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Prevalence and contributing factors of TMJ problems among dental students and professionals within a university setting

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Abstract

Introduction: Temporomandibular Joint (TMJ) disorders, characterized by pain and dysfunction in the jaw joint and surrounding muscles, are prevalent among dental students and professionals. High stress levels, repetitive jaw movements, and improper ergonomics contribute to this issue, making it important to understand its prevalence and contributing factors in this specific population.

Materials & Methods: A cross-sectional study was conducted at Sri Sai College of Dental Surgery, Vikarabad, involving 336 participants including dental students, interns, postgraduates, and faculty. Data were collected using structured questionnaires, assessing stress levels via the Perceived Stress Scale (PSS) and TMJ symptoms using the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD). Statistical analyses were performed to examine the associations between TMJ disorders and various factors.

Results: The study revealed a predominantly young and female cohort, with frequent headaches, tension, and disturbed sleep reported by the participants. Stress levels were higher among 1st-year students and postgraduates. Ergonomic issues and high-stress environments were identified as significant contributors to TMJ disorders.

Conclusion: The study highlights the widespread impact of TMJ disorders on dental professionals in university settings. Targeted interventions addressing stress and ergonomic issues are essential to enhance the well-being of dental students and professionals, ensuring a healthier and more productive future workforce.

Keywords: Temporomandibular joint disorders, headaches, ergonomics

1. Introduction

Temporomandibular Joint (TMJ) disorders represent a significant area of concern in dental and medical fields, characterized by pain, dysfunction, and discomfort in the jaw joint and surrounding muscles. These disorders can impact a wide range of individuals, including dental students and professionals who frequently experience high levels of stress and physical demands associated with their work and studies. Understanding the prevalence, contributing factors, and impact of TMJ disorders in this specific population is crucial for developing effective management strategies and interventions.

TMJ disorders are prevalent across various populations, but they are notably common among dental professionals and students. Research indicates that these individuals are at higher risk due to factors such as prolonged periods of stress, repetitive jaw movements, and improper ergonomics during clinical practices [1]. In particular, dental students, who are often new to clinical practice, may experience increased stress and musculoskeletal strain, leading to a higher incidence of TMJ-related issues [2].

Several factors contribute to the high incidence of TMJ disorders among dental professionals and students. Prolonged exposure to high-stress environments, repetitive jaw movements during dental procedures, and improper posture can exacerbate TMJ problems [3]. Additionally, dental students and professionals often face significant academic and professional pressures that can contribute to bruxism and other parafunctional habits, which are well-documented risk

factors for TMJ disorders [4].

Stress is a critical factor influencing the prevalence and severity of TMJ disorders. Dental students and professionals frequently experience stress related to their workload, patient interactions, and academic responsibilities. This stress can lead to increased muscle tension, bruxism, and clenching, all of which are associated with TMJ dysfunction [5]. Studies have highlighted the significant role of psychological factors in developing TMD, found a positive correlation between muscle and joint pain and stress, suggesting psychological components play a part in the condition's initiation and evolution [6].

The ergonomic setup of dental practices plays a vital role in the prevention and management of TMJ disorders. Improper ergonomic practices, such as poor posture during procedures, can contribute to musculoskeletal problems, including TMJ disorders [7]. Addressing ergonomic issues and implementing proper techniques can help reduce the incidence of TMJ disorders among dental professionals and students [2].

The purpose of this study is to assess the prevalence and contributing factors of TMJ problems among dental students and professionals within a university setting

Materials & Methods

Study Design

This cross-sectional study was conducted at Sri Sai college of Dental Surgery, Vikarabad, Telangana among dental students and professionals. Participants included first-year to final-year dental students, interns, postgraduates, and faculty members. Ethical approval was obtained from the university's Institutional Review Board (IRB), and informed consent was secured from all participants.

Participants

A total of 336 participants were included in the study, comprising 215 dental students and 121 dental professionals (interns, postgraduates, and faculty). Participants were selected using stratified random sampling to ensure representation from all academic levels and professional categories.

Data Collection

Data were collected using a structured questionnaire that included sections on demographic information, stress levels, TMJ symptoms. Stress levels were assessed using the Perceived Stress Scale (PSS), while TMJ symptoms were evaluated using the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) [8].

Statistical Analysis

Descriptive statistics were used to summarize demographic data, prevalence of TMJ symptoms, and stress levels. Chi-square tests and logistic regression analyses were conducted to examine the associations between TMJ disorders and factors such as stress, clinical practices, and ergonomic issues. Statistical significance was set at $p < 0.05$.

Results

The following observational questionnaire study was conducted on e-platform, via google forms at Sri Sai College of Dental Surgery, Vikarabad. The questionnaire was divided into 2 sections. The first part of the questionnaire collected their demographics viz., name, age, sex and study level, while the second part of the questionnaire consisted of questions relating to TM disorders. While the majority of the

participants i.e., 263 (78.50%) fell within the 17 to 25 age group, 47 (14.02%) and 25 (7.46%) participants belonged to 26 to 30 and 31 to 58 years age group, respectively (fig 1).

235 of 335 participants were female which contributed to 70.14% of the total sample, indicating the highest residence of women amongst the health care sector. Male population comprised of 100 participants implying only 29.85% of the sample size. The resultant male-to-female ratio was 1:2.35 (fig 2).

Participants are distributed across different study levels as follows: 1st Year: 33.43%, 2nd Year: 3.88%, 3rd Year: 9.25%, 4th Year: 17.31%, Interns: 11.34%, Postgraduates (PG): 21.19%, and Staff: 3.58%. This distribution suggests that the study may primarily reflect the experiences and perceptions of early-year students and postgraduates (fig 3).

The highest incidence of frequent headaches is reported by the 17 to 25 age group, with 65 participants experiencing this issue. This aligns with the majority age group and could indicate that younger participants are more prone to experiencing headaches. In comparison, 10 participants in the 26 to 30 age group and 2 participants in the 31 to 58 age group reported frequent headaches (fig 4).

The prevalence of feeling tense or nervous is highest among 1st-year students (41 participants) and postgraduates (28 participants), suggesting that these groups may experience higher stress levels, possibly due to the transition into university life or the demands of postgraduate studies. Other groups reported lower levels of tension: 2nd Year (3 participants), 3rd Year (7 participants), 4th Year (20 participants), Interns (17 participants), and Staff (1 participant) (fig 5).

A greater number of females (65 participants) report disturbed sleep compared to males (23 participants). This indicates potential gender differences in sleep quality or stress-related sleep issues, with females possibly being more susceptible to stress-induced sleep disturbances (fig 6).

30 of the 335 participants have a history of treatment for temporomandibular joint (TMJ) disorders (fig 7).

The jaw-related questionnaire included whether they had ever experienced lock jaw, trouble opening their mouth, difficulty moving their jaw side to side, and pain or difficulty when speaking or chewing. The aforementioned problems have been documented to affect only a small percentage of participants (fig 8,9,10,11). Very few subjects reported experiencing pain in their faces or around their ears (fig 12,13).

The data reveals a predominantly young and female cohort, with a significant portion in their early academic years. The skewed age distribution indicates a focus on a youthful demographic, primarily capturing the experiences and challenges of students in their initial stages of academic life. The significant gender imbalance, with a higher proportion of females, may influence the findings and should be considered in future research to enhance the robustness and applicability of the results.

The academic distribution shows a concentration of participants in their 1st year of study, followed by postgraduates and 4th-year students. The lower representation from 2nd and 3rd-year students and staff suggests that the study may primarily reflect the experiences of early-year students and postgraduates.

Health and well-being concerns such as frequent headaches, feeling tense, and disturbed sleep are prevalent, particularly among younger participants and females. The high incidence

of frequent headaches among the 17 to 25 age group and the high levels of tension among 1st-year students and postgraduates highlight the need for targeted interventions to address stress and health-related issues within this demographic. The significant gender difference in reports of disturbed sleep underscores the importance of considering gender-specific approaches to improve sleep quality and overall well-being.

Discussion

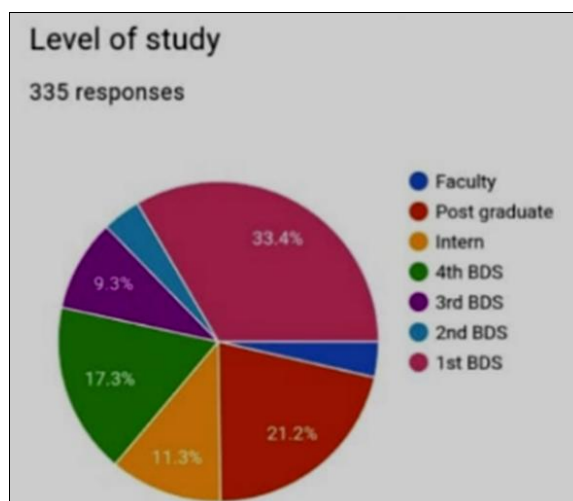
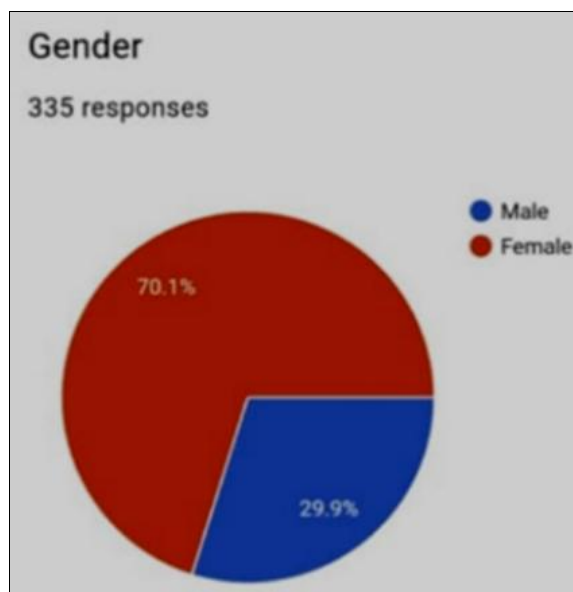
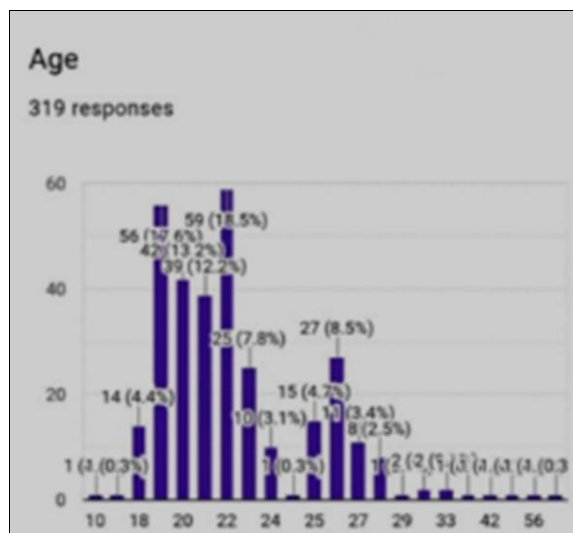
Temporomandibular joint disorders (TMDs) encompass a range of conditions affecting the temporomandibular joint (TMJ), which can lead to pain, dysfunction, and a decrease in quality of life. Understanding the demographic distribution of TMDs and related health concerns such as headaches, tension, and sleep disturbances can aid in the development of targeted interventions. This discussion focuses on analysing the prevalence of these issues across different age groups, genders, and academic levels based on the collected data.

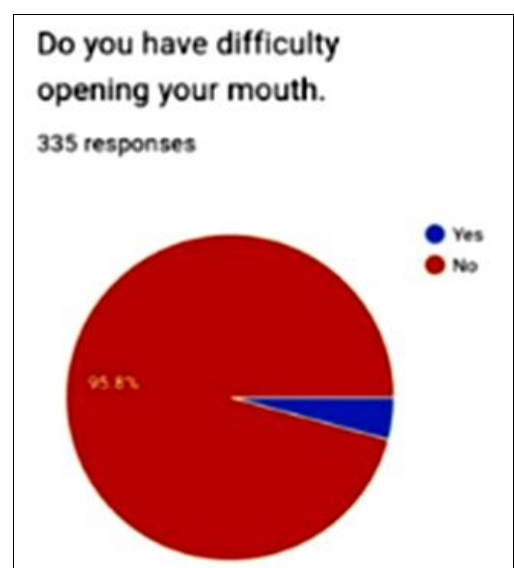
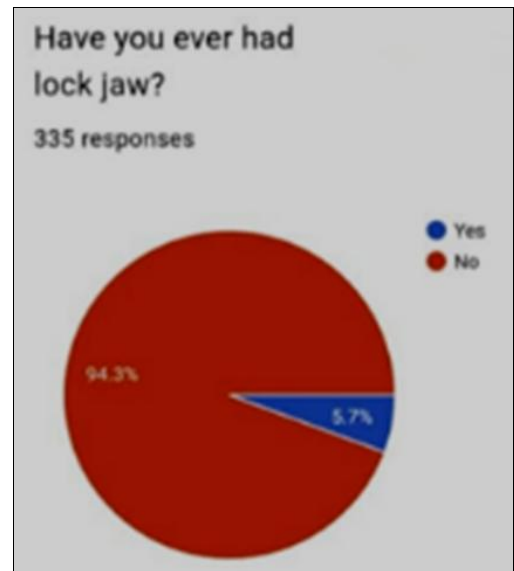
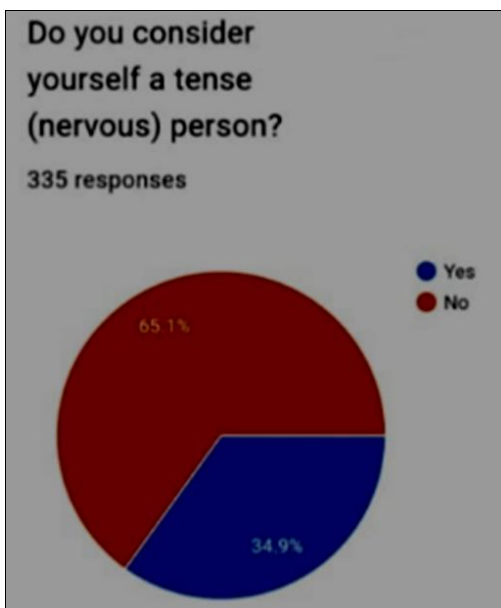
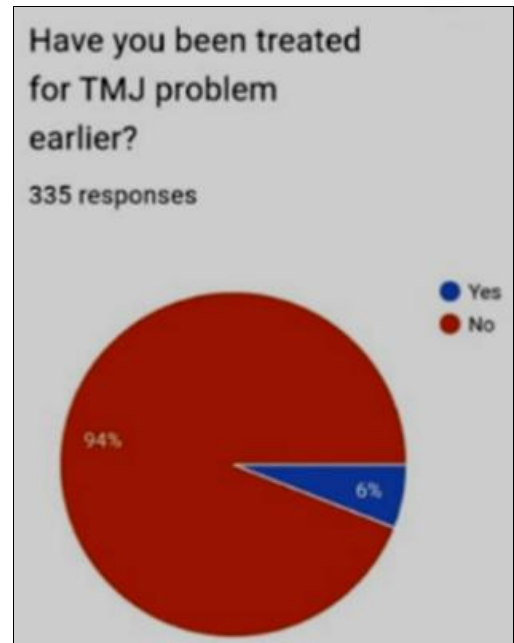
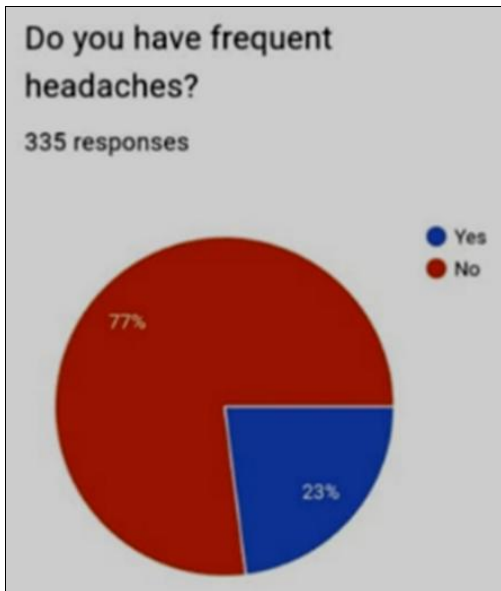
Gender differences in the prevalence of TMDs and associated conditions such as headaches and tension are well-documented, with females often reporting higher incidences of these issues. Females are more likely to experience TMDs and associated conditions due to hormonal and psychosocial factors. Younger individuals are often more susceptible to stress and lifestyle factors that contribute to TMDs [9, 10, 11].

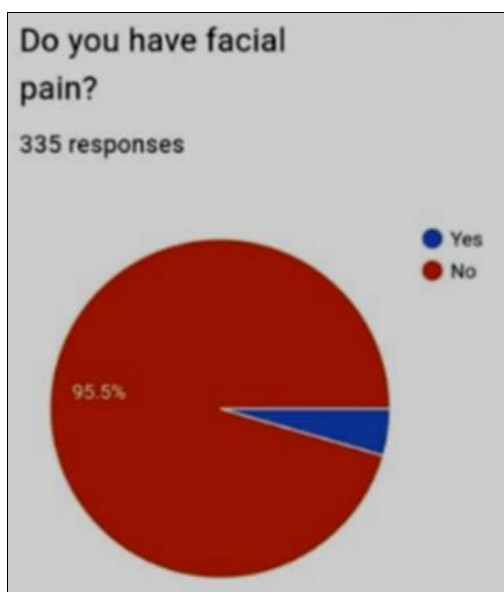
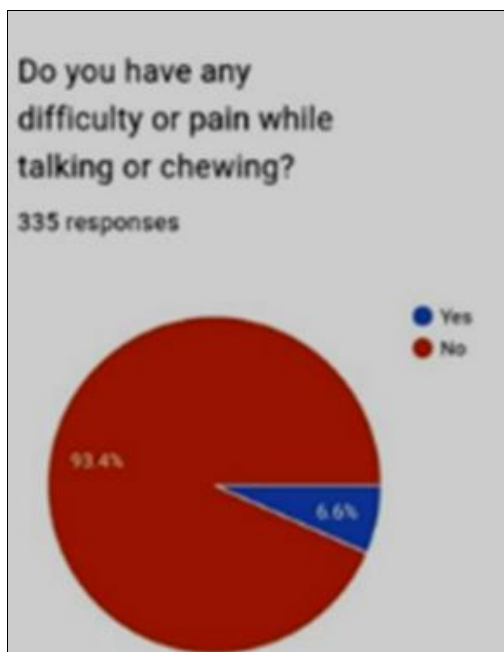
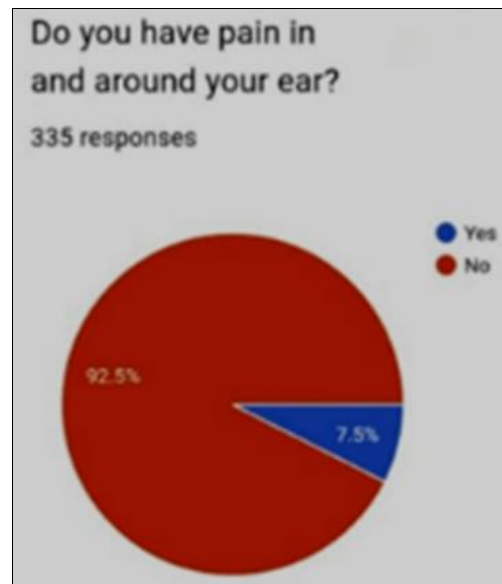
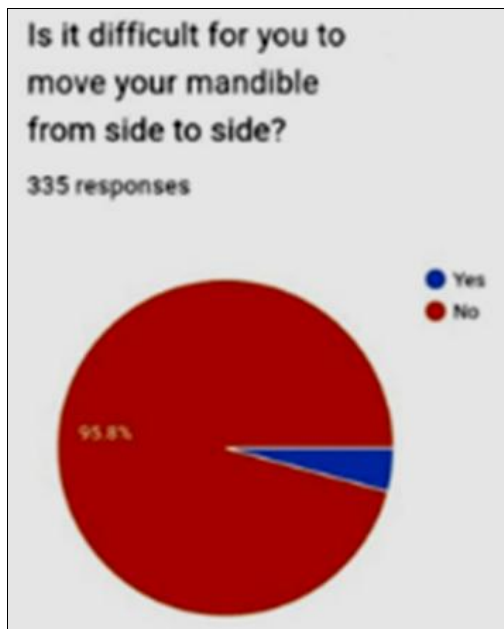
The data highlights significant age and gender differences in the prevalence of headaches, tension, and sleep disturbances [12]. Younger individuals and females reported higher frequencies of these issues, which aligns with existing research on the demographic factors influencing TMDs (13, 14). Stress has been identified as a major risk factor for TMDs, as it can lead to bruxism, jaw clenching, and other behaviours that contribute to joint dysfunction and pain [15, 16]. The prevalence of headaches and tension in these groups further supports the need for interventions aimed at managing stress and preventing TMDs [17]. Sleep disturbances are frequently linked to TMDs, as poor sleep quality can exacerbate pain and dysfunction associated with the disorder [18, 19].

Implementing stress management and relaxation techniques, such as mindfulness, cognitive-behavioural therapy, and stress-reduction workshops, could be beneficial in reducing the prevalence of TMDs and associated conditions [15; 20]. Providing educational workshops on TMDs, stress management, and healthy lifestyle practices could help raise awareness and equip individuals with strategies to manage their symptoms effectively [16; 19]. Establishing support services, such as counselling and mental health resources, for students and staff could help address the underlying factors contributing to tension and sleep disturbances [10; 21].

Educational institutions should consider incorporating stress reduction techniques and ergonomic training into their curricula to help manage the physical and psychological factors contributing to TMD. Additionally, regular screenings for TMD symptoms and related disorders could help identify individuals at risk and provide early intervention [22].







Conclusion

This study highlights the widespread impact of TMJ disorders on dental professionals in universities, emphasizing the need for targeted interventions to reduce their burden on daily activities and academic performance. By adopting recommended strategies, dental schools can enhance student well-being, fostering a healthier and more productive future workforce. The study's robust methodology, using structured questionnaires and rigorous data analysis, ensures reliable findings. Future research should focus on long-term trends in TMJ symptoms and the effectiveness of interventions in reducing TMJ disorder prevalence among dental students.

Conflict of Interest

Not available

Financial Support

Not available

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