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Assessment of Incidence of TMJ Disorders in Dental Graduates Competing for Post Graduation Exam: Original Research

Dr.BalaYaduVamsi Sankuratri[1], Dr.Rajnish Kumar Verma[2],Dr.Asif Iqbal[3],Dr. Siva Kumar Pendyala[4],Dr Abin Ann Abraham[5], Dr.PuneetaVohra[6], Dr.Hemanadh Kolli[7]

[1]BDS, MPH, University of Texas at Arlington, Texas.byv.sankuratri@gmail.com
[2]MDS, Senior Lecturer, Department of Pediatric& Preventive Dentistry,Kalinga Institute Of Dental Sciences, Campus 5, KIIT University ,Patia,Bhubaneswar, Odisha,India. rajnishkverma@gmail.com
[3]MDS STUDENT, DEPARTMENT OF ORAL MEDICINE AND RADIOLOGY, DARSHAN DENTAL COLLEGE UDAIPUR, RAJASTHAN.aschdry@gmail.com
[4]Associate Professor, Department of Oral & Maxillofacial Surgery, Faculty of Dentistry, AIMST UNIVERSITY, Semeling, Bedong, Kedah-08100, Malaysia.drsiva77@gmail.com
[5]Senior Lecturer, Dept of Oral and Maxillofacial surgery, Al Azhar Dental college, Thodupuzha, Kerala. abinsabu.as@gmail.com
[6]Professor ,Dept Of Oral Medicine And Radiology, Faculty Of Dental Sciences , SGT University, Gurgaon, Haryana, India.mithi7k@gmail.com
[7]BDS, MPH, Northern Illinois University, DeKalb, Illinois, USA.

Corresponding Author: Dr.BalaYaduVamsiSankuratri, BDS, MPH, University of Texas at Arlington, Texas. byv.sankuratri@gmail.com

ABSTRACT

Aim: The purpose of the research was to evaluate the incidence of TMJ disorders (TMD) in dental graduates who are in process of competing in post graduate entrance exams.

Methodology: A sample of 100 dental graduates (BDS professionals) were selected for this survey study. Their age ranged from 23 to 30 years. Study includes clinical evaluation of TMJ system and questionnaire. The stress level in respondents was then categorized with the help of Likert's scale.

Results: Headache was found to be the most prevalent TMD symptom (26.2%) followed by clicking (24.9%), pain on clicking (5.5%), jaw lock (3.4), and difficulty in mouth opening (0.9%). Clicking was found to be the most prevalent TMD sign (24.9%) among dental students followed by deviation (16.3%), muscle tenderness (14.3%), and TMJ pain (5.7%). The most prevalent TMD was disc displacement 22.6% followed by myofascial pain dysfunction syndrome (MPDS) with disc displacement (13.5%) and MPDS (3.8%).

Conclusion: Stress is a significant etiologic factor involved in initiation and maintenance of TMDs in Dental graduates.

Keywords Dental Students, Incidence, Pain, Temporomandibular Joint Disorders

INTRODUCTION

The temporomandibular joint (TMJ) is synovial compound joint of an ellipsoid variety consisting of the bilateral articulation with condyles of the mandible with the glenoid fossa of the inferior border of the temporal bone, separated by the meniscus or interarticular disc.[1] Thus the TMJ is anatomically made up of two bones but functionally, the articular disc serves as third non-ossified component that regulates the complex movements of the joint. Temporomandibular system mainly comprise of two components, the TMJ and the associated neuromuscular system. Any condition that prevents this complex system of muscles, bones andjoints from synchronous/harmony working may progress to temporomandibular disorder (TMD).Temporomandibular disorder (TMD) is a group of conditions producing abnormal,

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incomplete, or impaired function of the temporomandibular joint. Temporomandibular disorder (TMD) is a wide-ranging term used to describe a number of related disorders, involving the temporomandibular joint (TMJ), masticatory muscles, and occlusion, with common symptoms such as pain, restricted movement, muscle tenderness, and intermittent joint sounds.[1] TMD consist of clinical signs and symptoms that involve imbalance between structures of the stomatoganthic system involving masticatory muscles, TMJ and associated structures.[2]The most frequent sign of TMD is sound in TMJ region [3] and the most frequent symptoms of TMD include restricted and painful mandibular movement, and pain in TMJ.[4,5] The exact cause of TMDs is not known but is thought to be multifactorial.[6] Different etiological factors of TMD documented in medical literature are Psychological factors such as personality and behavior, occlusal discrepancies, improper dental treatment, joint laxity, continuous micro trauma to joint, overloading/overusing joint structures, and parafunctional habits. Stress, behavioral, social, and emotional conditions are also considered. Among different etiological factors of TMD, psychosocial factors are most commonly related to TMD patients.Prevalence of TMD differs in different populations according to their ethnicity, culture and socioeconomic features.[7]Indices play an essential role for prevalence determination of a specified population as there is no numeric criteria to check the severity of TMD. Moreover, Helkimo's index is the pioneer for the measurement of pain and severity in TMD patients. This index is further broken down in to clinical, anamnesis and occlusal dysfunction.[8]In general population, TMD affects adults more frequently around 30-70%, and to a lesser extent 16 to 68% of children are affected.[9]TMD is seen most commonly between 20 to 40 years of age and accounts to be more frequent in women than in men.[10]For the assessment of TMD according to the applicability and researcher or clinician purposes, questionnaires, imaging tests such as x-rays, computed tomography, magnetic resonance imaging and clinical assessment has been used.[11]The research diagnostic criteria for TMD standardize the diagnosis and classification of clinical forms of TMD.[12]As late diagnosis can result in destructive and irreversible effects on TMJ and therefore, early evaluation is necessary for its treatment.[13]Epidemiological information related to distribution, incidence, and determinants and etiology of TMD is valuable in human population.[14]Dental school is a highly pressurized, difficult environment for students and has been widely acknowledged as being associated with high levels of stress. Dentistry has grown into a highly demanding and competitive profession. Dental students have to take thorough theoretical knowledge, tough clinical work, and interpersonal skills. 50%–75% of TMJ patients undergone stressful life conditions before the development of TMD symptoms.[15,16]Hence a survey was planned to determine the prevalence of Temporomandibular Disorder in dental students.

AIM OF THE STUDY

The purpose of the research was to evaluate the incidence of TMJ disorders (TMD) in dental graduates who are in process of competing in post graduate entrance exams, which will also help to analyse the stress level in the participants.

METHODOLOGY

A sample of 100 dental graduates (BDS professionals) were selected for the study. Their age ranged from 23 to 30 years. Patients with craniofacial anomalies, history of orthodontic treatment, trauma, and surgery of TMJ were excluded from study.Study includes clinical evaluation of TMJ system and questionnaire. TMJ evaluation includesthe examination of TMJ sounds, Muscles of mastication, mouth opening, and range of mandibular motion. The pretested questionnaire comprised two sections, first part covered the demographic data (i.e., age, sex, and academic year), TMD symptoms, and TMD signs whereas the second part included the standardized scales related to stress dental environmental stress scale (DESS)

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and perceived stress scale (PSS). The presence of signs and symptoms of TMD was determined using a self-administered modified questionnaire composed of 5 questions regarding commonTMD symptoms and 5 questions regarding TMD signs. The PSS comprises of 10 questions. Questions are designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. The questions in the PSS ask about feelings and thoughts during the last month in relation to preparation for the post graduate entrance exams and the stress they are encountering. In each case, respondents are asked how often they felt a certain way. PSS scores are obtained using Likert scale. The responses to the questionnaire were based on a four-point Likert scale with response options of 1 = not stressful, 2 = slightly stressful, 3 = moderately stressful, and 4 = severely stressful, as well as a fifth possible response of not applicable (0 = not applicable). Descriptive statistical measures like - Percentage analysis, standard deviation, mean of the sample were under consideration. Chi square test was used to analyse the propensity of the stress level.

RESULTS

The present study evaluates the relationship between various stressful life events and temporomandibular joint disorder (TMD) among dental graduates. Among respondents, headache was found to be the most prevalent TMD symptom (26.2%) followed by clicking (24.9%), pain on clicking (5.5%), jaw lock (3.4), and difficulty in mouth opening (0.9%), The frequency distribution of TMD signs among BDS professionals, showed that clicking was found to be the most prevalent TMD sign (24.9%) amongst them followed by deviation (16.3%), muscle tenderness (14.3%), and TMJ pain (5.7%).The TMD prevalent in MDS aspirants, showed that the most prevalent TMD was disc displacement 22.6% followed by myofascial pain dysfunction syndrome (MPDS) with disc displacement (13.5%) and MPDS (3.8%) in dental graduates. Amongst them, the prevalence of TMDs was found to be higher in females than males with highest frequency of disc displacement in females (66.0%). However, the TMDs did not differed ($P > 0.05$) between the two genders ($\chi 2 = 0.61$, $P = 0.736$) i.e., found to be statistically the same

DISCUSSION

Temporomandibular disorders (TMJ disorders), TMJ dysfunction, and TMJ syndrome are the common synonyms associated with problems of the jaw, TMJ itself, and surrounding facial muscles. It is commonly occurs in 2nd to 4th decade with female predominance. Clinical features of TMJ disorders are clicking, poping, or grating sounds, tenderness of TM joint, reduced mouth opening, stiff or tender neck and shoulders region, pain in ears and preauricular region while opening/closing jaw or chewing. Other symptoms include tired face, difficulty in chewing, swelling on the side of the face, toothache, headache, dizziness, hearing problems, and ringing in the ears (tinnitus).In the present study, TMJ pain the most prevalent TMD symptom (26.2%) followed by headache (25.7%) pain on chewing (23.2%), lock jaw (3.4%), and difficulty in opening (6.2%) and clicking was also the most prevalent TMD sign (31.2%) noted in our sample followed bydeviation (16.3%), muscle tenderness (14.3%), between TMJ pain (5.7%) and limitation (6.2%) which is in accordance to the study by Feteih[17] wherein the prevalence of Joint sounds were the most prevalent sign (13.5%) followed by restricted opening (6.2%) and opening deviation (16.9%). Basafa and Shahabee[18] and Miyake *et al.* in their study have shown that joint noises were the predominant sign and symptom.[19]The prevalence of TMDs was found to be higher among females than males with highest frequency of Disc displacement in Females (66.0%) in dental students. This observation is in line with the study done by Basafa and Shahabee wherein women were found to be more prone to TMDs than men (1.6:1).[17] A strong female preponderance (9:1) observed by Milam and by Manfredini*et al.*[20] where in the reported females:males ratio is

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about 3–4:1 and by Bonjardim*et al.* which showed that the percentage of women (57.43%) with TMD is higher than that of men (42.11%).[21] However, these are in contrast to the findings reported by Acharya wherein overall, males perceived more stress than female students.[22]Lack of time for relaxation, uncertainty about dental career, difficulty of covering through revisions, expectation of family members as well as peer pressure, financial responsibilities etc., are source of stress all through the tenure of preparation for various entrance exams for getting enrolled for postgraduate courses in various colleges where cut off percentage is high and seats are less. It has taken a toll on the dental graduate students and the stress leading to TMJ symptoms in these individuals as evident in this study.As the study loads increase and postural irregularities on respondents may induce the temporomandibular disorder in MDS aspirants. The results of the present study were in accordance with several previous studies done. Increased stress levels are believed to result in poor habits including bruxism, clenching, and even excessive gum chewing. These lead to muscular overuse, fatigue and spasm and subsequent pain in the survey participants.

CONCLUSION

The conclusion drawn from the findings of this study clearly indicates stress to be significantly involved in initiation and maintenance of TMDs and in dental students there are some factors predominantly leading to stressful situations exposing them to TMDs. These derivations will be of great help in diagnosing this complicated group of diseases (TMDs).

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TABLES

Table 1- Age-wise distribution of temporomandibular disorders among dental graduates

Age (years)	**MPDS *n*(%)**	**Disc displacement *n*(%)**	**MPDS with disc displacement *n*(%)**	***χ*2**	***P***
23-25 years	2 (11.1)	43 (40.6)	14 (22.2)	11.00	0.027
25-27 years	15 (83.3)	54 (50.9)	42 (66.7)		
27-30 years	1 (5.6)	9 (8.5)	7 (11.1)		

***** MPDS: Myofascial pain dysfunction syndrome

Table 2-Perceived stress score according to temporomandibular disorders symptoms

Variables	**Perceived stress scale**	**P**
Gender		0.879

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Male Female	1.62±0.46 1.64±0.41	
TMD pain Yes No	 1.63±0.47 1.63±0.43	0.987
Headache Yes No	 1.64±0.48 1.63±0.42	0.876
Clicking Yes No	 1.64±0.48 1.63±0.42	0.984
Pain during *Chewing* Yes No	 1.63±0.47 1.61±0.43	0.657
Difficulty in *mouth opening* Yes No	 1.65±0.49 1.53±0.42	0.045
TMJ sounds Yes No	 1.64±0.47 1.63±0.43	0.953
TMJ pain Yes No	 1.63±0.44 1.63±0.41	0.979
Muscle *Tenderness* Yes No	 1.63±0.47 1.63±0.43	0.992

***P<0.05=significant, TMD: Temporomandibular disorders, TMJ: Temporomandibular joint**