

The Influence of Psychological Factors on Temporomandibular Disorders

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Received: 02 December 2020; Accepted: 19 December 2020; Published: 26 December 2020

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Introduction

Temporomandibular disorders (TMD) are a group of clinical problems related to the masticatory muscles, temporomandibular joint (TMJ), and the related orofacial structures [1]. The etiology of TMD is multifactorial. Contributing factors involved in the induction and persistence of TMD-related pain include trauma, parafunctional habits, occlusal factors, and psychological distress [2]. Based on a biopsychosocial model that is valid for musculoskeletal disorders, etiology of TMD involves psychological, psychosocial, and biologic factors [3,4].

The concept of oral health has evolved from a purely biological perspective, to the incorporation of psychological and social aspects contributing to a person's functional comfort, social interactions, self-esteem, and well-being. Oral health related quality of life (OHRQoL) has been increasingly investigated as oral diseases can impair a patient's quality of life. As TMD discomfort, pain, and functional limitations may lead to physical, psychologic, and social disabilities, it can potentially impair OHRQoL [5].

Chronic Pain

Pain is defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage [6]." From this definition, we can appreciate that pain has both physical and emotional effects on the sufferer. Even if the clinician cannot find a physical cause for the patient's suffering, their pain must be treated as valid and real.

Acute pain typically occurs after tissue injury and is short in duration, lasting until the injury has healed. It therefore serves a physiologic purpose of protecting the body from further damage by alerting the individual to the injury and causing conscious avoidance of further harm. Chronic pain, on the other hand, may have arisen from tissue injury, but persists after the injury has healed. Thus, it does not serve any physiologic purpose. Pain lasting greater than three months is generally considered to be chronic in nature and has greater psychological effects compared to acute pain.

Temporomandibular Disorders

As previously mentioned, TMD can be caused by several factors. Oftentimes, the source of the pain is muscular, and can be treated by addressing the muscle tension and causative/perpetuating factors such as trauma, parafunctional habits, and poor posture and ergonomics. When muscle is not the cause of TMD, it is often capsular in origin. Internal derangement of the TMJ or bony degeneration secondary to osteoarthritis or an autoimmune condition can also be the cause of pain. Regardless of the source, pain in the orofacial region can be quite debilitating for patients, as the mouth and face serve essential functions of eating, talking, and expressing emotion. Patients may feel particularly stressed or anxious about pain in this area, and their OHRQoL may suffer disproportionately due to the additional emotional factors associated with the orofacial region [7].

Biopsychosocial Model

Traditionally, the medical community has viewed disease from a mechanistic model; the assumption is that all disease is due to underlying physical conditions, that when treated, resolve the disease [7]. For some cases of acute pain, this mechanism is satisfactory in explaining and treating the pain. However, not all pain conditions can be treated with this philosophy, especially chronic pain. A better approach to treating pain is one that also accounts for the inevitable influence of psychological factors on all pain conditions.

The biopsychosocial model is one such approach that accounts for both aspects of pain: the "bio" component refers to pain arising from physical tissue damage while the "psychosocial" component refers to the psychological aspects of pain resulting from interactions between brain structures involved in the processing of pain signals- the thalamus, cortex, and limbic system [7]. This model, proposed by George Engel, suggests that pain arises from a combination of biologic, psychologic, and sociologic factors rather than a purely somatic cause [6]. In the treatment of TMD, following a holistic model such as this will ensure that the patient's pain as well as the underlying causative/perpetuating factors are addressed.

Neuromatrix Theory

In the treatment of orofacial pain and TMD, providers often encounter patients with pain that cannot be attributed to any obvious pathology or cause. It has been estimated that 12% of cases fall into this category [8]. Instead of labelling these cases of pain as purely psychogenic in origin, it is important to remember that pain is an emotional as well as physical experience and should be treated as legitimate. Dr. Ronald Melzak's Neuromatrix Theory accounts for such instances of pain. Melzak proposes that pain results not only from injury or pathology, but also from genetic predisposition, sensory experience, and neural-hormonal mechanisms of stress [6].

Psychological Evaluations

It has been found that patients with chronic pain conditions also tend to have significant psychiatric comorbidities. Consistent with this, patients with TMD have increased risk of depression and elevated rates of post-traumatic stress disorder [8]. To evaluate a patient's level of psychiatric comorbidity, administering the following psychological questionnaires at the initial visit will be helpful: Beck Depression/Anxiety Inventories (BDI/BAI), Patient Health Questionnaire 9 (PHQ 9), Generalized Anxiety Disorder 7 (GAD 7), and Holmes Rahe Stress Inventory. An alternative questionnaire that combines the PHQ 9 and GAD 7 scales, called the Patient Health Questionnaire Anxiety and Depression Scale (PHQ ADS) has also been found to be valid and reliable in evaluating these common psychological conditions [9]. Pre-existing psychological traits and factors such as previous life events, negative affect, and perceived stress will not only give insight into treatment outcomes, but may also be useful in predicting the onset of TMD, according to a prospective study conducted by Fillingam et al. [10].

When patients yield high scores for the aforementioned questionnaires, referral to a pain psychologist for cognitive behavioral therapy (CBT) and biofeedback is indicated. However, when administering these questionnaires and referring for psychotherapy, it is crucial not to make the patient feel as though their pain is completely psychogenic; this may cause the patient to feel distrustful towards the provider or feel that they need to prove that their pain is real. Furthermore, it may be helpful to have the patient's spouse present while these questionnaires are reviewed, as they can provide a second perspective and help in the recovery process by offering support [11].

Psychotherapy for TMD Patients

As previously mentioned, referral to a pain psychologist is often warranted when treating patients with chronic pain. This is because pain is more than a sensory response system to nociception; it also involves behaviors, attitudes, and expectations based on past experiences. These past pain experiences play a major role in manifestation of chronic pain [11].

CBT and biofeedback are among the most common and successful modalities of psychotherapy used in such instances. CBT, developed by Albert Ellis and Aaron Beck, works under the assumption that faulty or mistaken appraisal of pain is responsible for eliciting maladaptive

emotion and self-defeating illness behavior. Thus, CBT uses cognitive restructuring to change the way patients think about their pain [8].

Biofeedback, on the other hand, aims to provide patients with feedback about physiological activity in order to bring that activity under voluntary control. This is accomplished using sensors that detect and display bodily functions such as temperature, blood pressure, heart rate, respiration, and muscle activity to help patients become aware of their somatically manifested pain response and work towards modifying it. TMD treatments that incorporate CBT and biofeedback have been shown to be more effective than TMD treatment alone [8].

Conclusion

When indicated, the treatment of TMD is most effective when combined with psychotherapy such as CBT and biofeedback. Having insight into the patient's past pain experiences and psychological profile can aid in treating their pain most effectively and efficiently. This is especially important when the patient has chronic pain in the orofacial region, as it will significantly impact their OHRQoL to a higher degree than other types of bodily pain. If the pain source is not immediately obvious, instead of labelling it as psychogenic, providers should strive to get a broader understanding of the factors surrounding the patient's condition and psyche to better diagnose and treat them.

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Citation: Sachi Mehrotra, Leonard B Goldstein. "The Influence of Psychological Factors on Temporomandibular Disorders." *J Sports Med Pain Manage* (2020): 003 doi: 10.47755/J Sports Med Pain Manage 2020.1.003