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

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Prevalence of temporomandibular dysfunction

Temporomandibular disorders are common among all age symptoms. 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. Additionally various age groups, different examination methods, and gender distribution lead to different results.

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. Reported prevalence rates vary broadly (from 16% to 50%) reflecting important differences in sample, criteria and methods used for collecting information. 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.

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:

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Having permanent dentition</td>
<td>• Previous history of orthodontic treatment</td>
</tr>
<tr>
<td>• Age above 18 years</td>
<td>• Craniofacial anomalies</td>
</tr>
<tr>
<td>• Pakistani nationality</td>
<td>• With missing posterior teeth</td>
</tr>
<tr>
<td>• Cooperative students</td>
<td>• History of systemic, musculoskeletal or neurological disorders.</td>
</tr>
</tbody>
</table>

**TABLE 1: CHARACTERISTICS OF THE STUDY GROUP**

<table>
<thead>
<tr>
<th>No of students who filled questionnaire</th>
<th>Total=500(100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males=250(50%)</td>
<td>Females=250(50%)</td>
</tr>
<tr>
<td>Males=35(14%)</td>
<td>Females=60(24%)</td>
</tr>
</tbody>
</table>

Mean age (years) 23.21 ± 4.6
Age range (years) 18–35

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

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

*Significant level P<0.005

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

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

*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> 0.05). (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. 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. 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. Farsi 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 al 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.

Nourallah 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 percent 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-Hakim 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 Abdel-Hakim’s study. Different population and sample size may play a role for variation in results.

REFERENCES

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CONTRIBUTION BY AUTHORS

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.