

# PRIMARY TEMPOROMANDIBULAR DISORDERS AND COMORBID CONDITIONS

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## ABSTRACT

**INTRODUCTION:** The aim of this study is to evaluate the distribution of the most common comorbid conditions associated with chronic temporomandibular disorders, and the pharmacological agents which play an integral role in the overall management of temporomandibular joint disorders.

**MATERIALS AND METHODS:** A total of 23 articles are included in this comprehensive review of the relevant studies on common comorbid conditions related to temporomandibular disorders. This review provides summarized clinical and online platform based analyses focused on the five most common comorbid conditions and their relevant pharmacological therapy.

**RESULTS AND CONCLUSION:** The majority of the studies show that comorbid conditions may include fibromyalgia, systemic myofascial pain and chronic fatigue syndrome, chronic headaches, migraine, heart arrhythmias, endometriosis, interstitial cystitis, irritable bowel syndrome, lower back pain, sleep disorders - insomnia, autoimmune diseases, sleep apnea, noises and irritation in the ear, vulvodynia and mental disorders. The top comorbid conditions reported from people with TMJ syndrome, regardless of status are: anxiety, depression, insomnia, fatigue and pain.

**Keywords:** *comorbid conditions, temporomandibular disorders, pharmacological agents*

## INTRODUCTION

One of the main symptoms of temporomandibular disorders (TMD) is pain localized in the area of the mandibular joint, masticatory muscles and other structures of the head and neck. Clarification of the exact source of the pain may pose a diagnostic challenge for clinicians, effective treatment of the disease and identification of the exact diagnosis. TMD is a

major cause of pain with non-dental origin in the orofacial region. The incidence of TMD ranges up to 12% of the population, the typical age range is between 20 to 40 years and is observed twice as common in women than men (23). Pain-related symptoms can vary from mild discomfort to debilitating pain, including severe limitations of masticatory function (13,14). The most common and typical symptoms are myofascial pain, disk dislocations and disabilities, degenerative conditions like osteoarthritis and osteoarthrosis, as well as autoimmune diseases (2,18,20).

## DEFINITIONS

TMD is a complex disorder with possible etiopathogenetic perspective, the etiology is multifactorial and includes biological, genetic, behavioural, emotional, cognitive and psychosocial related factors. The treatment of TMD varies greatly depend-

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ing on the competencies, the specialty and clinical experience of the treating specialist. This variability in actual clinical practice is due to the paucity of evidence-based research results, and lack of consensus about appropriate symptomatic or complex treatment of the specific subclass of these diseases. Adequate diagnosis and treatment of TMD is compounded by the high incidence of specific signs and symptoms that may be associated with systemic diseases and comorbid conditions - 85% of patients with TMD have complaints of different intensity and location of pain in other parts of the body, they usually represent local or regional manifestations of chronic, generalized muscle-skeletal pathologies such as fibromyalgia, systemic myofascial pain and chronic fatigue syndrome. The comorbid conditions on the basis of clinical observations may include chronic headaches, migraine, heart arrhythmias, endometriosis, interstitial cystitis, irritable bowel syndrome, low back pain, sleep disorders - insomnia, autoimmune diseases, sleep apnea, noises and irritation in the ear, vulvodynia and mental disorders. They are considered comorbid conditions because they are more commonly observed as individual symptoms than in combination of two or more. This in turn is an incentive for conducting research with respect to the elucidation of common mechanisms for all comorbid conditions (9).

### DATA ANALYSIS

A survey covering more than 6000 participants, shows the double increase of TMD in people with depression (percentage ratio =2.1; 95% confidence interval 1.5 to 3;  $P<.001$ ) and 1.8 times increase of myofascial pain in individuals with anxiety (percentage =1.8; 95% confidence interval 1.2 to 2.6;  $P<.001$ ). Many of the comorbid conditions are more prevalent and are extremely specific for women. Long-term studies show that 50% to 90% of patients had pain relief after conservative therapy. Multidisciplinary approach is the key to successful and sustainable treatment of TMDs. The main objectives of initial therapy should focus on solving the problems of pain and organ dysfunction. A TMJ Association, Ltd survey on 1511 TMD diagnosed patients in the USA in a web-based online platform shows that these patients are treated with anti-inflammatory drugs (73%), painkillers (56%), antidepressants (50%), opioids (48%),

anxiolytics (41%) and muscle relaxants (40%). Nearly 60% of patients classified pain as with moderate to severe intensity; one-quarter of them pointed it as a factor influencing or terminating their employment and activity (12). Many of the associated conditions are over six times more likely to occur if the patient is diagnosed with TMD. Among the wide range of 46 listed procedures used for the treatment of temporomandibular disorders, the most effective ones for the group of the most-affected patients (91%) are the thermal therapies-hot/cold compresses on the facial area or hot tubs. Almost 40% of TMD patients have undergone one or more surgical procedures and almost all have undergone medication with different means. The results of these treatments are not unique. Although this study is potentially limited to the most severe cases it shows that TMDs represent a wide spectrum of disorders with different clinical manifestations, pathophysiology and related comorbid conditions. The complex nature of TMD demonstrates the need for a broader interdisciplinary basic and clinical research and development of evidence-based strategies for more effective diagnostics, prevention and treatment of this chronic, debilitating diseases.

Comorbid conditions can be reliably and thoroughly identified and assessed in the real medical and dental clinical practice through an online network real-time platform for the exchange of data which regularly introduces updated data about the condition of the patients, their history of illness and the treatment, side effects, symptoms, the quality of life and etc. According to a report in JAMA, structured quantitative data can be summarized for research purposes. Online registration of data does not replace randomized placebo controlled trials, but it is a useful and modern form of information gathering and monitoring of clinical trials under certain circumstances.

### MAIN COMORBID CONDITIONS

The data from the online platforms at this stage is valid mainly for the population of the United States. The platforms provide a wealth of information about symptoms and medical treatment of primary temporomandibular joint syndrome and the comorbid conditions, such as that the ratio between

primary TMD and TMD with diagnosed comorbid conditions is approximately 1 to 8. The top comorbid conditions reported from 1.306 people (6) with TMJ syndrome, regardless of status are: anxiety, depression, insomnia, fatigue and pain. The percentage distribution of these conditions is:

- ◆ Insomnia - 211 TMJ Syndrome patients report severe insomnia (22%), 299 patients - moderate insomnia (31%), 250 patients - mild insomnia (26%), 203 TMJ Syndrome patients report no insomnia (21%). The most commonly used medications for the treatment of this condition are Trazodone, Zolpidem, Amitriptyline.
- ◆ Fatigue - 430 TMJ Syndrome patients report severe fatigue (44%), 375 patients - moderate fatigue (39%), 128 patients - mild fatigue (13%), 40 TMJ syndrome patients report no fatigue (4%). The most commonly used medications to treat this condition are rest, Vitamin B Complex, Modafinil.
- ◆ Pain - 386 TMJ Syndrome patients report severe pain (40%), 407 patients - moderate pain (42%), 142 patients - mild pain (15%), 36 TMJ Syndrome patients report no pain (4%). The most commonly used medications to treat this condition are Tramadol, Hydrocodone-Acetaminophen, Ibuprofen.
- ◆ Anxious mood - 124 TMJ Syndrome patients report severe anxious mood (13%), 362 patients - moderate anxious mood (38%), 323 patients - mild anxious mood (34%), 151 TMJ Syndrome patients report no anxious mood (16%). The most commonly used medications to treat this condition are Clonazepam, Alprazolam, Lorazepam.
- ◆ Depressed mood - 141 TMJ Syndrome patients report severe depressed mood (15%), 323 patients - moderate depressed mood (35%), 310 patients - mild depressed mood (32%), 179 TMJ Syndrome patients report no depressed mood (19%). The most commonly used medications for the treatment of this condition are Duloxetine, Sertraline, Venlafaxine (6).

## MOST COMMONLY USED MEDICATIONS

The most commonly used medications to treat TMJ syndrome – as a primary or as a comorbid condition are: Amitriptyline (Elavil), Tramadol (Ultram) Gabapentin (Neurontin), Duloxetine (Cymbalta) Diclofenac (Voltaren gel), Naproxen (500), Trazodone (Desyrel) Hydrocodone-acetaminophen (Vicodin) Pregabalin (Lyrica), Clonazepam (Klonopin) (6).

The national institutes of health, stress on the importance of the 2 keywords in the treatment therapy: conservative and reversible. A growing amount of literature supports nonsurgical intervention for TMDs. As with other muscle/joint conditions, the treatment is directed towards unloading the structures and the management of the accompanying discomfort. The American Academy of Oral and Maxillofacial Surgeons (2012) states: “surgical procedure for internal disorder is indicated only when nonsurgical treatment is ineffective and pain or dysfunction are moderate to severe”. Johns Hopkins Institute of Health considers the following non-surgical approach to be needed for TMD treatment: pharmacological treatment: non-opioid analgesics and non-steroidal anti-inflammatory drugs, low-dose tricyclic antidepressants, centrally acting skeletal muscle relaxants; reversible: oral appliances for patients with documented teeth grinding; physical therapy; behavior changes for the trigger factors that can cause TMD (consult a behavioral specialist for the benefits), cognitive behavioral therapy for patients with co-existing depression and anxiety. Guidelines for the diagnosis and management of disorders involving the temporomandibular joint and related musculoskeletal structures, approved by the American Association of Temporomandibular Joint Surgeons state that no surgical treatment should be considered for all patients with symptomatic internal disorder/osteoarthritis. (clinical and pathologic condition of disc displacement is internal disorder (ID), as well as the usual accompanying osteoarthritis (OA), also known as osteoarthrosis or degenerative joint disease). The reason for this focus is that the ID/OA is considered to be the most common cause of severe TMJ pain and dysfunction for mild or moderate pain and dysfunction, for which this treatment

alone is often enough. Patients with severe pain and dysfunction can also be treated non-surgically, but if there is not a visible reduction of the symptoms within 2-3 weeks, surgical consultation is indicated. Non-steroidal anti-inflammatory drugs (NSAIDs) act as support for pharmacological treatment of musculoskeletal disorders, where pain and inflammation are prominent features. Low dosage tricyclic antidepressants are effective in controlling the pain of nighttime gnashing of teeth, when doses are adjusted to ensure improved sleep. After a psychiatric consultation, if it is found that clinical depression is an aggravating factor, antidepressant medications may be useful as part of the treatment. The continued use of other drugs such as tranquilizers, muscle relaxants, sedatives and narcotic pain medications are rarely mentioned. Narcotic pain medications are commonly used for a short period after the operation. If necessary, for extended periods of time, it is recommended to consult a specialist in pain management (3,4,7,8,11,13,15,17,19,21,22,24,25,26,27).

## CONCLUSION

Knowledge of comorbid conditions and its pharmacologic therapy can assist with management of some symptoms associated with TMDs. Medication in conjunction with appropriate physical therapy and definitive treatments can offer the more complete approach to many problems. The most common classes of pharmacological agents used for the management of TMD and comorbid conditions are analgesics, anti-inflammatories, muscle relaxants, anxiolytics, antidepressants, anticonvulsants, etc. Each class of medication is specifically used for different disorders and the clinician must be familiar with the proper dosages indicated, and potential adverse effects.

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