EVALUATION OF ASSOCIATION BETWEEN MARITAL STATUS AND TEMPOROMANDIBULAR JOINT DISORDERS

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ABSTRACT

Several studies have stated the etiology of temporomandibular disorders (TMD) to be related to the demographic data of patients such as their age, gender or marital status. Even stress and anxiety has been associated with TMD. The purpose of this article was to evaluate the association between temporomandibular disorders and the marital status of patients. This would enable us to understand the various etiologies of TMD in a population and aid us in the treatment planning. In this retrospective study, digital case records of 102 patients with temporomandibular disorders treated in Saveetha dental college and hospital from June 2019 to March 2020 were reviewed. Demographic details and marital status of the patients were recorded. Retrieved data was analysed using IBM SPSS Software Version 20.0. Descriptive statistics and Chi-square test was done to test associations between categorical variables. P value < 0.05 was considered statistically significant. The results revealed that temporomandibular joint (TMJ) disorders found to be maximum in the 31-40 year age group at 30.4%. 63.7% of patients with TMJ disorders were found to be married. However no statistically significant association was found between marital status and temporomandibular joint disorders (p=0.721). It can be concluded that the prevalence of TMJ disorders is not dependent on the marital status of the patients.

Keywords: Degenerative disorder, Disc-Condyle disorder, Marital status, MPDS, Temporomandibular Disorders

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INTRODUCTION

Temporomandibular dysfunction (TMD) is a complex disturbance that involves the masticatory muscles and the temporomandibular joint (TMJ) causing damage to the masticatory function (Berretin-Felix et al., 2005). The masticatory function includes the relationship between the morphologic and functional aspects of TMJ, teeth and the neuromuscular system (Ash and Ramfjord, 1995). Etiology of TMD is multifactorial. It includes parafunctional habits, trauma, anatomy of the disc, pathophysiology of muscles, genetic association and also depends on age, gender and marital status (Rajendra Prabhu Abhinav et al., 2019; R. P. Abhinav et al., 2019; Christabel et al., 2016; Jain et al., 2019; Kumar, 2017a, 2017c; Patil et al., 2017).

Previous researches have advocated that pain due to changes in muscle activity, limits the movement of the mandible, protects it from further damage and promotes healing (Bagis et al., 2012; Kumar, 2017b; Kumar and Sneha, 2016; Patturaja and Pradeep, 2016). Velly et al (Jesudasan et al., 2015; Kumar and Rahman, 2017; Velly et al., 2003) revealed that females have three times the risk of myofascial pain than males in a series of 83 patients. Similarly, Karibe et al (Karibe et al., 2003; Rao and Santhosh Kumar, 2018) performed a study that revealed chewing significantly increases the pain in patients with a history of chronic masticator muscle pain but also in females, with no such history. Patients with TMD have also been known to have increased somatization, stress, depression and anxiety (Marimuthu et al., 2018; Packiri et al., 2017; Pallegama et al., 2005). This fact is being studied in relation with marital status in this study.

Previous studies have associated the existence of TMJ pain to be more common in females, in this study we investigated if there is an association with marital status and TMJ. Hence the aim of this study was to evaluate the association between marital status and TMJ pain.

MATERIALS AND METHODS

Study design and Study setting:

This retrospective cross-sectional study was conducted in Saveetha dental college and hospital, Saveetha University, Chennai. Digital case records of patients attending the hospital with pain due to TMJ disorders from June 2019 to March 2020 were reviewed and included in the study.. The study was initiated after approval from the institutional review board with the following ethical approval number - SDC/SIHEC/2020/DIASDATA/0619-0320.

Sampling:

After assessment in the university patient data registry, case records of 102 patients with TMD between the ages of 18 to 80 years were included in the study. The exclusion criteria were missing or incomplete data. Cross verification of data for errors was done with the help of an external examiner.

Data collection:
A single calibrated examiner evaluated the digital case records of the patients collected from June 2019 to March 2020 who reported with pain due to TMJ disorders and reviewed their marital status which was classified as single/unmarried or married. Demographic details like age, gender were recorded.

**Statistical Analysis:**
The collected data was validated, tabulated and analysed with Statistical Package for Social Sciences for Windows, version 20.0 (SPSS Inc., Chicago, IL, USA) and results were obtained. Categorical variables were expressed in frequency and percentage; and continuous variables in mean and standard deviation. Chi-square test was used to test associations between categorical variables. P value < 0.05 was considered statistically significant.

**RESULTS AND DISCUSSION**

This study conducted to evaluate the association of marital status of patients with temporomandibular joint disorders found no significant association between them.

In this study, TMJ disorders were maximum in the age group of 31-40 years with 30.4% of patients. The prevalence of TMJ disorders amongst males and females were found to be equal (50%). The study revealed that 63.7% of patients reported with TMD were married. The TMJ disorders in this study included Degenerative disorder (52%) followed by 31.4% of patients with Disc condyle disorder and 16.7% with MPDS [Table 1].

Degenerative disorder is maximum in the 21-30 yr age group; Disc condylar disorder and MPDS are maximum in the 31-40 year age group. In comparison, no statistically significant association was present between age and TMJ disorders in patients with p=0.278 [Figure 1] This particular result was supported by a study done by Martins RJ, which evaluated the relation between socio-economic class and demographic factors in the occurrence of TMD (Martins et al., 2008). However another study (Blanco-Hungría et al., 2012) associated the age with a characteristic pain intensity score (CPI) in patients with temporomandibular joint disorders and found a significant association thereby contradicting this study. TMJ sounds were also found to be increasing with age (Farsi, 2003). TMJ disorders were found to be maximum amongst the 31-40 years age group with 30.4% of patients in our study. This was supported by Han W (Han et al., 2018) who arrived at a result in which the respondents aged 20-39 years had the highest prevalence of TMD at 18.4%.

In comparison between gender and TMJ disorders in patients in this study, no significant difference was found in the prevalence of TMD among males and females. Thus no statistically significant association was present between gender and type of TMJ disorders with p=0.838. [Figure 2] This was supported by studies carried out by Bonjardim LR (Bonjardim et al., 2009) and Oliveira A (Oliveira et al., 2006) who assessed the TMD severity degree using an anamnestic index. Another study (Majumder et al., 2015) also found insignificant results between gender differences.
and symptoms of TMD like TMJ sound, feeling of stiffness, difficulty in mouth opening, pain or tenderness on chewing and pain on movement.

Many studies however, (Al-sanabani, 2017; Jesudasan et al., 2015; Karibe et al., 2003; Kumar and Rahman, 2017; Martins et al., 2008; Velly et al., 2003) found a significant increase in occurrence of TMD amongst females. The study using a CPI score on patients (Blanco-Hungría et al., 2012) with TMD found the score to be 15 points higher on average in females more than males, with the difference being statistically significant. This could also be due to the fact that males are capable of bearing more pain than females. Kim TY (Kim et al., 2015) found that TMD influenced more women than men. Women were more affected by osteoarthritis and general mental health like stress and depression and men by employment. However, Nazihet al found the prevalence of TMD to be larger in males than in females at 34.92%. These studies contradicted the present study that found equal prevalence of TMD in males and females at 50%.

TMD showed a higher prevalence in married patients but the results were not statistically significant. Thus, no statistically significant association was present in the marital status of the patients and the occurrence of TMJ disorders with p=0.721[Figure 3][Table 2].This statement was opposed by a study stating that in accordance with marital status, single people had a higher prevalence of TMD (21.1%) than married ones(9.6%) (Han et al., 2018). Blanco Hungria A et al (Blanco-Hungría et al., 2012) found a significant association among divorced patients and the rest of marital status categories using CPI score with single or unmarried patients having the lowest score and married patients depicting a higher intensity of pain. Mundt T et al (Mundt et al., 2008) found an association between widowed status and TMJ pain in women. The statement made by the present study was contradicted by another study (Kim et al., 2015) that stated that marital status and stress impacted the relationship with TMD by 16% and 12% respectively.

The limitations of this present study include a restricted population group. Future scope of the study could be improved by conducting it over a large scale as a multi centered study.

CONCLUSION
The current hospital based study found that TMD was more common among married individuals. However, there was no significant association between TMD and marital status of the patient. It can be concluded that the evidence is inconclusive to confirm the association of TMD and marital status. Well designed cohorts with much longer follow-up may provide additional information in this domain.

ACKNOWLEDGEMENTS
We would like to thank the administration of Saveetha University, Chennai for granting us the clearance and platform to conduct this study.
AUTHORS CONTRIBUTION
S.K contributed to study conception and design, data collection, analysis and interpretation and drafted the work. A.M. contributed to data interpretation, study design and data collection. R.J. contributed to study conception and design and data collection. All authors critically reviewed the manuscript and approved the final version.

CONFLICT OF INTEREST
The authors declare no conflict of interest.

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<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
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</tr>
<tr>
<td></td>
<td>11-20</td>
<td>19</td>
<td>18.6</td>
</tr>
<tr>
<td></td>
<td>21-30</td>
<td>28</td>
<td>27.5</td>
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<td></td>
<td>31-40</td>
<td>31</td>
<td>30.4</td>
</tr>
<tr>
<td></td>
<td>41-50</td>
<td>13</td>
<td>12.7</td>
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<tr>
<td></td>
<td>51-60</td>
<td>7</td>
<td>6.9</td>
</tr>
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<td></td>
<td>&gt; 61</td>
<td>3</td>
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<tr>
<td><strong>Gender</strong></td>
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</tr>
<tr>
<td></td>
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<td></td>
<td>Married</td>
<td>65</td>
<td>63.7</td>
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<td><strong>TMJ disorders</strong></td>
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<td>53</td>
<td>52.0</td>
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<tr>
<td></td>
<td>MPDS</td>
<td>17</td>
<td>16.7</td>
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Table 1. Demographic data of the study population

<table>
<thead>
<tr>
<th>Marital status</th>
<th>TMJ Disorders</th>
<th>Total</th>
<th>Pearson Chi-Square</th>
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<tr>
<td></td>
<td>Degenerative Disorder</td>
<td>MPDS</td>
<td>Disc Condylar Disorder</td>
</tr>
<tr>
<td>Unmarried</td>
<td>21</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
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<td>32</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>17</td>
<td>32</td>
</tr>
</tbody>
</table>

Table 2. Association between marital status and Temporomandibular disorders. TMD showed a higher prevalence in married patients but the results were not statistically significant. Chi square test, p=0.721 (>0.05). TMJ disorders are not dependent on marital status.
Figure 1. Bar chart depicting association between age and Temporomandibular disorders where the X axis represents age and Y axis represents TMJ Disorder in patients. Blue colour represents Degenerative disorders, red represents Myofascial pain dysfunction syndrome and green is Disc condylar disorder. Degenerative disorder is
maximum in the 21-30 yr age group; Disc condylar disorder and MPDS are maximum in the 31-40 year age group. However the results were statistically not significant, Chi square test, p=0.278 (>0.05).

Figure 2. Bar chart depicting association between gender and Temporomandibular disorders where the X axis represents gender and Y axis represents TMJ Disorder in patients. Blue colour represents Degenerative disorders, red represents Myofascial pain dysfunction syndrome and green is Disc condylar disorder. Prevalence of TMD was similar among both genders and the results were statistically not significant, Chi square test, p=0.838.(>0.05).
Figure 3. Bar chart depicting association between marital status and Temporomandibular disorders where the X axis represents marital status and Y axis represents TMJ Disorder in patients. Blue colour represents Degenerative disorders, red represents Myofascial pain dysfunction syndrome and green is Disc condylar disorder. TMD showed a higher prevalence in married patients but the results were not statistically significant. Chi square test, p=0.721 (>0.05).