



Incidence and Etiology of Temporomandibular Disorders (A Clinical Study)

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Abstract

Objective: This study aimed to investigate the incidence and etiology of temporomandibular disorders (TMD).

Setting and Duration: Study was conducted from January 2014 to September 2014 at Department of Oral and Maxillofacial Surgery Liaquat University of Medical and Health Sciences.

Methods: Specifically designed questionnaire proforma was used to collect information about the symptoms and etiology of TMD. The data was statistically analyzed using SPSS Version 17.0.

Results: The results of present study showed a total number of patients 300 were included in this study. There were 156(52%) females and 144(48%) males. Incidence of TMD was 34%.The most frequently reported TMD symptom was pain in joint(30%) followed by clicking(28%) muscle pain (22%) and the least common was restricted mouth opening (8%). Incidence of TMD was significantly high in female than male. Rate of TMD was high in 21 to 30 and 31to 40 years of age. Pain in joint, clicking and muscle pain was significantly high in females than males. The etiology of TMD is multifactorial.

Conclusion: Taken together the result of this study implies that, the frequency of TMD was widespread in our population. Females were more suffered from TMD than males. The incidence of TMD is high in age of 21-40 years in our population. Pain was the most frequently reported symptom followed by clicking, muscle pain and least common was restricted mouth opening. The etiology of TMD is acceptable that it is multifactorial (e.g. trauma malocclusion, parafunctional habits),still not completely clarified.

Keywords: Temporomandibular Disorders; Patients; Incidence; Etiology

Introduction

In dentistry a common health problem is Temporomandibular joint disorder (TMD) [1]. Presently the term 'temporomandibular disorders'(TMD) has been suggested as a 'joint term embracing a number of clinical troubles that involve the masticatory musculature, the TMJ and teeth [1-3]. The biomechanical environment in the TMJ is to understand the origin and progression of temporomandibular disorders [4].

Approximately 12% of population each year has persistent pain of TMJ [4]. The incidence and prevalence of TMD in different

population groups has been the subject of a large number of epidemiologic studies. The results revealed that about 40 - 75% of cases in general adult population (non-patients) show at least one sign of articular dysfunction (noise, disturbances of mandibular movements, etc.) and in about 33% of cases of those subjects there is at least one symptom of dysfunction (facial pain, articular pain, etc).

Among non-dental causes of orofacial region TMD are identified as major cause are considered to be a sub-classification of musculoskeletal disorders [5,6]. The diagnosis of TMD is based

on careful patient history taking and clinical examination, which depends on patient report of levels of pain/discomfort of the TMJ and associated muscles. Some patients with TMD also describe symptoms as pain/discomfort in the jaw, mainly in the region of the TMJ and/or muscles of mastication, limitation of mandibular function and TMJ sounds [7]. Clicking is the most common clinical sign of TMD [8].

The impact of TMD related pain ranges from mild discomfort to debilitating pain, such as routine oral activities (e.g., eating, speaking) can be painful, so the patients' ability to participate in these activities can be limited [9].

Various factors are involved in etiology of TMD, that include biomechanical, neuromuscular, social, neurobiological and hormonal [10]. The classification of these factors are predisposing (structural, metabolic and/or psychologic conditions), initiating (e.g. trauma or repetitive adverse loading of the masticatory system) and aggravating (parafunction, hormonal, or psychosocial factors) to emphasize their role in the progression of TMD [10]. It is now established that the etiology of TMD is multifactorial even though finding the primary etiologic factor can be difficult for the Individual patient [11]. Recent research has consistently emphasized behavioral and psychosocial factors as a part of a multifactorial etiology for TMD. The prevailing etiological model of TMD proposes that psychological factors (e.g., stress, anxiety, anger, depression) trigger oral habits (e.g., teeth clenching and grinding, jaw thrusting) resulting in muscle hyperactivity / tension in masticatory musculature and subsequent facial pain [10]. However, occlusal parameters (decayed teeth, faulty restorations, missing teeth and faulty dentures affecting occlusion) have also been speculated to have a certain association with TMD [12].

It is prone that the etiology of TMD will be different in young and in older patients. With increasing age, there is an increased risk of age-related joint changes and systemic Conditions affecting the TMJ.10However, it is commonly assumed that TMD most likely affect the adult patients [8,11]. The affected age group is most commonly Between 20 to 40 years [13]. In young individuals and adolescents the signs and symptoms of TMD have been noted but the prevalence is lower than in adults [10]. It is well predictable that the symptoms of TMD decrease with age and are often remitting and self-limiting [14]. The etiology of TMD in children and adolescents is measured multifactorial in nature and has

been related to trauma, malocclusion, and oral para functions such as bruxism, nail biting, and non-nutritional sucking [13,15]. The incidence of TMD sounds, limitation on mouth opening, masticatory muscle soreness, and pain in the TMJ area are often due to enormous changes in occlusion and TMJ, increasing from the primary dentition to the mixed dentition [13]. The most Common chief complaint of patients in TMD is pain important to pursuit of its treatment. Approximately 25% of those individuals experiencing temporomandibular pain will ultimately ask for treatment [15].

Material and Methods

This descriptive study with convenience sampling technique comprises 300 consecutive patients. An explanation regarding purpose of study was given to participants and informed consent was taken. Complete history and clinical examination was carried out to determine the etiology of symptoms and recorded on prescribed proforma.

Inclusion criteria

- Age 15 years and above of either gender.
- Patients having one of the following complain.
- Pain in the TMJ area.
- Clicking sounds.
- Restricted mouth opening.

Exclusion criteria

- TMJ disorder associated with fractures, infections, ankylosis, malignancies.
- Generalized conditions involving TMJ.
- Oral submucous fibrosis.

Results

A total of 300 patients were included in this study. There were 156(52%) female and 144(48%) male as shown in figure 1. Most of the patients were between 21 to 30 years of age as presented in figure 2. The average age of the patients was 26.68 ± 7.21 years (95%CI: 25.86 to 27.50).

Frequency of TMD was 34% (Figure 3) in which the most repeatedly presented TMD symptom in this study was joint pain 30% followed by clicking 28%, muscle pain 22% and the least common was restricted mouth opening as presented in table 1. Comparison of symptoms with respect to gender is shown in table 2. Etiological factors of temporomandibular disorder (TMD) are presented in figure 4. Commonest etiologies were bruxism 20% (60/300) and trauma 16% (48/300) followed up by malocclusion

12% (36/300), tooth clenching 8% (24/300) and nail biting 2% (6/300).

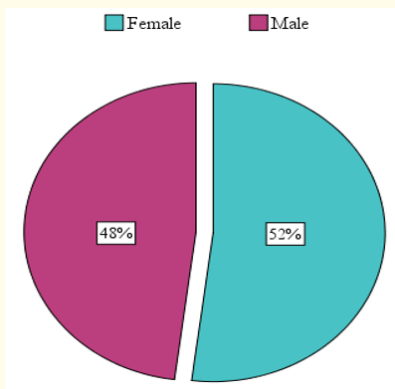


Figure 1: Gender Distribution Of The Patients N=300.

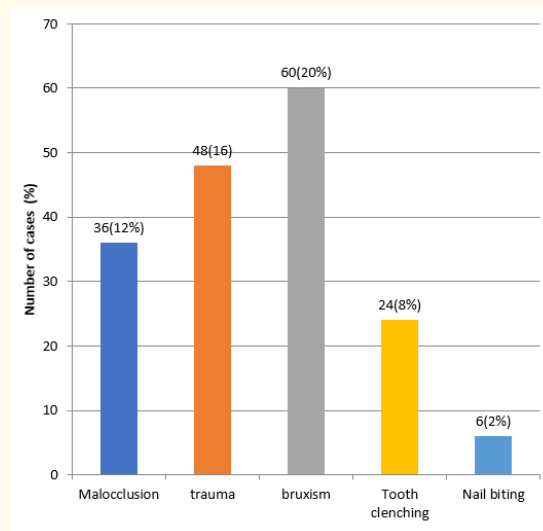


Figure 4: Etiology Factors of Temporomandibular Disorder (n=300)

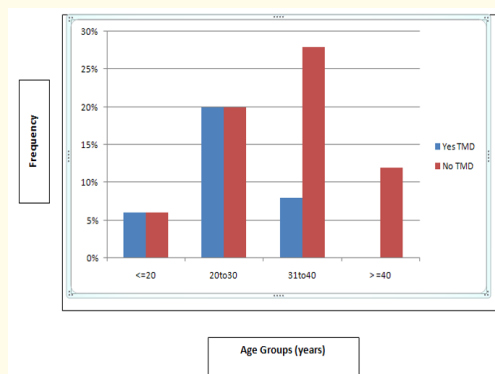


Figure 2: Age Division Of The Patients n=300.

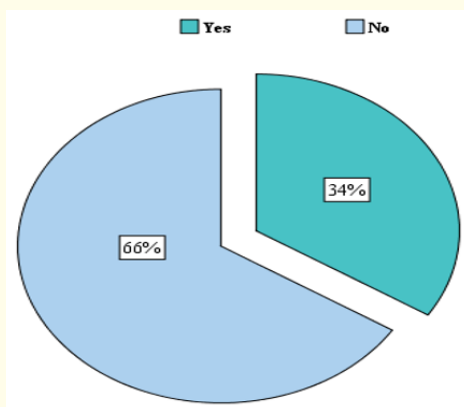


Figure 3: Frequency of Temporomandibular Disorder (Tmd) n=300.

Symptoms	Count	Percentage
NO Symptoms	198	66%
Restricted mouth opening	24	8%
Pain in Joint	90	30%
Clicking	84	28%
Muscle Pain	66	22%
Pain+ Clicking	12	4%
Pain + Clicking + Restricted mouth opening	12	4%
Pain + Muscle pain	12	4%
Pain+ clicking+ muscle pain	42	14%
Pain + Clicking + Restricted mouth opening+ Muscle pain	12	4%

Table 1: Frequency of Temporomandibular Disorder with Respect to Symptoms n=300.

Symptoms	Female n=156	Male n=144	P-Values
No Symptoms	78(50%)	120(83.3%)	0.0005
Restricted mouth opening	12(7.7%)	12(8.3%)	0.846
Pain in Joint	72(46.2%)	24(16.7%)	0.001
Clicking	60(38.5%)	24(16.7%)	0.0001
Muscle Pain	66(42.3%)	0(0%)	0.0005

Table 2: Comparison of Temporomandibular Disorder Symptoms Between Genders.

Discussion

Among 300 patients there were 156 (52%) females and 144 (48%) males in the present study. The total frequency of TMD observed in 300 general populations were 34% as per finding of this study. The incidence of TMD in female was more than males according to results of present study. According to previous studies, it is accepted that TMD symptoms are more common in females [16,17]. The prevalence of TMD in women is four times higher than in man [18]. The female to male ratio of TMD patients has been reported as ranging from 3:1 to as high as 9:1.26. The reason behind that TMD is more common in females with respect to different studies are as follows, Female reproductive hormones are known to be associated with increased risk of TMD pain as the presence of reproductive hormones increases the risk of developing pain.

The current study concluded that finding of 'no symptoms' was seen in 50% females and 83.3% in males. Pain in joint in females is 46.2% and in males is 16.7%. Similarly the clicking of joint is more in females than males, the clicking was found in females was 38.5% and males 16.7%. Another finding of current study is muscle pain that was more in female 42.3% and in males was 0%. According to current study the restricted mouth opening is slightly higher in males 8.3% than females 7.7%. According to previous studies when the symptoms are separately and independently evaluated between genders, it has been noted that women more frequently suffer from headaches, clicking in TMJ and pain in joint and muscles [19]. According to another study that concluded by different surveys in general population that pain in joints, muscle pain and clicking of joints was greater in females than males [20]. Johansson, *et al.* concluded in his study that in adults females report more frequent, severe and persistent TMD symptoms and exhibit more clinical signs than males [21]. Gender differences and its influence on the course of TMD is still a topic of interest.

According to this study the comparison of etiologic factors of TMD between genders were concluded as, trauma was significantly high in females 26.9% than males 4.2%. Another etiologic factor of TMD like malocclusion was found 23% in females and 0% in males. Bruxism was found in females 23.1% and 16.7% in males. Tooth clenching and nail biting was not significant between genders. The bruxism also found more in females than males in our population

due to psychosocial domain, life stress, and depression could cause such types of habits in patients that can lead to TMD. Such type of comparison was not found in previous studies.

Looking at the incidence of each symptom separately this study concluded that, pain was the commonest symptom in the sample investigated that was 30%. Which was also observed in the different earlier researches carried out, the occurrence of TMD related pain was approximately 5 - 10%. The most common symptom reported by patients with TMD is facial pain [22].

Von Korff, *et al.* concluded in his study that about 25% of those individuals experiencing temporomandibular pain will eventually seek treatment [23]. Dworkin S.F, *et al.* also concluded in his study that TMD related pain was reported by 12.1% of the general population [24]. Kalamir, *et al.* observed that 10 - 40% of the population suffers from severe head pain, of which preauricular or temporomandibular pain constitutes a large proportion in chronic sufferers of TMD [25].

The findings of current study concluded that clicking was the second most common symptom in the sample investigated that is 28%, whereas other studies demonstrated the most common symptom was clicking sounds with prevalence of 25% to 43% [24]. Prevalence of clicking reported by Elfving, *et al.* was 56% in TMD patients and 36% in general population. Agerberg, *et al.* concluded in his study prevalence of clicking 39% in the general population and 79% in previous patients [26]. Schmitter, *et al.* reported in his study patients experience clicking sounds 38% of the cases [27]. Similarly Hashimoto K., *et al.* and Truelove E proposed in his study that clicking in the TMJ on mandibular movement is frequently present in patient with TMD; both are also concluded that clicking is common finding in those peoples who are completely asymptomatic [28,29]. Compared the current results to previous studies the incidence of clicking was somewhat lower than former studies.

Looking at the incidence of another symptom in this study the finding of muscle pain was 22%. That shows the muscle pain was also a common symptoms in patients suffered from TMD. Schmitter, *et al.* concluded in his study the prevalence of muscle pain in TMD patients approximately 25% [27]. The incidence of muscle pain in the current study is within the range of previous study.

The least common finding of current study was restricted mouth opening 8%. Similarly Huber NU., *et al.* concluded in his study that prevalence of restricted mouth opening was present in only about 5% of cases [30]. Feteih R M concluded also in his research prevalence of restricted mouth opening is 4.7% [31]. The result of the present study are within the range of previous studies.

Malocclusion was also found to be an etiologic factor in TMD are present study it was found to be 12%. PullingarAG., *et al.* and De boever, *et al.* concluded that malocclusion has an important role in the development and course of TMD [32,33]. Sonnesen, *et al.* reported in his study that a significant association of TMD with unilateral crossbite and midline displacement [34]. The TMD is more due to malocclusion in our population as compared to British population because of lack of awareness regarding malocclusion which causes more TMD problem in our population.

Another finding of this study was parafunctional habits like tooth clenching and nail biting the finding of tooth clenching in this study was 8% and nail biting was 6%. Saheeb concluded in his research that clenching was found in general population is 17.2%, and nail biting was found 24.1% [35].

Looking at the incidence of TMD among age groups the current study concluded that the incidence of TMD was high in 20 to 30 and 31 to 40 years of age. According to previous studies the incidence of TMD among different age groups were concluded by different authors that, generally the TMD affects all age group List, *et al.* concluded that the highest incidence occurs in young and middle aged adults, followed by a decline with age Okeson concluded that the highest prevalence of TMD symptoms was reported in the 20 to 40 years age population which is in similarity with the finding of current study.

Conclusion

Taken together the result of this study implies that, the incidence of TMD is common in our population. Females were more suffered from TMD than males. The incidence of TMD is high in age between 20 - 40 years in our population. The most often encountered TMD symptom was pain followed by clicking, muscle pain and least common was restricted mouth opening. The etiology of TMD is acceptable that it is multifactorial, still not completely clarified. There is some limitation of study.

1. Lack of awareness of patients.
2. Environmental factors.

3. Poor socioeconomically conditions of patients.
4. Uncooperative patients.

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