's. A year wise comparison of the prevalence of TMD's was not done, however they did divide their sample age wise into two groups (<20 years and >20 years) and found that a significant difference in mean scores was reported for the items pertaining to lateral excursive movements of the mandible, neck pain and self reported nervousness. These age groups could not be implemented in this study as the whole sample lied in the 20-24 year age group.

Khyber College of Dentistry is the oldest and largest dental school of Khyber Pakhtunkhwa, but is by no means the only dental school of Peshawar. Sardar Begum Dental College, Peshawar Dental College and Rehman College of Dentistry are also running in the capital city, therefore the findings of this study cannot be extrapolated to the rest of the city. As every city has its own demographics, social and economic standing, cities which are home to other dental schools such as

Mardan, Kohat and Abbottabad need to conduct such studies to truly gauge the prevalence and severity of TMD's in the entire province.

CONCLUSION

From this study, it is concluded that:

Majority of the dental students (60.7%) did not suffer from TMD's.

Male students suffered more from mild to moderate TMD's, whereas females suffered exclusively from severe TMD's.

There was an increased prevalence of TMD's as students progressed from first to final year BDS.

ACKNOWLEDGMENT

The authors would like to thank all the students of 1st, 2nd, 3rd and final year BDS for their whole hearted participation in the study.

RECOMMENDATIONS

Dental students should undergo a routine dental examination with specific focus on the temporomandibular joint system to ascertain the true prevalence and severity of TMD's. A full time position of a clinical psychologist should be mandated to help dental students cope with stress.

The exposure towards clinical work should be started gradually from first year BDS to acclimatize students to help them learn and cope with clinical quotas set for the 3rd and final year of their studies.

REFERENCES

- 1 Dimitroulis G. Temporomandibular disorders: a clinical update. *British Medical Journal*. 1998; 317(7152): 190-94.
- 2 Bonjardim LR, Lopes-Filho RJ, Amado G, Albuquerque RLC, Goncalves SRJ. Association between symptoms of temporomandibular disorders and gender, morphological occlusion, and psychological factors in a group of university students. *Indian Journal of Dental Research*. 2009; 20(2): 190-94.
- 3 Sena MF, Mesquita KS, Santos FR, Silva FW, Serrano KV. Prevalence of temporomandibular dysfunction in children and adolescents *Rev Paul Pediatr* 2013; 31(4): 538-45.
- 4 Soukaina R, Zaid HB, Wala M, Amina C, Sawaira F, Samarab O, Badranb DH. Prevalence of Temporomandibular Joint Disorders among Students of the University of Jordan *J Clin Med Res* 2009; 1(3): 158-64.

- 5 Roda R, Bagán J, Fernández J, Bazán S, Soriano Y. Review of temporomandibular joint pathology. Part I: Classification, epidemiology and risk factors. *Med Oral Patol Oral Cir Bucal*. 2007; 12(4): 292-98.
- 6 Leresche L. Epidemiology of temporomandibular disorders: Implications for the investigation of etiologic factors. *Crit Rev Oral Biol Med*. 1997; 8: 291-305.
- 7 Feteih R. Signs and symptoms of temporomandibular disorders and oral parafunctions in urban Saudi Arabian adolescents: A research report. *Head Face Med*. 2006; 2: 25.
- 8 Magnusson T, Egermark-Eriksson I, Carlsson G. Four-year longitudinal study of mandibular dysfunction in children. *Community Dent Oral Epidemiol*. 1985; 13(2): 117-20.
- 9 Milam SB. Pathophysiology and epidemiology of TMJ. *J Musculoskel Neuron Interact* 2003; 3(4): 382-90.
- 10 Nomura K, Vitti M, Oliveira AS, Chaves TC, Semprini M, Siessere S, 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(2): 163-67.
- 11 Murphy MK, MacBarb RF, Wong ME, Athanasiou KA. Temporomandibular Joint Disorders: A Review of Etiology, Clinical Management, and Tissue Engineering Strategies. *The Int J Oral Maxillofac Implants*. 2013; 28(6): 393-414.
- 12 Karthik R, Hafila MIF, Saravanan C, Vivek N, Priyadarsini N, Ashwath B. Assessing Prevalence of Temporomandibular Disorders among University Students: A Questionnaire Study. *JISPCD* 2017; 7(7): 24-29.
- 13 Abu-Ghazaleh SB, Rajab LD, Sonbol HN. Psychological stress among dental students at the university of Jordan. *Int J Dental Ed*. 2011; 75(8): 1107-14.
- 14 Pedroni CR, De Oliveira AS, Guaratini MI. Prevalence study of signs and symptoms of temporomandibular disorders in university students. *J Oral Rehabil*. 2003; 30(3): 283-89.
- 15 Garcia AR, Lacerda Jr N, Pereira SLS. Grau de disfunção da ATM e dos movimentos mandibulares em adultos jovens. *Rev Assoc Paul Cir Dent* 1997; 51(1): 46-51.
- 16 Otuyemi OD, Owotade FJ, Ugboko VI, Ndukwe KC, Olusile OA. Prevalence of signs and symptoms of temporomandibular disorders in young Nigerian adults. *J Orthod*. 2000; 27(1): 61-65.
- 17 Bevilaqua-Grossi D, Chaves TC, de Oliveira AS, Monteiro-Pedro V. Anamnestic index severity and signs and symptoms of TMD. *Cranio* 2006; 24(2): 112-18.
- 18 Kassab M, Bakry A, Salim WS. The Incidence of Temporomandibular Joint Disorders Among Dental Students In Aljouf University, KSA. *IJMMMS* 2015; 2(1): 5-11.
- 19 Wahid A, Imran F, Razzaq A, Bokhari SAH, Kaukab T, Iftikhar A, et al. Prevalence and Severity of Temporomandibular Disorders (TMD) in Undergraduate Medical Students using Fonseca's Questionnaire. *PODJ* 2014; 34(1): 38-41.

CONTRIBUTIONS BY AUTHORS

- 1 **Fahad Qiam:** Principal author, generated and executed the idea of the study.
- 2 **Areeba Niazi:** Helped in data collection.
- 3 **Muslim Khan:** Helped in study design.
- 3 **Atta ur Rehman:** Helped in discussion writing and proof reading.