

# **Prevalence of Temporomandibular Joint Disorder among Patients Attending Private Dental College, Chennai**

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## **Abstract**

Temporomandibular joint and muscle disorder commonly called “TMJ” disorder, are a group of conditions that cause pain and dysfunction in the jaw joint and the muscle that control the jaw movement. The general and clinical consequences of discomfort, pain and disturbance of mastication are similar in most patients. TMD can be caused by injury to the jaw, TMJ or muscles on head and neck, such as from a heavy blow. Other causes includes: Grinding or clenching the teeth (puts a lot of pressure on TMJ), dislocation of the soft cushion or disc between the ball and socket, presence of osteoarthritis or rheumatoid arthritis in the TMJ, stress which can cause a person to tighten muscles in the face and jaw as to clench the teeth. Some symptoms of TMD are like - Pain and tenderness, clicking, popping or limited jaw opening or there will be swelling on the side of the face. Therefore, the aim of this study is to determine the prevalence of TMJ disorder attending private dental colleges in Chennai. Case sheet of all the patients reporting to the OPD of Saveetha Dental College with TMJ problems. The study was conducted between June 2019-March 2020. This university setting study a sample of 61 patients. Data tabulated with parameters of age, gender and TMD types Microsoft excel 2016 (microsoft office 10) was used to collect data and later was imported to spss software for statistical analysis. Descriptive statistics having frequency, percentage and chi-square test done for association. The prevalence of TMD Temporomandibular joint disorder was found to be more among males than females. Among the age groups of 11-25 years, 26-40 years and above 40 years, TMJ disorder was more prevalent between 26-40 years age group (64.41%). Prevalence of TMD Degenerative disorder, Disc condyle disorder and MPDS among them Disc condyle is more common (61.02%) as compared to others. The association between age and TMD was found to be statistically highly significant using chi-square test ( $p < 0.001$ ). Within the limit of this study, male were more affected and the disc condyle disorder was more common among study participants in the age group between 26-40 year.

**Keywords** – TMJ, TMD, Clenching, Heavy bow, stress, trauma,

## **Introduction**

The temporomandibular articulation is composed of bilateral, diarthrodial temporomandibular joints

(TMJ)<sup>1</sup>. Each joint is formed by a mandibular condyle and its corresponding temporal cavity (glenoid fossa and articular eminence). The TMJ and its associated structure play an essential role in guiding mandibular motion and distributing stress produced by every day task such as chewing, swallowing and speaking. Some dental pain is caused cavities or stress and if you are stressed to the point of clenching your jaw and grinding your teeth, which develop pain in TMJ<sup>2</sup>.

TMJ disorders (TMD) are a class of degenerative neuro-skeletal conditions associated with morphological and functional deformities. Invasion of bacteria into the

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joint space cause intracapsular and pericapsular infection of the TMJ is rare<sup>34</sup>. TMD include abnormalities of the intra articular disc position and/or structure as well as dysfunction of the associated musculature. Self reported system of temporomandibular disorder include report the problem related to masticatory system such as pain while chewing food sometimes children cannot explain property whether it is caused by caries or any other reason<sup>5</sup>. TMD is characterized by the clinical sign of pain and malfunction occurring jointly and separately

1. Pain in the temporomandibular joint (TMJ).
2. Articular sound.
3. Pain in the muscle of mastication.
4. Stiffness of jaws.
5. Limited mouth opening.
6. Signs and symptoms that may be associated with orofacial pain and/or cervicospinal problems.

A malfunction is an expression of disturbance of functionality. TMJ disorders are common and often self limited in adults. However, only few with TMJ symptoms require treatment and even fewer develop chronic or debilitating symptoms. Fluoride are present in the environment. Excessive systemic exposure of fluorides can lead to disturbance of bone homeostasis<sup>67</sup>. Sometimes TMJ disorder caused due to trauma or accident, acute trauma to the jaw and/or muscles of the jaw is a leading cause of TMJ injury and can often be attributed to car accidents, falls, etc<sup>8</sup>. Causes of TMJ disorder include parafunctional habit, emotional stress anxiety occlusal interferences, malpositioning or loss of teeth, postural changes, dysfunction of the masticatory musculature and adjacent structure, intrinsic and extrinsic changes in TMJ structure and/or a combination of such factor<sup>9</sup>.

TMJ disorder diagnosed there is no widely accepted standard test now available to correctly diagnose TMJ disorders. Because the exact causes and symptoms are unknown, identifying disorders can be difficult and confusing<sup>10</sup>. Currently, health care providers note the patient's description of symptoms, take a detailed history and examine problem areas including head, neck, face and jaw. Facial pain can be a symptom of

many conditions, such as sinus or ear infection, various types of headaches, and facial neuralgia<sup>11</sup>. Ruling out these problems will help in identifying TMJ disorder.

TMJ disorder can be treated but the more Effective treatment requires more knowledge about the cause, signs & symptoms<sup>12</sup>. Treatment can be like conservative treatment which is considered as the simple treatment in which we have to do all the things which help in relieving discomfort.

Self-care practices like eating soft foods, applying ice packs, avoiding extreme jaw movement and learning techniques for releasing and reducing stress and sometimes by opting for preventive treatment like pit and fissure sealant<sup>13,14</sup> for prevention of dental caries which ultimately reduces the risk of caries development and tooth loss. For many people with TMJ disorder, short term use of over the counter pain medicines [NSAID]. Natural products offer a novel method for preventing and treating inflammatory diseases and are potential tools for TMJ arthritis management<sup>15,16</sup>. Dentists may recommend an oral appliance also called a stabilization splint or bite guard, which is a plastic guard that fits over the upper or lower teeth. Nutrition in jaw fractures treated with intermaxillary fixation is more compromised. Healing is impaired in malnourished, critically ill, elderly, and patients with prolonged stay in hospital and hence nutrition in the form of enteral, parenteral, and oral sip feeding plays a major role in providing nutritional care<sup>17</sup>. Stabilization splints are the most widely used treatments for TMJ disorder. Other types of treatment, such as surgical procedure, invade the tissue<sup>18</sup>. Surgical treatments are controversial, often irreversible and should be avoided as much as possible. There have been no long-term clinical trials to study the Safety and effectiveness of surgical treatment of TMJ disorders. Failure to respond to conservative treatment, for example, does not automatically mean that surgery is necessary. If surgery is recommended, be sure to have the doctor explain it to you, in words you can understand, the reason for the treatment, the aisle involved, the other type of treatment that may be available.

## Materials and Methods

This record based, descriptive study was conducted among patients reporting to the OP of Saveetha Dental College. Case sheets of all the Patients of OP Department

of Saveetha dental college were reviewed for a period of ten months [JUNE 2019 and MARCH 2020]. Sample of 61 patients regarding Temporomandibular joint disorder were taken.

Prior to the start of the study, ethical approval was obtained from Scientific Review Board, Saveetha Dental College, SIMATS University. Data consisting of age, gender and TMJ disorder types was retrieved from the records of patients who visited dental college from October 2019-March 2020.

The age was grouped into (11-25 years), (26-40 years) and above 40 years. The gender includes male and female. TMJ disorders types - Disc condyle disorder, Degenerative disorder and MPDS. Data was recorded and tabulated in MS Excel. Then the tabulated data expressed by means of frequency and percentage. Chi-square test was employed to find the association between age and TMJ disorder, Gender and TMJ disorder with level of Statistical significance at  $p < 0.05$ .

## Results and Discussion

TMD is similar to musculoskeletal disorders in other parts of the body, and similar treatment approach can generally be used. It is important for dentists to rule out disorders that mimic same as temporomandibular disorder, and to identify non TMJ disorder that may have negatively impact the patients TMD symptoms and offer the patient to take treatment. In this study we take a various age groups among them the age group which had higher prevalence for temporomandibular joint disorder was (26-40 years age group (64.41%) followed by 11-25 year age group as shown in figure 1. The most common age group was found to be (26-40 years). Supported studies done by (Muthukrishnan et al., and Yang et al.) state in their studies that the young adult age group between (26-36 years) were maximum affected by TMJ disorder<sup>19</sup>.

Some literature also state that there is no proper studies done on the prevalence of the middle age group patient. Some studies oppose this result done by (Yadav et al., and Mathew et al.), in their studies they say that the old age group is more prone to TMJ disorder as their bone becomes weak they also say there is no any exact reason found behind TMJ disorder.<sup>20,21</sup>

Out of 61 patients, 32 were males and 27 females patients in figure 2. In a study done by (H et al., and Charizopoulos et al.) state that the male are more prevalence to TMD disorder which is similar to this study<sup>22,23</sup>, some studies done by (Bagis et al and Wizel et al) stated that females are more prevalent than the male due to nutrition differences and many other factors<sup>24,25</sup>. This hold true as male are more prone to TMD disorder as they have habit and more prone to trauma. There are different types of TMD disorder like degenerative disorder, disc condyle disorder and MPDS among them the more prevalence we observe the disc condyle disorder types (61.02%) followed by MPDS (35.59%) as shown in figure 3. Supportive study done by (Turp et al). state that disc condyle is more frequently seen as compared to other types of TMJ disorder<sup>26</sup>.

It is apparent from Figure 4 which shows a statistically significant association between Age and TMJ disorder using Chi-square test. The frequency distribution of Disc condyle disorder (n=14) was found to be more in the age group of 11-25 years. Similarly, Disc condyle disorder (n=22) was found to be more in the age group of 26-40 years than MPDS. A total of 5 study participants in the age group more than 40 years reported with MPDS. Above age 40 year we can only see MPDS types of TMD disorder. Young adults have habits of betel nut chewing and they are also more prone to road accidents<sup>29</sup>. In male disc, condyle disorder is more prominent as compared to female shown.

Figure 5 depicts the association between Gender and TMJ disorder where disc condyle disorder was more prevalent in Male (n=21) study participants than females (n=15). But on the other hand, MPDS was found to be more prevalent in female (n=11) study participants than males (n=10) and was found to be statistically insignificant using chi-square test. Supportive studies (Koca et al)<sup>27</sup> state that male are more to frequently seen with TMJ disorder, some study disagree with that (Pontes et al)<sup>28</sup> they say that females are more prone to disc condyle disorder. As a patient ages the attrition rate increases which changes the maxillary mandibular relationship which poses a risk of TMD disorder.

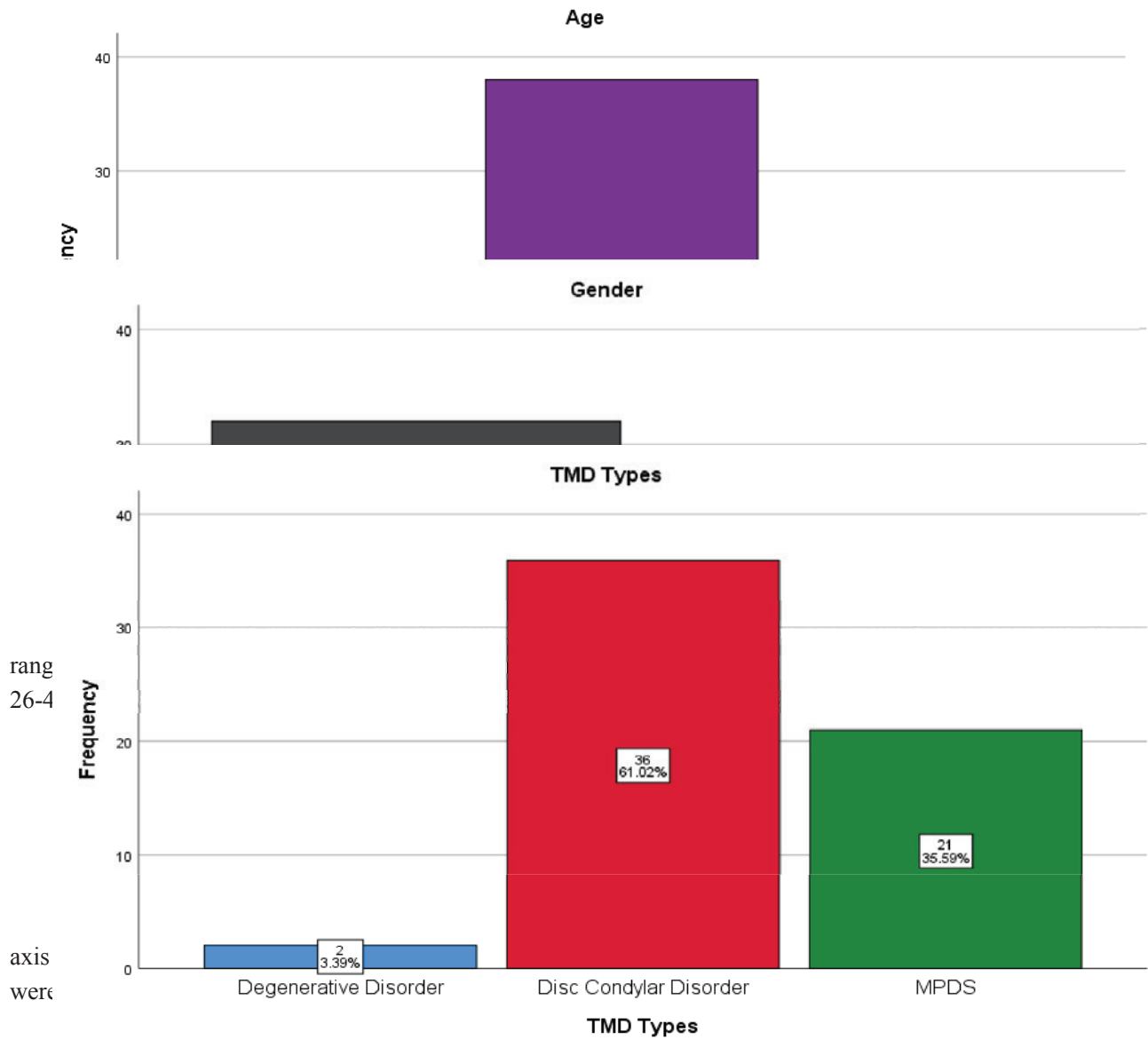


Figure 3: The graph represents the prevalence of Temporomandibular disorder types. X axis represents the TMD types like Degenerative disorder, Disc condyle disorder and MPDS y axis represent the frequency of participants. Where disc condyle disorder is more in number(61.02%) followed by MPDS (35.59%).

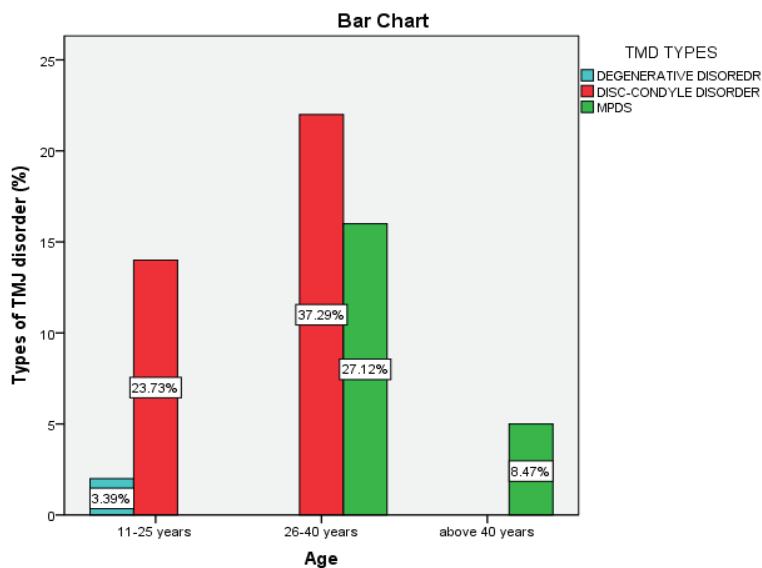


Figure 4 Bar graph represents the association between the age and Temporomandibular joint disorder types. X axis represents the age range 11-25 years,26-40 years and above 40 years and Y axis represents the TMD types, where blue colour denotes the degenerative disorder, red colour denotes disc condyle disorder and green colour denotes the MPDS. The association between age and Temporomandibular joint disorder types was analyzed using Chi square test and was found to be statistically significant [Chi- square value= 22.301; (p value<0.001)]. Hence proving disc condyle disorder and MPDS were more prevalent in the age group between 26-40 years.

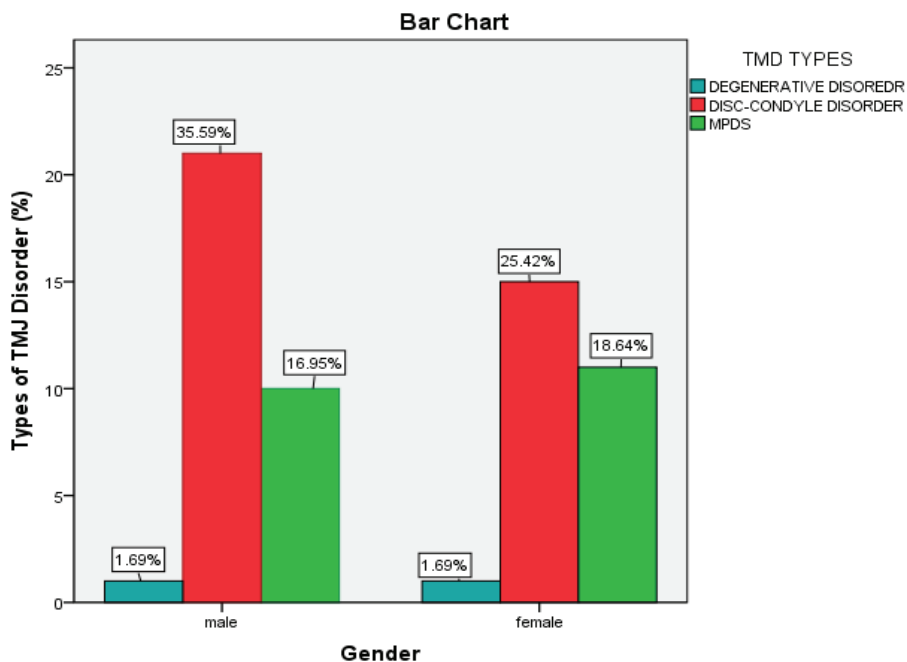


Figure 5 Bar graph represents the association between the gender and Temporomandibular joint disorder types. X axis represents the gender and Y axis represents the TMD types-degenerative disorder, disc condyle disorder and MPDS, where blue colour denotes the degenerative disorder, red colour denotes disc condyle disorder and green colour denotes the MPDS. Chi square test was done and association was found statistically not significant [Chi- square value=0.628; p>0.05].Hence proving that disc condyle disorder was more prevalent in males where females were more affected with MPDS.

## Conclusion

Within the limit of this study the age group of 26-40 years had higher prevalence of TMD disorder (Disc Condyle disorder). With respect to gender wise distribution, Disc Condyle disorder was found to be more prevalent among males than females and MPDS was more common in females than males.

**Contribution-** All authors are equally contributed for the study design, methodology and data collection.

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**Conflicts of Interest:** None to declare.

**Ethical Clearance:** It is taken from "Saveetha Institute Human Ethical Committee" (Ethical Approval Number- SDC/SIHEC/2020/DIASDATA/0619-0320)

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