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Temporomandibular Disorders: A Better Understanding

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Dr. Shrishty Bhardwaj
Post Graduate, Department of Oral and Maxillofacial Surgery Saveetha Dental college and hospital, Chennai, Tamil Nadu
Email ID: shrishtybhardwaj15@gmail.com Contact Number: +919986212358

Dr. Hemavathy O. R. Muralidoss
Professor Dept. of Oral and Maxillofacial Surgery,Saveetha Dental college and hospital, Chennai, Tamil Nadu
Email ID: hemadocmd@gmail.com Contact Number: +919842564465

Corresponding Author: Dr. Shrishty Bhardwaj
Address: Flat no. 109/3, Golden Opulence Poonamallee High Road Chennai 600056, TamilNadu, India Mobile No. +919986212358

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Abstract

Aim: Multiple studies have pinpointed specific causes of TMD symptoms. On the other hand, there is a lack of adequate statistics. The purpose of this research was to identify the factors (e.g., age, trauma history, parafunctional behaviors, etc.) that contribute to TMD.

Materials and methods: A total of 50 subjects took part in the research. The" TMD questionnaire served as a straightforward method for screening patients for the presence of temporomandibular dysfunction. A self-reported questionnaire was used to gather information about the participants' demographics and parafunctional behaviors. Independent t-tests, "Chi-square tests with a significance level of p 0.05" were used to examine the data.

Results: We counted 14 men and 36 females. In this sample, people had an age range from 18-30, 30-40, and 40-50 years. TMD was substantially linked with a history of Parafunctional habits, trauma, behavioral changes, and occlusal disturbances. On the other hand, there was not a significant difference between risk factors of TMD and factors like gender and age.

Conclusion: Parafunctional behaviors, including trauma, behavioral changes, and occlusal disturbances that come from the jaw joint (TMJ), are typical signs of TMD.

1. Introduction:

The clinical presentation of temporomandibular disorders (TMD) consists of a number of signs and symptoms, and TMD is now understood to be a prevalent cause of orofacial discomfort. When it comes to the stomatognathic system's performance and quality of life, pain is nearly always a major factor [1,2]. The primary method of TMD diagnosis is clinical, with the potential addition of imaging studies. However, the patient's interpretation of the signs and symptoms is typically what prompts them to seek medical attention.

Affected individuals often describe a variety of symptoms, include otologic symptoms and muscle and joint pain in the jaw (temporomandibular) [1]. other symptoms include difficulties moving the jaw, joint sounds, problems with stomatognathic functions, and masticatory muscle pain. Habitually induced oral trauma may affect teeth, masticatory muscles, and the temporomandibular joints, thereby upsetting the stomatognathic system's functional balance and perhaps exacerbating pre-existing temporomandibular joint disorder (TMD)[3]. Therefore, the quantity, frequency, intensity, and length of practises may affect the severity of TMD symptoms, including weariness, muscle soreness, and joint compression, according to certain research [4].

To explain TMD, a multifactorial aetiology is the most plausible theory. Causes may be broken down into four categories:

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Direct/ indirect/ microtrauma, anatomical/physiological/psychological, and environmental. Kim et al. [5] study showed that those who had experienced trauma were more likely to exhibit symptoms and signs of TMD than those who had not. Clenching, bruxing, unilateral chewing, and/or biting the lips have all been linked to problems in the temporomandibular joint (TMJ) [6,7]. There has been a correlation established between TMD and the presence of Class II/III angles, midline shift, significant overjet, and deep overbite.

The process of orthodontic treatment may influence masticatory system adaption, making it an intriguing component in the development of TMD symptoms. The association between orthodontic therapy and TMD has been explored [8], but current research suggests that it cannot prevent or increase TMD symptoms. Not only are the aforementioned physical components important, but so are the psychological and social ones. Compared to healthy participants, a patient's perception and tolerance will be different if they are experiencing psychosocial variables like stress, anxiety, or depression. Patients with TMD had a strong correlation with both bruxism and stress. The long-term outcome of therapy for TMD is significantly influenced by the removal of contributory variables. As a result, the purpose of this study is to examine the link between TMD and its risk factors and to determine the prevalence of TMD via the use of a screening tool questionnaire.

2. Materials and Methods:

The Institute Ethical Committee approved this cross-sectional research. There were 50 participants (male= 14, females=36), ranging in age “from 18-30, 30-40and 40-50 years. Those people were picked because they made up the bulk of the list of those waiting for treatment.

The Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) have to be used by a trained evaluator in order for cases with muscle and/or articular TMD to be evaluated for inclusion [9]. If participants exhibit any of the following symptoms of TMD, they will be considered for participation: discomfort in the jaw or TMJ, restricted jaw movement, popping, clicking, or grating noises, and/or an irregular static or dynamic occlusal relationship are all symptoms of TMJ disorder. Patients with a prior history of head and neck cancers or central or peripheral neurological disorders were not considered for inclusion.

Patients were examined one at a time while sitting in a dental chair under intense lighting. Morphofunctional analysis of the static and moving occlusion was used to confirm the state. It was decided that palpating “the masseter, temporal, suprahyoid, medial, and lateral pterygoid bones, as well as the insertion of the temporalis muscles (intraoral), and the TMJs,” would assist pinpoint the origin of the pain. In addition to auscultation, palpation of the TMJ area was performed during mandibular mobility to detect the presence of joint sounds. The protocol RDC/TMD [9] criteria were used to guide the clinical evaluation. The three-part "Protocol for Multidisciplinary Centers for the Determination of Signs and Symptoms of TMD (ProDTMMulti)" was used to collect information on how individuals experienced signs and symptoms of TMD.

The researcher gave the self-evaluation questionnaire to all subjects. They have been given all the information they need to understand the study's goals and administer the questionnaire correctly. The self-evaluation survey has many major parts. The initial set of questions included the respondent's demographic information, which may have included their gender, age, psychological/behavioural change, occlusal disturbances history, or history of “trauma. The second was the TMD screening questionnaire, which is parafunctional habits. It was requested of all participants that they check out the most often practised behaviours on a Yes or No scale.

Statistical Analyses of the Data

SPSS, a statistical programme designed specifically for the social sciences, was used to examine all of the information gathered. To compare the means of two unrelated groups, we employed the t-test for independent samples. Analysis of the relationship between variables and TMD was performed using the Chi-square test. The cutoff for significance was p 0.05.

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3. Results:

Table 1. Comparison of risk factors of temporomandibular pain among three age groups

Risk factor	Age group (in years)			p value
	18-30 (n=32)	30-40 (n=15)	40-50 (n=3)	
Parafunctional habits	18 (56.3%)	9 (60%)	1 (33.3%)	0.696 (NS)
Trauma	2 (6.3%)	3 (20%)	0	0.287 (NS)
Psychological/behavioural change	4 (12.5%)	3 (20%)	0	0.608 (NS)
Occlusal disturbance	4 (12.5%)	5 (33.3%)	1 (33.3%)	0.210 (NS)

Chi-square test; NS: Non-significant difference

Comparison of risk factors of temporomandibular pain among three age groups showed that parafunctional habits were seen in 56.3% (n=18) of the subjects belonging to 18-30 years of age group, 60% (n=9) of the subjects belonging to 30-40 years of age group and one subject (33.3%) belonging to 30-40 years of age group (p=0.696; non-significant difference). Trauma was reported in 2 subjects (6.3%) of 18-30 age group and 3 subjects (20%) of 30-40 years age group (p=0.287; non-significant difference). Psychological/behavioural changes were seen in 4 subjects (12.5%) of 18-30 age group and 3 subjects (20%) of 30-40 years age group (p=0.608; non-significant difference). Occlusal disturbances were seen in 4 subjects (12.5%) of 18-30 age group, 5 subjects (33.3%) of 30-40 years age group and 1 subject (33.3%) of 40-50 years age group (p=0.210; non-significant difference).

Table 2. Comparison of risk factors of temporomandibular pain among male and female

Risk factor	Gender		p value
	Male (n=14)	Female (n=36)	
Parafunctional habits	7 (50%)	21 (58.3%)	0.753 (NS)
Trauma	0	5 (13.9%)	0.304 (NS)
Psychological/behavioural change	4 (28.6%)	3 (8.3%)	0.085 (NS)
Occlusal disturbance	2 (14.3%)	8 (22.8%)	0.704 (NS)

Chi-square test; NS: Non-significant difference

Comparison of risk factors of temporomandibular pain among male & female subjects showed that parafunctional habits were seen in 50% (n=7) of the males and 58.3% (n=21) female subjects (p=0.753; non-significant difference). Trauma was seen only in female subjects (n=5; 13.9%) (p=0.304; non-significant difference). Psychological/behavioural changes were seen in 4 male subjects (28.6%) and 3 female (8.3%) subjects (p=0.085; non-significant difference). Occlusal disturbances were seen in 2 male subjects (14.3%) and 8 female (22.8%) subject (p=0.704; non-significant difference).

4. Discussion:

Finding out how common TMD is and what variables can increase one's likelihood of developing the condition were the primary motivations for this research. Treatment often starts at the stage of chronic or recurring disease, Time ranged from 1 year to 23 years between the start of symptoms and the first

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examination in FORP/USP. The International Association for the Study of Pain (IASP) established a 6-month cutoff for the duration of pain symptoms in 1994 [11], yet this condition has lasted significantly longer than that. to define the clinical state of continuous pain. Due to the wide range of symptoms associated with TMD, sufferers may see many doctors before being diagnosed and sent to a DTM expert, increasing the likelihood that treatment will be delayed until the illness has progressed to a chronic state. This suggests that there are obstacles to making a proper diagnosis and, thus, indicating the best treatment for each case. These challenges may originate from a lack of agreement on diagnostic procedures, an inability to accurately pinpoint the source of the malfunction, or both. [12] More than that, many people wait until they have developed severe symptoms before seeking help for their condition.

Subjects were identified using the RDC/TMD classification system, which is frequently used for DTM [9]. Yet this is not the best way to grasp the gravity of the situation. Thus, we used the previously developed ProDTMMulti to standardise data pertaining to patients' signs and symptoms in multidisciplinary clinics, determine which signs and symptoms influence the patient and to what extent, and establish which problems are most urgent on a daily basis [13].

There was a high prevalence of complaints of both daytime and nocturnal clenching and grinding of teeth, confirming findings seen in other groups with TMD [9, 13]. Although these findings are predictable given that the sample already included people with TMD, it was intriguing to see how patients' self-reports, which either confirmed or refuted the clinical findings, complimented those findings. As such, their proposed technique is validated as an effective means of dysfunction identification that may be readily used by a variety of health practitioners.

Our data, in line with earlier research [14], demonstrated a prevalence of TMD that was greater in females than men, but statistical study indicated no significant association between gender and TMD. Different sex hormone levels may play a role in the physiopathology of TMD, although lower pain thresholds, joint laxity, and TMJ hypermobility in women are also likely contributors [15]. TMD is most common among individuals between the ages of 20 and 40, as has been noted in the scientific literature. The incidence and prevalence of TMD do not rise with age, contrary to the findings of many other musculoskeletal disorders [16]. It is recommended that a patient with TMD should be treated with the least invasive procedures first. If this adequately resolves the pain, no other form of treatment is required. Patients are recommended to wear appropriate occlusal appliances at night as long as it benefits them. [20]

Researchers hypothesised that the increased prevalence of TMD between the ages of 21 and 40 compared to older age groups was due to the impact of psychological stresses intrinsic to the peak of these workers' careers on their experience of TMD pain [17]. Research has attempted to link TMD with orthodontics before, but the results have been inconsistent. There was no evidence that TMD and orthodontic therapy were linked in this research. According to the evaluations of the literature [17], orthodontic treatment does not provide a danger for the development of TMD, independent of the technical type of treatment, whether or not extractions are necessary, or the pre-treatment malocclusion. By examining the correlation between TMD and past injuries, both direct and indirect, we found that the presence of an injury history was correlated with TMD. Trauma was seen only in female subjects (p=0.304; non-significant difference) with age group 30-40 years suffering maximum TMD pain than other age groups. Those who had suffered head or neck injuries reported higher levels of jaw discomfort and handicap compared to the controls in a recent research examining the relationship between the two [16].

This research also looked at the effects of TMD on parafunctional behaviours. In one study, researchers found a correlation between habits such as lateral chewing, pen biting, cheek biting, lip biting, and gripping (TMD). However, sleep bruxism, nail biting, tongue biting, chewing gum, eating solid food, sleeping on one's side, sucking a finger, or resting one's chin on one's palm were not associated with TMD. In our study Parafunctional habits was seen more in age group belonging to 30-40 years (p=0.696; non-significant difference). Sleep bruxism, or the habit of grinding one's teeth during one's sleep, is one of the many parafunctional behaviours that have been associated with an increased chance of developing TMD [18]. In our study, TMD pain was seen more in females than males (p=0.753; non-significant difference). The most important element in the onset of TMD is psychological/behavioural change. Our results showed

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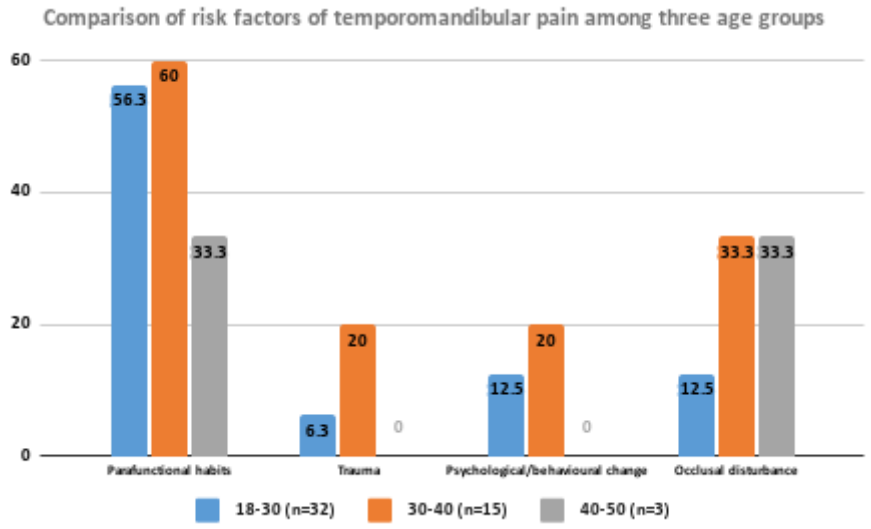
a significant correlation between psychological and TMD with the majority of our participants in the age range of 18-30 years, with high prediction seen in males. As shown by Gameiro et al. [19], stress may modify the functioning of the serotonergic and opioid systems as well as the hypothalamic-pituitary-adrenal axis. Examples include new research showing that emotional or mental strain may alter the body's natural capacity to feel and communicate pain. Occlusal disturbances are also one of the contributing factors to TMD pain, In our study, it was seen maximum between the age group 30-40 years with high prediction seen in males.

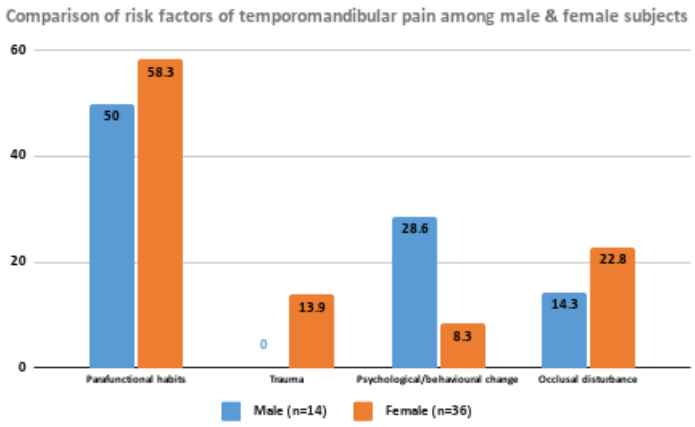
This research's weak spot is its cross-sectional structure. To prove the connection between potential causes and TMD, prospective cohort research is the best method to use. As a result, care is warranted when extrapolating the relationship between risk variables and TMD. Moreover, the participants are all health science students, therefore the findings cannot be generalised to the general public. Nevertheless, our findings corroborate those of prior research into the frequency and causes of TMD.

5. Conclusion:

The biggest behavioural component for TMD was parafunctional habits, however, a history of trauma, Psychological/behavioural change, and Occlusal disturbance were all highly associated with the temporomandibular joint disorder. Females were more likely to have TMD.

While interesting, such results relied heavily on patient reports. To verify and generalise these results, a clinical research is needed. Furthermore, just an association, not a causative one, can be drawn between the variables in this research.





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