

Review Article

Temporomandibular Joint Disorders and Mental Health: Unleashing the Veiled Bond

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ABSTRACT

Around 60-70% of the general population is likely to experience at least one symptom of temporomandibular disorder (TMD) at some point in their lives, yet only about 5% pursue treatment. TMDs are a prevalent cause of orofacial pain, impacting a considerable portion of the population. However, their diagnosis and treatment continue to pose challenges. Although evidence links TMDs to worsening mental health conditions, there is limited research on how TMD patients perceive the impact of these disorders on their mental well-being. As a result, individuals with TMD experience both physical and psychological complications, along with reduced social participation. Individuals experiencing chronic pain are at a higher risk of developing mood disorders, particularly depression and anxiety, which can further intensify pain, lead to emotional allodynia, and cause neuroanatomical changes. In this article, we aim to explore the increasing prevalence of TMD and how they can be interlinked with the current mental health disorders. A bidirectional mode of treatment incorporated by oral physicians can effectively enhance treatment outcomes. Our review highlights the necessity of healthcare intervention programs to assist individuals experiencing chronic TMD pain. It also emphasizes the significance of healthcare providers adopting a multimodal treatment strategy to address both TMD and associated mental health conditions.

Keywords: Chronic pain, Temporomandibular disorders (TMDs), Mental health and TMD, Multidisciplinary TMD treatment

INTRODUCTION

The American Academy of Orofacial Pain defines temporomandibular disorders (TMDs) as a broad term encompassing various musculoskeletal and neuromuscular conditions that affect the masticatory muscles, the temporomandibular joint (TMJ), and related structures.^[1] TMDs are characterized by symptoms such as pain, restricted jaw movement, and sounds within the TMJs. Secondary TMJ pain is often associated with conditions like arthritis, disc displacement, osteoarthritis, or subluxation.^[2] TMDs rank as the fourth most prevalent oral condition, following dental caries, periodontal diseases, and malocclusions. The number of reported cases has risen significantly, affecting approximately 5% to 12% of the population, making TMDs the leading cause of chronic non-odontogenic orofacial pain. Clinically, TMDs present with symptoms such as tenderness in the masticatory muscles and/or TMJ, joint sounds (clicking, popping, or grating) during jaw movements or chewing, and abnormalities in jaw function, including deviation, restriction, or deflection while opening or closing the mouth. The progression or aggravation of these symptoms can ultimately interfere with an individual's ability to perform normal physiological activities. Given the wide variability in clinical presentation, TMDs are typically diagnosed through a comprehensive patient history and physical examination.^[3] These may lead

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to bruxism, which in turn affects the masticatory system, eventually resulting in TMJ dysfunction.

Research suggests^[4] that approximately 60-70% of the general population may experience at least one symptom of TMDs at some point in their lives. However, only around 5% of affected individuals seek medical attention. Additionally, psychological factors like stress and anxiety are thought to contribute to the development of TMJ disorders. Patients' poor psychological status is one of the concerns related to TMDs, and it includes recurrent symptoms of depression, bad general mood, decreased activity, sleep disorders, and general pessimism. Depression and anxiety are now recognized as a serious problem in adults' general health.^[5]

In 2017,^[6] mental disorders were the second leading cause of the global disease burden in terms of years the patient has lived with disability and the sixth leading cause of disability-adjusted life years. This presents a considerable challenge for healthcare systems, particularly in low- and middle-income countries. Mental health has been identified as a crucial focus in global health policies and is included in the Sustainable Development Goals. The link between anxiety, depression, and their resulting symptom of TMD remains a topic of ongoing discussion.

Escalating Incidence of Temporomandibular Joint Disorders

TMD symptoms can occur across a wide age range and are relatively common among children and adolescents. The prevalence of temporomandibular joint and muscle disorders (TMJD) is estimated to be between 5% and 12%, with some studies reporting higher rates, reaching up to 25% and even 33% to 40% in the general population.^[7] However, TMDs are more commonly observed in young and middle-aged adults, with peak occurrence between 20 and 40 years of age. The condition is at least twice as prevalent in women compared to men.^[8] TMD is associated with substantial morbidity, affecting quality of life and work productivity. Its prevalence in India varies widely, ranging from 18% to 61.2%, depending on the population and assessment methods. Studies indicate that females exhibit higher levels of stress and parafunctional habits compared to males, both of which are significant contributing factors to TMDs. Females in their reproductive years (ages 20–40) are at higher risk, likely due to hormonal and psychosocial factors. Further large-scale, population-based studies in India are needed to accurately determine the incidence of TMDs.

TMD's Foreshadowing Mental Health Disorders

Pain around the temporomandibular joint can result from disorders within the joint itself, issues in nearby structures,

or a combination of both.^[9] TMDs can also present with symptoms beyond the musculoskeletal system, including tinnitus, referred ear pain, headaches (such as tension headaches or migraines), toothaches, neck pain, and myofascial pain. According to a report by the World Health Organization (WHO), TMDs are the third-most prevalent stomatological condition, following dental caries and periodontal diseases.^[10]

The causes of TMD include biological, environmental (such as smoking), emotional (like depression and anxiety), social, and cognitive factors. It is frequently associated with other pain conditions, such as chronic headaches, fibromyalgia, autoimmune diseases (including Sjogren's syndrome, rheumatoid arthritis, and lupus erythematosus), psychiatric disorders, and sleep apnea.^[11] There is a growing association between TMD symptoms and psychological factors, such as depression, anxiety, and oral parafunctional habits, particularly bruxism, in adolescents. Poor sleep quality and high stress levels are emerging as key contributing factors. Individuals with TMDs are more frequently affected by anxiety and depression compared to the general population.^[12] TMD pain has an inimical impact on the mood and mental health of patients. Mental health includes psychological, emotional, and social well-being, shaping how we think, feel, and act. It is essential for managing stress, fostering relationships, and making decisions. Mental health remains crucial at every stage of life, from childhood through adulthood. It is influenced by environmental factors and nutritional status, which reflects how dietary habits and choices fulfill an individual's nutritional needs.^[13] Being deprived of one's favorite foods and needing to substitute these with less satisfying food due to difficulty in chewing and eating, a grave feeling of depression and pessimism may occur.^[14] Unfortunately, healthcare providers often fail to recognize the full scope of mental distress experienced by these patients. Their focus is usually on the medical aspects of treatment, neglecting the emotional, functional, and social factors that contribute to the patients' overall suffering.

Bidirectional Relationship between TMD and Mental health issues

TMD and mental health are closely interconnected. Research^[15] highlights a bidirectional relationship between TMD and various mental health issues, such as anxiety, depression, and stress. Psychological stress often triggers muscle tension, especially in the jaw, neck, and face. Over time, this tension can lead to teeth grinding (bruxism), clenching, or abnormal jaw movement, contributing to TMD. Depression can reduce pain tolerance and increase perception of pain, making symptoms of TMD feel more intense. It may

also contribute to fatigue and poor posture, exacerbating TMD symptoms. Individuals suffering from anxiety or post-traumatic stress disorder (PTSD) may exhibit behaviors such as clenching or jaw-tightening as a response to emotional distress, putting pressure on the temporomandibular joint. A patient with TMD often exhibits central sensitization, where the nervous system tends to become overly sensitive to pain stimuli. This is also seen in conditions like fibromyalgia and depression.^[16] Dysregulation of neurotransmitters like serotonin, dopamine, and cortisol is common in both mental health disorders and chronic pain conditions like TMD. Chronic pain in TMD is associated with the sensitization of supraspinal and second-order neurons within the dorsal horn and subnucleus caudalis of the trigeminal spinal nucleus. This condition is further influenced by an imbalance in antinociceptive mechanisms and a significant genetic predisposition.^[17] The pain associated with TMD may trigger these mental disorders; both TMD and mental health disorders experienced by patients with anxiety and depression are associated with heightened stress responses, including activation of the hypothalamic-pituitary-adrenal (HPA) axis, which in turn increases the cortisol levels. Stress can lead to parafunctional habits such as bruxism (teeth grinding), which exacerbates TMD.^[18] It has been perceived that both TMD and mental health disorders involve central sensitization, where the nervous system becomes hypersensitive to stimuli, amplifying pain perception. This mechanism is common in conditions like fibromyalgia, migraines, and other chronic pain syndromes, which often coexist with TMD.^[19] Chronic stress and emotional dysregulation may increase neuroinflammatory processes, which are implicated in both chronic pain conditions and mental health disorders.^[20] Altered serotonin and dopamine pathways are implicated in both mental health conditions (e.g., depression, anxiety) and TMD-related pain processing.^[21] The link between mental and oral health has been explored through biological and behavioral mechanisms. The connection between oral health and depression is complex, involving a variety of biological, psychological, and social factors, making it difficult to identify precise mechanisms.

CONCLUSION

The connection between TMDs and mental health is complex, involving overlapping biological, psychological, and social factors. Early screening for TMD, combined with timely intervention through cognitive behavioral therapy, has been shown to improve outcomes. Oral physicians should play a key role in counseling patients on maintaining healthy oral habits and making lifestyle modifications while also identifying and managing underlying anxiety and depression. TMD and mental health conditions share a rather complex, analogous

relationship. Stress, anxiety, and depression can worsen TMD, while TMD-related chronic pain and functional limitations can exacerbate mental health issues. Oral physicians should prioritize effective communication and awareness of TMD-related complications to support their patients better. There is also a clear need for healthcare intervention programs aimed at treating individuals with chronic TMD pain, as significant physiological and psychosocial overlaps exist between mental health disorders and TMD. Shared mechanisms, such as stress-induced muscle tension, central sensitization, neurochemical imbalances, and sleep disturbances, contribute to this relationship. These conditions often interact in a bidirectional way, where psychological stress worsens TMD symptoms, and chronic pain, constantly, can often lead to mental health issues like anxiety and depression.

Furthermore, factors such as emotional dysregulation, trauma, and maladaptive thought patterns strengthen this connection. A multidisciplinary approach, incorporating dentists, psychologists, physical therapists, and medical professionals, can be incorporated while planning effective management. By targeting the underlying shared mechanisms, comprehensive treatment plans can enhance outcomes for individuals with TMDs and mental health challenges. High-quality research is needed to define medication usage better and understand the risks and benefits of drugs used in treatment.

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