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PREVALENCE OF TEMPOROMANDIBULAR DISORDERS AMONG PATIENTS VISITING A PRIVATE DENTAL INSTITUTION

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Abstract

Temporomandibular disorders (TMD) are a set of joint and muscular dysfunctions of the cranio-orofacial area. Thus the diagnosis of early symptoms and sign of Temporomandibular Disorders during adolescence is fundamental for preventing or minimising TMD pain. Aim of the study is to investigate the prevalence of temporomandibular disorders among patients visiting Saveetha Dental College. A retrospective cross-sectional study was conducted using the patient's record from Saveetha Dental College from June 2019 to March 2020. Patients selected by non-probability purposive sampling. Data was collected and then subjected to statistical analysis. Higher prevalence of Temporomandibular patients is seen in the age group of 30-40yrs (43%) and female(51%) population.Within the limits of study, higher prevalence of Temporomandibular patients is seen in the age group of 30-40yrs in male population with TMD Disc condyle disorders. Extensive study should be done with more sample population and improved ways of diagnosis. The aim of the study was to create awareness among people regarding the advantage of early intervention of Temporomandibular disorders.

Keywords : *Age; Gender; Pain; Prevalence; Temporomandibular Disorders*

I. Introduction

The Temporomandibular articulation is composed of bilateral,diarthrodial, temporomandibular joints (TMJs). Each joint is formed by a mandibular condyle and its corresponding temporal cavity (glenoid fossa and articular eminence)[1].TMJ plays an important role in guiding mandibular motion and distributing stresses produced by everyday tasks like chewing, swallowing and speaking[2].

Temporomandibular disorders (TMD) are a heterogeneous group of musculoskeletal and neuromuscular conditions[3]involving the temporomandibular joint complex, and surrounding musculature and osseous components[4].Temporomandibular disorders include abnormalities of intra-articular discal positions and structures as well as dysfunction of associated musculature[5,6]. The etiology of temporomandibular disorders are multifactorial. The most commonly cited factors are emotional tension, occlusal interferences, teeth loss, postural deviation, masticatory muscular dysfunction[7], internal and external changes in TMJ structure, either alone or in combination[8]. Symptoms and signs include painful joint sounds, restricted or deviating range of motion, and cranial/muscular pain known as orofacial pain[9,10].

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Internal derangement of the TMJ is defined as an abnormal positional relationship of disc relative to mandibular condyle and the articular eminence[11]. Clinical observation includes painless clicking and unrestricted mandibular motion. Degenerative processes may be a predisposing factor for disc displacement[5]. A clicking, crepitus, or locking of the TMJ may accompany joint dysfunction. A single click during opening of the mouth may be associated with an anterior disk displacement. A second click during closure of the mouth results in recapture of the displaced disk; this condition is referred to as disk displacement with reduction. When disk displacement progresses and the patient is unable to fully open the mouth (i.e., the disk is blocking translation of the condyle), this condition is referred to as closed lock [4]

Increased loading in TMJ may stimulate remodelling[12], involving increased synthesis of extracellular matrices[13]. Pathophysiology of degenerative changes is one that results from dysfunctional articular remodelling[5]. Age clearly is a predisposing factor because both frequency and severity of disease appears to increase with ageing[14,15].

Myofascial pain dysfunction syndrome (MPDS) is a stress induced psychophysiological disease originating in the muscles of mastication[16]. MPDS can be caused due to occlusal disturbance, intracapsular disorders or emotional turmoil[17]. Pain associated with MPDS is usually unilateral[18]. Other signs and symptoms include TMJ sounds, impaired or irregular mandibular movement, limitation of mouth opening, preauricular pain, facial pain, headache, jaw tenderness on function[19,20]. TMD self-management instructions routinely encourage patients to rest their masticatory muscles by voluntarily limiting their use, i.e., avoiding hard or chewy foods and restraining from activities that overuse the masticatory muscles (e.g., oral habits, clenching teeth, holding tension in the masticatory muscles, chewing gum, and yawning wide).The self-management instructions also encourage awareness and elimination of parafunctional habits (e.g., changing teeth clenching habit to lightly resting the tongue on top of the mouth or wherever the tongue is most comfortable) and keeping the teeth apart and masticatory muscles relaxed[21].

Investigation of TMD includes plain radiographs of the temporomandibular joint, such as high level orthopantomogram and transcranial projections, are useful as baseline investigations for detection of any gross pathological, degenerative or traumatic changes in the mandibular condyle. In recent years, magnetic resonance imaging has increasingly been used in the investigation of the status of the articular disc to determine if there is internal derangement of the temporomandibular joint. Cone-beam CT-scans (CBCT) are becoming more cost effective and accessible to many Dental Practitioners and are extremely useful in showing high resolution, multiplanar images of the condylar head that clearly shows the presence of condylar pathology such as osteoarthrosis[22].

A multidisciplinary approach is successful for the management of TMD. Initial treatment goals should focus on resolving pain and dysfunction. More than 1,500 persons in an online TMD registry reported that they had received anti-inflammatory agents (73%), non prescription pain relievers (56%), antidepressants (50%), opioids (48%), anxiolytics (41%), and muscle relaxants (40%). Surgical interventions were reserved for patients whose symptoms did not improve after a trial of conservative therapy.[23]

Age and gender plays a major role in Temporomandibular disorders. Some literature showed it increases during adolescence and some told prevalence was more in old age[24]. Thus this study was contemplated to find the prevalence of Temporomandibular disorders among patients visiting Saveetha Dental College.

II. MATERIALS AND METHODS :

Study design and setting :

This retrospective cross sectional study examined the records of patients from June 2019- March 2020 at Saveetha Dental College, Chennai, India. Ethical clearance was obtained from the Institutional ethical committee (SDC/SIHEC/2020/DIASDATA/0619-0320).

Data collection:

Online database was used for retrieval of data. Case sheets of 86,000 patients were reviewed among which 53 patients were recruited for the study who had temporomandibular disorder. Relevant data like age, gender was

notes.Incomplete data were excluded and verified by external reviewers. All the data collected was entered in Microsoft Excel Sheet.

Statistical analysis:

Data obtained was subjected to statistical analysis.Chi-square test was employed with the level of significance set at $p<0.05$.The results obtained were presented as tables and graphs. The collected data was validated, tabulated and analysed with Statistical Package for Social Sciences for Windows, version 23.0 (SPSS Inc., Chicago, IL, USA) and results were obtained. Categorical variables were expressed in frequency and percentage; and continuous variables in mean and standard deviation. Chi-square test was used to test associations between categorical variables. P value < 0.05 was considered statistically significant.

III. RESULTS:

The results inferred from this study is as follows:

Age distribution of temporomandibular disorder according to our study was found to be 10-20yrs (13%), 20-30 yrs (21%), 30-40yrs (43%), 40-50yrs(15%), 50-60yrs (7%) [Figure 1]. The highest incidence of TMD was found to be in the age group of 30-40yrs [Figure 1]. Gender distribution of TMD according to our study was male(49%), and females(51%) [Figure 2]. The prevalence was higher among females [Figure 2]. Temporomandibular disorders were categorised into TMD Disc condylar disorder, Myofascial pain dysfunction syndrome (MPDS) , and degenerative disorder. The patients who reported to Private Dental College with Temporomandibular disorders had more of TMD disc condyle disorder (62%) compared to MPDS (34%) and degenerative disorder (4%) [Figure 1]. No statistical significance for the association between age and temporomandibular disorders [Figure 1]. No statistical significance for the association between gender and temporomandibular disorders [Figure 2].

		TEMPOROMANDIBULAR DISORDERS			TOTAL
		DEGENERATIVE DISORDERS	DISC-CONDYLE DISORDER	MPDS	
AGE	10-20 yrs	0	5	2	7
	20-30 yrs	0	6	5	11
	30-40 yrs	2	14	7	23

	40-50 yrs	0	6	2	8
	50-60 yrs	0	2	2	4
TOTAL		2	33	18	53

Table 1: Distribution of Temporomandibular disorder patients according to age

		TEMPOROMANDIBULAR DISORDERS			TOTAL
		DEGENERATIVE DISORDERS	DISC-CONDYLE DISORDERS	MPDS	
GENDER	MALE	0	17	9	26
	FEMALE	2	16	9	27
TOTAL		2	33	18	53

Table 2: Distribution of Temporomandibular disorder patients according to gender

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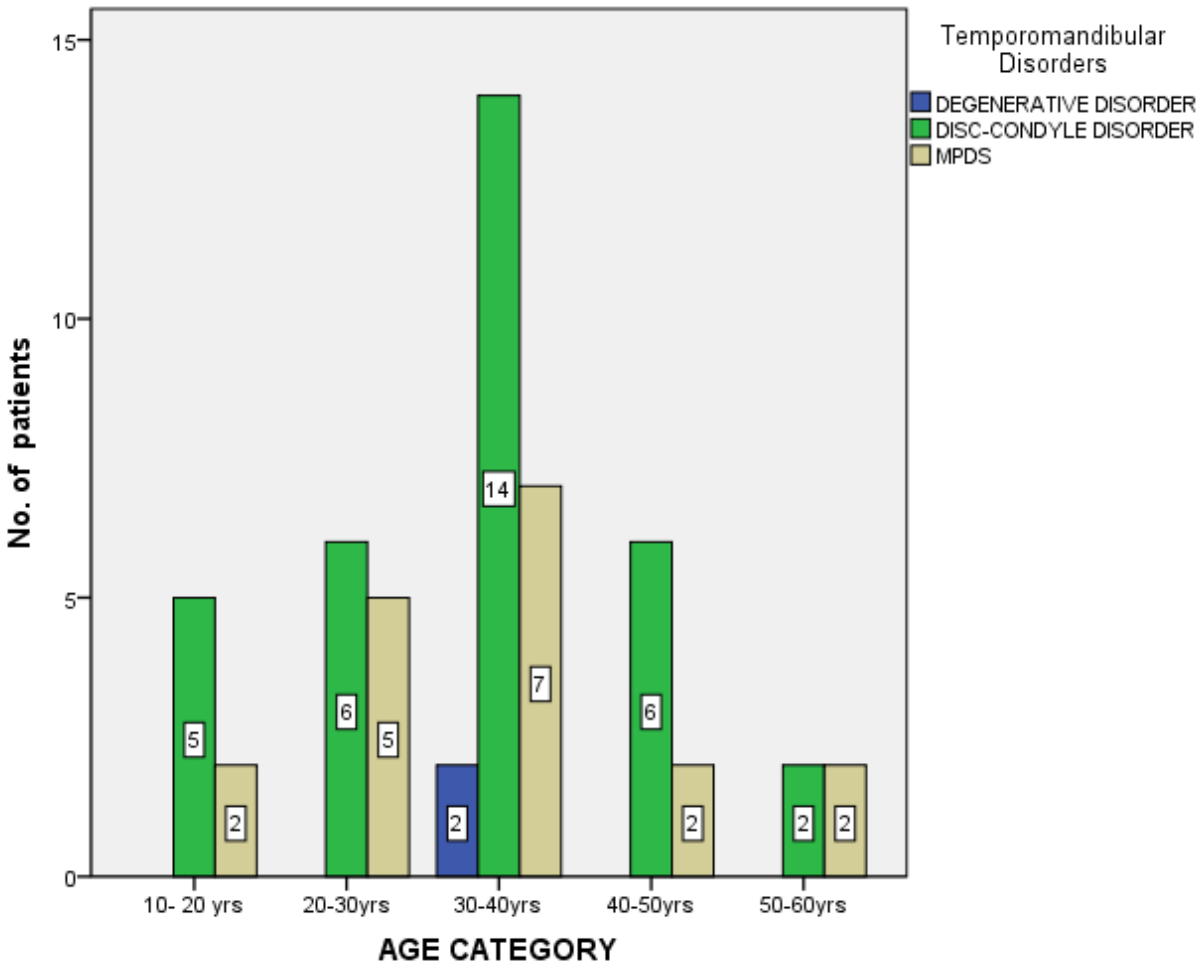

Figure 1: Bar Graph Depicting Frequency Of Temporomandibular Disorders To Age.

Figure 1: Bar Graph depicting the association between Age and Temporomandibular Disorders. X-axis represents age and Y axis represents the number of TMD patients. Association between age and number of patients with Temporomandibular disorders was done using Chi-square test (Pearson Chi-square test; $p=0.840$, $p>0.05$). It is seen that the highest prevalence of all degenerative disorders, disc-condyle disorder, myofascial pain dysfunction syndrome was seen in the age group of 30-40 yrs.

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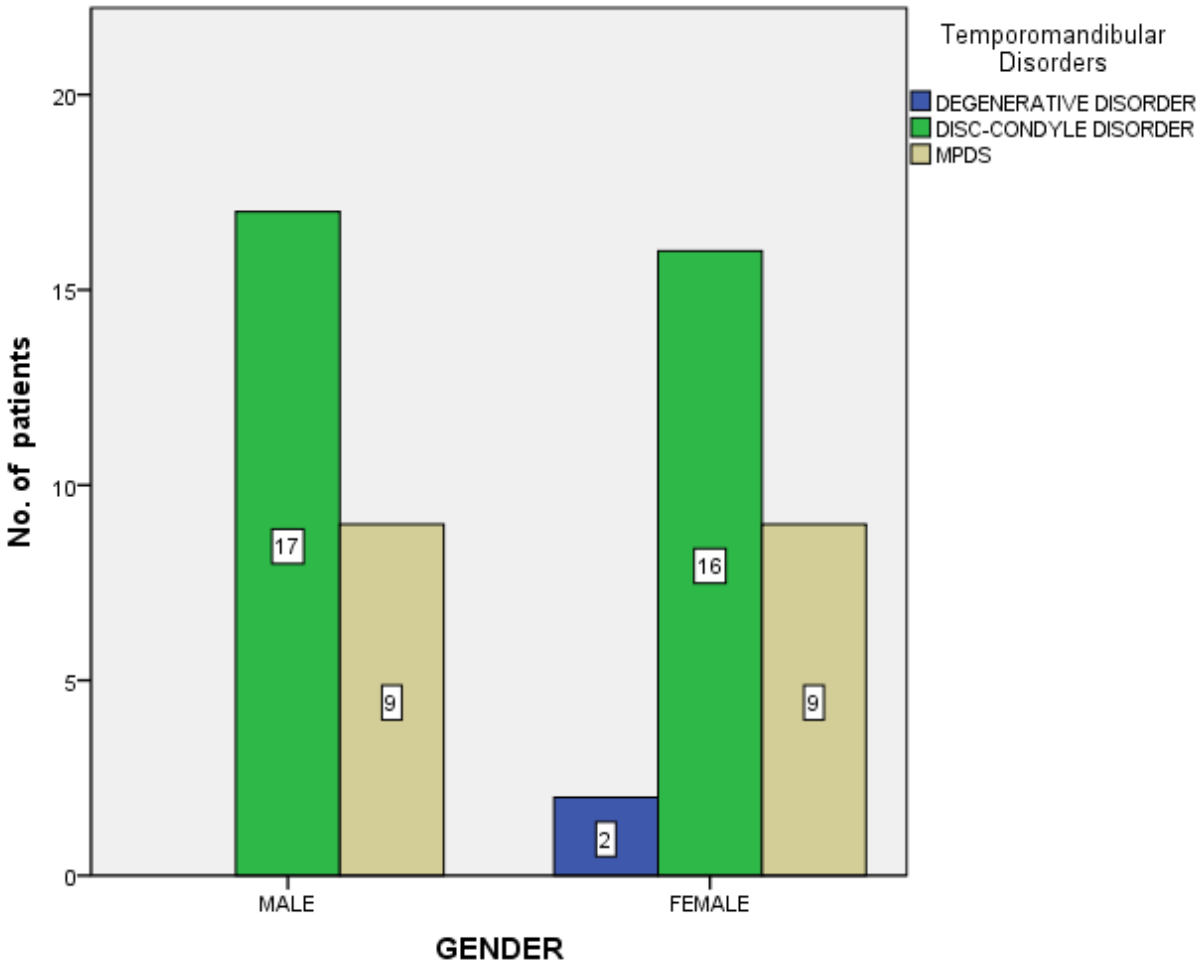

Figure 2: Bar Graph Depicting the Frequency of Temporomandibular Disorders to Gender.

Figure 2: Bar Graph depicting association between Gender and Temporomandibular Disorders. X-axis represents gender and Y-axis denotes the number of TMD patients. Association between gender and Temporomandibular disorders was done using Chi-square test (Pearson Chi-square test; p=0.366, P>0.05). It was found that males were more commonly affected by disc-condyle disorder and Myofascial pain dysfunction syndrome. But degenerative disorder was seen only in females.

IV. DISCUSSION:

In this study, a more prevalent group of temporomandibular disorders was under 30- 40 yrs and female predilection.The patients who reported to Saveetha Dental College with Temporomandibular disorders had more of TMD disc condyle disorder (62%) compared to MPDS (34%) and degenerative disorder (4%).No statistical significance for the association between age and temporomandibular disorders. No statistical significance for the association between gender and temporomandibular disorders.The present study is similar to a study done by BOra Bagis, where females had TMD signs and symptoms more frequently than males (p= 0.006; odds ratio 0.954; 95% CI 0.922- 0.987) [25]. According to Daniele Manfredini, prevalence of disc displacement were found to be 57.3% and muscle disorders (49.7%).The study showed female predilection (81.3%).Mean age was found to be 32.7 + or - 14.5 yrs in patients with disc displacement in absence of

degenerative disorders[26] .Age and gender distribution of this literature was supporting the present study[27].Another similar study showed more female prevalence of temporomandibular disorders[28]. Guarda Nardini et.al identified two age peaks in Temporomandibular disorder prevalence : One at around age 52 yrs for patients with joint crepitus and another at around age 38yrs for patients without joint crepitus [29,30].Gender distribution similarly was found in a literature by Andrea Lusvarghi Witzel, where females (80.5%) more prevalent than males (19.5%) [31].This study was in agreement with the present study.According to Bertoli et.al, myofascial pain was the most prevalent type (10.3%), followed by disc displacement with reduction (8.0%) and arthralgia (3.5%). There was a significant association between sex and TMD symptoms; prevalence was significantly higher in girls (RP = 1.37; 95% CI = 1.14–1.65; p = 0.001)[32]. This study was similar to the present study regarding the gender distribution but according to Bertoli, myofascial pain dysfunction syndrome was more prevalent which is in contrast to our study where TMD Disc condyle disorder is more common. A study done by Sandhya Jain, concludes that significantly more females presented with TMDs as compared to males in the 19-30 years age group[33]. Akhter et.al showed that 18yrs old patients are more prevalent compared to other age groups [34,35] which was opposing the present study.

It is recommended that the least invasive procedures be used first and if this adequately resolves the pain, no other treatment is needed. It is appropriate for patients to wear an occlusal orthotic at night for as long as it is beneficial.Additionally, consider non-TMJ disorders that may negatively impact the patient's TMD symptoms, such as neck pain, widespread pain, rheumatic disorders, sinus pain, poor sleep, and depression. Failure to obtain adequate improvement of these non-TMD contributors decreases the probability of patients achieving satisfactory TMD symptom improvement .A significant number of TMD patients have a cervical component contributing to or perpetuating the TMD symptoms.Surgery is required only in case of TMJ inflammation, acute TMJ disc displacement without reduction (closed lock),and TMJ ankylosis (painless severe limited opening)[21].

Limitations:

Limitation of the study was a sample size not generalised by the entire population.Thus multicentre study with large sample size should be conducted.

V. CONCLUSION:

Within the limits of the study, higher prevalence of Temporomandibular disorder is seen in the age group of 30-40yrs in male population with TMD Disc condyle disorders. Extensive study should be done with more sample population and improved ways of diagnosis.The diagnosis of early symptoms and signs of temporomandibular disorders during adolescence is fundamental for preventing or minimising TMD pain and for reducing its impact on adolescent' lives.Thus this study was done to create awareness among dentist as well as patients for early diagnosis and prevention.

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Author's contribution:

First author (A.Ashwatha Pratha) performed the analysis, and interpretation and wrote the manuscript.Second author (Manjari Chaudhary) and third author (Ravindra Kumar Jain) contributed to conception, data design, analysis, interpretation and critically revised the manuscript. All the authors have discussed the results and contributed to the final manuscript.

CONFLICT OF INTEREST:

None

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