Temporomandibular disorders in association with stress among students of sixth grade preparatory and students of fifth year high schools

Toka T. Alnesary, B.D.S. (1)
Rafil H. Rasheed, B.D.S., M.Sc. (2)

ABSTRACT

Background: A close relationship had been reported between depression, anxiety and many disease symptoms or disorders. This is true for temporomandibular disorders which is a collective term embracing a number of clinical problems that involve the masticatory musculatures, temporomandibular joint and associated structures, or both. This study designed to evaluate the association of stress with temporomandibular disorders among sixth grade preparatory students and students of fifth year of secondary school.

Subjects, materials and methods: The sample's size of 404 students of sixth grade preparatory study (154 males and 250 females) and 360 (168 males and 192 females) of fifth year of secondary schools. Firstly all the students subjected for stress questionnaire, secondly the stressful students subjected to different combination of clinical and questionnaire measures according to the research diagnostic criteria of temporomandibular disorders (axis I) which have standardized series of diagnostic tests based on clinical signs and symptoms. Data are analyzed by using Z-test and chi-square.

Results: The results obtained from this study showed that no significant differences between classes in the percentage of stressful students with temporomandibular disorders according to the clinical examination but in both classes, females' students showed higher percentage of temporomandibular disorders than males of same class. Bruxism and nail biting were significantly higher among students of sixth grade.

Conclusions: This study revealed that stress of studying at sixth grade has no effect on temporomandibular disorders prevalence.

Keywords: Stress, temporomandibular disorders, myofascial. (J Bagh Coll Dentistry 2012;24(2):70-74).

INTRODUCTION

Temporomandibular joint (TMJ) should not be isolated or excluded from being associated with other joints disorders but fortunately the temporomandibular disorders (TMDs) could be an early exploration to other joint disorders.

Temporomandibular disorders are a collection of disorders involving the temporomandibular joint, the soft tissue structures within the joint, and the muscles of mastication. The etiology of these disorders is multidimensional. Biomechanical, neuromuscular, biopsychosocial, and neurobiological factors may contribute to TMDs. These factors are initiating and aggravating (parafunctions, hormonal, or psychosocial factors) to emphasize their role in the progression of TMD. Some studies revealed that occlusal factors were only weakly associated with TMD signs and symptoms. Moreover, there are people classified as bruxers, who did not present history of pain in masticatory muscles.

There is currently considerable evidence that psychological factors are of importance in the understanding of TMD.

Research findings have supported a relationship between anxiety, muscular tension, and TMD symptoms, the psychological status assessment showed that 39.8% of patients with TMD experienced moderate to severe depression, and 47.6% had moderate to severe nonspecific physical symptom scores (somatization).

The importance of psychological factors in the etiology of TMD has usually been emphasized; they are believed to predispose the individual to chronicity.

Temporomandibular disorders are often associated with somatic and psychological complaints, including fatigue; sleep disturbances, anxiety, and depression. Thus, considering that stress is associated with psychological disturbances such as anxiety and depression.

MATERIALS AND METHODS

This study was carried out in randomly selected secondary schools of Baghdad city for evaluation the association of stress with TMDs in students according to the research diagnostic criteria of TMD (RDC/TMD axis I).

The sample's size of 404 students of sixth grade preparatory study (154 males and 250 females) and 360 (168 males and 192 females) of fifth year of secondary schools.
Subjects gave their informed consent and the local ethical committee approval.

The students subjected for stress questionnaire which consist of 20 questions a score of 7 or more is considered positive for a potential psychiatric problem. Then the stressful students subjected to different combination of questionnaire and clinical measures according to RDC/TMD (Axis I).

The stressful students whom subjected to clinical examination had no history of head injury and without orthodontic treatment, dental pain, muscle tenderness due to systemic diseases as fibromyalgia, neuralgia or local infection and had no more than 2 missing posterior teeth.

The stressful students who had pain in the face, jaw, temple, priauricular or in the ear and headaches or migraine or pain that limit these activities: chewing, exercising, eating hard or soft food or drinking, smiling, oral hygiene, yawning and talking and those who had clicking, bruxism and oral habit were asked about: the pain history and talking and those who had clicking, bruxism and oral habits with observation their evidences.

Oral Diagnosis

The patients were asked about any bad oral habits with observation their evidences.

**RESULTS**

There were significant differences between classes in percentage of stressful students by self-report stress. In this study from all selected males of fifth year there were 21 (12.5%) stressful students and from selected females of fifth year there were 117 (60.9%) stressful students, so the total number of stressful students in the fifth year of secondary study was 138 (38.3%) from 360 students were subjected to self report questionnaire, while in the six grade of secondary study the percentage of stressful students were higher than those in fifth year as follow: stressful males were 62 (40.3%) and 214 (85.6%) stressful females, so the total number of stressful students in sixth grade was 276 (68.3%) These findings were listed in table (1).

But there were no significant differences between classes in percentage of stressful students had TMDs according to the clinical examination, in this study from all selected students of fifth year there were 10 (5.9%) males and 45 (23.4%) females had TMD by clinical examination, so the total number of the stressful students with TMDs by clinical examination in the fifth year of secondary study was 55 (15.2%) which was less than students in the six grade where TMDs showed 63 (15.5%) which divided into 12 (7.7%) males and 51 (20.4%) females, and these findings were listed in table (2).

The number of students in the fifth year who had myofascial pain (and some of them had MFP in combination with other TMDs) was (52), which was more than those in sixth grade (48) and the differences were significant, while the disc displacement with reduction was (6), the disc displacement without reduction was (6) and arthralgia also was (6) presented in less numbering the students of fifth year in comparison to those of sixth grade (8,15,12) respectively but the differences were not significant.

It had been found that percentage of sixth grade students with deflection (57.1%) was higher than that in the fifth class students (50.9%), and the percentage of sixth grade students with nail biting (34.9%) was higher than that in the fifth class students (9.1%) with significant differences.

**DISCUSSION**

This study revealed that most of students in the secondary school were under stress and the differences were highly significant (P value =
0.001) between fifth (38.3%) and sixth grades (68.3%). Yusoff et al., 2011\textsuperscript{15} in previous study found that the prevalence of distressed secondary school students in Malaysia was 32.8%. Other previous studies reported that over one-third of adolescents were under stress\textsuperscript{16, 17}. Many of these emotional disturbances seem to be caused by school-related stress such as inappropriate workloads or assignments, examinations, falling behind compared to others and inappropriate treatment by teachers\textsuperscript{16}. Several authors have observed that the prevalence of psychological distress is higher among students than among working nonstudent populations of the same sex and age\textsuperscript{18}

By clinical examination it had been shown that the prevalence of TMDs in stressful students of fifth and sixth year of secondary study was nearly equal (15.2%, 15.5%), although the percentage of stressful students in sixth grade was significantly higher. This percentage was lower than that observed in another studies\textsuperscript{19, 20, 21} and showed agreement with similar result reported by\textsuperscript{22, 23}. The large frequency ranges for signs and symptoms of TMD previously described in reviews are apparently based on very different samples (e.g. random, non-random, different ages, age ranges, sample size, ratio of gender distribution) and different examination methods (e.g. kind of variable, method of data collection)\textsuperscript{24}

The role of stress and personality in the etiology of the temporomandibular pain dysfunction syndrome has undergone extensive scrutiny. There is considerable evidence that psychological and psychosocial factors are of importance in the understanding of TMD as with other chronic pain disorders\textsuperscript{25} but there is less evidence that these factors are etiologic. Even though studies have indicated the role of stress in the etiology of TMD, the issue of whether psychological factors cause TMD or reflect the impact of TMD on the person remains unknown, due largely to the absence of longitudinal incidence studies designed to test the relationship of the onset of TMD pain to the onset of psychological and psychosocial factors. Several studies have assessed the relationship between TMD and stress, these studies have had shortcomings, e.g., assessment of acute stress, limited sample size, nonstandardized examination, no controls\textsuperscript{12, 26, 27}

Although some reports noted no sex differences in the prevalence of TMD\textsuperscript{20, 23}, this has not been the case for some of the signs and symptoms in the present study. Generally females have more signs and symptoms than males. This is in agreement with other reports in the literature\textsuperscript{28, 29}. It has been stated that these sex differences could probably be explained by mental factors i.e. young females seem to present a lower pain threshold\textsuperscript{28}. Kuttilla et al., found that females showed more signs and symptoms of TMD, and it seems to be explainable by their higher stress. The higher prevalence of TMD in females than in males has been attributed to an interaction of a variety of factors ranging from biological and hormonal factors to psychological and social ones.

In this study the students who were recorded with myofascial pain more than students with other TMDs even those students with MFP alone or in combination with other TMDs. Lobbezoo et al., (2004) revealed that between 50% and 70% of all patients with TMDs reported masticatory muscle pain.

Deflection (57.1%, 50.9%) and midline deviation (58.7%; 61.8%) were reported in both sixth class and fifth class respectively, which were higher than that observed by other study (Feteih, 2006). Several studies failed to find strong evidence to support the theory that occlusion plays a role in the etiology of TMD, particularly as the sole cause or the dominant factor\textsuperscript{32, 33}. While Gesch et al., (2004) reported a weak association between malocclusion and the functional and clinical parameters of occlusion as well as subjective TMD.

Oral habits (nail biting) was also reported in this study and showed higher percentage among students of sixth (34.9%) than students in the fifth class (9.09%) with significant difference. Other study reported lower percentage than that of students in sixth class\textsuperscript{20}. The higher frequency of nail biting that had been recorded at clinical examination may explain the higher percentage of students at sixth class with disc displacement without reduction, arthralgia and disc displacement with reduction.

There is currently considerable evidence that psychological factors are of importance in the understanding of TMD. The issue of whether psychological factors cause TMD or reflect the impact of TMD on the person remains unknown, although there is strong evidence that some patients with TMD are more anxious and/or depressed compared with asymptomatic controls. Research findings have supported a relationship between anxiety, muscular tension, and TMD symptoms\textsuperscript{35}.\n
\textit{Oral Diagnosis \textcopyright 2012 J Bagh College Dentistry, Vol. 24(2), Temporomandibular disorders
REFERENCES
Table 1: The differences between classes in the percentage of stressful students by self report stress

<table>
<thead>
<tr>
<th>Sex</th>
<th>5th secondary</th>
<th></th>
<th>6th secondary</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>No. with stress</td>
<td>% with stress</td>
<td>Total</td>
</tr>
<tr>
<td>Male</td>
<td>68</td>
<td>21</td>
<td>12.5</td>
<td>154</td>
</tr>
<tr>
<td>Female</td>
<td>192</td>
<td>117</td>
<td>60.9</td>
<td>250</td>
</tr>
<tr>
<td>Total</td>
<td>360</td>
<td>138</td>
<td>38.3</td>
<td>404</td>
</tr>
</tbody>
</table>

P value: 0.0001*

*Significant using Z-test at 0.05 level of significance

Table 2: The differences between classes in percentage of students had TMDs according to clinical examination

<table>
<thead>
<tr>
<th>Sex</th>
<th>5th secondary</th>
<th></th>
<th>6th secondary</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>total</td>
<td>No. with TMD</td>
<td>% with TMD</td>
<td>total</td>
</tr>
<tr>
<td>Male</td>
<td>168</td>
<td>10</td>
<td>5.9</td>
<td>154</td>
</tr>
<tr>
<td>Female</td>
<td>192</td>
<td>45</td>
<td>23.4</td>
<td>250</td>
</tr>
<tr>
<td>Total</td>
<td>360</td>
<td>55</td>
<td>15.2</td>
<td>404</td>
</tr>
</tbody>
</table>

P value: 0.336

*Significant using Z-test at 0.05 level of significance