

Incidence of Temporomandibular Disorders Among Dental Students

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ABSTRACT

Introduction: Temporomandibular Disorder (TMDs) are the most common condition affecting the Temporomandibular Joint and associated structures with limitation of masticatory function with complex interaction of factors. The aim of this study was to evaluate the prevalence of TMDs by the use of questionnaire in non-patient population i.e dental students of Pakistan.

Material and methods: Descriptive questionnaire based survey was conducted on 100 undergraduate dental students from 1st, 2nd, 3rd and 4th year BDS for sign and symptoms of TMD along with their clinical examination. The results were scored and assessed in the specified population. Among them there were 27 students from age group 15-25, and 74 were in age group of 25-35 years. Regarding sex of dental students, 26 were males and 74 were females. Questionnaires were hand delivered and clinical examination was done on appointment dates decided by the clinician. All the forms were duly filled and returned. Data analysis was done using SPSS software.

Results: Among the study group 17% of students were found to have TMD sign and symptoms while 83% showed minimum rare infrequent symptoms. Out of the sign and symptoms, stress induced TMD was seen in 34.7% of students while 19.8% students had clicking sound. On clinical examination, 60% of students had edge to edge bite and 9% had limited mouth opening followed by 28% of deviation in jaws. 13% of students had tenderness in their muscles on examination, TMJ sounds were observed in 26% on rotation and around 80% on translation.

Conclusions: To summarise, sign and symptoms of TMD were present among dental students although with low prevalence but it has to be investigated thoroughly to get the proper treatment. Early diagnosis and prevention of future complications related to TMDs are the key factors for successful TMD treatment.

Keywords: Dental Students, Incidence, Pain, Temporomandibular Joint Disorders

INTRODUCTION

Temporomandibular disorder (TMD), a collective term, depicts variety of related disorders which involves temporomandibular joint (TMJ), occlusion, masticatory muscles with symptoms including pain, muscle tenderness, restricted and incoordinated movement of jaw, and irregular joint sounds.¹ Clicking sounds are due to disc displacement with reduction or because of hypermobility or remodelling of jaw.² Absence of clicking sounds doesn't imply the healthy TMJ. The causes behind these disorders are multifactorial associated with stress, gender, age, personality, occlusal interferences, postural changes, mispositioning or loss

of teeth, extrinsic or intrinsic changes in TMJ systemic problems like ankylosing spondylitis, rheumatoid arthritis and lupus. Furthermore, psychosocial, psychological and physical factors are also involved³ physical examination for TMD includes recording and measurement quality and symmetry of jaw and mandibular movements while opening mouth, lateral protrusive movements of jaw. In addition to it, regardless of the age, gender, range of sign and symptoms diagnosis of TMD is difficult.⁴

Prevalence of TMD differs in different populations according to their ethnicity, culture and socioeconomic features.⁵ 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 into clinical, anamnesis and occlusal dysfunction.³ In general population, TMD affects adults more frequently around 30-70%, and to a lesser extent 16 to 68% of children are affected.⁶ TMD is seen most commonly between 20 to 40 years of age and accounts to be more frequent in women than in men.⁷

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.⁸ The research diagnostic criteria for TMD standardize the diagnosis and classification of clinical forms of TMD.⁹ As late diagnosis can result in destructive and irreversible effects on TMJ and therefore, early evaluation is necessary

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for its treatment.¹⁰ Epidemiological information related to distribution, incidence, and determinants and etiology of TMD is valuable in human population.¹¹

To our knowledge no such study has been conducted among Pakistani population. So, the aim of this present study is to examine the prevalence of TMD in healthy university students who have not received or on in any active orthodontic treatment. It will help in the development of Pakistani reference comparison material. Furthermore, the rationale was to investigate the association between TMD and other contributing factors.

MATERIAL AND METHODS

This cross sectional study was conducted in Baqai Dental College, Karachi, Pakistan. Ethical approval for all the stages was being granted by the research ethical committee. All the volunteers signed the consent forms.

Subjects

The subjects comprised of 100 students 74 of them were females and 26 were males living in suburb of Karachi, Pakistan. The subjects were placed into 4 groups: Group 1 was composed of 25 1st year BDS students of Baqai Dental College Karachi, Pakistan, Group 2 consisted of 25 students of 2nd year BDS professionals, Group 3 included 25 students of 3rd year BDS, while Group 4 had 25 students of 4th year BDS graduates with the age ranging from 15 years to 35 years of dental undergraduates. For all the 4 groups, students were randomly selected and were informed of the research goals before the data collection. Subjects who were on analgesics or on any other medications related to the head and neck pain or disorder were excluded from the study.

	Males	Females	Age Group A (15-25)	Age Group B (25-35)	Education 1 st year BDS	2 nd year BDS	3 rd year BDS	4 th year BDS
Frequency	74	26	27	74	25	25	25	25

Table-1: Distribution of dental students according to TMD in relation to gender, age and education level

Clinical Examination	Components	Number of Students/ Frequency (%)
Signs of occlusal instability	Open bite	8
	Edge to edge	60
	Cross bite	6
	Deep bite	20
	Orthodontic treatment	7
Mandibular opening	>40 mm	54
	30-39 mm	37
	<30 mm	9
Jaw Opening	Upon full opening, does the patient's jaw deviate either right or left?	28
	Does the jaw deviate in protrusion?	73
Masticatory Muscle Palpation	Are any of the following muscles Masseter, Temporalis tender when palpated?	13
Evaluating TMJ Sounds	Right JointIs there any clicking sound on rotation?	26
	Is there any clicking sound (translation)?	75
	Left JointIs there any clicking sound on rotation?	21
	Is there any clicking sound (translation)?	80

Table-2: Distribution of factors associated with TMD symptom among the students.

Questionnaire

Data collection started from January to February of 2018, by the distribution of questionnaire. It followed the characteristics of multidimensional evaluation. There were two parts of the questionnaire. 1st part consisted of 10 questions with the answers given by students in 'Yes', 'No'; and 'Sometimes', While, the second part had 5 aspects of clinical examination which were evaluated by one expert investigator to minimise any error. Dental students with all permanent dentition and no history of orthodontic treatment were included in the study.

STATISTICAL ANALYSIS

Data was obtained and analysed using SPSS software version 20. The frequency and forms of appearances of TMD sign and symptoms were analysed among total number of subjects for both males and females separately.

RESULTS

Hundred dental students were evaluated from a dental school with age ranging from 15-25 years (27%), and 25-35 years (74%). There were equal range of students from each class of BDS from 1st, 2nd, 3rd and 4th year. Though there were majority of female students 74% than male students 26%. Table 1.

Among the study group 75.2% did not have difficulty in mouth opening, while 9.9% used to have difficulty and 14.9% experienced it sometimes. Clicking sound was found among 19.8% of students, 62.4% had no clicking sound in their jaws and 17.8% of students only sometimes observed it. 9.9% of students had difficulty in jaw movements, while

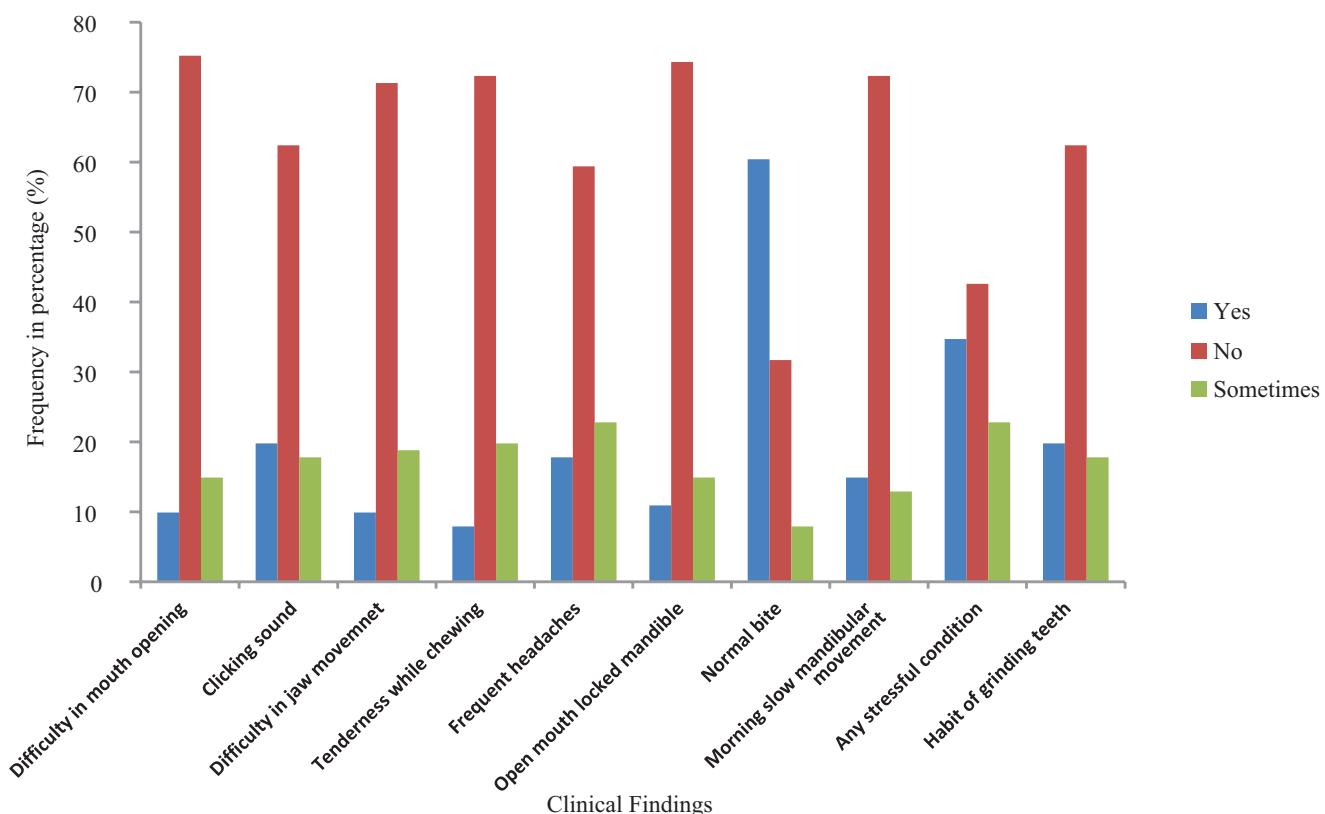


Figure-1: Incidence of TMJ pain among the students

18.8% felt the difficulty sometimes, and 71.3% never experienced any difficulty in sideways, forward, reverse or during up and down movement of jaws. 7.9% of students had tenderness or muscular pain while chewing food, 19.8% had pain sometimes and 72.3% never had any tenderness or muscular pain while chewing or biting food.

Amongst other symptoms 17.8% had history of frequent headaches, 22.8% had headaches on and off, and 59.4% did not experience any headaches. 10.9% of students felt locked mandible while opening their mouths, 14.9% had it sometimes, and 74.3% had no locked mandible. According to students 60.4% thought they had normal bite, while, 31.7% did not think they have the normal bite, and 7.9% were confused about their bite. 14.9% felt rigidity and slow movement of mandible and facial pain in morning, 12.9% felt it sometimes, 72.3% felt no pain in mornings and no rigidity. 34.7% of students amongst all felt pain under any stressful conditions, 22.8% felt it sometimes, 42.6% felt no pain during stress. Habit of grinding teeth was recorded by 19.8%, 17.8% had this habit but periodically, while 62.4% of students did not grinded or clenched their teeth under any condition.

The findings of clinical examinations revealed signs of occlusal instability Table 2, most commonly 60% of students had edge to edge bite, 20% of students had deep bite, 8% had open bite and 7% of students had orthodontic treatments in their life before this study. Mouth opening was seen to be adequate among students i.e. 54% of students had more than 40mm of mouth opening. 37% of students had less than 40mm of opening and only 9% of students had limited mouth opening which was less than 30mm. Upon full opening, 28%

of patient's jaw deviated either right or left side and 72% of students did not have any deviation in their jaws. 73% of students jaw deviated while protrusion.

Moreover, when masticatory palpation was done on students, 13% of students felt tenderness on palpating the muscles masseter and temporalis whereas, 88% of students felt no tenderness. On evaluation of TMJ sounds of right TMJ of students, 26% of students had clicking sound on rotation, and 75% on translation. Furthermore, left TMJ 21% of students had signs of clicking sound on rotation however 80% had clicking sound on translation.

DISCUSSION

This present study was conducted to assess the prevalence of TMD in dental students of Karachi, Pakistan by the use of self-reported questionnaire based survey. The questionnaire allowed collection of a well quantity of information in a relatively short period of time with less cost and with better understanding. The ultimate goal was hence to evaluate the prevalence and myofacial pain and their association between dental students. The response rate of the questionnaire was 100% which was satisfactory as compare to other studies.

Among the study group sign and symptoms of TMD were asked from students through questionnaire to analyse the overall prevalence among students. Where 9.9% of students had difficulty in mouth opening, clicking sound was observed 19.8% of students, 9.9% of students had difficulty in jaw movements, in sideways, forward, reverse or during up and down movement. 7.9% of students had tenderness or muscular pain while chewing food or biting food. 17.8% had history of frequent headaches, 10.9% of students felt

locked mandible while opening up their mouths widely. Furthermore, 7% did not think they have the normal bite, 14.9% felt rigidity and slow movement of mandible and facial pain in morning, and 34.7% of students felt pain under any stressful conditions. Additionally, by 19.8% had the history of grinding their teeth. Therefore, the whole study group result depicts that 17% of students were found to have sign and symptoms of TMD, whereas 83% of students were without or experienced the sign and symptoms very rarely. Mutlu et al study was in accordance to our findings¹², although the prevalence rate found by Modi et al was 68.6% which was less than our study.¹³

This adds evidence to the importance of the clinical examination of TMJ among students. Clinical examination reveals dental occlusion i.e edge to edge bite in 60% of students, followed by 20% of deep bite, 8% of open bite and 7% of students with orthodontic treatments. Limited mouth opening was seen in 9% and 54% of students were completely fine mouth opening i.e more than 40mm. Upon full opening of mouth, 28% of patient's jaw deviated either right or left side and 73% of student's jaw deviated while protruding their jaws. In addition to it, masticatory palpation, 13% of students felt tenderness on the muscles of masseter and temporalis. While evaluating TMJ sounds of students, 26% of students had clicking sound on rotation on right side and 21% on left side, translation was observed in 75% of students on right side and 80% on left side of jaws of students.

In the present study, prevalence of TMDs in students was found to be low as compared to other studies. It is believed that increased stress resulted in TMDs and poor habits of grinding and clenching teeth. These lead to muscular fatigue, overuse and excessive load on muscles. Many symptoms may not have manifestations related to TNJ itself, i.e. headaches. More studies, and comparisons are necessary for the understanding of pathological aspects to address the effective therapeutic measure.

CONCLUSION

Results from the aforementioned study analysed that clinical sign and symptoms were present in dental students but at a low level. Most of the cardinal signs were in varying extent in the study groups out of which edge to edge bite was most commonly seen and pain during stressful condition was ranked higher followed by clicking sounds. Further studies are required at community level for the comparison of TMD with different age groups and different population.

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