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FREQUENCY OF TEMPOROMANDIBULAR JOINT DISORDER AMONG PATIENTS WITH PARTIAL EDENTULISM

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ABSTRACT

INTRODUCTION: The relationship between the severity of TMD & partial edentulism has always been debatable. Missing teeth can affect the harmony between the TMJ structures.

OBJECTIVE: To find the frequency of temporomandibular joint disorder among patients with partial edentulism.

METHODS: The study was carried out on 179 subjects with partial edentulism by using Fonseca questionnaire and observing the number of missing teeth.

RESULTS: 31.8% (n=57) had no TMD, 41.8% (n=75) had mild TMD and 19.5% (n=35) had moderate TMD and 6.7 % (n=12) had severe TMD symptoms.

CONCLUSION:

Partial edentulism is an important factor in the induction of TMD so the physical therapist can devise a better treatment plan for the management of TMD due to disturbed biomechanics.

INTRODUCTION

The temporomandibular joint (TMJ) is the multifarious joint in the body. It is described as ginglymoarthrodial joint because it provides hinging movement in one plane, therefore, called a ginglymoid joint. At the same moment, it provides a gliding movement which is called an arthrodial joint. Temporomandibular joint has a distinctive feature of being bilateral diarthrotic joint (Pai et al., 2019).The temporomandibular joint anchors the condyle of the mandible to the glenoid fossa of the temporal bone. During the opening and closing of mouth the joint can be assessed with ease by positioning the finger near the ear.(Ahmed & Abuaffan, 2016). The temporomandibular disorder (TMD) is defined as the collection of signs and symptoms that describes the subcategory of craniofacial painful disorders covering complaints of pain and discomfort on the temporomandibular joint (TMJ) area and overtiredness of craniocervicofacial muscles, particularly mastication muscles, restriction in mandibular range of movement and joint noises, tinnitus, tooth wear, parafunctional habits, and otalgia.(Modi et al., 2012) The prevalence of temporomandibular disorders is 21.1% to 73.3%.When compared to male, females showed a higher occurrence of temporomandibular disorders. (Lai et al., 2020). The factors that can cause temporomandibular disorders are parafunctional habits (e.g., bruxism, tooth abrasion, lip biting), emotional stress, posture, jaw injuries, injury during dental surgery, during endotracheal intubations, wide opening of the mouth, cervical injury due to hyperextension), joint laxity and co-morbidity of other musculoskeletal disorders.(Glick, 2015). The signs and symptoms of temporomandibular disorders is divided into six main categories: Jaw clicking and popping sound , Jaw lock, Facial pain, Muscle tenderness and Otologic complaints , Psychosocial effects. (Durham, 2008). Partial edentulism is defined as the phenomena when one or more teeth are missing. It causes adjacent teeth to drift and tilt, opposing teeth erupted, altered speech, changes in facial appearance and temporomandibular disorders.(Jeyapalan & Krishnan, 2015) The assumed association between edentulism and temporomandibular disorders, which has resulted from the concept of tooth loss, is a predisposing factor to dysfunction. The loss of vertical dimension of occlusion has been thought to play an essential role in the aetiology of TMDs.(Hickey et al., 1975). The association between the severity of temporomandibular joint disorders and missing teeth has always been debatable. Partial edentulism is considered as the major causative factor for the pathological condition of the temporomandibular joint. Moreover, missing teeth affect the harmony between the temporomandibular joint structures.(Fallahi et al., 2016)

MATERIALS AND METHODS

This descriptive cross-sectional study was carried out in Lahore Medical and Dental College and private clinic Dental Surgery Associates in Lahore from June 2020 to December 2020. The purpose of this study was to find the frequency of temporomandibular joint disorder among patients with partial edentulism. After ethical approval was acquired from LCPT, written informed consent was taken from all the patients. All information and collected data were kept confidential. Non-probability convenience sampling was utilized in this study. A questionnaire Fonseca Anamnestic Index consisting of ten items and observing number of tooth missing were utilized in this study on 179 subjects. Data had been anonymized and entered into Statistical Package for Social Sciences (SPSS) 20 version. It had been thoroughly reviewed for mistakes and omissions. All qualitative variables were analyzed by frequency and all quantitative variables were assessed in the form of mean and standard deviation.

RESULTS

Information was gathered from 179 participants. With age, the minimum age of participant was 20 years and maximum age was 60 years with a mean of 35.22 and standard deviation of 10.927. Age distribution shows that most common age group was 20-35 years (57%) followed by 36-50 years (29.1%) & 51-60 years (14%). The percentage of males participating was 52% (n=93) and the percentage of females participating was 48% (n=86). Males were more in number than females. However, 55.3% subjects (n=99) had 2-5 missing teeth, 33.5% (n=60) had 6-9 missing teeth and 11.2% subjects (n=20) had 10-13 missing teeth. After categorizing the temporomandibular disorder (TMD) score on the basis of the Fonseca questionnaire, 31.8% subjects (n=57) had no temporomandibular disorder, 41.8% subjects (n=75) had mild temporomandibular disorder and 19.5% subjects (n=35) had moderate temporomandibular disorder and 6.7 % subjects (n=12) had severe temporomandibular disorder symptoms. Moreover, 24% subjects (n=43) reported that it's not hard for them to open their mouth while 35.7% subjects (n=64) reported sometimes they find it difficult to open their mouth and 40.2% subjects (n=72) reported yes. And 25.1% subjects (n=45) had no difficulty in moving jaw to the side while 40.7% (n=73) sometimes had and 34.0% (n=61) had difficulty in moving jaw to the side. 48.6% subjects (n=87) had no neck pain/stiffness while 31.2% subjects (n=56) had sometimes and 20.1% subjects (n=36) reported yes that they had neck pain/stiffness. Additionally, 39.6% subjects (n=71) had no pain in the ear or around the temporomandibular joint area, 30.7% subjects (n=55) reported sometimes and 29.6% subjects (n=53) reported yes that had pain in the ear or around the temporomandibular joint area. 39.6% subjects (n=71) had no pain in the ear or around the temporomandibular joint area, 30.7% subjects (n=55) reported sometimes and 29.6% subjects (n=53) reported yes that had pain in the ear or around the temporomandibular joint area. 51.9% subjects (n=93) said they do clench or grind their teeth while 29.0% subjects (n=52) do it sometimes and 18.9% subjects (n=34) said no.

Table 1: Descriptive Statistics of Age

	N	Minimum	Maximum	Mean	Std. Deviation
Age	179	20.00	60.00	35.22	10.927

Table 2: Frequency of Number of Missing Teeth

	Frequency	Percent
2-5 missing teeth	99	55.3
6-9 missing teeth	60	33.5
10-13 missing teeth	20	11.2
Total	179	100.0

Table 3: Frequency of Temporomandibular joint disorder

	Frequency	Percent

No TMD	57	31.8%
Mild TMD	75	41.8%
Moderate TMD	35	19.5%
Severe TMD	12	6.7%
Total	179	100.0

Table 4: Frequency of Difficulty in Mouth Opening

	Frequency	**Percent**
No	43	24 %
Sometimes	64	35.7%
Yes	72	40.2%
Total	179	100.0

Table 5. Frequency of Difficulty in Moving Jaw to the side

	Frequency	**Percent**
No	45	25.1%
Sometimes	73	40.7%
Yes	61	34.0%
Total	179	100.0

Table 6: Frequency of Neck pain or Neck Stiffness

	Frequency	**Percent**
No	87	48.6%
Sometimes	56	31.2%
Yes	36	20.1%
Total	179	100.0

Table 7: Frequency of Pain in the TMJ area

	Frequency	**Percent**
No	71	39.6%
Sometimes	55	30.7%
Yes	53	29.6%

Total	179	100.0

DISCUSSION

Al-Shumailan et al. conducted a study to determine the prevalence of temporomandibular disorders (TMD) in adult Jordanian subjects with missing posterior teeth and the association of signs and symptoms of TMD with missing posterior teeth (Al-Shumailan et al., 2015). In this study, the frequency of temporomandibular joint disorder among patients with partial edentulism is found.Based on Mund (2005), a study that proves that tooth loss has a contrasting influence on the temporomandibular joint disorder in males and females which females did not demonstrate any exceptional association between the loss of occlusal support and temporomandibular joint disorders while in males it showed a significant association.(Mundt et al., 2005). While in this study males were more in number than female and temporomandibular joint dysfunction was more evident in male participants with partial edentulism. Al Zarea conducted a study to determine the prevalence of various temporomandibular joint dysfunction (TMD) signs in healthy asymptomatic edentulous individuals and denture wearers. (AlZarea, 2017). In this study, those patients were included who had 2 or more missing teeth and assessed whether they have temporomandibular dysfunction or not. Temporomandibular joint pain has been stated more prevalent on the side with the most missing teeth and an increased risk of joint disorder was seen in the individuals without any molar support. (Pullinger et al., 1994).In this study, severity of temporomandibular joint dysfunction is stated by simply recording the number missing teeth in whole mouth. Fallahi et al. conducted a study to evaluate the prevalence of TMD in patients with partial edentulism and compare it with subjects with complete dentition. Fonseca questionnaire was used and the number of lost teeth and classification of edentulous areas was recorded. (Fallahi et al., 2016). In this study frequency of temporomandibular joint disorder was found among the patients with partial edentulism. Fonseca questionnaire was used and number of lost teeth were recorded through intraoral examination. Chairunnisa et al. conducted a study on the association between number of tooth loss, tooth loss quadrants, and occlusal support with temporomandibular disorders in partially edentulous patients. (Chairunnisa & Sihombing, 2018). In this study frequency of temporomandibular joint disorder among patients with partial edentulism was found. The results of the current study showed the frequency of temporomandibular joint dysfunction among patients with partial edentulism. After categorizing the temporomandibular disorder (TMD) score on the basis of the Fonseca questionnaire, 31.8% subjects (n=57) had no temporomandibular disorder, 41.8% subjects (n=75) had mild temporomandibular disorder and 19.5% subjects (n=35) had moderate temporomandibular disorder and 6.7 % subjects (n=12) had severe temporomandibular disorder symptoms.

CONCLUSION

This study has concluded that most of the patients with partial edentulism were seen with mild temporomandibular disorder, few with moderate temporomandibular disorder and a very small number of patients were seen with severe temporomandibular disorder.

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