

Prevalence of Temporomandibular Joint Disorders in Symptomatic and Asymptomatic Patients: A Cross-Sectional Study

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Abstract

Introduction: Temporomandibular joint (TMJ) disorder is an umbrella term used to describe many conditions with differing etiologies. The multifactorial etiology of Temporomandibular joint (TMJ) disorder is related to emotional tension, teeth loss, occlusal interferences, masticatory muscular dysfunction, postural deviation, internal and external changes in TMJ structure and the various associations of these factors. The present cross-sectional study was undertaken to evaluate the prevalence of Symptomatic and Asymptomatic patients with Temporomandibular Joint disorders.

Material & Methods: The present cross-sectional study was conducted in the Department of Oral Medicine and Radiology, Meenakshi Ammal Dental College and Hospital, Chennai. A total of 500 outpatients seeking dental treatment, from July 2012 to September 2012, in between the age of 21-50 years were included in the study. A questionnaire was designed which includes demographic information of the patients and all the subjects were screened for symptoms. Descriptive statistical analysis was done.

Result: Among the 500 people screened 292 were males (59%) and 208 were females (41%). Among the total study group 240 patients were asymptomatic or were free of any TMJ symptoms which accounts for 40% and 260 patients(60%) had either clicking, pain or deviation.

Conclusion: As dental practitioners, we seldom examine the TMJ during routine examination. Though treating the cause is important, it's also duty of a dentist to thoroughly examine the patient, identify any underlying asymptomatic disorders, and educate and motivate the patient to take up preventive measures & early treatment to avoid further symptoms that serve as precursors to TMJ disorders.

Keyword: Prevalence, Symptoms, TMJ.

Introduction:

Temporomandibular joint (TMJ) disorder is an umbrella term used to describe many conditions with differing etiologies that cause pain and dysfunction of the TMJ and structures related to mastication. Pain is the most important symptom in Temporomandibular joint (TMJ) dysfunction for both the patient and the clinician, and is the main reason why patients with TMJ disorders (TMJD) seek medical help.¹

Scientific investigation of TMJD began in the 1950s. Earlier it has been suggested that the improper occlusion could influence masticator muscle functions. Later, throughout the 1960s and into the 1970s the emotional stress and occlusal conditions were considered as the major etiologic factors of functional disorders of the TMJD's. Further with increasing research it is commonly accepted that TMJ derangement is of multifactorial origin and is best thought of as the result of a combination of occlusal, neurophysiologic, and psychological factors.²

The multifactorial TMJD etiology is related to emotional tension, teeth loss, occlusal interferences, masticatory muscular dysfunction, postural deviation, internal and external changes in TMJ structure and the various associations of these factors.³ It can affect any patients regardless of their age and gender with varying signs and symptoms. However, diagnosis of this clinical entity may be difficult due to the variation in symptoms among different patients and in the same patient at different times.⁴

Now a days, with an increasing awareness and interest of the public towards oral health there is a need to provide attention towards the temporomandibular joint disorders.⁵ Temporomandibular Joint (TMJ) issues can lie dormant in a patient. While some patients are not aware of their condition, many realize that they are experiencing something that is not normal in the TMJ, but do not understand its future consequences, or even worse, how to correct it. A sharp pain while eating or a loud click in the TMJ could be their warning call.

The present cross-sectional study was undertaken to evaluate the prevalence of Symptomatic and Asymptomatic patients with Temporomandibular Joint disorders.

Materials & Methods:

The present cross-sectional study was conducted in the Department of Oral Medicine and Radiology, Meenakshi Ammal Dental College and Hospital, Chennai. Ethical clearance was obtained from the institutional review board prior to conducting the study. A total of 500 outpatients seeking dental treatment, from July 2012 to September 2012, were included in the study. The patients were categorized into three groups based on age: 21-30 years, 31-40 years and 41-50 years old. Patients below 20 years were excluded from the study. Patient with stomatognathic system impairment, with any gross pathology of ear and clinically diagnosed TMD with treatment were excluded. Informed consent was taken from each individual, those who denied to give the consent were excluded from the study.

A questionnaire was designed which includes demographic information of the patients and all the subjects were screened for pain, and clicking and deviation while opening and closing of their mouth and also during mastication.

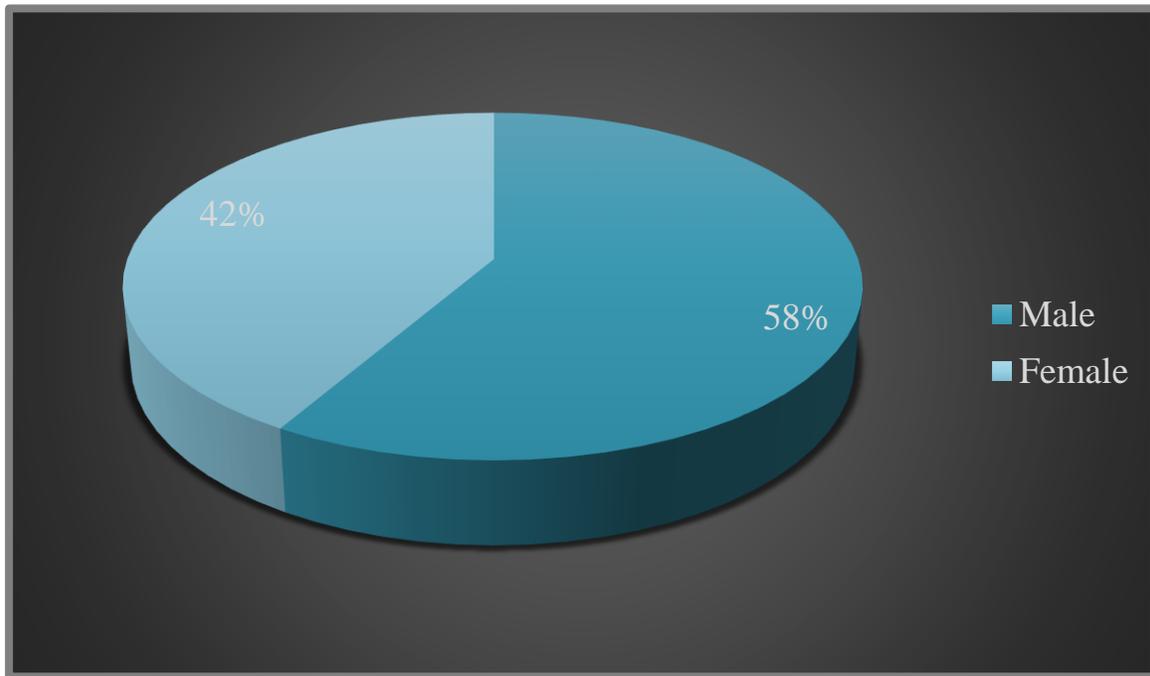
Descriptive statistical analysis was done.

Results:

Among the 500 people screened 292 were males (59%) and 208 were females (41%) [Graph No. 1]. 235 patients (47%) were in 21-30 age group followed by 153 patients in 31-40 years (31%) and 112 was found in the 41-50 years group (22%) respectively (Table No. 1). Among the total study group 240 patients were asymptomatic or were free of any TMJ symptoms which accounts for 48% and 260 patients (52%) had either clicking, pain or deviation (Graph No. 2). Majority of the symptoms were unilateral (78%). Only 22 % had symptoms on both the sides (Graph No. 3). Joint sounds are the most common problem associated which accounted for 66% of the symptomatic group. Deviation was seen in 25% and pain in 9% of the group (Graph No. 4). Associated symptoms were seen in very few patients. Clicking and deviation was seen in 40 patients, pain and clicking in 14 patients and only 1 patient had pain & deviation (Graph No. 5).

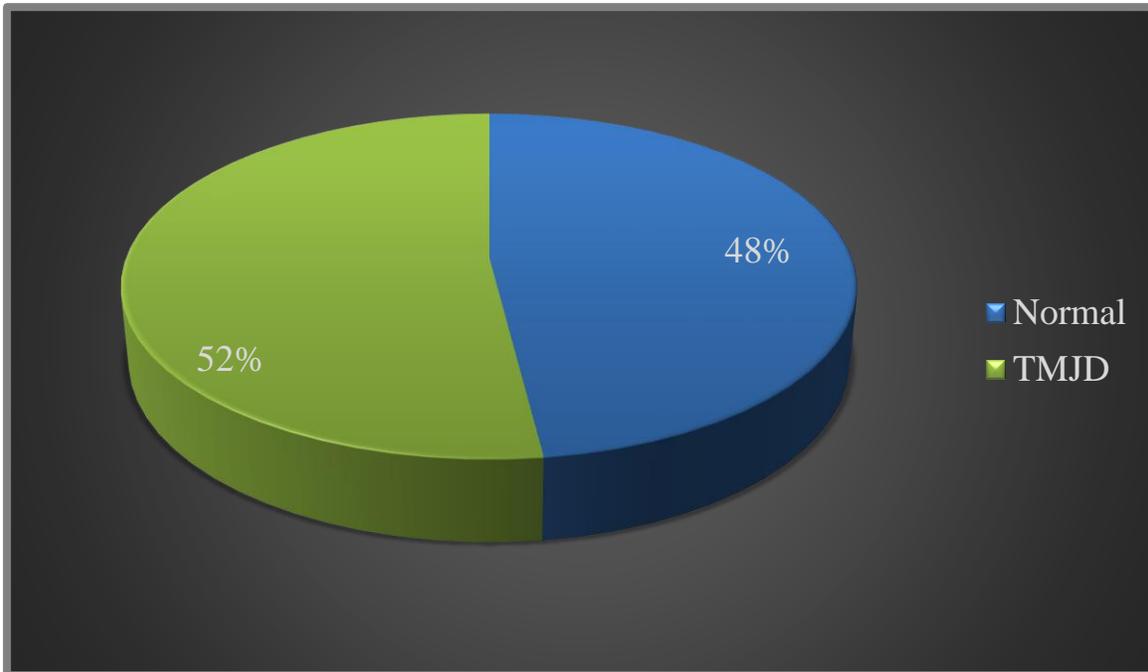
Discussion:

The temporomandibular joint (TMJ) is a compound articulation formed from the articular surfaces of the temporal bone and the mandibular condyle. Both surfaces are covered by dense articular fibrocartilage. Each condyle articulates with a large surface area of temporal bone consisting of the articular fossa, articular eminence, and preglenoid plane. Because of the condyle's ability to translate, the mandible can have a much higher maximal incisal opening than would be possible with rotation alone. The joint is thus referred to as "ginglimodiarthrodial": a combination of the terms ginglymoid (rotation) and arthrodial (translation)¹.

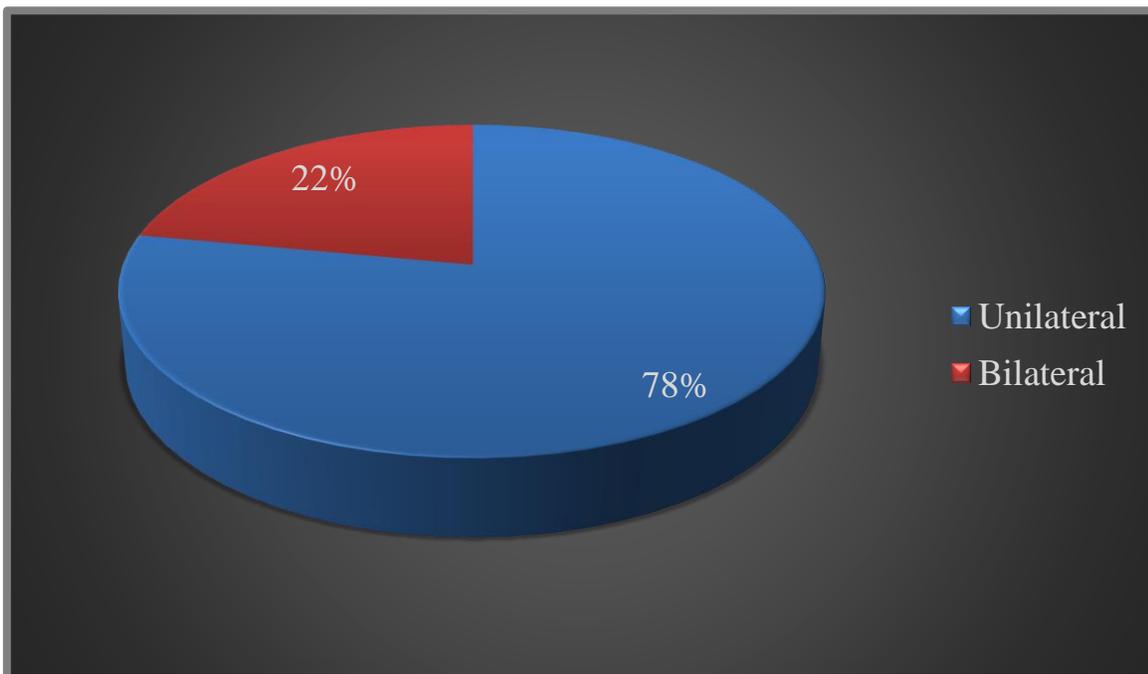
Graph No. 1: Distribution of the Subjects according to Sex**Table No. 1: Distribution of the Subjects according to Age**

Sr. No.	Age Groups	N(%)	%
1.	21-30 years	235	47
2.	31-40 years	153	31
3.	41-50 years	112	22
Total		500	100
Mean±SD = 172.66±72.52			

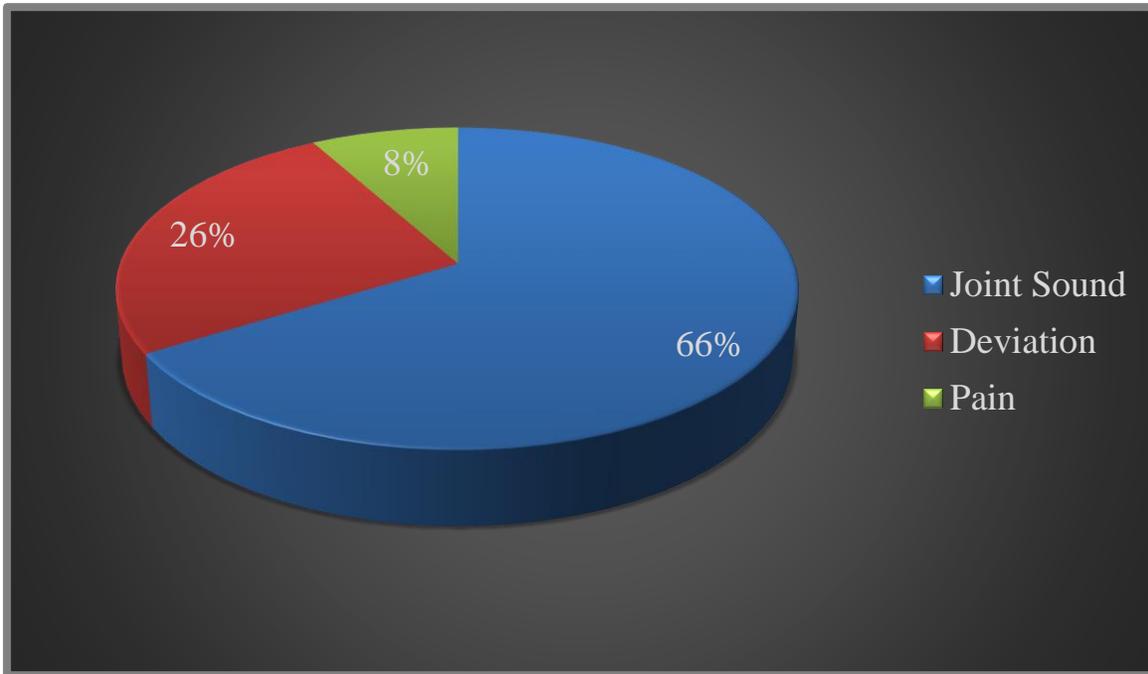
Graph No. 2: Prevalence of Temporomandibular Joint Disorder



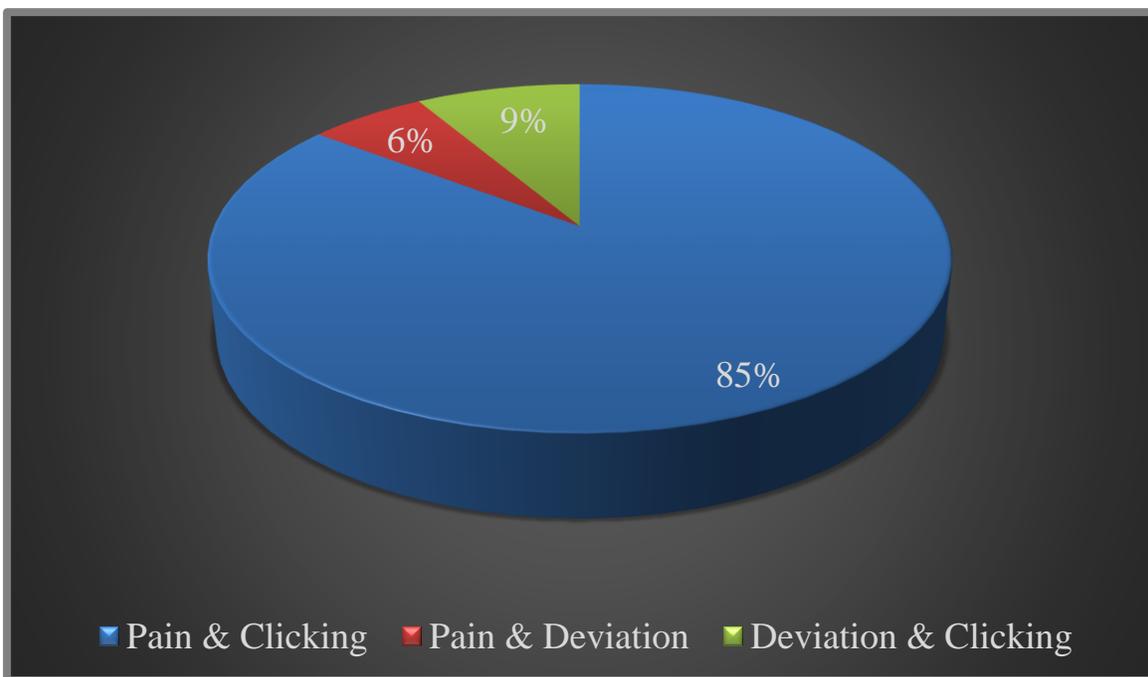
Graph No. 3: Distribution of the Subjects on the Basis of Side Involved



Graph No. 4: Distribution of the Subjects on the Basis of Symptoms



Graph No. 5: Distribution of the Subjects on the Basis of Associated Symptoms



A cartilaginous disc resides between the articular surfaces of the temporal bone and mandibular condyle. Although other articular cartilages are composed of hyaline cartilage, this disc is composed of fibrocartilage; thus, the disc contains a much higher percentage of collagen, increasing its stiffness and durability. The disc does not have any direct vascularization or innervation; however, the posterior attachment of the disc (also known as retrodiscal tissue) is both highly vascularized and highly innervated and, therefore, pertinent to the discussion of joint pain.^{1,6}

Signs and symptoms of temporomandibular disorders (TMDs) may include pain, impaired jaw function, malocclusion, deviation or deflection, limited range of motion, joint noise, and locking. The term “temporomandibular disorders” (TMD), is a collective term embracing a number of clinical problems that involve the masticatory musculature, the temporomandibular joint (TMJ) and associated structures, or both. These disorders are characterized by

1. Facial pain in the region of the TMJ and/or the muscles of mastication,
2. Limitation or deviation in the mandibular range of motion, and
3. TMJ sounds during jaw movement and function.

In our study we concentrated only in determining the awareness of the study population towards TMJD.

Clicks are brief sounds produced by mandibular movements associated with disc displacement with reduction, though click-like sounds can also be produced by joint remodeling or joint hypermobility. The presence of joint sounds supports the diagnosis of internal derangement of the TMJ. Absence of such click sounds does not necessarily imply joint normality. There are occasional patients who seek professional advice regarding treatment of an audible click that is not accompanied by pain.^{6,7}

Joint sounds are detected by palpation, auscultation or sonography. Palpation is less sensitive, since some sounds go undetected; in this sense, it is useful to question the patient as to when and where he or she

notices the sounds. In contrast, auscultation and sonography offer low specificity, since many accessory sounds such as friction of the hair or skin, or even blood flow in the exploratory zone, can induce false positive readings.^{7,8}

Anterior disc displacement (ADD) is the most frequently encountered articular disorder. Disc displacement (also known as internal derangement) is defined as “a disturbance in the normal anatomic relationship between the disc and condyle that interferes with smooth movement of the joint and causes momentary catching, clicking, popping or locking”. Therapy is indicated if pain and significant limitation in range of motion are present. Deviations are usually caused by disc alterations, and are a consequence of condylar movements to overcome the disc obstacle.^{7,8}

Pain is the most important symptom in temporomandibular joint (TMJ) dysfunction for both the patient and the clinician, and is the main reason why patients with TMJ disease (TMJD) seek medical help.

The joint cartilage lacks nerve endings, and is therefore unable to cause pain. The nerve endings are found in the periarticular soft tissues, specifically in the disc and capsular ligaments, and in the retrodiscal tissues (bilaminar zone of Rees). These are mostly free nerve endings, though some receptors with a more complex structure believed to correspond to mechanoreceptors have been identified in the lateral portion of the capsule and stylomandibular ligament.^{1,6,7}

In the present study 52% of the population showed were suffering from TMJ disorders. Which is less than the prevalence found by Modi P et al³ & Ryalat et al⁴, who showed prevalence rate of 68.6% & 55% respectively. It is more than prevalence found by Mutalu N et al² 17%.

In the present study most common symptom found was of joint sound followed by deviation and pain. In concordance to this Ryalat et al⁴ found pain as the

most common symptom followed by clicking and deviation.

The present showed higher prevalence of the temporomandibular joint disorders which implies need of awareness in the general population regarding the same and also preventive measures should be taken at community level.

Conclusion:

The subject of TMJ pain and dysfunction is complex. Signs and symptoms may be specific or nonspecific. The strong relationship between articular and muscular disorders makes accurate diagnosis difficult. A thorough knowledge of joint anatomy and function serves as a basis for understanding the effect of dysfunction on the joint's component parts. Patients with symptomatic (pain) TMJ problems are meagre in number compared to asymptomatic (Clicking & Deviation) patients. Some of the asymptomatic patients were not aware of the underlying problem in their TMJ due to the absence of pain. As dental practitioners, we seldom examine the TMJ during routine examination. Though treating the cause is important, it's also duty of a dentist to thoroughly examine the patient, identify any underlying asymptomatic disorders, and educate and motivate the patient to take up preventive measures & early treatment to avoid further symptoms that serve as precursors to TMJ disorders.

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