

A COMPREHENSIVE REVIEW OF TEMPOROMANDIBULAR DISORDERS AND OROFACIAL PAIN: FROM DIAGNOSIS TO TREATMENT

Clipa Larisa¹, Agop-Forna Doriană^{2*}, Murariu Denisa-Vasilica¹

¹ DDS, Resident, Faculty of Dental Medicine, University of Medicine and Pharmacy "Grigore T. Popa", Iasi

² "Gr. T. Popa" U.M.Ph. - Iasi, Romania, Faculty of Dentistry, Department of Surgery

Corresponding authors: Agop-Forna Doriană, e-mail: drdorianaforna@gmail.com

ABSTRACT

Aim of the study Temporomandibular disorders (TMDs) and orofacial pain syndromes represent a diverse group of musculoskeletal, neuromuscular, and pain-related conditions affecting the temporomandibular joint (TMJ), masticatory muscles, and associated craniofacial structures. (1,2) These disorders are among the most common causes of chronic facial pain and may significantly affect patients' quality of life, daily activities, and psychological well-being. (3,4) The purpose of this literature review was to analyze current diagnostic and therapeutic principles in patients with temporomandibular disorders and orofacial pain syndromes and to summarize contemporary evidence regarding their management. (5,6)

Materials and methods A narrative review of the literature was conducted using scientific publications indexed in international databases. Relevant studies, systematic reviews, meta-analyses, and clinical guidelines focusing on temporomandibular disorders and orofacial pain were analyzed. (3,5,7) Special attention was given to publications from the last five years in order to reflect current trends in diagnosis and treatment. (4,6,8)

Results The reviewed literature highlights the multifactorial nature of TMDs and emphasizes the importance of a biopsychosocial approach to diagnosis and treatment. (1,9) Standardized diagnostic systems such as the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) and the International Classification of Orofacial Pain (ICOP) have improved diagnostic accuracy. (1,2) Conservative therapies, including patient education, physiotherapy, behavioral interventions, and occlusal appliances, remain the cornerstone of treatment. (3,5,6) Pharmacological therapies and minimally invasive procedures may be beneficial in selected cases, particularly when conservative management does not provide sufficient symptom relief. (7,8)

Conclusions Current evidence supports an individualized and multidisciplinary approach to the management of temporomandibular disorders and orofacial pain syndromes. (3,4) Early diagnosis, appropriate conservative treatment, and consideration of psychosocial factors contribute significantly to successful patient outcomes. (1,9)

Keywords: temporomandibular disorders, orofacial pain, diagnosis, treatment, temporomandibular joint, DC/TMD, physiotherapy

INTRODUCTION

Temporomandibular disorders (TMDs) represent a heterogeneous group of musculoskeletal and neuromuscular conditions affecting the temporomandibular joint (TMJ), masticatory muscles, and associated craniofacial structures. These disorders are among the most common causes of chronic pain in the orofacial region and constitute an important public health concern due to their prevalence, impact on quality of life, and economic burden associated with diagnosis and treatment.

TMDs encompass a broad spectrum of clinical conditions, including myalgia, myofascial pain, arthralgia, disc displacement disorders, degenerative joint disease, and headache attributed to temporomandibular dysfunction. (1,3)

The prevalence of temporomandibular disorders in the general population varies according to diagnostic criteria and study design. Epidemiological studies indicate that approximately 30–40% of adults present at least one clinical sign of temporomandibular dysfunction, while approximately 5–12%

require clinical intervention due to pain or functional impairment. Women are affected more frequently than men, particularly during reproductive years, suggesting a potential role of hormonal factors in disease pathogenesis. Furthermore, TMDs are frequently associated with other chronic pain conditions, including fibromyalgia, chronic headache, cervical pain, and sleep disorders. (1,14,15)

Historically, the etiology of temporomandibular disorders was primarily attributed to occlusal discrepancies. Throughout much of the twentieth century, clinicians believed that malocclusion represented the principal cause of TMJ dysfunction and associated symptoms. Consequently, extensive irreversible dental procedures, including occlusal adjustments and full-mouth rehabilitations, were commonly performed. However, advances in clinical research have demonstrated that occlusion alone cannot explain the complexity of TMD manifestations. Contemporary evidence supports a multifactorial etiology involving biomechanical, psychological, genetic, inflammatory, hormonal, and behavioral factors. (6,11)

The modern understanding of TMDs is largely based on the biopsychosocial model. This approach recognizes that chronic pain is influenced not only by structural abnormalities but also by psychological and social determinants. Emotional stress, anxiety, depression, pain catastrophizing, sleep disturbances, and maladaptive coping strategies have been identified as significant contributors to symptom onset and persistence. In many patients, psychosocial factors may exert a stronger influence on pain perception and disability than structural joint alterations. (5,15,16)

The temporomandibular joint is one of the most complex joints in the human body. Its unique anatomical structure allows both

rotational and translational movements, enabling essential functions such as mastication, speech, swallowing, and facial expression. Any disruption of the delicate balance among articular structures, muscles, ligaments, and neuromuscular control mechanisms may result in pain and dysfunction. Consequently, diagnosis and treatment of TMDs require a comprehensive understanding of anatomy, physiology, biomechanics, and pain mechanisms. (2,3)

Significant progress has been made in the development of standardized diagnostic systems. The introduction of the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) represented a major advancement in clinical practice and research. This diagnostic framework provides validated criteria for identifying specific TMD subtypes while simultaneously assessing psychosocial variables that may influence treatment outcomes. Similarly, the International Classification of Orofacial Pain (ICOP) has facilitated more accurate differentiation between temporomandibular disorders and other painful conditions affecting the craniofacial region. (1,12,13)

Treatment strategies have also evolved substantially over recent decades. Current evidence favors conservative, reversible, and patient-centered interventions as first-line therapies. Physical therapy, behavioral modifications, occlusal splints, pharmacological treatments, and patient education constitute the foundation of contemporary management. More invasive interventions, including arthrocentesis, intra-articular injections, and surgical procedures, are generally reserved for patients who fail to respond to conservative measures. (7,9,10)

Given the multifactorial nature of TMDs and the diversity of available treatment options, clinicians must adopt an individualized approach tailored to each patient's clinical

presentation and psychosocial profile. A multidisciplinary strategy involving dentists, physiotherapists, psychologists, neurologists, and pain specialists is often necessary to achieve optimal outcomes.

The purpose of this literature review is to summarize current evidence regarding diagnostic and therapeutic principles in patients with temporomandibular disorders and orofacial pain syndromes and to discuss contemporary approaches that may improve patient care and long-term treatment outcomes.

MATERIALS AND METHODS

A narrative literature review was performed using publications available in international scientific databases. Articles addressing temporomandibular disorders,

RESULTS AND DISCUSSIONS

Epidemiology and Etiopathogenesis of Temporomandibular Disorders

Temporomandibular disorders are recognized as one of the most prevalent musculoskeletal pain conditions affecting the craniofacial region. Epidemiological investigations conducted in different populations have consistently demonstrated that signs and symptoms of TMDs are widespread, although only a subset of affected individuals seek professional treatment. The discrepancy between symptom prevalence and healthcare utilization suggests that many patients successfully adapt to mild dysfunction or remain undiagnosed. (1,14)

Several factors contribute to the development of temporomandibular disorders. Current evidence indicates that no single etiological factor can fully explain the onset and progression of TMDs. Instead,

temporomandibular joint dysfunction, chronic orofacial pain, diagnosis, conservative therapy, pharmacological management, physical rehabilitation, and minimally invasive interventions were considered.

The inclusion criteria comprised systematic reviews, meta-analyses, clinical guidelines, randomized controlled trials, and observational studies published in English. Studies focusing on epidemiology, etiology, diagnostic protocols, and treatment outcomes were selected for analysis.

The information extracted from the literature was grouped into thematic categories including etiopathogenesis, diagnostic principles, imaging modalities, conservative treatment, pharmacological management, minimally invasive procedures, and multidisciplinary approaches. (7-10,17)

these disorders emerge through complex interactions among biological, mechanical, behavioral, and psychosocial determinants. (2,5,14)

Parafunctional activities represent one of the most frequently investigated risk factors. Bruxism, characterized by repetitive clenching or grinding of the teeth, generates excessive mechanical loading on the temporomandibular joint and masticatory muscles. Persistent parafunctional activity may contribute to muscle fatigue, microtrauma, articular overload, and pain. Nevertheless, recent studies suggest that bruxism alone is insufficient to cause TMDs and should be considered one component of a broader etiological framework. (5,14)

Psychological factors play a particularly important role in disease development and chronicity. Anxiety, depression, stress, and emotional distress have been associated with increased pain intensity and greater functional impairment. Patients

experiencing chronic psychological stress often demonstrate heightened muscle activity and altered pain processing mechanisms. Furthermore, stress-related activation of the hypothalamic-pituitary-adrenal axis may influence inflammatory pathways and contribute to symptom persistence. (15,16)

Trauma constitutes another significant etiological factor. Direct trauma to the mandible, facial skeleton, or temporomandibular joint may result in structural alterations that predispose individuals to dysfunction. Similarly, indirect trauma such as whiplash injuries has been associated with an increased risk of TMD development. Although not all traumatic events lead to chronic symptoms, they may act as initiating factors in susceptible individuals. (2,14)

Inflammatory and degenerative processes are frequently observed in patients with temporomandibular disorders. Synovitis, capsulitis, and osteoarthritis may contribute to pain generation and progressive structural damage. Inflammatory mediators released within the joint environment can sensitize peripheral nociceptors and facilitate the transition from acute to chronic pain. (2,17)

Recent research has highlighted the role of central sensitization in chronic temporomandibular pain. Central sensitization refers to increased responsiveness of neurons within the central nervous system, resulting in amplification of pain signals. Patients with chronic TMD frequently exhibit widespread pain sensitivity, suggesting that alterations in central pain processing mechanisms may contribute to symptom persistence even in the absence of significant peripheral pathology. (15,16)

The biopsychosocial model currently provides the most comprehensive explanation for temporomandibular

disorders. According to this framework, biological abnormalities interact with psychological characteristics and social influences to determine disease expression and treatment outcomes. This model has important implications for clinical practice because it emphasizes the necessity of comprehensive assessment and multidisciplinary treatment strategies. (5,15,16)

Diagnostic Principles

Accurate diagnosis represents the foundation of successful treatment in patients with temporomandibular disorders and orofacial pain syndromes. Due to the multifactorial nature of these conditions and the overlap of symptoms with other craniofacial disorders, clinicians must adopt a systematic and comprehensive diagnostic approach. Misdiagnosis may result in inappropriate treatment, prolonged symptoms, increased healthcare costs, and patient dissatisfaction. (1,3)

The diagnostic process begins with a detailed medical and dental history. Information regarding pain location, intensity, duration, frequency, aggravating and relieving factors, onset of symptoms, previous treatments, trauma history, parafunctional habits, and psychosocial status should be carefully collected. Particular attention should be given to the presence of headaches, cervical pain, sleep disturbances, and psychological stress, as these factors are frequently associated with temporomandibular disorders. (1,28)

Pain characteristics provide valuable diagnostic information. Muscular pain is typically described as diffuse, aching, and aggravated by function, whereas joint-related pain is often localized near the temporomandibular joint and may be accompanied by clicking, crepitation, or mandibular movement restrictions. Neuropathic pain disorders, such as

trigeminal neuralgia, present different clinical features and require distinct management strategies. (12,13)

Modern diagnostic protocols emphasize the importance of standardized assessment tools. The use of validated diagnostic systems improves consistency among clinicians and facilitates communication between healthcare professionals involved in patient management.

The Diagnostic Criteria for Temporomandibular Disorders (DC/TMD)

One of the most significant advances in the field of temporomandibular disorders has been the introduction of the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD). Developed as an updated version of the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD), this system provides standardized diagnostic algorithms with high reliability and clinical applicability. (1,28)

The DC/TMD framework consists of two complementary axes.

Axis I: Physical Diagnosis

Axis I focuses on clinical diagnosis of temporomandibular disorders based on physical examination findings. The major diagnostic categories include:

- Myalgia
- Local myalgia
- Myofascial pain
- Myofascial pain with referral
- Arthralgia
- Disc displacement with reduction
- Disc displacement without reduction
- Degenerative joint disease
- Subluxation
- Headache attributed to TMD

This classification allows clinicians to

identify specific pathological entities and establish individualized treatment plans. (1,29)

Axis II: Psychosocial Assessment

Axis II evaluates psychological and behavioral factors that may influence pain perception and treatment outcomes. Areas assessed include:

- Depression
- Anxiety
- Somatic symptoms
- Pain-related disability
- Functional limitations
- Emotional distress
- Catastrophizing behavior

The inclusion of psychosocial variables reflects the growing recognition that chronic pain cannot be explained solely by structural abnormalities. Numerous studies have demonstrated that psychological factors significantly affect symptom severity, treatment response, and long-term prognosis. (1,15,29)

International Classification of Orofacial Pain (ICOP)

The International Classification of Orofacial Pain (ICOP) represents another important milestone in the diagnosis of orofacial pain disorders. Developed by international experts, ICOP provides a comprehensive classification system for painful conditions affecting the oral and facial regions.

The classification includes six major categories:

1. Orofacial pain attributed to disorders of dentoalveolar structures
2. Myofascial orofacial pain
3. Temporomandibular joint pain
4. Neuropathic orofacial pain

5. Orofacial pain resembling primary headaches
6. Idiopathic orofacial pain

The implementation of ICOP has significantly improved diagnostic precision and facilitated differentiation between temporomandibular disorders and other pain conditions that may present similar symptoms.(12,13,16)

Clinical Examination

Clinical examination remains the cornerstone of diagnosis. A thorough evaluation should include both extraoral and intraoral assessments.

Extraoral examination involves inspection of facial symmetry, mandibular posture, and muscle hypertrophy. Clinicians should observe mandibular movements during opening, closing, lateral excursions, and protrusion.

The maximum interincisal opening should be measured and recorded. Normal mouth opening generally ranges between 40 and 60 mm. Restricted opening may indicate muscular dysfunction, disc displacement, or joint pathology.

Palpation of the masticatory muscles provides valuable diagnostic information. The following muscles should be systematically examined:

- Masseter muscle
- Temporalis muscle
- Medial pterygoid muscle
- Lateral pterygoid region
- Sternocleidomastoid muscle
- Trapezius muscle

Tenderness, trigger points, and referred pain patterns should be documented.

Temporomandibular joint palpation should be performed both at rest and during mandibular movements. Pain during palpation may indicate inflammatory or degenerative joint disease. (1,29)

Joint sounds such as clicking, popping, and crepitation should be assessed. Clicking is commonly associated with disc displacement with reduction, whereas crepitation often suggests degenerative joint changes. (1,2)

Imaging Modalities

Although diagnosis is primarily clinical, imaging studies play an important role when structural abnormalities are suspected.

Panoramic Radiography

Panoramic radiographs provide a general overview of maxillofacial structures and may reveal gross osseous abnormalities. However, their diagnostic value for temporomandibular disorders is limited due to image distortion and poor soft tissue visualization. (2)

Cone-Beam Computed Tomography (CBCT)

CBCT has become increasingly popular in dental practice due to its ability to provide high-resolution three-dimensional images of bony structures.

The technique is particularly useful for:

- Detecting osteoarthritic changes
- Evaluating condylar morphology
- Identifying fractures
- Assessing ankylosis
- Investigating developmental abnormalities

Compared with conventional computed tomography, CBCT delivers lower radiation doses while maintaining excellent image quality. (2,3)

Magnetic Resonance Imaging (MRI)

Magnetic resonance imaging is considered the gold standard for evaluation of soft tissue structures within the temporomandibular joint.

MRI allows visualization of:

- Articular disc position
- Disc morphology
- Joint effusion
- Synovial inflammation
- Ligament integrity
- Bone marrow changes

This modality is especially valuable in patients with suspected internal derangements and chronic joint pain. (2,3,28)

Ultrasonography

Ultrasonography offers a non-invasive and relatively inexpensive diagnostic alternative. Although its accuracy remains lower than that of MRI, advances in ultrasound technology have improved its usefulness in clinical practice.

Benefits of ultrasonography include:

- Absence of radiation exposure
- Real-time dynamic evaluation
- Lower cost
- Greater accessibility

However, its effectiveness is highly dependent on operator experience. (3,30)

Conservative Management

Contemporary management of temporomandibular disorders emphasizes conservative, reversible, and evidence-based interventions. Conservative therapy remains the first-line treatment approach for the majority of patients. (9,10)

One of the most important components of treatment is patient education. Many patients experience significant anxiety regarding joint noises and facial pain. Providing accurate information about the benign nature of most TMD conditions may reduce fear and improve treatment adherence. (9,10,17)

Behavioral modifications represent another essential therapeutic strategy. Patients should be encouraged to:

- Avoid clenching and grinding
- Reduce gum chewing
- Limit excessive mandibular movements
- Maintain proper posture
- Improve sleep habits
- Practice stress management techniques

Lifestyle modifications may substantially reduce symptom severity and prevent progression of dysfunction.

The effectiveness of conservative therapy supports the concept that many temporomandibular disorders are self-limiting conditions that respond favorably to non-invasive interventions. (5,15)

Physical Therapy and Therapeutic Exercises

Physical therapy has emerged as one of the most evidence-supported treatment modalities for temporomandibular disorders.

The primary objectives of physiotherapy include:

- Pain reduction

- Restoration of normal mandibular function
- Improvement of muscular coordination
- Enhancement of joint mobility
- Prevention of chronic disability (18,19,20)

Therapeutic exercises are frequently prescribed as part of rehabilitation programs. These exercises may involve stretching, controlled mandibular movements, strengthening exercises, and neuromuscular re-education techniques.

Stretching exercises help reduce muscle tension and improve flexibility of the masticatory muscles. Regular stretching may increase mandibular range of motion and decrease discomfort during function.

Strengthening exercises aim to improve muscular stability and functional performance. When appropriately prescribed, these exercises contribute to long-term symptom control. (20,21)

Manual therapy techniques have also demonstrated beneficial effects. Common interventions include:

- Soft tissue mobilization
- Trigger point therapy
- Myofascial release
- Joint mobilization
- Cervical manipulation (18,21)

The relationship between cervical dysfunction and temporomandibular disorders has received considerable attention in recent years. Many patients with TMD present concomitant neck pain, postural abnormalities, and cervical muscle dysfunction. Consequently, comprehensive rehabilitation programs frequently include cervical exercises and postural correction strategies. (18)

Several systematic reviews have reported significant improvements in pain intensity, mandibular mobility, and quality of life following physiotherapy interventions. In some studies, exercise therapy has demonstrated outcomes comparable to those achieved with occlusal splint therapy.

These findings support the integration of physiotherapy into multidisciplinary treatment protocols and reinforce the importance of conservative management as the cornerstone of temporomandibular disorder therapy. (18,19,20,21)

Occlusal Splint Therapy

Occlusal splints continue to represent one of the most commonly prescribed therapeutic modalities in the management of temporomandibular disorders. Despite their widespread use, the exact mechanisms responsible for symptom improvement remain incompletely understood. Contemporary evidence suggests that splints exert their beneficial effects through a combination of biomechanical, neuromuscular, and behavioral mechanisms rather than by permanently correcting occlusal relationships.

Several types of occlusal appliances are currently available, including stabilization splints, anterior repositioning splints, anterior bite planes, and soft occlusal appliances. Among these, stabilization splints are the most frequently prescribed and have been extensively investigated in clinical studies.

The primary objectives of stabilization splint therapy include reducing excessive muscle activity, minimizing parafunctional habits, decreasing joint loading, and protecting dental structures from mechanical wear. By creating a stable occlusal platform, these appliances may contribute to improved

neuromuscular coordination and reduced masticatory muscle hyperactivity. (22)

Clinical studies have demonstrated significant reductions in pain intensity and improvements in mandibular function among patients treated with stabilization splints. However, systematic reviews indicate that splints should not be considered superior to all other conservative therapies. Instead, they appear most effective when integrated into a comprehensive treatment program that includes patient education, physiotherapy, and behavioral modifications. (19,22,23)

Current clinical guidelines recommend reversible appliance therapy while discouraging irreversible occlusal procedures such as extensive selective grinding or full-mouth rehabilitation solely for the purpose of treating TMD symptoms. The modern approach emphasizes conservative management and recognizes that structural occlusal factors play a relatively limited role in the etiology of most temporomandibular disorders. (6,23)

Pharmacological Management

Pharmacological treatment constitutes an important component of symptom management, particularly during acute exacerbations or in patients experiencing moderate to severe pain. However, medication should generally be considered an adjunctive measure rather than a definitive treatment strategy. (8,9)

Nonsteroidal anti-inflammatory drugs (NSAIDs) remain the most frequently prescribed medications for TMD-related pain. These agents reduce inflammation and provide short-term analgesic effects. Ibuprofen, naproxen, and diclofenac are commonly used in clinical practice. Although generally effective for acute pain

episodes, prolonged use may be associated with gastrointestinal, cardiovascular, and renal adverse effects. (8)

Muscle relaxants are frequently prescribed for patients presenting significant muscular tenderness and hyperactivity. These medications may help reduce muscle spasm and improve sleep quality. Nevertheless, their use should generally be limited to short treatment periods due to potential side effects such as sedation and dependence. (8)

Tricyclic antidepressants, particularly amitriptyline, have demonstrated beneficial effects in chronic pain conditions. Their effectiveness appears to be related primarily to modulation of central pain pathways rather than treatment of depression itself. Low-dose antidepressant therapy may be particularly useful in patients exhibiting chronic pain, sleep disturbances, and psychosocial comorbidities. (8,15)

Anticonvulsants such as gabapentin and pregabalin are occasionally employed in patients presenting neuropathic pain characteristics. These medications may reduce central sensitization and improve pain control in selected cases. (8)

Recent systematic reviews suggest that pharmacological interventions provide moderate short-term benefits; however, evidence supporting long-term effectiveness remains limited. Consequently, clinicians should carefully evaluate the risks and benefits associated with prolonged medication use and prioritize conservative therapeutic strategies whenever possible. (8,9)

Minimally Invasive Procedures

Although most patients respond favorably to conservative therapy, a subset of individuals may require minimally invasive interventions due to persistent symptoms or significant functional limitations.

Arthrocentesis represents one of the most commonly performed minimally invasive procedures. The technique involves irrigation of the superior joint compartment with sterile solutions in order to eliminate inflammatory mediators, release adhesions, and improve joint mobility. Arthrocentesis has demonstrated favorable outcomes in patients presenting internal derangements and inflammatory joint disorders. (17,27)

Intra-articular injections constitute another important therapeutic option. Various substances have been investigated, including corticosteroids, hyaluronic acid, platelet-rich plasma (PRP), and autologous blood derivatives. (27)

Corticosteroid injections provide potent anti-inflammatory effects and may offer rapid symptom relief. However, concerns regarding potential cartilage damage have limited their long-term use. (27)

Hyaluronic acid injections aim to restore synovial fluid viscosity and improve joint lubrication. Several studies have reported improvements in pain and mandibular function following viscosupplementation procedures. (27)

Platelet-rich plasma has attracted increasing attention due to its regenerative potential. PRP contains numerous growth factors capable of promoting tissue repair and modulating inflammatory responses. Although early results appear promising, additional high-quality studies are required to establish standardized treatment protocols. (27)

Open surgical procedures are reserved for carefully selected patients who fail to respond to conservative and minimally invasive therapies. Because surgery carries inherent risks, it should only be considered when clear indications exist.

Orofacial Pain Syndromes Beyond

Temporomandibular Disorders

The concept of orofacial pain extends beyond temporomandibular disorders and encompasses a diverse group of painful conditions affecting the head, face, oral cavity, and associated structures. Accurate differentiation among these disorders is essential because treatment approaches vary considerably.

Trigeminal neuralgia represents one of the most distinctive neuropathic pain conditions. Patients typically describe sudden, intense, electric shock-like pain attacks triggered by everyday activities such as speaking, chewing, or facial contact. Diagnosis is primarily clinical and often requires neurological evaluation. (12,13)

Burning mouth syndrome is characterized by persistent oral burning sensations in the absence of clinically identifiable abnormalities. The condition predominantly affects middle-aged and elderly women and may be associated with psychological factors, hormonal changes, and neuropathic mechanisms. (12,16)

Persistent idiopathic facial pain remains one of the most challenging diagnoses in orofacial pain medicine. Patients often report continuous, poorly localized pain without apparent structural pathology. The absence of objective findings frequently complicates diagnosis and management. (12,16)

Headache disorders may also overlap with temporomandibular symptoms. Tension-type headaches and migraines frequently coexist with TMDs, creating diagnostic challenges and emphasizing the importance of comprehensive evaluation. (12,13)

The International Classification of Orofacial Pain has significantly improved diagnostic accuracy by providing standardized criteria for differentiating among these diverse conditions. Accurate classification

facilitates targeted treatment and reduces the risk of unnecessary interventions.

Multidisciplinary Approach

One of the most important developments in contemporary TMD management has been the recognition that successful treatment often requires collaboration among multiple healthcare disciplines.

The multifactorial nature of temporomandibular disorders makes it unlikely that a single therapeutic modality will address all contributing factors. Consequently, multidisciplinary care has become increasingly emphasized within clinical guidelines and scientific literature.

Dentists play a central role in diagnosis and initial management. However, physiotherapists contribute significantly through rehabilitation programs aimed at restoring function and reducing pain. Psychologists may assist patients experiencing chronic pain, anxiety, depression, or maladaptive coping

strategies. Neurologists, pain specialists, rheumatologists, and maxillofacial surgeons may also become involved depending on the complexity of the clinical presentation. (9,15,16)

Cognitive behavioral therapy has demonstrated particular value in patients presenting chronic pain syndromes. This intervention helps patients develop adaptive coping strategies, reduce catastrophizing behavior, and improve overall quality of life. (15)

The biopsychosocial model serves as the conceptual foundation of multidisciplinary care. By addressing biological abnormalities, psychological influences, and social determinants simultaneously, clinicians may achieve superior long-term outcomes compared with isolated treatment approaches. (5,15,16)

Current evidence strongly supports individualized treatment planning. Rather than applying standardized protocols to all patients, clinicians should consider each patient's unique clinical characteristics, psychosocial profile, and treatment goals.

CONCLUSIONS

1. Temporomandibular disorders are multifactorial conditions involving complex interactions among biological, psychological, and social factors.
2. Contemporary diagnosis relies primarily on the DC/TMD and ICOP classification systems, which improve diagnostic accuracy and standardization.
3. Comprehensive patient assessment should include detailed clinical examination, psychosocial evaluation, and appropriate imaging when indicated.
4. Conservative management remains the cornerstone of treatment for most patients.
5. Physical therapy and therapeutic exercises provide significant benefits in pain reduction and functional rehabilitation.
6. Occlusal splints represent effective adjunctive therapies but should be integrated into a broader treatment strategy.
7. Pharmacological interventions may provide short-term symptom relief but should not replace conservative treatment.

8. Minimally invasive procedures such as arthrocentesis and intra-articular injections may benefit selected patients who fail conservative management.
9. Orofacial pain syndromes require careful differential diagnosis because many conditions mimic temporomandibular disorders.
10. Multidisciplinary, patient-centered care offers the greatest potential for long-term improvement in pain, function, and quality of life. The first conclusion. (7-10,17,25)

Acknowledgements

The authors would like to thank Prof. Univ. Dr. Norina Consuela Forna for the support and constructive comments and also to the staff of the Department of Prosthetic Dentistry and Oral Function.

REFERENCES

1. Schiffman E, Ohrbach R, Truelove E, Look J, Anderson G, Goulet JP, et al. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for Clinical and Research Applications. *J Oral Facial Pain Headache*. 2014;28(1):6–27.
2. Kapos FP, Exposto FG, Oyarzo JF, Durham J. Temporomandibular disorders: a review of current concepts in aetiology, diagnosis and management. *Oral Surg*. 2020;13(4):321–334.
3. Li DTS, Leung YY. Temporomandibular Disorders: Current Concepts and Controversies in Diagnosis and Management. *Diagnostics*. 2021;11(3):459.
4. Dworkin SF, LeResche L. Research Diagnostic Criteria for Temporomandibular Disorders. *J Craniomandib Disord*. 1992;6(4):301–355.
5. Sharma S, Gupta DS, Pal US, Jurel SK. Etiological factors of temporomandibular joint disorders. *Natl J Maxillofac Surg*. 2011;2(2):116–119.
6. Manfredini D, Lombardo L, Siciliani G. Temporomandibular disorders and dental occlusion. A systematic review. *Minerva Stomatol*. 2017;66(1):20–32.
7. Mauro G, D’Antò V, Bucci R, et al. Temporomandibular Disorders Management—What’s New? A Scoping Review. *J Clin Med*. 2024;13:3564.
8. Minervini G, Franco R, Marrapodi MM, et al. Pharmacological Therapy in the Management of Temporomandibular Disorders and Orofacial Pain: A Systematic Review and Meta-analysis. *Pain Res Manag*. 2024;2024:1–15.
9. Busse JW, Wang L, Kamaleldin M, et al. Management of chronic pain associated with temporomandibular disorders: a clinical practice guideline. *BMJ*. 2023;383:e076227.
10. Tran C, Su N, Durham J, et al. Management of temporomandibular disorders: a rapid review of systematic reviews and guidelines. *J Oral Rehabil*. 2022;49(12):1218–1232.
11. Ohrbach R, Dworkin SF. The evolution of TMD diagnosis. *J Dent Res*. 2016;95(10):1093–1101.
12. International Headache Society. International Classification of Orofacial Pain, 1st edition (ICOP). *Cephalalgia*. 2020;40(2):129–221.
13. Pigg M, Nixdorf DR, Law AS, et al. New International Classification of Orofacial Pain. *J Endod*. 2021;47(2):149–157.
14. Warzocha J, Słotwińska SM, et al. Etiologic Factors of Temporomandibular Disorders. *J Clin Med*. 2024;13(4):1057.

15. Wan J, Wang Y, Zhang X, et al. Temporomandibular Disorders and Mental Health: A Review. *Front Psychiatry*. 2025;16:1452310.
16. Canfora F, Guarda-Nardini L, et al. Advancements in Understanding and Classifying Chronic Orofacial Pain. *Biomedicines*. 2023;11(12):3275.
17. Christidis N, Lövgren A, et al. Interventions for painful temporomandibular disorders: systematic review and network meta-analysis. *J Oral Rehabil*. 2024;51(3):435–451.
18. Bednarczyk V, Oliveira-Souza AIS, et al. Cervical rehabilitation interventions for pain and function in adults with myogenic TMD. *Musculoskelet Sci Pract*. 2024;70:102925.
19. Romeo A, Michelotti A, et al. Physical therapy in addition to occlusal splint in myogenic temporomandibular disorders. *Clin Oral Investig*. 2024;28(6):352.
20. Zhang L, Xu L, Wu D, et al. Exercise therapy versus occlusal splint therapy for painful temporomandibular disorders. *Clin Rehabil*. 2021;35(11):1571–1584.
21. Shimada A, Yoshida N, et al. Effectiveness of exercise therapy on pain relief and jaw mobility in TMD patients. *J Oral Rehabil*. 2023;50(9):1022–1031.
22. König J, Türp JC, et al. Additional splint therapy has no superiority in myogenic TMD. *J Oral Rehabil*. 2024;51(2):280–291.
23. Singh BP, Kumar V, et al. Occlusal interventions for managing temporomandibular disorders. *Cochrane Database Syst Rev*. 2024;8:CD014345.
24. Di Francesco F, Paduano S, et al. Acupuncture as symptomatic treatment of temporomandibular disorders: systematic review and meta-analysis. *Complement Ther Med*. 2024;78:102967.
25. Al-Moraissi EA, Wolford LM, et al. Treatment of myogenous temporomandibular disorders: systematic review and network meta-analysis. *J Oral Rehabil*. 2022;49(3):292–307.
26. Fertout A, Drici M, et al. Transcutaneous electrical nerve stimulation in temporomandibular disorders: systematic review. *Cranio*. 2022;40(6):511–519.
27. Torres D, Oliveira AB, et al. Intra-articular injections for TMJ osteoarthritis: systematic review and network meta-analysis. *Oral Surg Oral Med Oral Pathol Oral Radiol*. 2024;138(1):44–58.
28. Nykänen L, Häggman-Henrikson B, et al. Brief Diagnostic Criteria for Temporomandibular Disorders. *J Oral Rehabil*. 2025;52(1):11–24.
29. Reiter S, Eli I, et al. Axis I diagnostic profile according to the Diagnostic Criteria for Temporomandibular Disorders. *J Oral Rehabil*. 2024;51(12):1784–1794.
30. Minervini G, Franco R, et al. Accuracy of temporomandibular disorders diagnosis: systematic review. *Diagnostics*. 2024;14(4):395.