

The Mind-Body Connection: Cognitive Behavioural Therapy in Management of Temporomandibular Disorders

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ABSTRACT

Temporomandibular disorders (TMDs) can be defined as a heterogeneous collection of disorders marked by orofacial pain, masticatory dysfunction or both. TMDs can significantly impact the quality of life. The diagnosis and treatment of these disorders continue to perplex oral physicians. Current therapies for management remain only marginally successful and in some cases, they do not contribute to relief at all, raising the issue whether we are treating merely the symptoms of the disease and not the cause. The psychological component of this debilitating condition is frequently overlooked or ignored. The dynamic relationship between cognition and psychophysiological response is well proven. TMD patients show high rates of dysfunctional alteration and activity interference similar to other chronic pain syndromes. Cognitive Behavioral Therapy (CBT) is a modality that decreases maladaptive behavior and teaches adaptive coping. It has been shown to be effective in achieving a range of improvements in patients with chronic pain. In view of limitations of use of long term pain medication and TMJ surgery, a pragmatic approach seems to be inclusion of CBT as minimal intervention therapy for TMDs.

Keywords: Temporomandibular dysfunction, TMJ disorders, TMJ pain, Cognitive Behavioral Therapy, pain and cognition

INTRODUCTION

Temporomandibular disorders (TMDs) involve a group of symptoms associated with pain and dysfunction of the temporomandibular joint (TMJ) involving the masticatory system.¹ These disorders are also referred to as 'temporomandibular dysfunction', 'craniomandibular disorders' and 'mandibular dysfunction'. TMDs can be subdivided into muscular and articular categories. Differentiation between the two is sometimes difficult because muscle disorders may mimic articular disorders, and they may coexist. Symptoms range from mild pain and jaw dysfunction that may resolve over time to chronic conditions of intractable pain and limitations in jaw function that are severely debilitating.² A review of 18 epidemiologic studies found prevalence rates ranging from 16% to 59% for reported symptoms and 33% to 86% for clinical signs; a more recent meta-analysis of 51 prevalence studies registered even more extreme variations: 6% to 93% based on subjects' reports and 0% to 93% according to clinical assessments.³ Signs and symptoms of TMD are

in general more prevalent, more severe, and more long-lasting in women than in men, which to some extent may explain the preponderance of women among TMD patients.⁴

The pharmacological treatments tried in these patients include nonprescription pain relievers, anti-inflammatory agents, muscle relaxants, narcotic agents, antidepressants, anti-anxiety medications or surgical treatment methods. Non-pharmacological treatment has also been used as adjunct or monotherapy in patients (bite plane therapy, temporary or permanent occlusal therapy, orthodontic therapy, jaw exercises, thermal therapy, ultrasound therapy, transcutaneous electrical nerve stimulation (TENS) and acupuncture)⁵ Literature is replete with mention of cases which were refractory to all such treatment. Patients with TMD pain are similar to patients with other chronic pain syndrome, both including high rates of psychosocial dysfunction and activity interference.⁶ A number of other conditions occurred significantly more frequently among TMD affected individuals, including headaches, depression, fatigue, fibromyalgia, autoimmune disorders, sleep apnoea and gastrointestinal symptoms.⁴

To a large extent, these conditions remain poorly understood and there exists a plethora of approaches to diagnose and classify them. The RDC/TMD is a dual axis to assess and classify patients with TMD.⁷ The axis I measures physical diseases including persistent orofacial pain, limitations in mandibular range of motion, pain on masticatory muscle palpation and detectable sounds in the TMJ during jaw function, while axis II includes a 31-questionnaire to evaluate the psychological and psychosocial status of TMD patient, such as pain status variables, disability levels, depression and non-specific physical symptoms.

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Although, TMD is not a life threatening disease, the quality of life can be adversely impacted by the chronic nature of the pain. The psychological component of this debilitating condition is either overlooked by healthcare professionals due to preoccupation with treating the perceived etiology or ignored due to lack of familiarity with psychological assessment and counseling methods. The psychological co-morbidity has led to the question of whether treatment approaches need to be reformulated to adequately address this form of pain.

Cognitive Behavioral Therapy

Cognitive Behavioral Therapy (CBT) concerns with the psychological aspect of pain. CBT focuses on the interrelationships between cognition (emotion), actions (behaviors) and feeling(effect) and the role they play in a person's symptoms, functioning and quality of life.⁸ CBT works on the following principles: (1) The assumption that individuals feelings and behaviors are influenced by his or her thoughts; (2) The use of structured techniques to help individuals identifying and changing maladaptive thoughts and behaviors and (3) The emphasis on teaching skills that individuals can apply more liberally when facing problems. Researchers have demonstrated the effectiveness of cognitive behavioral skills training with TMD patients similar to conditions such as chronic back pain.⁹ Unfortunately CBT as therapy for TMD has not yet gained enough acceptance in clinical practice owing to lack of evidence in literature for its use. However, the complexity of this condition underscores the urgency to evaluate these domains rather than one that simply addresses the potential etiological mechanisms in a singular fashion. This article reviews the biopsychosocial moderation of chronic pain in TMDs and how CBT may be beneficial for effective management of this condition.

METHOD

Literature search was carried out using following keywords: Temporomandibular dysfunction, TMJ disorders, TMJ pain, Cognitive Behavioral Therapy, Pain and Emotion, Biopsychosocial perspective, chronic pain. Only articles published in English language were considered. A total of 100 articles were reviewed, out of which 40 were literature reviews, 41 were original studies and 19 were case reports.

DISCUSSION

The patient with temporomandibular joint dysfunction has been a part of dental practice for many years. Helkimo, a pioneer in TMD epidemiology, concluded that "symptoms of dysfunction of the masticatory system are more common than hitherto assumed. This implies that dentists in the future must interest themselves more than before for diagnosis and treatment of functional disturbances of the masticatory system in general practice."¹⁰ It is imperative to understand the pathophysiology of pain, transition from acute to chronic,

moderation by psychosocial factors and how it can be consequently managed by modifying them.

Biopsychosocial Model of Pain

Arguable the start of the modern era in chronic pain treatment began with the Gate Control Theory of pain (Melzack and Wall, 1965) which emphasized the importance of cognitive and effective as well as sensory influences on pain. The biopsychosocial model focuses on both disease and illness, with illness being viewed as the complex interaction of biological, psychological and social factors. The distinction between disease and illness is analogous to the distinction that can be made between nociception and pain. Nociception involves the stimulation of nerves that convey information about potential tissue damage to the brain. In contrast, pain is a subjective perception that results from the transduction, transmission and modulation of sensory information.¹¹

The biopsychosocial approach views pain and disability as a complex and dynamic interaction among physiologic, psychologic and social factors that perpetuate and may even worsen the clinical presentation. In stark contrast, the traditional biomedical approach assumes that symptoms have specific physical causes and attempts are made to eradicate the cause by rectifying the physical pathology or by cutting or blocking the pain pathways pharmacologically or surgically. Literature has consistently established that chronic pain can develop from the reinforcement of acute pain through operant conditioning. Feedback from the environment or social cues may facilitate or discourage engaging in pain behaviors.¹² It is suspected that the identification of psychological issues serves as an indicator that acute pain is becoming more chronic in nature.¹³

The biomedical approach traditionally has promised a cure or barring that, elimination of significant amount of pain. Currently though, there are no definitive cures for the most prevalent chronic pain syndromes. Holding out the promise for an elusive care adversely affects people with musculoskeletal pain because none currently exists. Rehabilitation rather than cure is the most appropriate therapeutic option.

Prevalance of co-morbid conditions

There has been a lot of research into recognizing a high rate of psychological co-morbidity in patients with TMJ dysfunction. Anxiety disorders represent a common syndrome comprised of both emotional and psychophysiological symptoms. Gatchel et al observed higher levels of anxiety among patients with acute TMD relative to those with chronic TMD. These and related findings underscore the notion that anxiety may represent a potential mechanism in the persistence of pain.¹⁵ Mood disorders including depression represent a common factor in chronic pain. Their presence influences numerous germane endpoints to pain patients including pain severity, pain-related disability, treatment response and quality of life. In one study, approximately 40% of TMD patients in their sample met criteria for clinical depression.¹⁶

Post-traumatic Stress Disorder (PTSD) is frequently observed in patients suffering from all forms of orofacial pain. Its prevalence is believed to be the second largest to depression and has been estimated to be around 10-30% in TMD. Gender differences have emerged from these data with females exhibiting a higher degree of TMD and PTSD symptoms compared to males. Consistent with other pain populations, the presence of PTSD in TMD increases the likelihood of a greater pain severity, lower pain threshold, poorer treatment outcomes, reduced functionality and a higher level of disability.¹⁷ Among acute TMD participants, those with multiple diagnoses (including MPDS) were more likely to report higher pain as well as more interference with daily activities due to pain relative to participants who did not have a TMD diagnosis.¹⁸ Other psychological constructs are also believed to influence pain symptoms. For example, stress burden has begun to receive increased attention as a pivotal variable in the manifestation and course of orofacial pain.¹⁹

Further, it underscores the potential etiological pathways in which pain emerges. For example, the presence of psychological distress may trigger muscular activity that eventually might elicit pain via mechanical pathways. The documented psychological co-morbidity also allows us to speculate that the processing of pain has been compromised by the same abnormal neurotransmitter imbalances observed in psychological disorders.²⁰

Pain and Cognition

Cognition refers to the subjects' ability to evaluate the significance of experience. It overlies the individuals learned behavior concerning the experience of pain. It may block, modulate or enhance the perception of pain. Proper manipulation of various environmental factors is required to help patient unlearn this behavior. In the initial stages of pain, the afflicted individual tends to believe that the sensation is directly associated with a particular cause or event (e.g. injury) and is temporary. However, upon the sustained presence of pain, the individual becomes aware of its permanence and adverse thoughts may develop.¹⁷ Individuals may fixate on the pain, which can create amplification of any pain stimulus that is experienced, a phenomenon known as 'Pain Catastrophization'.¹⁸ It is defined as dwelling on the worst possible outcome of any situation in which there is a possibility for an unpleasant outcome. It included three main psychological responses: (1) Rumination (2) Magnification (3) Helplessness. Somatization is a disposition or trait that manifests as the "tendency to experience and communicate somatic distress in response to psychosocial stress". Either of these traits can make it hard for the patient to cope with chronic pain and does lead to maladaptive behavior that makes it refractory in nature.

The increased attention to the role of cognitions in mood, anxiety and other psychological disorders sparked interest in incorporating cognitive therapy techniques into behavioral therapies for chronic pain. The techniques basically involve cognitive approaches such as¹⁹ (1) changing the patients'

conceptualization of pain management (2) changing self-defeating beliefs about pain (3) reversing the lifestyle affects of chronic pain and (4) help the patient set realistic goals. Behavioral strategies that can be instituted include: (1) encouraging the patient to test and extend his physical limits (2) encouraging the patient to carry out activities in spite of pain (4) encouraging 'Formal Relaxation' (5) help the patient set up a pain diary and (6) regular appointments with the professional for review.

Turk and colleagues hypothesized that patients who report emotional and physical difficulties would benefit more from a treatment that included cognitive therapy than from a similar comparison treatment that did not.²⁰ CBT, which encourages the patient to directly attend to and manage the pain problem may actually work less well for those high in somatization than a treatment that entails less focus on symptoms. Self-efficacy of the confidence to manage pain may also moderate treatment. Those with greater confidence in their ability to cope may more readily adopt and persist in the coping skills developed in CBT.²¹

In patients with TMD, somatization is related to more widely dispersed pain that is more severe and more difficult to localize and treat. It may be the case that the over concern with bodily symptoms interferes with the patients' ability to do the mental work. (e.g. reframing and problem solving) required by CBT.²² CBT may also be more effective than a more passive controlled treatment for those who demonstrate a "monitoring" coping style, i.e., the tendency to attend to threatening stimuli.^{23,24}

It appears that CBT works best for those who are best prepared to use it. It therefore, may be clinically useful to assess key constructs such as somatization, readiness and self efficacy to manage chronic pain and to add intervention components that will serve to increase readiness and boost self efficacy for managing TMD pain.

CONCLUSION

As reviewed above there have been quite a few studies that have examined treatment outcomes on TMJ disorders, most have major shortcomings in experimental design. Few systematic reviews of studies examining CBT in treatment of TMD specifically have been published. Integration of CBT into primary care settings offers much promise in both expanding application of CBT and improving outcomes. There is a clear and pressing need for well designed randomized control trials examining CBT in TMDs. Special attention must be paid to the following: (1) use of standardized diagnostic criteria for TMD such as RDC/TMD (2) adequate sample size for enhancing validity of results and (3) controlling of possible confounders. Ultimately, the testing of such a framework would allow researchers to determine whether the convergence of factors can lead to better integrative interventional approaches to treat the pain condition oftentimes perceived as treatment reticent.

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