Original Article

# Prevalence of Temporomandibular Disorders in Individuals Seeking Treatment at Dental Hospital: A Cross-Sectional Study

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## Abstract

**Introduction:** Temporomandibular disorders (TMDs) being the most prevalent orofacial condition, is one of the major reason for patients to seek conservative intervention at dental hospital. The multifactorial etiology of TMDs along with the wide spectrum of associated signs and symptoms, mainly orofacial pain, restricted mouth opening, and deviation, has made the condition difficult to diagnose. The aim of the present study is to determine the signs and symptoms associated with temporomandibular disorders according to Research Diagnostic criteria for Temporomandibular disorders (RDC/TMD). **Materials and Methods:** The present cross-sectional study was conducted at dental hospital, Rajasthan among 1450 individuals. The 209 individuals, above 18 years of age who met the inclusion criteria were enrolled in the study. Along with signs and symptoms of TMDs (VAS score for orofacial pain, clicking sound, crepitus, reduced mouth opening (less than 40 mm), joint deviation and tenderness, etc.) the structured questionnaire according to RDC/ TMD were also assessed. The data was analyzed using Statistical Package for the Social Sciences version 21 software. **Results:** In the present study population, the prevalence of TMDs was 14.41% only. Most of the patients were in 2nd decade (33.01%) with female predilection (69.85%). The VAS score for patients complaining of orofacial pain (58.85%) was 6.32±1.12 with reduced mouth opening in 42.58%. According to RDC/TMD, the most common finding observed was TM joint deviation (63.15 %), followed by clicking sound (56.93%), crepitus (46.41%), MPDS (12.91%), internal derangements (10.52%) and osteoarthritis (6.22%). **Conclusion:** The prevalence of TMDs was more prevalent in younger generation, especially with female predilection. The most common signs and symptoms seen in the present study were orofacial pain, followed by reduced mouth opening, TMJ deviation and clicking sound.

**Keywords:** Prevalence, Temporomandibular disorders, research diagnostic criteria for temporomandibular disorders

## Introduction

Temporomandibular disorder (TMDs) are the most prevalent condition associated with the oral and maxillofacial region. The multifactorial origin of TMDs can be attributed to the psychological stress, occlusal interferences, internal derangements, muscular dysfunction, or traumatic injuries affecting the temporomandibular joint (TMJ). TMDs are associated with a variety of signs and symptoms affecting occlusion, condylar articulation with the glenoid fossa, muscles of mastication, and associated TMJ. The most common cardinal sign associated with TMDs is radiating orofacial pain in and around the joint, followed by restricted mouth opening, clicking sound, crepitus, joint tenderness, and deviation.[1-3]

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TMDs affect a wide group of individuals, from younger to old age, irrespective of gender. The prevalence of TMDs ranges from 40% to 60% in the general population. The estimated population presented with signs and symptoms, associated with TMDs is 50%–70%.[4,5] Due to its multifactorial origin along with a variety of clinical manifestations in patients, it is difficult for the healthcare professionals to diagnose the condition. Therefore, the present study was carried out to determine the signs and symptoms associated with TMDs according to the Research Diagnostic Criteria (RDC) for TMDs.

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## Materials and Methods

### Study setting

The present prospective cross-sectional study was conducted at dental hospital, Jodhpur, Rajasthan, after approval by the ethical committee (IRB/2019/342). The informed written consent was obtained from all the participants.

### Sample size

Initially, 1450 individuals above the age of 18 years, visiting the dental hospital underwent intraoral and extraoral screenings from February 2019 to February 2020, were considered for the study. Of 1450, 209 met the inclusion criteria and were enrolled in the study. The demographic data and clinical findings were recorded.

### Inclusion criteria

- Patients >18 years of age
- Patients who met the RDC/TMD criteria
- Patients willing to agree for written consent
- Cooperative patients.

### Exclusion criteria

- Patients with a history of recent third molar extraction
- Patients with TMJ developmental anomalies, pathologies, trauma, or surgery
- Patients were not willing to cooperate or sign the written consent.

### Study design

The questionnaire was designed according to the RDC for TMDs, the clinical findings such as visual analog score (VAS) for orofacial pain, clicking sound, crepitus, restricted mouth opening, joint deviation and tenderness, myofascial pain dysfunction syndrome (MPDS), osteoarthritis, and internal derangements were evaluated. The VAS score for the orofacial pain was assessed on the scale of 0–10, with a score 0 as no pain, whereas score 10 as severe pain. The mouth opening was measured as the inter-incisal distance between the maxillary and mandibular central incisors using Vernier caliper. The mouth opening <40 mm was considered as reduced.

The data collected were analyzed using the Statistical Package of Social Science (SPSS) 21.0 software Chicago, IL, USA. Descriptive data were presented in number, mean, or percentage. Chi-square test was used for qualitative parameters with $P < 0.005$ was considered as statistically significant.

## Results

In the present study, the prevalence of TMDs was 14.41% as out of 1450 patients; only 209 met the RDC/TMD and were enrolled for the study. The mean age of patients was 32.84 ± 18.73 years. The patients in the present cross-sectional study were distributed into six groups. The patients mainly affected with TMDs were between 21 and 30 years (33.01%) of age, followed by 51–60 years (24.88%). Majority of patients in the study were females with 69.85% (146), wheras only 30.14% (63) were males [Table 1].

On clinical examination in the present study, 123 (58.85%) complain of pain with the mean VAS score of 6.32 ± 1.12. The mouth opening <40 mm was seen in 42.58% (89) of participants. The majority of study patients TMJ deviation was assessed, out of with 76 patients were examined with left deviation of the mandible on mouth opening, whereas rest 56 with right deviation. The clicking sound on either side of the joint was determined in 56.93% (119), followed by crepitus in 46.41% (97). The secondary parameters such as MPDS, internal derangements, and osteoarthritis in TMJ were seen in 12.91% (27), 10.52% (22), and 6.22% (13) patients respectively [Table 2].

## Discussion

TMDs involve group of signs and symptoms, involving TMJs and periauricular regions, usually seen in young and middle-aged individuals. Referred orofacial pain to the masticatory and neck muscles, reduced mouth opening, joint and muscle tenderness, clicking sound, and deviation on mandibular movements are major clinical findings in individuals diagnosed with TMDs. Various hypothesis regarding the etiology of TMDs is stated in the literature, including psychological stress, occlusion interferences, and muscular dysfunction, etc. Most of the individuals were not aware of the condition, its etiologic factors, and consequences affecting the quality of life; therefore, the present study was carried out to determine the signs and symptoms associated with TMDs according to RDC for TMDs.

In the present study, 14.41% of individuals were diagnosed with the TMDs. The present study was in consonance with the study published by Oyetola *et al*., in which the prevalence

**Table 1: Age-wise distribution of enrolled patients**

| Age groups (years) | *n* (%) |
|---|---|
| 18-20 | 12 (5.74) |
| 21-30 | 69 (33.01) |
| 31-40 | 32 (15.31) |
| 41-50 | 29 (13.87) |
| 51-60 | 52 ( 24.88) |
| Above 60 | 15 (7.17) |

*n*: Number of study participants

**Table 2: Clinical parameters in the enrolled patients**

| Clinical parameters | *n* (%) |
|---|---|
| Orofacial pain | 123 (58.85) |
| Reduced mouth opening | 89 (42.58) |
| TMJ deviation | 132 (63.15) |
| Clicking sound | 119 (56.93) |
| Crepitus | 97 (46.41) |
| MPDS | 27 (12.91) |
| Osteoarthritis | 13 (6.22) |
| Internal derangements | 22 (10.52) |

*n*: Number of study participants, TMJ: Temporomandibular joint, MPDS: Myofascial pain dysfunction syndrome

of TMDs was 13% in a tertiary hospital-based study.[6] The other studies conducted by Ryalat *et al*., de Godoi Gonçalves *et al*. and Zwiri and Al-Omiri stated the higher prevalence of TMDs among Jordan, Brazilian, and Saudi Arab population, respectively.[7-9] The above studies stated the psychological stress as the major predisposing factor in the causation of TMDs while in the present study, the prevalence rate is relatively less which can be attributed to less stressful life and increase in awareness regarding TMDs among the present population.

Majority of the population in the present study belongs to the second decade (33.01%), followed by the fifth decade (24.88%) of life. The study published by Ryalat *et al*. among 18–25 years university students concluded that the prevalence of TMDs symptoms was higher than the aged population. Studies by Oyetola *et al*. and Johansson *et al*. mentioned that most of the individuals participated belong to the fifth and sixth decade of life, attributed to the predisposing stress and age-related factors such as TMJ arthritis, attrition, etc. Both the studies are in consonance with the present study.[6,7] The female predilection was seen in the current study with majority of 69.85% which is in favor with the studies published by Chaurasia *et al*., Oyetola *et al*., and Ryalat *et al*.[5-7] Fischer conducted a experimental research on rats investigating the effect of ovarian hormones on TMJ nociceptors. The authors further concluded the greater prevalence of TMDs among females is due to result of fluctuation in hormones during the reproductive stage.[10,11]

In the present study, the TMDs related orofacial pain is the major (58.85%) clinical parameter with VAS score of 6.32 ± 1.12. This is in accordance with Oyetola *et al*. in which all the participants complain of pain. In another study by de Godoi Gonçalves *et al*., only 25.6% individuals complained of TMD-related pain which is not in accordance with the present study. In the present study, the mouth opening <40 mm was seen in 42.58% of patients unlike the studies published in literature with 77% of participants complaining of reduced mouth opening.[6,8] 56.93% and 46.41% individuals complains of clicking sound and crepitus respectively in the current study while in the earlier studies, clicking sound was stated as a most common symptom of TMDs In addition, 30.7% of the study population complained of clicking sound in a questionnaire-based study published by Iodice *et al*.[12] A study by Chaurasia *et al*. regarding the prevalence of TMDs determines the deviation of joint in 40.8% of individuals only while in the present study TMJ deviation was seen in 63.15% which is in consonance with a study published by Oyetola *et al*. stating that 64% of participants on the clinical examination have jaw deviation.[5,6]

The prevalence of the secondary parameters considered in the present study, such as MPDS, internal derangements, and osteoarthritis was 12.91%, 10.52%, and 6.22%, respectively, which is according to the study published by Chaurasia *et al*. concluding the similar parameters with the prevalence rate of 33.7%, 36.8%, and 29.5%, respectively.

Till our knowledge, this is the first study in Jodhpur, Rajasthan population, determining the prevalence of signs and symptoms associated with TMDs according to RDC/TMD. The present study was single centered due to limited resources with a convenient sampling procedure. We would like to recommend further clinical trials involving the severity and complications associated with TMDs.

## Conclusion

In the current scenario, TMDs are more prevalent among the younger population, especially in the second decade of life with female predilection. Referred orofacial pain and reduced mouth opening are the major clinical parameters affected in the present study followed by TMJ deviation and clicking sound. Further, along with a multicentered study, correlation of signs and symptoms with the severity and consequences of TMDs are recommended.

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### Conflicts of interest

There are no conflicts of interest.

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