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Research Article
Disorders

Prevalence of temporomandibular disorders in MBBS students – A study from north India

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Introduction: The Fonseca questionnaire is a self-administered questionnaire that has been proposed as a low-cost, easily applied alternative TMD assessment tool for the non-patient population. It serves as a preliminary screening tool for TMD. **Material and methods:** It was a cross-sectional descriptive study conducted by the general surgery department ofHind Institute of Medical Science, Safedabad, Barabanki, Uttar Pradesh from March 2018 to May 2018. The minimum sample size required for the study was found to be 360 to obtain CI level of 0.95, at least 80% power for analysis and minimal error. The sample size was kept to be 450 as the students volunteered for the research. **Results:** The most common symptom was pain on neck or neck stiffness seen in 30% of the males and 47 % females, second most common symptom found was the habit of clenching or grinding the teeth seen in 26% of the males and 33% of the females. Regarding the presence of TMDs, 60% of the participants were scored to have mild TMD, 4.7% were scored to have moderate TMD sand only 1.5 % were scored to have severe temporomandibular disorders. **Conclusion:** A simple Anamnestic index is of use in identifying and classifying TMJ and TMD symptoms in patients according to the severity of the disorder. Identification and follow-up of the prevalence and health-care needs of patients with TMDs are recommended with longitudinal studies.

Keywords: Anamnestic index, Fonseca questionnaire, Temporomandibular joint disorders

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Introduction

Temporomandibular disorders (TMDs) represent a generic designation for a subgroup of orofacial pain disorders. This group comprises issues in the temporomandibular joint (TMJ) region, muscle fatigue, especially of the masticatory muscles, impaired jaw movement, and articular sounds [1].

It is evident from the numerous epidemiologic studies on the occurrence of temporomandibular disorders in the general population that there are a number of consistent findings. Firstly, signs of temporomandibular disorders appear in about 60–70% of the general population, and yet only about one in four people with signs are actually aware of or report any symptoms [2].

Studies have revealed that around 60%-75% of the subjects will manifest one TMD sign and 35% TMD symptom, and TMD signs are present in 50%-75% of the population at some moment in life, whereas an estimated 35% exhibit mild symptoms [3-5].

The etiology of temporomandibular disorders is multifactorial. The most commonly cited factors are emotional tension, occlusal interferences, teeth loss, postural deviation, masticatory muscular dysfunction, internal and external changes in TMJ structure, either alone or in combination [6].

The anamnestic and clinical indexes proposed by Helkimo [7] in 1974 which were obtained from clinical observations were widely used. Fonseca [8] in 1992 modified Helkimo's indices and developed his anamnestic questionnaire, classifying TMD as light, moderate, severe, non-TMD. The advantage of Fonseca's questionnaire includes self-administration, short time of application, low cost, and less influence from the examiner and less variability in the measures [9].

The Fonseca questionnaire is a self-administered questionnaire that has been proposed as a low-cost, easily applied alternative TMD assessment tool for the non-patient population. It serves as a preliminary screening tool for TMD. Fonseca's questionnaire follows the characteristics of a multidimensional evaluation.

It is composed of 10 questions that screen for the presence of pain in the TMJ, head, and back; pain while chewing, parafunctional habits, movement limitations, joint clicking, perception of malocclusion, and sensation of emotional stress [10].

Fonseca's anamnestic index (FAI) was used to classify TMD severity as 'no dysfunction,' 'light dysfunction,' 'moderate dysfunction,' or 'severe dysfunction.'

This study evaluated the prevalence of TMDs in MBBS students with the help of Fonseca's questionnaire.

Material and Methods

Study design: It was a cross-sectional descriptive study.

Study place and population: The study was conducted by the general surgery department ofHind Institute of Medical Science, Safedabad, Barabanki, U.P. It is a tertiary referral center with a bed strength of 800, MBBS students of all the batches were included in the study.

Study period: Data was collected over a period of 3 months from March 2018 to May 2018

Sample size: The sample size was decided on the basis of the results of the other previous studies in which the prevalence was found to be around 40%.

Sample size = $(Z2\times [p] \times [1 - p])/C2$.

Where $Z=Z$ value for the confidence level chosen (e.g., 1.96 for 95% confidence level).

p= Percentage having a particular disease/problem etc., and it is expressed as a percentage (generally it is taken as 0.5).

C = Confidence interval (CI) expressed, expressed as a decimal (generally 0.05).

The minimum sample size required for the study was found to be 360 to obtain CI level of 0.95, at least 80% power for analysis and minimal error. The sample size was kept to be 450 as the students volunteered for the research.

Procedure: All selected subjects who met the criteria were informed on the details of the study and requested to sign an informed consent prior to the study.

The inclusion criteria of the study were not receiving orthodontic treatment or treatment for TMD, no developmental anomalies of the face, and/or not having any severe or immune disorder.

The subjects were asked to complete a self-assessed questionnaire. It contained questions on demographic information and past medical, dental,

And TMJ history. Then, after obtaining consent, the subjects were asked Fonseca's 10 questions where they were asked to select one answer from 'yes,' 'no,' or 'sometimes' [10].

Each 'yes' answer was assigned a value of 10, each 'sometimes' answers value of 5 and each 'no' answers value of 0. The values of the 10 answers were added for each participant. Then, according to Fonseca's Anamnestic Index (FAI), TMD severity was classified as without dysfunction (score between 0–15), mild dysfunction (score 20–40), moderate dysfunction (score 45–65), and severe dysfunction (score 70–100).

Statistical analysis: Data was entered into Microsoft office-excel 2007 and statistical analysis was done using the same.

Results

Out of 450 questionnaires distributed, 380 students responded to the questionnaire. Among 380 students, 208 (54.7%) were males and 172 (45.3%) were females. The mean age of subjects was 20.5 ± 1.8 years. The range was 17-26 years. Seventy-eight percent of the total study population out of which 40.6% of male participants (154) and 37.4% of female participants (142)) did not have any TMJ symptoms.

Table-1: Results of Fonseca questions.

Fonseca Questions	Male(n=54)		Female (n=30)	
	Yes N (%)	No N (%)	Yes N (%)	No N (%)
Is it hard for you to open your mouth?	2 (3.7)	52	1	29
Is it hard for you to move your mandible side to side?	4 (7.4)	48	2	28
Do you get tired/ muscular pain while chewing?	7 (12.9)	45	5	25
Do you have frequent headaches?	11 (20.3)	41	9	21
Do you have pain on the neck or neck stiffness?	16 (29.6)	36	14	16
Do you have earaches or pain in cranio-mandibular joints?	12 (22.2)	40	8	22
Have you noticed any TMJ clicking while chewing or when you open your mouth?	10 (18.5)	42	6	24
Do you clench or grind your teeth?	14 (25.9)	40	10	20
Do you feel your teeth do not articulate well?	7 (12.9)	47	5	25
Do you consider yourself a tense (nervous) person?	2 (3.7)	52	2	28

* Multiple responses were recorded, TMJ-Temporomandibular joint

Table no.1 shows the results of the Fonseca's questionnaire, the least common symptom presented in the study population was difficulty in opening mouth and considering themselves a nervous personality, and the most common symptom was pain on neck or neck stiffness seen in 30% of the males and 47 % females, second most common symptom found was the habit of clenching or grinding the teeth seen in 26% of the males and 33% of the females.

Table-2: Temporomandibular disorder according to Fonseca's Anamnestic Index.

TMJ dysfunction	Male n(%)	Female n (%)	Total
Without dysfunction	154(40.6)	142(37.4)	296(78)
Mild dysfunction	40(10.5)	20(5.3)	60(15.7)
Moderate dysfunction	10(2.6)	08(2.1)	18(4.7)
Severe dysfunction	04(01)	02(0.05)	06(1.5)
Total	208(54.7)	172(45.3)	380(100)

Table no.2 shows the severity of TMJ disorders in the study population. Seventy-eight percent of the study population (37.4% of female participants (142) and 40.6% of male participants (154)) did not have any TMJ symptoms.

Regarding the presence of TMDs, 15.7% of the participants were scored to have mild TMD, 4.7% were scored to have moderate TMD and only 1.5 % were scored to have severe temporomandibular disorders.

Discussion

The main aim of this study was to evaluate the prevalence of signs and symptoms of TMD in MBBS students through the frequency distribution of data obtained using a questionnaire.

Fonseca's questionnaire was utilized in this study because it ensures the collection of a large quantity of information in a relatively short period. It is also easy to understand and has almost no influence on the investigator's data analyzer.

In the present study, the prevalence of TMD in females was (7.45%) almost half as that of males (14.1%).

This is opposite to the results done in the previous studies by Solberg et al., Klineberg et al., Shiau, and Chang [11-13]. In the present study, the least

Common symptom presented in the study population was difficulty in opening mouth and considering themselves a nervous personality found 2% in both males and females, and the most common symptom was pain on neck or neck stiffness seen in 30% of the males and 47 % females, this may be due to the fact that students spend too much time in attending the lectures and not maintaining proper posture during sitting and other activities and overuse of mobile phones.

The second most common symptom found was the habit of clenching or grinding the teeth seen in 26% of the males and 33% of the females.

In another study conducted by R Karthik and Fathimahalifa et al in 2017 in Tamil Nadu, they found the most common symptoms elicited by the participants in their study included difficulty in mouth opening, masticatory pain, pain in the auricular region, clicking in the TMJ during chewing, or mouth opening [14].

In the current study, seventy-eight percent of the study population (37.4% of female participants (142) and 40.6% of male participants (154) did not have any TMJ symptoms. Regarding the presence of TMDs, 15.7% of the participants were scored to have mild TMD, 4.7% were scored to have moderate TMD and only 1.5 % were scored to have severe temporomandibular disorders.

In another study conducted by Dinesh Rokaya and KanokwanSuttagul in Nepal in 2018, it was found that more than half of the subjects (69.4%) had no dysfunction, whereas, 26.6% had mild dysfunction, 3.4% had moderate dysfunction, and 0.6% had severe dysfunction [15].

The limitations of this study are that a brief questionnaire was used and that the sample population comprised of only medical students from one region. In addition, in this descriptive study, the association of each medical and dental history and related problems with TMD is not considered. This study only provides information regarding the prevalence and severity of TMD in medical students.

Conclusion

A simple anamnestic index is of use in identifying and classifying TMJ and TMD symptoms in patients according to the severity of the disorder, TMD, and its associated symptoms are frequent among college students. Identification and follow-up of the prevalence and health-care needs of patients with TMDs are recommended with longitudinal studies.

What does the study add to the existing knowledge?

TMJ and TMD symptoms are very common in the population and are also related to stress and the medical profession is full of stress. So early diagnosis of this disorder will prevent the severity and if the stress is, prevalence in medical professionals may decrease the incidence of these disorders.

Author's contribution

All the authors, **Dr. Sanjiv Bhatia, Dr. Pratipal Singh, Dr. Vijay Kumar Goel, Dr. Dharmendra Uraiya, Dr. Ajay Kumar** collaborated in the concept design, questionnaire preparation and manuscript preparation for the study.

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