

“Prevalence of types of temporomandibular disorders among the dental OPD patients- A cross-sectional study”

Dr. Preeti Nair, MDS¹, Dr. Karthik Hegde, MDS², Dr. Rhiti Chatterjee³, Dr. Himangi Srivastava⁴, Dr. Roshni Lalwani⁵, Dr. Roopali Patel⁶,

¹Professor and Head, Department of Oral Medicine and Radiology, People's College of Dental Sciences, Bhopal, India.

²Reader, Department of Oral Medicine and Radiology, People's College of Dental Sciences, Bhopal, India.

³Post Graduate Student, Department of Oral Medicine and Radiology, People's College of Dental Sciences, Bhopal, India.

⁴Post Graduate Student, Department of Oral Medicine and Radiology, People's College of Dental Sciences, Bhopal, India.

⁵Post Graduate Student, Department of Prosthodontics, People's College of Dental Sciences, Bhopal, India.

⁶Post Graduate Student, Department of Oral Medicine and Radiology, People's College of Dental Sciences and Research Centre, Bhopal, India.

Corresponding Author: Dr. Roopali Patel

Abstract

Background- To identify the role of Malocclusion, Parafunctional habits, other factors associated in causing TMDs and also to establish the most prevalent type of TMD in various Age group and gender.

Method- Cross-sectional study conducted among 21,623 patients based on clinical examination and constructed questionnaire. Data subjected to Pearson Chi-Square Analysis and Statistical analysis carried out using SPSS release 20 package.

Results- The results of present investigations showed that 55.3% of the patients had TMD of which 73% were females. Patients below the age of 20 years were found to be most commonly affected (53%) followed by the age group of 21 to 40 years (26%). Various factors contributing to TMD were also established.

Conclusion- The present study showed a high risk of developing TMDs among the younger age group especially in females. This demands further investigations to identify the risk factors associated with TMD in order to establish various measures in preventing and managing the disease.

Keywords: Temporomandibular disorder, Parafunctional habits, Masticatory muscles.

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I. Introduction

Temporomandibular joint, a ginglymo-diarthroidal joint, distinctly differs from other joints because of the involvement of two bones- mandible and temporal, an articular disc, muscles (elevators more than depressors), ligaments, and dentition regulated by an intricate neurologic control system. Though each joint can simultaneously perform a different function, neither can work without influencing the other^[1]. The joint is vulnerable to damage due to the constant loading and limited function of the articular disc to redistribute the joint stresses^[2].

One of the dilemmas in the diagnosis of orofacial pain involves, a group of heterogeneous pathologies which affect the temporomandibular joint, muscles of mastication and associated structures called as temporomandibular disorders^[3]. These disorders can be identified by a triad of clinical signs like TMJ and/ or muscle pain; joint sounds; and restriction/ deviation/ deflection in the path of mouth opening^[4]. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) is the latest classification formulated to aid in clinical diagnosis of temporomandibular joint disorders^[5].

The multifactorial etiology involves pathophysiological and psychosocial factors; now proposed as biopsychosocial model. Macrotrauma, microtrauma, malocclusion, loss of teeth and systemic diseases comprise the former group while emotional stress, sleep disturbances and negative attitude may be some of the factors in the latter group^[6]. There is considerable variability in the prevalence of TMDs, ranging from 6 to 93% based on subjective symptoms and 0-93% based on objective signs. This can be attributed to the disparity in the diagnostic criteria rather than to the variation in the population studied^[7]. Standardization in the diagnostic criteria would be instrumental in conducting multi-centric studies which could reflect the prevalence of these disorders region wise and country wise. Based on epidemiological studies, most TMD symptoms occur in the

younger age group, especially students with female predilection^[1,7]. Many studies have focused on university students; however, the prevalence is no lesser in the general population. Nevertheless, in general population the symptoms are most commonly pronounced between the ages of 17 and 30, while in patients the symptoms are more pronounced between the ages of 20 and 40^[8]. Gender studies showed a higher frequency for all signs and symptoms of TMD among Women than men^[9]. This study was carried out to estimate the prevalence of TMDs in patients reporting to outpatient department. The objectives were to establish the most prevalent type and to establish the role of malocclusion and parafunctional habits in its causation, to assess factors associated with it, to ascertain the age group and gender most related to TMDs.

II. Materials and Methods

A cross sectional study was carried out in the outpatient department from August 2013 to February 2015 where 21,623 patients were examined. TMJ function and dysfunction along with muscles of mastication and occlusion was assessed using a constructed questionnaire. It helped record demographic data including history and habits with pain rating, detailed examination of hard tissues with special emphasis on TMJ examination. Detailed examination of TMJ and muscles of mastication was done. Written consent was obtained from all the patients. Non compliant patients were excluded from the study. Statistical analysis was carried out using SPSS software. The frequency of signs and symptoms and the prevalence of various forms of TMDs were reported. The data was subjected to Pearson's Chi-square analysis to check for the statistical significance. The p-value was set at <0.05.

III. Results

The prevalence of patients diagnosed with TMDs was 55.3%, 73% being females and the rest (27%) were males (Fig.1) Patients below 20 years of age were found to be most commonly affected, i.e.53%, followed by 26% in 21-40 yrs, 10% in 41-60yrs and 11% in 61-80 yrs age group (table1). Factors contributing to TMD were established to be parafunctional habits (34%), overstretching during yawning (31%), trauma to the jaw (23%), dental treatment (8%) and traumatic dental treatment (4%) (fig 2). 63% presented with at least one symptom while 37% of the diagnosed subjects were asymptomatic. Pain was the most common symptom (42%), followed by difficulty in mouth opening (30%) and stiffness in the jaws (28%). The mean score on visual analog scale (VAS) was found to be 3.5±1.2.

Amongst all the cases of TMDs, 91% presented with TMJ sound like thud, pop, clicks, 59% with deviation, and 89% had derangement in occlusal relationship out of which 96% had anterior deep bite. The relationship between anterior deep bite and TMDs was found to be statistically significant with p<0.05. The most common form of TMD which was diagnosed was anterior disk displacement (ADD) with reduction (36%) followed by myositis (26%), hypermobility (23%), Myofascial pain dysfunction syndrome (MPDS) (5%), ADD without reduction (3%), subluxation (2%), dislocation (2%), osteoarthritis (2%) and capsulitis/synovitis (1%) (table 2).

IV. Discussion

Quality of life may be adversely affected by chronic orofacial pain, TMD being a major cause of the same. The results of the present study showed that TMDs are remarkably prevalent (55.3%) in the general population which was similar to a “German population”-based study by Gesch (2004) (49.9%). Various prevalence studies based on young population found the TMD prevalence to vary from 30% to 75%^[10-21].

The female predilection found in this study (fig 1.) is comparable to the results of studies by many authors^[9,11,14,16,22,23]. Warren and Fried hypothesized that morphological changes in the TMJs of women could be the reason for such predilection^[16]. Hormone level fluctuation has been quoted as the possible cause by various authors^[6,24-30]. In addition, Wieckiewicz et al mentioned other causes to be biological differences, social position, or higher sensitivity to pain in women^[6]. Chalkoo et al found significant association between the estrogen level and TMDs. He stated that estrogen receptors are widely distributed in the body, including the articular cartilage and subchondral bone of the TMJ which affects the immune response in the TMJ^[30]. Kishimoto et al, by his study on animal model, found that expression of inducible nitric oxide synthase (iNOS, an essential enzyme in the pathogenesis of inflammatory arthritis) in the synovial membrane with mandibular deviation, may be exacerbated, in the presence of estrogen^[31].

Parafunctional habits, as a contributing factor produces joint noise as an effect, presenting with difficulty in mouth opening, concomitantly. The present study showed high prevalence of joint sounds (91%), difficulty in mouth opening (30%) and parafunctional habits (34%). Similar results were demonstrated in the study by Melchior et al^[32]. Saheeb et al reported that 89.7% of the TMD patients had oral and parafunctional habits^[33]. Zhang et al stated that occlusal trauma and occlusal interference were important contributing factors^[34].

Complexity in the anatomy of this compound joint leads to a myriad of disorders in such a confined space. Clicking sounds, deviation and deflection of the mandible are strongly suggestive of disc derangement. Up to 8% of TMDs may be constituted by internal derangements^[35]. In the present study, anterior disc displacement (ADD) with reduction was the commonest disorder (36%), while other studies showed variations^[36,37]. ADD without reduction showed 3% occurrence in the current study while Machado et al reported a prevalence of 4%^[37]. Breaking of adhesions, promoting lubrication of synovial fluid and encouraging resorption of inflammation along with judicious usage of splints, remain the mainstay in management of derangement of disc^[35].

Muscular symptoms in the head and neck region rank high in the differential diagnosis of orofacial pain. Myositis is nonspecific pain of masticatory muscles while “myofascial pain” is described by the presence of trigger points^[38]. Musculoskeletal pain could negatively impact the daily activities and quality of life. Prevalence of muscular disorders ranges from 2.68%^[39] to 64.7%^[37], while the present study showed 31%. Studies based on lower socio-economic group have shown lesser prevalence of MPDS than those in developed regions^[40]. Multiple studies have, time and again, reiterated, that high muscular tension, precipitated by anxiety, seem to be strongly linked with presence of TMDs. Masseter was found to be the most commonly affected muscle in this study.

TMDs have a high occurrence among school and university students, i.e., among the youth, as found in the present investigation. The possible explanation could be stress and anxiety related to academics, moving away from adult supervision, peer pressure and competition^[15,19]. Early correction of malocclusion, identification of psychological problems and rehabilitation constitute essential remedial methods of this malady.

V. Conclusion

Chronic disease may hamper social life, predispose to negative interpersonal relations and may lead to overall deterioration in quality of life. A holistic approach to multifactorial disease becomes necessary to encompass all aspects of the disease; World health organisation too vouches for the same through its definition of disease. The biopsychosocial model enlightens us regarding not only the scientific approach, but also adoption of a spiritual dimension in the management of these disorders. Thus ideally, physical appliances, correction of occlusion and habits, active counseling and life modification changes could propel early expulsion of TMDs in our society.

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Figure 1. Gender distribution of TMD patients

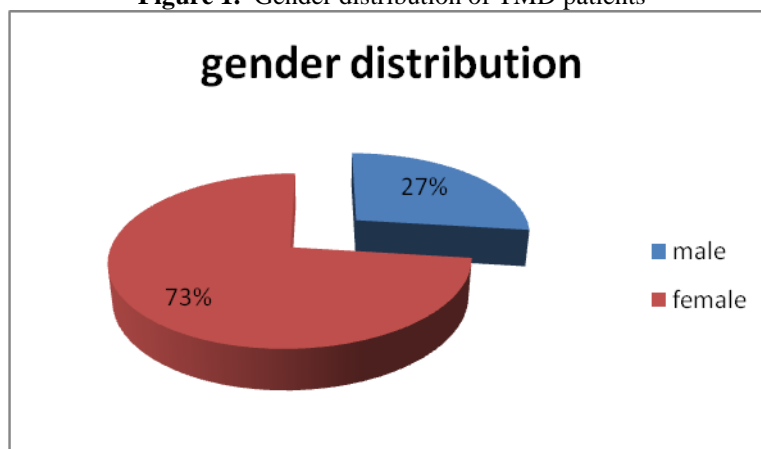


Table I: Age distribution of TMD patients

Age group (years)	N	Percentage%
<20	6338	53
21-40	3109	26
41-60	1196	10
61-80	1315	11
81-100	0	0

Fig 2. Distribution of contributing factors of TMDs.

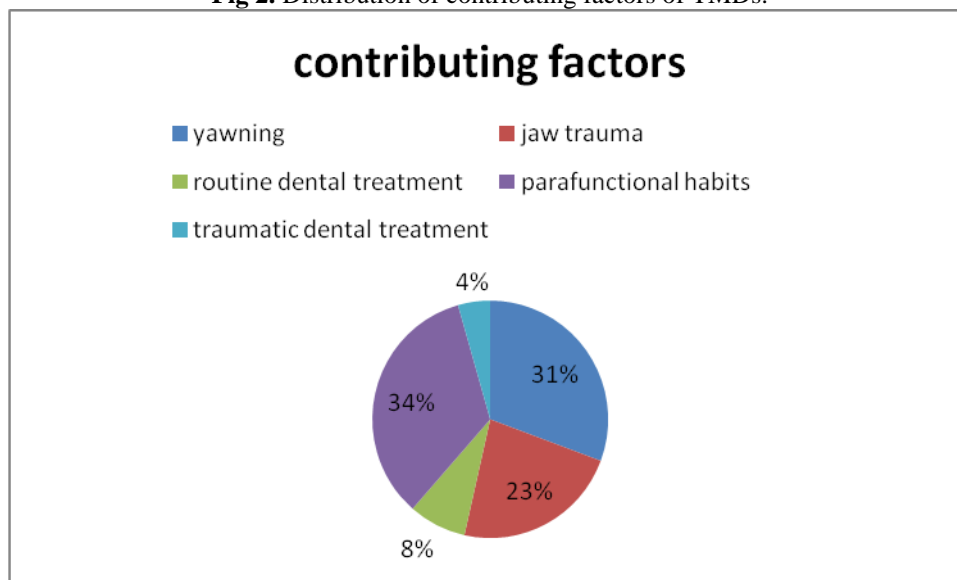


Table II. Distribution of types of TMDs among the TMD patients

Temporomandibular Joint Disorders	n	Percentage(%)
ADD with reduction	4306	36
ADD without reduction	359	3
Myositis	3109	26
Hypermobility	2750	23
Osteoarthritis	239	2
Retrodiscitis	0	0
Capsulitis	119	1
MPDS	598	5
Subluxation	239	2
Dislocation	239	2

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