

Assessment of Temporomandibular Joint Disorders and Related Factors in Patients at Tertiary Care Hospital

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ABSTRACT

Background and goals: Temporomandibular disorders (TMD) are the utmost communal disorders of the temporomandibular joint and its linked structures. The objective of the study was the epidemiological assessment of Temporomandibular joint disorders and associated factors.

Study Design: A descriptive cross-sectional study.

Place and Duration: In the Oral and Maxillofacial surgery department of Punjab Dental Hospital, Lahore for one-year duration from January 2021 to December 2021.

Methods: This study comprises a sample of 400 young adults aged 15-40 years of age selected by cluster sampling technique. The surveyors finalized questionnaires and conducted clinical trials. The analysis of data was done with the Fisher exact tests and Chi-square.

Results: The pervasiveness of Temporomandibular disorders in the considered sample was 43.8%. The most communal symptoms of TMD were muscle tenderness, clicking and tenderness of temporomandibular joint. The utmost common influencing aspects for TMD were clenching, early contact in the bruxism and protrusive movement. There was a clear preponderance of girls (68.6%) over boys (31.4%) ($p = 0.001$).

Conclusion: Symptoms of TMD in adults were common with the apparent preponderance of women.

Keywords: Adolescents, Epidemiology, Diseases of the Temporomandibular joints.

INTRODUCTION

The temporomandibular joint (TMJ) is a synovial type that allows two bones to move clearly, each with an articulating surface covered with hyaline cartilage¹⁻². Two bones in particular are the skull bone (temporal bone) and the mandible³. There are two joints in the TMJ joint, upper and lower, separated by a joint disc located between the temporal bone and the condyle⁴⁻⁵. The upper hinge is for gliding and the lower hinge for pivoting or hinged motion. There is coordination between the muscles and the jaw in terms of jaw movement, limiting damage to surrounding tissues and maximizing function⁶. TMJ disorders are a group of disorders involving TMJ and the masticatory muscles that cause pain and dysfunction in the jaw⁷. Some physicians have suggested the term cranio-mandibular disorder for these conditions because they believe that the symptoms include an etiology of pain not only associated with TMJ, but also with pain unrelated to the tooth region⁸⁻⁹. However, this adds to the confusion, which is why the American Dental Association (ADA) preferred the terminology "temporomandibular disorder" (TMD). It can also be associated with various types of pain and discomfort, such as ophthalmic, ENT, and other chronic conditions⁹. It is clear from various studies that the prevalence of TMD in the general population is very common, around 60-70%, but only 25% of patients notice the development of this disorder¹⁰⁻¹¹. Emergency treatment is sought in 1-2% of young children, 5% of adolescents and 5-12% of adults. A thorough and detailed prior physical examination of the temporomandibular joint is mandatory to prevent any iatrogenic injury¹². We conducted this study to epidemiologically assess the symptoms, signs and related factors associated with TMD.

METHODS

This descriptive cross-sectional study includes a sample of 400 young adults aged 15-40 years of age selected by cluster sampling technique held in the Oral and Maxillofacial surgery department of Punjab Dental Hospital, Lahore for one-year duration from January 2021 to December 2021. The research team approved the study. The consent in written form was obtained prior to study. A senior dentist evaluated all the subjects. The assessors finalized the questionnaires and conducted a clinical trial. The questionnaires were then assessed by prosthodontist and a dentist and institute to

be correct. The questionnaire comprised items from the history of patient's: oral cavity trauma; ENT infections; Orthodontic treatment; The masticatory muscles were inspected clinically and the etiological factors related to TMJ (including joint pain and joint sounds) and TMD were assessed: premature contacts, malocclusion and para-functional habits. The analysis of data was done with the Fisher exact and Chi-square tests. Multivariate analysis was accomplished using logistic stepwise regression. Statistical implication was grounded on odds values <0.05 .

RESULTS

The TMD prevalence in the adolescents was 175(43.8%). The data exhibited a clear predominance of females 120 (68.6%) over males (31.4%) ($p = 0.001$). The rates of TMJ pain, myofascial pain and clicking in patients with TMD were 260(65%),150(37.5%) and 290(72.5%), correspondingly. Table 1 displays the incidence of oral trauma, headache history, ENT infections and treatment by orthodontist. There was a noteworthy variance between people with a history of ENT infection with and lacking TMD ($p = 0.001$). Though, there was no noteworthy variance between TMD and non-TMD patients who had a history of orthodontic treatment, headache history and oral trauma.

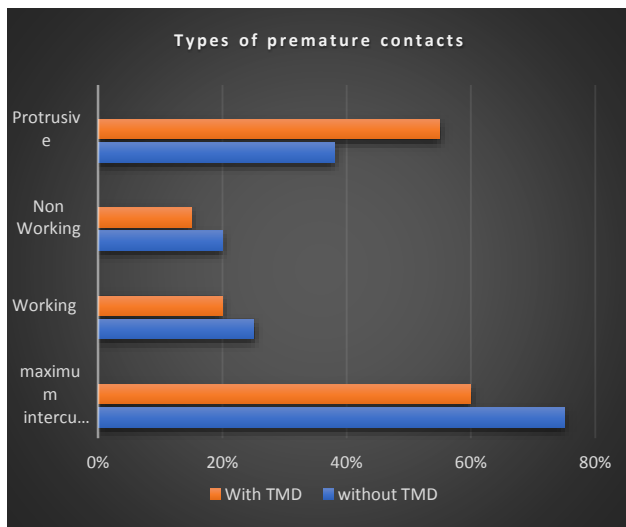
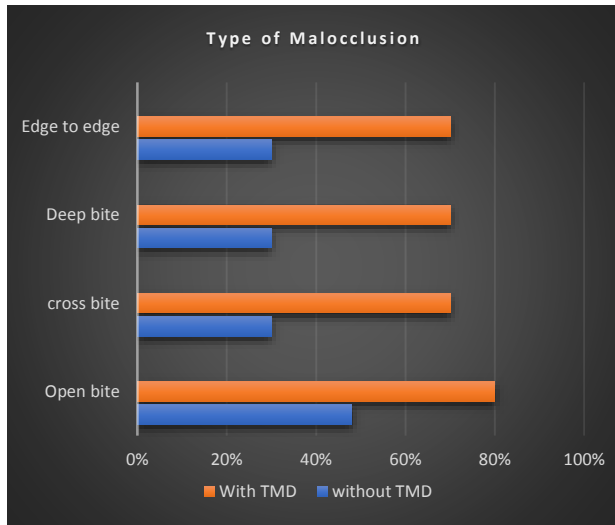
Table 1: Incidence distribution of trauma, ear, nose and throat (ENT) infection, headache and orthodontic treatment in the studied people

History	TMD+	TMD-	Total	P-value
Trauma	24%	12.9%	18.5%	$P>0.04$
ENT infection	33.7%	30.7%	32.2%	$P=0.001$
Headache	16.6%	13.8%	15.2%	$P>0.06$
Orthodontic treatment	6.9%	4.4%	5.7%	$P>0.04$

Malocclusion was detected in 66.1% of cases. Conferring to the information, the part of malocclusion (53.7% in people with TMD, 59% in people without TMD) was not significant. The most common accompanying disease was a deep bite malocclusion (Fig. 1).

Premature contact was observed in 154(38.5%) (63.6% in cases with TMD and 36.4% in cases not having TMD). Occlusion was assessed at maximal intercuspation and non-working, working and protrusive movements. People with TMD exhibited significant

premature contacts with maximum intercuspation and protruding movement ($P = 0.000$). In both subgroups, the maximum incidence of premature contact was observed at maximum intercuspation (Fig. 2).



Of all patients, 70.5% had para-functional habits (68.6% of TMD and 61.8% of non-TMD) and there was no substantial variance between these subgroups ($p = 0.301$). Except for biting nails and lips and resting head on hands as parafunctional habits, bruxism and clenching were significantly associated with TMD ($p = 0.001$). In both subgroups, the most common habits were lip biting and head rest. Logistic regression results exhibited that the significant factor influencing to TMD is clenching. Statistically, the probability of TMD in persons with clenching was 2.7 times higher than in the general population. Premature contacts in bruxism and protrusive movement trailed in occurrence (Table 2).

Table 2: Stepwise logistic regression analysis of parafunctional habits amid patients with temporomandibular disorders

Variables	Regression coefficient	Odds ratio	P-value	Confidence interval
Premature contacts	0.801	2.39	<0.04	1.498–3.627
Clenching	0.979	2.710	<0.04	1.540–4.752
Gender	-0.410	0.670	0.011	0.490–904
Bruxism	0.610	1.840	0.032	1.102–3.981

DISCUSSION

The etiology of TMJ disorders is complex and multifactorial, and includes genetic, traumatic, inflammatory, degenerative and idiopathic disorders¹³⁻¹⁴. There may be initiating, supporting, predisposing and systemic factors such as bruxism, microtrauma and macro-trauma, factors such as orthodontic treatment, orthopaedic instability, occlusal abnormalities, malnutrition and health, exogenous estrogen and joint laxity¹⁵. However, in some cases, one factor can be the cause of pathology. Therefore, the aim of this review, which is crucial for successful treatment, is to accurately identify and treat the causative agents. Negative stress and trauma to the masticatory system lead mainly to the appearance of initiating factors¹⁵.

72.5% of all respondents in our study showed more clicks than Japanese teens, Brazilian teens, and Iranian dental students in alternative analysis. There are reports that joint sounds are identified as the communal signs in children. Our outcomes similarly presented that, according to many other studies, the percentage of women with TMD (68.6%) was higher suggestively than that of the male subgroup (31.4%). Our results presented that open bite, deep bite, cross bite and end-to-end malocclusion were not significantly associated with TMD; this has also been found in several other studies¹⁶⁻¹⁷.

Injury can include injuries of the jaw and jaw due to frequent falls, especially in paediatric patients. Other injuries associated with it are sports, car accidents, forced intubation, extraction of third molars, physical violence, etc¹⁸⁻¹⁹. Stiffness can also result from prolonged immobilization and closed reduction. Persistent factors include social factors (which can affect the pain response), behavioural factors (bone squeezing, grinding, bruxism, and poor head posture), cognitive factors (despair and discouragement can negatively affect driving), and emotional factors (anxiety) and depression. Women seeking TMJ treatment have more serious problems than men (1: 8 males to female ratio)²⁰. Predisposing factors that affect the masticatory system increase the likelihood of developing TMD. These include structural processes and the psychological and pathophysiological factors discussed above. Structural processes can be discussed under the heading occlusive factors. One of the most important etiological factors in TMD is occlusion disorder²¹⁻²². Pullinger et al. demonstrated weaker correlation of occlusion with the following structural factors, such as a unilateral lingual cross bite, multiple missing posterior teeth (more than 5), inadequate dentures and defective restorations, open bite, excessive flux > 6-7 mm, and retraction. inter-nodular position > 4 mm²³.

CONCLUSION

According to the results of this study, TMDs are common and there is a clear predominance of women. TMDs lower quality of life and challenge dentists to treat. Therefore, everything possible should be done to prevent and diagnose TMD early. Attention should be paid to raising public awareness of this subject, especially in schools, among young people and their parents, through brochures and other means.

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