ASSOCIATION OF TEMPOROMANDIBULAR JOINT SOUNDS WITH MALOCCLUSION

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ABSTRACT

Temporomandibular joint disorder is a multi-factorial condition affecting the joint or muscles of the jaw. A descriptive cross-sectional study was conducted to determine association of temporomandibular joint (TMJ) sounds with various categories of malocclusions. 384 subjects, who fulfilled the inclusion criteria of the study, were clinically examined for the presence or absence of temporomandibular joint sounds & type of malocclusion. A Chi-Square test (p < 0.05) was used to find any significant association of TMJ sounds with different categories of malocclusion. Joint sounds were found to be present in 100 (26%) subjects. Joint sound were present in 55 (22.6%) subjects with Class I malocclusion, 36 (32%) subjects with Class II malocclusion and only 9 (31%) subjects with Class III malocclusion. Chi-Square test revealed no significant association of TMJ sounds with malocclusion or gender. TMJ sounds can be a frequent finding in healthy individuals with no other symptoms of TMD. In the light of results of current study and other recent studies that have been carried out around the globe, it can be concluded that clicking itself is not indication of any active disease & it can rarely progress to any significant clinical problem, so there needless management must be avoided.

Key Words: Temporomandibular joint, Temporomandibular Disorders, Malocclusion, Clicking.

INTRODUCTION

Temporomandibular joint (TMJ) are usually soundless in majority of individuals but various structural and functional abnormalities like subluxation, disc displacement and osteoarthritic chances can lead to an increase in the friction between joint elements leading to generation of sounds. Clicking sound during opening and closing of jaw is characteristic clinical sign of disc displacement with reduction. Disc displacement can be defined as abnormal position of articular disc against condyle and articular eminence of TMJ. These clicking sounds can be heard in those individuals who may or may not present with temporomandibular disorders (TMD). TMD is a group of conditions affecting TMJ or muscle of the jaw and is linked to preauricular pain, articular sounds and limited mouth opening. Previously various terms like myofascial pain dysfunction syndrome or muscle hyperactivity disorder have been used to describe pain and discomfort associated with TMJ. TMD is found to be the least pejorative term which is currently used to label these above mentioned symptoms. Etiology of TMD is multifactorial and is usually related to trauma, stress, parafunctional habits, occlusal changes or masticatory disturbances with age. It has also been reported that mostly patients suffering from internal joint pathology, muscle spasms or psychogenic problems suffers from TMD as well.

In some studies it has been stated that clicking sound from TMJ is the first and the foremost symptom of TMD, while other studies suggested that these joint sounds are harmless unless they are accompanied by another sign or symptom. In various studies it has been reported that 75% of the population shows at least one sign and 33% shows at least one symptom of TMD at some point of time in their lives. TMD is considered to affect females twice more frequently than males. It is generally believed that this condition is mostly seen in adult patients, however number of studies...
have shown children being affected by the condition as well. Various studies have linked symptoms of TMD to various malocclusions traits. On the other hand number of carefully controlled longitudinal studies have reported weak link between them.

Literature review showed that lot of work has been done on TMD around the globe including Pakistan, but majority of work done has largely focused on other aspects of TMD and very few has been done on TMJ sounds and their possible association with malocclusion. The objective of this study was to determine association of temporomandibular joint sounds with different categories of malocclusion.

**METHODOLOGY**

This descriptive cross-sectional study was conducted on subjects with malocclusion, visiting Orthodontic Department from June 2014 to August 2015. All subjects with malocclusion in their permanent dentition, ranging from 14 to 25 years of age, were included in the study. Any subject with congenitally missing or extraction of permanent tooth, active or previous orthodontic treatment, any systemic diseases or metabolic disorders affecting bone metabolism, joint disorders and of non-Pakistani descent was excluded from this study. Sample size was calculated using sample size calculator available on www.openepi.com at 95% confidence level at the prevalence of 50%. Probability Sampling Technique (Systemic Sampling Technique) was used to collect data. Subject who were included in the study were informed about it before hand and prior consent was obtained before including any subject in the study. A data entry sheet was formulated that recorded the demographic details along with detailed medical, dental and family histories from every subject. Consent was obtained from every subject to carry out their clinical examination. During initial Orthodontic diagnosis, each subject was clinically examined for the presence of Temporomandibular joint sounds. Furthermore, every subject was also examined for the type of morphological occlusion (Angle Class I, Class II and Class III). Data tabulation and analysis was completed using SPSS software version 22. A Chi-Square test (p < 0.05) was used to determine any association between morphological occlusion and Temporomandibular Joint sounds.

**RESULTS**

Out of 384 patients examined, 267 (70%) were females and 117 (30%) were males (Fig 1). 243 (63%) subjects had Angle’s Class I malocclusion, 112 (30%) subjects had Angle’s Class II malocclusion and 29 (7%) had Angle’s Class III malocclusion (Table 1). Chi-Square test revealed that relation of malocclusion with joint sounds was found to be statistically insignificant (p > 0.05).

Joint sounds were found to be slightly more prevalent in females than males (Table 2). Chi - Square test revealed that relationship of gender with joint sounds was found to be statistically insignificant (p > 0.05). Besides joint sounds, none of the subjects examined reported any other sign or symptom of temporomandibular dysfunction (TMD).

**DISCUSSION**

Temporomandibular joint sounds is one of the symptoms of TMD mentioned in the literature. Various studies reported temporomandibular joint sounds as frequent finding in otherwise healthy individuals with no other symptoms of TMD and have
suggested that there needless management must be avoided as they rarely progress to severe clinical problems.  

Result of current study showed that those subjects who were diagnosed with temporomandibular joint sound, none of them reported any other sign or symptom of TMD.

The association between various morphological occlusion and different symptoms of TMD has long been debated. Previously it was considered that dental occlusion does play an important role in the etiology of TMD and few studies reported statistically significant association between morphological occlusion and severity of TMD symptoms. But over the period of time various studies conducted around the globe have found weak association between occlusal abnormalities and different symptoms of TMD. One study reported that lack of canine-guided occlusion during lateral movement in Class II malocclusion subjects could be at more risk of developing certain symptoms of TMD. Another study reported that Class II Div 2 malocclusion subjects have greater TMJ sensitivity than those compared with Class I malocclusion. Anjum reported that all subjects with TMD were having malocclusion and stress with pain and clicking sounds in joint as the most common presenting symptom.

Results of this study are also in accordance with most of the recent studies conducted around the globe. John MT et al after conducting an extensive study on more than three thousand patients concluded that greatly increased or decreased values for overjet and overbite is not a risk factor for the presence of joint sounds. Another study reported that there is no significant association between TMJ clicking and several malocclusion features. A broad literature review conducted McNamara et al concluded that there is weak association between different symptoms of TMD and morphological or functional occlusal factors. Pullinger et al after investigating the effects of eleven different malocclusions concluded that no single malocclusions alone could lead to symptoms of TMD. Mohlin et al reviewed studies which were conducted on relationship of TMD with malocclusion from 1966 to 2000 and concluded that no association could be established between malocclusion and TMD. Dental occlusion is one of the most important factors that determine the amount of load distribution on the temporomandibular joint; therefore it should not be ignored and longitudinal studies are needed.

Results of this study do not necessarily reflect the trend of entire Pakistani population as it was conducted on a sample of Karachi population. Thus, possible role of malocclusion in TMD diagnosis and management is still valuable for exploration and more work needs to be done in this domain.

CONCLUSION

In the light of recent researches that have been carried out around the globe, it can be stated that morphological occlusion is presently a declining factor in the symptoms of TMD. Symptomless temporomandibular joint sound does not essentially indicate any disease process involving joint and it rarely requires any active treatment.

REFERENCES

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