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Prevalence of temporomandibular joint dysfunction in students

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Abstract
Temporomandibular joint dysfunction (TMD) encompasses a group of conditions affecting the temporomandibular joint (TMJ), associated muscles, and supporting structures. This study investigates the prevalence of TMD among students aged 19–25, highlighting the impact of gender and dietary habits on dysfunction severity. Findings indicate significant gender differences and a correlation between dietary preferences and TMD prevalence. The study underscores the importance of early screening and preventive interventions to reduce TMD-related impairments.

Keywords: Prevalence, TMD, dysfunction, Temporomandibular

Introduction
Temporomandibular joint dysfunction (TMD) represents a complex health issue characterized by pain, reduced mandibular movement, and associated symptoms like clicking or locking of the jaw. The TMJ is a synovial joint that plays a crucial role in mastication and speech, making dysfunction a source of significant morbidity (Marklund *et al*., 2008).

The etiology of TMD is multifactorial, involving stress, occlusal interferences, structural anomalies, and parafunctional habits like bruxism (Otuyemi *et al*., 2000) [4]. Emotional factors such as anxiety and depression also play a prominent role, with studies reporting higher prevalence in females, potentially due to hormonal differences and lower pain thresholds (Bagis *et al*., 2012) [8].

Previous research shows that TMD symptoms, including jaw pain, clicking sounds, and locking, increase with age, peaking in adulthood (Kohler *et al*., 2009) [9]. Although symptoms often appear in childhood or adolescence, they are rarely reported until they interfere with daily activities. Early identification and intervention are essential to prevent chronic pain and functional limitations.

This study focuses on the prevalence of TMD among students aged 19–25, an age group more likely to recognize and articulate symptoms. By examining the influence of gender and dietary habits, the research aims to contribute to the understanding and management of TMD in young adults.

Aim and objectives
Aim
To determine the prevalence of temporomandibular joint dysfunction in students aged 19–25 years.

Objectives
1. To determine TMD prevalence using the TMJ Scale.
2. To compare the severity of TMD symptoms between male and female students.
3. To analyze the relationship between dietary habits (vegetarian vs. non-vegetarian) and TMD prevalence.

Literature review
Studies worldwide have investigated the epidemiology and risk factors of TMD. A study by Sao Paulo (2006) on Brazilian college students found that 73% of female participants experienced TMD symptoms compared to 27% of males, highlighting gender disparities. Similarly, Marklund *et al*. (2007) [7] noted that female dental students were more susceptible to myofascial pain and TMJ dysfunction.

Psychological stress has been consistently linked to TMD prevalence. Sao Paulo (2012) observed a strong correlation between anxiety levels and TMD symptoms, emphasizing the role of mental health in orofacial disorders. In adolescents, Kohler *et al*. (2009) [9] found that TMD symptoms, although generally mild, increased with age and were often associated with oral parafunctional habits.

Dietary influences on TMD have received limited attention. This study addresses the gap by exploring the impact of vegetarian versus non-vegetarian diets on TMJ dysfunction, given the mechanical demands of chewing tougher foods in non-vegetarian diets (Bagis *et al*., 2012) [8].

Methodology
Study design
The study employed a cross-sectional design using purposive sampling.

Study population
A total of 30 students (both male and female) aged 19–25 years from Pune participated in the study.

Inclusion and exclusion criteria
Inclusion criteria
- Students aged 19–25 years.
- Willingness to participate and provide informed consent.

Exclusion criteria
- Individuals with prior TMJ surgery or trauma.
- Those with severe systemic conditions affecting the TMJ.

Procedure

After providing informed consent, participants completed the TMJ Scale, a questionnaire designed to assess TMJ dysfunction symptoms and severity. The data were analyzed to determine symptom prevalence, gender differences, and the influence of dietary habits.

Results

Prevalence of symptoms

1. **Pain at the TMJ:** Reported by 34% of participants, TMJ pain was the second most prevalent symptom. Pain intensity varied, with some participants reporting mild discomfort and others severe enough to affect daily activities.

2. **Clicking sounds:** The most commonly reported symptom, present in 52% of participants, often indicated early-stage TMJ dysfunction.

3. **Jaw locking:** The least common symptom, experienced by 14% of participants, generally suggested advanced dysfunction.

Gender differences

- Females exhibited a higher prevalence of TMJ pain (53%) compared to males (47%).
- Clicking sounds showed similar prevalence across genders (52% in females vs. 48% in males).
- Jaw locking was evenly distributed between genders.

Influence of dietary habits

- Non-vegetarians exhibited a significantly higher prevalence of TMD (73%) compared to vegetarians (27%).
- The increased mechanical load from chewing tougher foods in non-vegetarian diets likely contributes to TMJ strain.

Discussion

The results confirm the multifactorial nature of TMD, aligning with findings by Sao Paulo (2006) and Marklund *et al*. (2007) [7] that females are more prone to TMD due to hormonal variations and lower muscle thresholds. The higher prevalence of pain and clicking sounds in females further supports this gender disparity.

Clicking sounds emerged as the most prevalent symptom, consistent with observations by Bagis *et al*. (2012) [8], who noted that joint noise often precedes other dysfunction symptoms. This underscores the importance of identifying and managing early signs to prevent progression.

Dietary habits played a notable role, with non-vegetarians showing higher TMD prevalence. Chewing tougher foods may exert additional stress on the TMJ, supporting the hypothesis that dietary practices influence joint health. While this finding aligns with biomechanical principles, it has limited prior documentation, indicating a need for further research.

The findings also highlight the importance of age-specific interventions. Young adults aged 19–25 are at a critical stage where early diagnosis and treatment can significantly improve long-term outcomes. Tools like the TMJ Scale are instrumental in screening and monitoring symptoms, although they require further validation for detailed gradation of dysfunction severity.

Limitations

The study's small sample size limits its generalizability. The TMJ Scale, while useful, lacks the precision to provide a comprehensive assessment of dysfunction severity. Additionally, the cross-sectional design precludes causal inferences about the relationship between dietary habits and TMD.

Conclusion

This study highlights the high prevalence of TMD among college students, particularly among females and non-vegetarians. The findings emphasize the need for targeted awareness campaigns and preventive interventions in young adults to mitigate TMD-related impairments.

Key Findings

1. Clicking sounds are the most common symptom, followed by pain and jaw locking.
2. Females exhibit higher prevalence and severity of symptoms compared to males.
3. Non-vegetarian dietary habits are associated with increased TMD prevalence.

Implications

The study underscores the importance of early screening and management strategies, particularly for high-risk groups such as females and individuals with non-vegetarian diets. Future research should explore longitudinal relationships between dietary habits, stress, and TMD progression to develop tailored interventions.

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