

Prevalence and Associated factors Of Temporomandibular Joint Dysfunction among Young Adults in Karachi

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Article Processing

Received: 29/01/2021

Accepted: 22/05/2021

Cite this Article: Ahmed, H., Yasmeen, S., Ishaque, F., Naz, A., Khan, F., Iqbal, S. Prevalence and Associated factors Of Temporomandibular Joint Dysfunction among Young Adults in Karachi. *Journal of Rawalpindi Medical College*. 30 Jun. 2021; 25(2): 224-228. DOI: <https://doi.org/10.37939/jrmc.v25i2.1570>

Conflict of Interest: Nil
Funding Source: Nil

Access Online:



Abstract

Introduction: The objective of the study was to determine the prevalence and associated factors for temporomandibular joint dysfunction among young adults in Karachi.

Materials and Methods: A cross-sectional study was carried out in (n=383) subjects with (n=165) males and (n=218) females aged between 18–30 years. The subjects were requested to answer Fonseca's questionnaires, which consisted of ten questions. The collected data sets were analyzed statistically by using the SPSS version 22.

Result: A total (n=383) participants, the prevalence of TMD is 66.6% (n=255). The participant with TMD show 54.0% (207) mild TMD, 12.0% (n=46) moderate and 0.5% (n=2) severe. Female with 34.72% (n=133) showing TMD, as compare to men 31.85% (n=122). While considering the TMD of severe category, only females are affected showing 0.5% (n=2) prevalence. Participant with any level of TMD had associated factors, 68.92% (n=264) frequent headache: 62.66% (n=240) neck pain: 53.78% (n=206) considered themselves as tense people: 40.46% (n=155) reported to clench or grind their teeth: 32.37% (n=124) reported TMJ clicking.

Conclusion: The result of the study concluded that TMD a high prevalence among young adults in Karachi. This study also concluded that half of the participants had mild temporomandibular joint dysfunction.

Keywords: Temporomandibular disorders (TMDs), Mastication, Helkimo's indexes, Fonseca anamnestic Index (FAI).

Introduction

The temporomandibular joint is a hinge joint between the condylar head of the mandible and the mandibular fossa of the temporal bone.¹ The joint contains a fibrous extension called an articular disc that allows mandibular movements such as depression, elevation, lateral deviation, retrusion, and protrusion. The joint is surrounded by several soft tissue structures like muscles and ligaments.

The term temporomandibular disorder (TMD) is a collective term that is clinically characterized by pain in the chewing/masticatory muscles, in the area around the ear and/or in the temporomandibular joints, usually aggravated by manipulation and the alteration of mandibular (jawbone) movements (limited range of movement, asymmetric movements), and/or joint sounds such as crepitus and pops.² Furthermore, the severity of TMD often correlates with the severity of migraine headaches. The association of TMD and frequency of headaches has been well described, suggesting that both conditions are influenced by similar predisposing factors, or that they share common peripheral and/or central mechanisms.²⁻³ TMD can considerably affect the quality of life.⁴

The etiology of TMD is another topic that remains unclear. Among various hypotheses proposed to explain the onset and maintenance of symptoms, those advocating occlusal factors and psychologic disturbances are among the most common. Loss of posterior support, occlusal interference, and lack of anterolateral guidance during mandibular movements are proposed by some to play an important role in initiating and perpetuating TMD.⁵⁻⁶

Temporomandibular disorders are common among all age symptoms. Symptoms have been found more frequently in females than males, this is probably due to the presence of certain gender hormones, which decrease after menopause, reducing TMD incidence,⁷ but these findings have not always been confirmed. However, the frequencies differ between epidemiologic studies. Additionally, various age groups, different examination methods, and gender distribution lead to different results.⁸ Extra-articular disorders include myofascial pain-dysfunction syndrome (MPDS), temporal arteritis, and psychopathology and Intra-articular conditions of the TMJ include dislocation, arthritis, TMJ meniscus disorders, and tumors. The joint is auscultated during mandibular motion. The normal joint functions

relatively quietly. Listen for crepitus or grinding and clicking or popping sounds.⁸⁻⁹

According to studies the prevalence rates of temporomandibular joint disorders vary broadly (from 16% to 50%) reflecting important differences in sample, criteria, and methods used for collecting information.¹⁰⁻¹¹

Among the instruments for assessing TMD, there are questionnaires, clinical assessment, and imaging tests (x-ray, computed tomography, and magnetic resonance imaging), used according to their applicability and to users' purposes.¹²⁻¹³ Different questions covering major TMD signs and symptoms have been collaborated to simplify the evolution in epidemiologic studies and to standardize research samples. The anamnestic and clinical indexes proposed by Helkimo's (1974) were obtained from clinical observation. Based on Helkimo's (1974) indexes, Fonseca (1992) developed his anamnestic question that classifies TMD signs and symptoms as mild, moderate or severe, or free TMD.¹³ The diagnosis of TMJ is achieved by evaluating the medical history and by physical examination.¹⁴⁻¹⁶ However, diagnostic TMJ imaging methods are used to assess the integrity of its components and their functional association, to confirm the extent or progression of an existing disease, and to assess and document the effects of an already established treatment.¹⁷

Thus the prevalence and associated risk factors of TMD are fundamental to minimize its impact on the activity of living in adults, so the study aims to investigate the prevalence and associated risk factors of TMD in adults according to the standardized criteria of temporomandibular disorder.

Materials and Methods

The cross-sectional study-based survey had been conducted among young adults in the Karachi period-specific from June 2020 to November 2020. The study population comprised general laborers, students, office workers, and teachers. The suggested study sample comprised (n=383) young adults in which (n=165) males, (n=218) females take from the general population. Data were collected by using the non-Probability Convenience sampling method. Male and female of aged-group between 18-30 years involved in any chewing habits were included. The questionnaire developed by Fonseca used to evaluate the degree of TMD in the participants' frame of ten questions, were initialized to determine the presence of pain in TMJ, head, and while chewing, para-functional habits,

limitation of movements, joint clicking, perception of malocclusion, and emotional stress. Sample Proportional data sets were analyzed involve the frequency distribution by SPSS version 22 for the data obtained. An Anamnestic index Fonseca's questionnaire was used thorough categorized participants into mild TMD, moderate TMD, severe TMD, or normal.

Results

A total number of (n=383) participant from general population in which 43.1% (n=165) was male and 56.9% (n=218) was female were enrolled in this cross-sectional study. The age of the participant is between 18 to 30 years. Figure 1 the prevalence of TMD was observed in 66.6 % (n= 255) and 33.4 % (n= 128) was free of TMDs, 54.0 % (n=207) had a mild TMDs, 12.0% (n=46) had a moderate TMDs and 0.5% (n=2) had a sever TMDs. Figure 2,3 the participant 66.6% (n=255) whose had TMDs, 31.86% (n=122) and 34.74% (n=133) were male and female respectively. Refer to Table 1 Out of total participant (n=383) in which 43.1% (n=165) was male and 56.9 (n=218) was female. From 43.1% (n=165) male over 11.23% (n=43) had no TMD, 24.55% (n=94) had Mild TMD and 7.31% (n=28) had moderate TMD. From 56.9% (n=218) female through 21.92% (n=84) had no TMD, 29.5% (n=113) had Mild TMD, 4.69% (n=8) had moderate TMD and 0.5% (n=2) had Severe TMD. (Table 2)

Extensive evaluation about the risk factor of TMD data analyzed male participants 43.1% (n=165) out of 33.69% (n=129) had no issue in the opening of the mouth, (7.05%) (n=27) had some issues and 2.35% (n=9) had an issue in the opening of mouth no issue to side to side movement of the mandible, 6.00% (n=23) had some issue while 1.56% (n=6) had issues to side to side movement of mandible further 14.10% (n=54) had no complaint of frequent headache, 19.06% (n=73) had some complain and 9.92% (n=38) had complained of frequent headache. While certain specific characteristics had been reported in Table 3 In comparison between female participants 56.9% (n=218) where, (51.42%) (n=197) had no issue in opening of mouth, 4.70% (n=18) had some issues and 0.78% (n=3) had issue in opening of mouth, 48.29% (n=185) had no issue to side-to-side movement of mandible, 6.53% (n=25) had some issue and 2.09% (n=8) had issues to side-to-side movement of mandible. While other 30.02% (n=115) had no feeling of tiredness/muscular pain while chewing, 21.66% (n=83) had some feeling and 5.22% (n=20) had a strong

feeling of tiredness/muscular pain while chewing' 16.97% (n=65) had no complaint of frequent headache, 25.58% (n=98) had some complaint and 14.36) (n=55) had complained of frequent headache further distinct characteristics had been reported in Table 4.

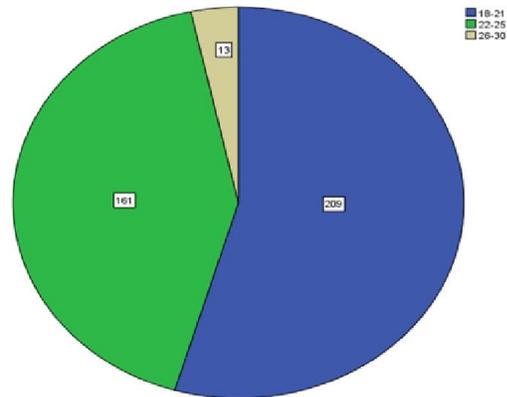


Figure 1: Age of participants

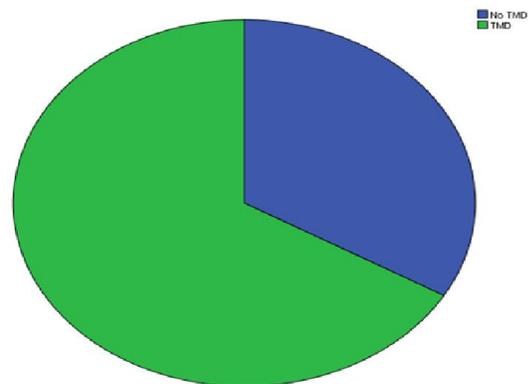


Figure 2: Prevalence of TMD

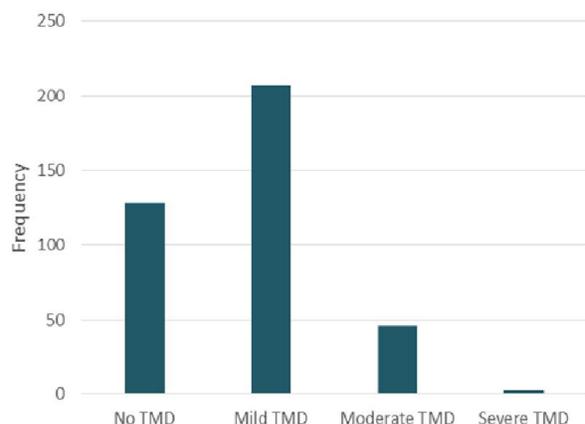


Figure 3: Prevalence of TMD and the severity of TMD

Table 1: Prevalence of TMD among males and females

Gender	Participant with No TMD	Participant with TMD	Total
Male	43	122	165
Female	85	133	218
Total	128	255	383

Table 2: Association between gender and the severity of TMD

	Male	Female	Total
No TMD	43	85	128
Mild TMD	94	113	207
Moderate TMD	28	18	46
Severe TMD	0	2	2
Total	165	218	383

Table 3: Frequency of responses among males

Characteristics	No	Sometime	Yes
01 Is it hard for you to open your mouth?	129	27	9
02 Is it hard for you to move your mandible from side to side?	136	23	6
03 Do you get tired /muscular pain while chewing?	62	85	18
04 Do you have frequent headaches?	54	73	38
05 Do you have pain on the nape or stiff neck?	60	82	23
06 Do you have earaches or pain in craniomandibular joints?	111	31	23
07 Have you noticed any TMJ clicking while chewing or when you open your mouth?	103	45	17
08 Do you clench or grind your teeth?	83	40	42
09 Do you feel your teeth do not articulate well?	121	33	11
10 Do you consider yourself a tense (nervous) person?	75	72	18

Table 4: Frequency of responses among females

Characteristics	No	Sometime	Yes
01 Is it hard for you to open your mouth?	197	18	3
02 Is it hard for you to move your mandible from side to side?	185	25	8

03 Do you get tired /muscular pain while chewing?	115	83	20
04 Do you have frequent headaches?	65	98	55
05 Do you have pain on the nape or stiff neck?	83	100	35
06 Do you have earaches or pain in craniomandibular joints?	171	22	25
07 Have you noticed any TMJ clicking while chewing or when you open your mouth?	156	45	17
08 Do you clench or grind your teeth?	145	48	25
09 Do you feel your teeth do not articulate well?	174	27	17
10 Do you consider yourself a tense (nervous) person?	102	86	30

Discussion

In the present study, over 50% of the interviewed had TMD, in which 31.86% are men and 34.74% are women while in other studies women 63.11% were more affected than men 40.62%.¹⁸ Considering severe TMD, only 0.5% of women were affected while other study women approximately 9 times more affected than men.¹⁸ The high prevalence of TMD in women may be related to their different physiological characteristics, such as regular hormonal variations, muscle structures, and different characteristics of the connective tissue.^{19,20}

Regarding TMD alone in this study, 33.5% of the subjects had no TMD, 54.0% had mild TMD, 12.0% moderate and 0.5% severe. While other studies support the findings by showing 35.78% had mild TMD, 11.93% moderate, and 5.5% severe.²¹

The participant with any level of TMD showed marked characteristics: 53.78% considered themselves as tense people while other study showed it 76.72%;²¹ 40.46% reported clenching or grind their teeth while other study showed it 71.55%;²¹ 32.37% reported TMJ clicking while other study showed it 65.52%; 68.92% reported frequent headache while other study showed it 64.66% and 62.66% reported neck pain while other study showed it 61.21%.^{21,22} These data are of great importance for the early diagnosis of TMD.

The result of this study, drawn the following conclusions: first, TMD is of a high prevalence among young adult in Karachi, among participant with TMD

which reveals that in the young population 54.0% of the person present with mild TMD; second, TMD and its associated symptoms are frequent headache 68.92%, the second most common symptom is neck pain 62.66% and the other significant symptom is the role of stress in the development or progression of TMD. More studies are required to identify risk factors associated with TMD to establish measures for prevention and treatment.

Conclusion

The result of the study concluded that TMD has a high prevalence among young adults in Karachi. This study also concluded that half of the participants had mild temporomandibular joint dysfunction i.e. 66.6 %, which is alarming. The male to female ratio was almost similar. Its associated symptoms are frequent among people the most common associated symptom of TMD is earache, the second most common symptom is clicking in joint and the other significant symptom is frequent headache, which signifies the role of stress in the development or progression of TMD. The elderly population was a point of limitation for future study design on large sample size as this study was focused only adult population.

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