

Prevalence of Temporomandibular Disorders and Assessment of Factors Associated with it - A Retrospective Study

Research Article

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Abstract

The temporomandibular joint has many anatomic and functional features that make it one of the most complex joints of the body. Temporomandibular disorders are a complex group of conditions involving the temporomandibular joint, disc or masticatory muscles. This condition causes a physical and psychological debility in the population, as the pain is widespread and causes disability. Patients can also have clicking or grating sounds, limited or asymmetrical jaw movement. Even though it is not a life threatening disease, the quality of life is reduced. The aim of this study was to evaluate the prevalence of temporomandibular disorders and assessment of factors associated with it. A retrospective study was conducted in the Saveetha Dental College. Ethical clearance was obtained from SRB committee, Saveetha Dental College. Data was collected from a total of 86000 patients who visited Saveetha dental college between Jun,2019 to March,2020. Out of this, the data of 69 patients who had pain in the TMJ in this time frame were retrieved. The data obtained was tabulated in SPSS for windows, version 20. Frequencies were analysed. Chi square test was done to analyse association. There is no significant association between type of TMD with age ($P=0.342$), gender ($P=0.950$) and dental status ($P=0.404$) in the present study. Within the limitations of this study, TMD was more predominant in males, disc displacement was more predominant and the most affected age group was between 30-39 years of age.

Keywords: Temporomandibular Disorders; Tmd; Condylar Disc Disorder; Mpds; Degenerative Disorders.

Introduction

The temporomandibular joint has many anatomic and functional features that make it one of the most complex joints of the body [11]. The part of the mandible in the TMJ is the condyle. Condylar remodeling is continuous even after cessation of growth. It is associated with ageing. Condylar remodeling is a physiological, adaptive process. It is the adaptation of the structure of the condyle to meet the functional demands [3]. While evaluating panoramic radiographs, this adaptive mechanism must be kept in mind. Temporomandibular disorders are a complex group of conditions involving the temporomandibular joint, disc or masticatory muscles. It is characterized by chronic facial pain. Sometimes, it is also associated with other comorbidities, like chronic joint and muscle pain [1]. This condition causes a physical and psychologi-

cal debility in the population, as the pain is widespread and causes disability. Patients can also have clicking or grating sounds, limited or asymmetrical jaw movement. Even though it is not a life threatening disease, the quality of life is reduced [5, 62, 7].

TMD can be caused by trauma, grinding and clenching of teeth, disc slip, stress, osteoarthritis and rheumatoid arthritis [16]. Also, a hereditary problem named joint hypermobility where there is increased range of motion in all joints. This is called TMJ hypermobility. Winocur et al, after conducting a study about the prevalence of general joint laxity and TMJ hypermobility among adolescent girls, stated that there was a 43% prevalence of generalized joint laxity and out of which 27.3% was recognised as TMJH [68]. Adair et al, conducted a survey where they discovered that patients with generalized joint hypermobility were more likely

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to show signs and symptoms of TMD than ones with normal joint mobility [68]. Types of TMD include disc condyle disorder, MPDS and degenerative disorder [9].

Certain genetic factors, like polymorphisms in COMT - catechol - O - methyltransferase - and ADRB2 – beta - 2 adrenoceptor genes, are likely to be responsible for hypersensitivity to experimental pain in at least 50% of the cases studied. These same factors may make individuals more susceptible to developing chronic pain throughout life [25]. Joint pains can also be associated with systemic factors like, hormonal changes, autoimmune diseases, bacterial and viral infiltration, tissue metabolism, etc [59, 63, 32, 8].

Several studies state that females have more predilections for TMD due to stress and hormonal changes [36, 48, 57]. Dental status like occlusal interference, loss of teeth, loss of vertical dimension, excess vertical dimension in removable or fixed prosthesis, orthodontic treatment, parafunctional habits like clenching and bruxism, and talking with phone over shoulder [24, 52, 25, 27]. Dental treatments like implant placements, extraction of teeth, etc exacerbate the pain [2, 25, 17]. Different studies state different relationships between age and TMD. According to Österberg T et al, neither the variation in TMD symptoms between various age groups and with time is fully understood, nor is the etiology of TMD clarified [41]. However Ferreira et al stated a higher occurrence in young adults [21].

Previously our team has a rich experience in working on various research projects across multiple disciplines. (Jain, 2017 [31]), (Varghese, Ramesh and Veeraiyan, 2019 [61]), (Ashok and Ganapathy, 2019 [6]), (Padavala and Sukumaran, 2018 [42]), (Ke et al., 2019 [34]), (Krishnan et al., 2018 [6]), (Ezhilarasan, Sokal and Najimi, 2018 [20]), (Pandian, Krishnan and Kumar, 2018 [44]), (Ramamurthy and Mg, 2018 [50]), (Gupta, Ariga and Deogade, 2018 [27]), (Vikram et al., 2017 [66]), (Paramasivam, Vijayashree

Priyadharsini and Raghunandhakumar, 2020 [45]), (Palati et al., 2020 [43]), (Samuel, Acharya and Rao, 2020 [50]) Now the growing trend in this area motivated us to pursue this project.

The purpose of this study was to evaluate the prevalence of temporomandibular disorders.

Materials And Methods

A retrospective study was conducted in the Saveetha Dental College, Chennai, India. Ethical clearance was obtained from SRB committee, Saveetha Dental College, Chennai, India. The clinical portion of this retrospective study was conducted over a 9 month period, i.e, between June, 2019 to March, 2020 and included patients who came with pain in the TMJ.

Inclusion criteria: Patients who came with pre-existing pain in TMJ, both males and females.

Exclusion criteria: Patients in whom only clicking was present without any pain.

Data was collected from a total of 86000 patients who visited Saveetha dental college between Jun, 2019 to March, 2020. Out of this, the data of 69 patients who had pain in this time frame were retrieved. The data obtained was tabulated in SPSS for windows, version 20. Frequencies were analysed. Chi square test was done to analyse correlation.

Results

In the present study 55.1% were males and 44.9% were females [Figure 1]. 13% of the patients were <20 years, 21.7% of the patients were between 20-29 years of age, 40.6% of the patients were between 30-39 years of age, 14.5% of the patients were between 40-49 years of age, 8.7% of the patients were 50-59 years

Figure 1 - Bar graph represents the association between gender and type of TMD. X-axis represents the gender and Y-axis represents the percentage of patients with TMD. Chi-square test was done. (Pearson Chi-square P value: 0.950 (>0.05), hence not statistically significant). There is no statistically significant association between gender and type of TMD.

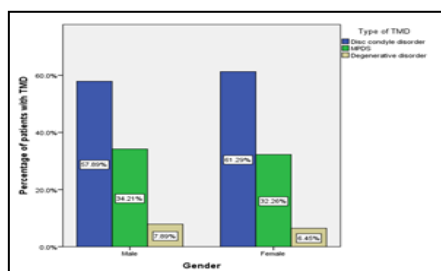


Figure 2 - Bar graph represents the association between age and type of TMD. X-axis represents the age and Y-axis represents the percentage of patients with TMD. Chi-square test was done. (Pearson Chi-square P value: 0.342 (>0.05), hence not statistically significant). There is no significant association between age and type of TMD.

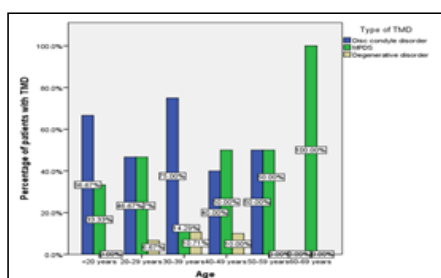


Figure 3 - Bar graph represents the association between dental status and type of TMD. X-axis represents the dental status and Y-axis represents the percentage of patients with TMD. Chi-square test was done and association was not found to be statistically significant. (Pearson Chi-square P value:0.404(>0.05), hence not statistically significant). There is no significant association between dental status and type of TMD.

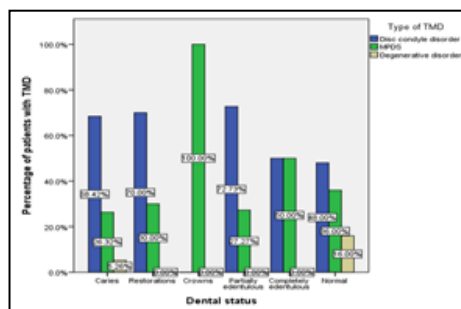


Table 1 - Represents the frequencies of age, gender, type of TMD, dental status of participants.

S.No	Variable	Options	Frequency [%]
1	Gender	Male	38 [55.1%]
		Female	31 [44.9%]
2	Age	<20 years	9 [13%]
		20-29 years	15 [21.7%]
		30-39 years	28 [40.6%]
		40-49 years	10 [14.5%]
		50-59 years	6 [8.7%]
		60-69 years	1 [1.4%]
3	Type of TMD	Disc condylar disorder	41 [59.4%]
		MPDS	23 [33.3%]
		Degenerative disorder	5 [7.2%]
4	Dental status	Caries	19 [27.5%]
		Restorations	10 [14.5%]
		Crowns	2 [2.9%]
		Partially edentulous	11 [15.9%]
		Completely edentulous	2 [2.9%]
		Non-carious lesions	25 [36.2%]

of age, 1.4% of the patients were between 60-69 years of age [Figure 2]. 59.4% had Disc condylar disorder, 33.3% had MPDS, and 7.2% had degenerative disorder. 27.5% had caries, 14.5% had restorations, 2.9% had crowns, 15.9% were partially edentulous, 2.9% were completely edentulous, 36.2% had non carious lesions [Figure 3][Table 1].

There was no significant correlation between Type of TMD with gender (P=.950), age (P=.342), Dental status (P=.404) and systemic diseases (P=.205). Significance level was set at P<0.05.

Discussion

In the present study 55.1% were males and 44.9% were females [Figure 1].13% of the patients were <20 years, 21.7% of the patients were between 20-29 years of age, 40.6% of the patients were between 30-39 years of age, 14.5% of the patients were between 40-49 years of age, 8.7% of the patients were 50-59 years of age, 1.4% of the patients were between 60-69 years of age [Figure 2]. 59.4% had Disc condylar disorder, 33.3% had MPDS, and 7.2% had degenerative disorder. 27.5% had caries, 14.5% had

restorations, 2.9% had crowns, 15.9% were partially edentulous, 2.9% were completely edentulous, and 36.2% had non carious lesions [Figure 3].

In the present study, males with TMD were more predominant than females. But there was no significant correlation between type of TMD with gender (P=.950). Haissam Dahan et al state that gender is a major confounder in TMD [15]. Korszun et al, Contreras et al, Gonçalves DA, Österberg et al, Plesh et al, also stated that TMD is more predominant in women due to an increased predominance of stress related disorders (Website, no date; [35, 41, 48, 13] Bonato et al stated that 82.5% of their sample population with TMD was women [10]. A study done by Fillingim et al on chronic TMD patients stated that women reported with higher levels of psychological distress across several SCL-90R scales, along with greater neuroticism, perceived stress, negative affect, and somatic awareness. Women also reported greater use of catastrophizing, distraction, and praying & hoping, while men reported higher scores on coping self-statements, and ignoring and reinterpreting pain sensations [2]. Another study done by Ferreira CL et al stated that the number of women who presented

a higher prevalence of painful symptoms was greater, followed by otologic symptoms and complaints of dysphonia [21]. However, Hiltunen et al stated that no differences based on gender were found [29].

Disc condylar disorder was more predominant in this study. However, in a study by Yap et al, MPds was more common. Bertoli et al and Franco-Micheloni et al also stated that MPDS is most common followed by disc displacement and degenerative disorders [23, 9].

In the present study, patients were predominantly between 30-39 years of age. This concurs with Bonato et al, who stated that TMD is more prevalent in women between 20 and 40 years [10]. However, Plesh et al stated that for females, headache or migraine pain with TMJ pain peaked around age 40 and decreased afterwards. Joint pains increased with age regardless of gender [48]. Ferreira et al stated a higher occurrence in young adults [19 to 40 years old] [21]. Contreras et al stated that TMD onset tends to occur after puberty, and the increase in the severity of signs and symptoms generally reaches its peak during the reproductive age [48, 13]. However, Hiltunen et al stated that no differences based on age were found [29]. But there was no significant association between types of TMD and age ($P=.342$) in the present study.

27.5% had caries, 14.5% had restorations, 2.9% had crowns, 15.9% were partially edentulous, 2.9% were completely edentulous, and 36.2% had non carious lesions in the present study. But there was no significant correlation between type of TMD with dental status ($P=.950$). Mathew et al Pereira et al., Sato et al., Hiltunen et al., Crow et al., and Takayama et al., stated that there is no significant association between degenerative changes in the condyle with dentition status [47, 56, 29, 14, 60]. However, Muir et al, Giesen et al., and Harriman et al were not in agreement [28, 40, 26]. Österberg et al stated that the TMD index was significantly associated with bruxism [41]. Huang et al reported a correlation between third molar extraction and TMD [30]. Moon et al stated that loss of occlusion and centric relation causes loss of equilibrium leading to TMJ and postural problems[39].

The limitations of this study were firstly, the small sample size. Secondly, the entire sample was taken from a similar geographic location. Thirdly, systemic diseases were not assessed. Further studies need to be done with a larger sample size to assess the prevalence of TMD with systemic diseases. Our institution is passionate about high quality evidence based research and has excelled in various fields (Pc, Marimuthu and Devadoss, 2018 [46]; Ramesh et al., 2018 [51]; Vijayashree Priyadharsini, Smiline Girija and Paramasivam, 2018 [65]; Ezhilarasan, Apoorva and Ashok Vardhan, 2019 [19]; Ramadurai et al., 2019 [49]; Sridharan et al., 2019 [58]; Vijayashree Priyadharsini, 2019 [64]; Chandrasekar et al., 2020 [12]; Mathew et al., 2020 [38]; R et al., 2020; Samuel, 2021 [53]). We hope this study adds to this rich legacy.

Conclusion

The present study was conducted to understand the prevalence of temporomandibular disorders and assessment of factors associated with it. Within the limitations of this study, TMD was more predominant in males, disc displacement was more common and the most affected age group was between 30-39 years

of age. There is no significant association between type of TMD with age, gender and dental status in the present study.

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