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# Deconstruction of orofacial pain and reconstruction of the cTMD patient

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**Pain is defined as "an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage" (The International Association for the Study of Pain, 2020).[1]**

**Chronic pain** is defined simply as pain that has been present for more than three months. The criteria are slightly more complicated than that but what we know is that after three months, there may be some changes in the neural networks which makes chronic pain a pathological entity. This is well described in the latest International Classification of Diseases -11 (ICD-11) classification of orofacial pain. In a recent article on the pathways involved it appears that a person with genetic susceptibility may be primed to becoming a chronic pain sufferer.[2] The understanding of the neurophysiology of chronic orofacial pain requires understanding nociplasticity, which may be influenced by genetic, sleep, psychological distress, immune dysfunction and endocrine factors. Mainly, it is these genetic and environmental factors that create the variability we see (Fig 1). The ICD-11 classification separated the mechanical diagnoses from the chronic pain diagnoses of the "old" DC/TMD classification.

Neuroanatomy involved in chronic orofacial pain indicates the known ascending pathway of the trigeminal nerve but also the descending inhibitory pathways, including the trigeminal proprioceptive mesencephalic periaqueductal gray pathway.[3] The descending pathway (periaqueductal gray) may be affected by the activity of the prefrontal cortex, anterior cingulate cortex, the amygdala and insula. These areas of the brain are also involved with stress activity.

The crux lies within the neural circuitry (Fig 2), which undergoes alterations known as nociplasticity, thereby manifesting as the pathophysiology in chronic temporomandibular disorder (cTMD) and numerous other chronic pain conditions. Distinguishing these chronic pain syndromes from mechanical issues of the temporomandibular joints (such as disc displacement or arthrosis) is paramount. Doing so facilitates a tailored approach to management in alignment with contemporary global standards for chronic pain management.

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cTMD patients frequently present with accompanying comorbidities (Fig 1), including migraine headaches, ear symptoms, irritable bowel syndrome, fibromyalgia, sleep disturbances, psychological disorders, immune dysregulation, and susceptibility to the nocebo effect, possibly exacerbated by genetic predisposition.

From a clinical standpoint, comprehending these underlying mechanisms enhances our ability to diagnose and understand chronic pain conditions, allowing for their classification under the ICD-11 as either 'Chronic Primary Pain' or 'Chronic Secondary Pain.' Both classifications denote the absence of pathology at the site of pain. In the case of cTMD, pain manifests in the orofacial region but is not directly attributable to local pathology.[4] It's imperative to align with current perspectives, especially in light of recent critiques from the National Academies, which highlighted dentistry's tendency towards 'siloed thinking' regarding this condition. Moving forward necessitates embracing this new evidence. For more complete information refer to the listed references.

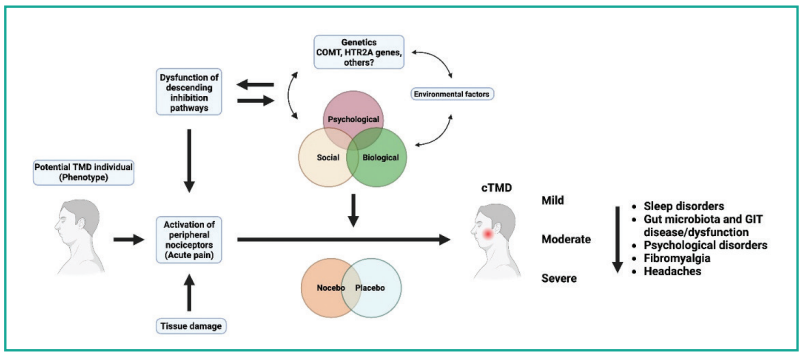


Figure 1: adapted from Polonowita, Guan et al 2024

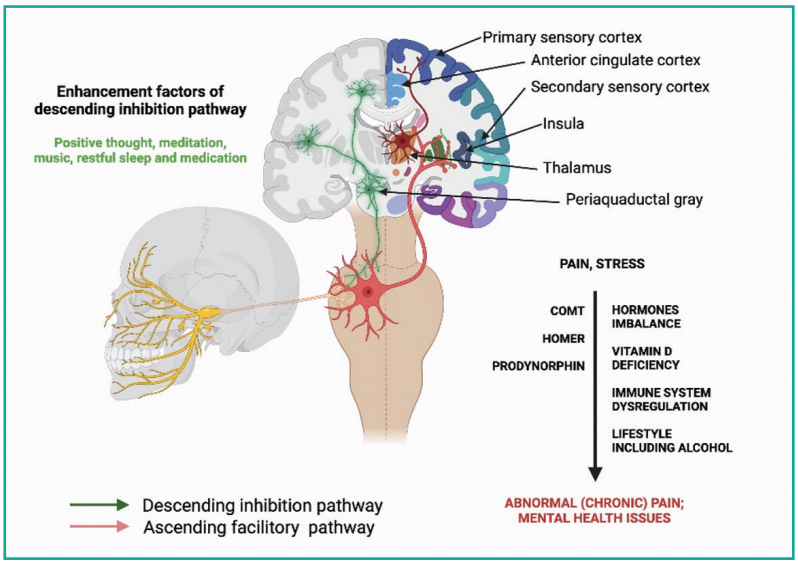


Figure 2: Adapted from Polonowita, Guan et al 2024

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