Temporomandibular Disorders in Children and Adolescents, Including Those with Special Health Care Needs

Latest Revision

2024

How to Cite: American Academy of Pediatric Dentistry. Temporomandibular disorders in children and adolescents, including those with special health care needs. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2024:494-504.

Abstract

This best practice assists dental practitioners in recognizing and diagnosing temporomandibular disorders and identifying evidence-based treatment options. Temporomandibular disorders are a group of musculoskeletal and neuromuscular conditions that include clinical signs and symptoms involving the muscles of mastication, the temporomandibular joint, and associated structures and occasionally occur in chidren and adolescents, including those with special health care needs. Temporomandibular disorders generally are classified into two broad categories: temporomandibular joint conditions and masticatory muscle disorders. Diagnosing temporomandibular disorders should be based on a screening history, clinical examination, and diagnostic aids (e.g., temporomandibular joint imaging). Temporomandibular disorder treatment goals include restoring function, decreasing pain, reducing risk factors, and improving quality of life. Treatment approaches include reversible and irreversible therapies. Common reversible approaches include patient instruction, physical therapy, behavioral therapy, pharmacotherapy, and occlusal splints. Meanwhile, with limited evidence for effectiveness of irreversible therapies (e.g., occlusal adjustments, orthodontic treatment, surgery), such approaches should be avoided in children.

This document was developed through a collaborative effort of the American Academy of Pediatric Dentistry Councils on Clinical Affairs and Scientific Affairs to offer updated information and guidance on temporomandibular disorders in children and adolescents, including individuals with special health care needs.

KEYWORDS: EVIDENCE-BASED DENTISTRY; PEDIATRIC DENTISTRY; TEMPOROMANDIBULAR JOINT DISORDERS; TEMPOROMANDIBULAR JOINT

Purpose

The American Academy of Pediatric Dentistry (**AAPD**) recognizes that disorders of the temporomandibular joint (**TMJ**), masticatory muscles, and associated structures occur in children and adolescents, including those with health care needs. These recommendations are intended to assist the practitioner in the recognition and diagnosis of temporomandibular disorder (**TMD**) and to identify possible treatment options.

Methods

Recommendations on temporomandibular disorders in children and adolescents were developed by the Clinical Affairs Committee—Temporomandibular Joint Problems in Children Subcommittee and adopted in 1990.[1] This document by the Council on Clinical Affairs is a revision of the previous version[2], last revised in 2019. A search was conducted using the PubMed®/MEDLINE database with the parameters: terms: TMJ and occlusion OR TMJ and treatment OR TMJ and dysfunction OR TMJ and disorders OR temporomandibular joint dysfunction syndrome OR TMD treatment OR TMD occlusion OR temporomandibular joint OR temporomandibular joint disc OR mandible/physiopathology/masticatory muscles/physiopathology AND bruxism OR sleep bruxism or prevalence OR pain measurement OR facial pain/etiology OR headache/diagnosis OR pain measurement AND adolescent OR child OR sex characteristics OR gender differences OR dental care for children OR pediatric dentistry OR evidence-based dentistry; limits: within the last 15 years, humans, English. One hundred ninety-eight articles met these criteria. Papers for review were chosen from these searches and from references within selected articles; textbooks also were used. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/ or consensus opinion by experienced researchers and clinicians.

Background

Definition of TMD

TMD is a collective term for a group of musculoskeletal and neuromuscular conditions which includes several clinical signs and symptoms involving the muscles of mastication, the TMJ,

ABBREVIATIONS

AAPD: American Academy of Pediatric Dentistry. **DC/TMD:** Diagnostic Criteria for Temporomandibular Disorders. **JIA:** Juvenile idiopathic arthritis. **mm:** millimeters. **MRI:** Magnetic resonance imaging. **TMD:** Temporomandibular disorder. **TMJ:** Temporomandibular joint.

and associated structures.[3] Joint disorders (e.g., arthralgia, disc-condyle complex disorders), joint diseases (e.g., osteoarthritis), and masticatory muscle disorders (e.g., myalgia) fall under the umbrella of TMD.[4(pp204,205)]

Prevalence of TMD in children and adolescents

TMDs is a major cause of nonodontogenic pain in the orofacial region.[5] The reported prevalence of TMD in children and adolescents varies widely in the literature.[6-11] This variation may be due to differences in populations studied[8,9], diagnostic criteria[6], examination methods[10], and lack of a universally-accepted and validated tool for pediatric and adolescent TMD assessment.[12,13] The Diagnostic Criteria for Temporomandibular Disorders (**DC/TMD**) examination decreases variability in diagnosis but is designed for patients over age 18.[14,15] A systematic review using this instrument found TMD prevalence in patients aged 10- to 19-years-old ranged from 7.3 to 30.4 percent.[6] Another systematic review demonstrated a higher prevalence of TMD in females (44.7 percent) than males (30 percent).[9] Data suggest the prevalence increases with age; yet, few studies include patients under age nine.[8,14,16] A 2021 meta-analysis reported joint-related TMD in 31 percent of adults and 11 percent of children and adolescents.[11] Regional studies demonstrate a two to three percent incidence (rate of new cases that will develop over time) of TMD in adolescence.[17] Recent adaptation of the DC/TMD for children (six- to nine-years-old) and adolescents (10- to 19-years-old)[18-21] has the potential to facilitate pediatric and adolescent research.

Headaches are common during pediatric and adolescent years[22], with an overall prevalence of 38 percent in females and 27 percent in males.[23] Although TMD may occur alongside a primary headache disorder (e.g., migraine, tension-type headache), the International Classification of Headache Disorders includes "headaches attributed to temporomandibular disorder" as a distinct headache diagnosis.[22,24] TMD pain is highly associated with headaches in adolescents, with headaches most often occurring before the onset of jaw pain.[25] The development of headache and symptomatic TMD have been correlated with the onset of puberty in girls.[26]

Etiology of TMD

A universal unambiguous cause of TMD has not been identified.[4(pg194)] Therefore, it is impossible to reliably predict which patients will or will not develop TMD. Nevertheless, TMD pain in adolescence triples the risk of TMD pain as a young adult.[27] Predisposing (risk) factors, precipitating (initiating) factors, and perpetuating (sustaining) factors contributing to the development of TMD have been identified.[28] The available evidence base suggests a poor correlation between any single etiological factor and resulting signs (i.e., findings identified by the dentist during the examination) and symptoms (i.e., findings reported by the child or parent).[29] Factors reducing the adaptive capacity of the masticatory system contribute to TMD development.[4(pg194)]

Etiologic factors include:

1. macrotrauma: chin trauma, a common occurrence in childhood because of falling, is a reported factor in the development of TMD in pediatric patients.[30-32] A direct blow to the mandible from a traumatic incident (e.g., motor vehicle accident, sports collision, physical abuse) can damage masticatory structures and lead to signs and symptoms of inflammation and TMD.[4(pg195)] TMJ injuries following jaw dislocation and mandibular hyperextension during medical and dental procedures (e.g., oral intubation, bite block placement, third molar extraction) have been reported.[30,33,34] Subcondylar fractures are the most common mandibular fractures in children.[35] Treatment of jaw fractures with closed reduction and prolonged immobilization can result in TMJ ankylosis and subsequent jaw dysfunction.[36,37] Mandibular fractures in a growing patient may result in facial asymmetry.[36,37] Because the TMJs are near the base of the skull, traumatic brain injury or concussion may accompany jaw injuries.[30] Indirect trauma such as flexion-extension (whiplash) injuries may alter pain processing and lead to TMD symptoms; yet, a direct relationship between TMD and indirect trauma has not been established.[4(pg196)]
2. microtrauma: Tooth grinding, clenching, and other repetitive parafunctional mandibular behaviors are thought to contribute to the development of TMD.[38] Prolonged wind instrument use or fingernail biting also can strain the masticatory system.[28] Overtime, excessive loading of the TMJ can lead to cartilage breakdown, synovial fluid alterations, and anatomic changes within the joint (e.g., degenerative joint disease) and masticatory musculature (e.g., masseter hypertrophy).[39] Bruxism, repetitive jaw movements characterized by tooth clenching and grinding, occurs with variable intensity and frequency during periods of sleep and wakefulness.[40] Sleep bruxism, classified as a sleep-related masticatory muscle activity with potential physiologic or protective relevance,[41,42] is most prevalent during childhood and decreases with age.[40(pg373)] One in four children experiences probable or possible sleep bruxism with no difference between genders.[43] The literature on the association between parafunction and TMD in pediatric patients and adult patients is contradictory.[44-46] However, childhood parafunction was found to be a predictor of the same parafunction 20 years later.[47] A systematic review found a positive association between awake bruxism and painful TMD in children and adolescents, although none for sleep bruxism.[48] Sleep bruxism and sleep breathing disorders (e.g., snoring, obstructive sleep apnea) commonly occur together; yet evidence regarding the pathophysiological association and the temporal relationship between the two conditions is lacking.[49] Individuals with neurologic disorders (e.g., spastic cerebral palsy) have an increased likelihood of presenting with parafunctional oral habits and bruxism.[50,51]

3. anatomical factors (skeletal and occlusal) and orthodontic treatment: The association of skeletal and occlusal factors and the development of TMD is relatively weak.[4(pg197),52,53] Some occlusal findings (e.g., anterior open bite, nonworking occlusal interferences) may be the result, and not the cause, of TMD.[52] Furthermore, data do not support that the development of TMD is caused or improved by orthodontic treatment,[53-60] regardless of whether premolars were extracted.[33] Changes in freeway dimension of the rest position (normally two to four millimeters [**mm**]) may be impinged by occlusal changes or restorations.[61] While most children and adolescents compensate to changes in vertical dimension without problem, TMD may develop in others due to failure of the masticatory system to adapt.[4(pp197,198)] A recent pediatric cohort study demonstrated that increasing the vertical dimension with the Hall technique for preformed crowns did not lead to TMD over a 12-month period.[62] Little evidence links skeletal or occlusal factors with TMD, but the following have some association across studies:
   - skeletal anterior open bite.[63,64]
   - steep articular eminence of the temporal bone.[65]
   - overjet greater than six to seven mm.[63,64]
   - skeletal Class II profile.[66]
   - Class III malocclusion.[67]
   - unilateral posterior crossbite.[54-56,58,63,64,68,69]
   - functional posterior crossbite.[69,70]

   Craniocervical posture has been suggested to be associated with TMD because patients with jaw pain and dysfunction commonly present with neck pain, hypomobility, and dysfunction.[71,72] Nevertheless, cranio-cervical posture was found to be similar in patients with or without TMD.[71]
4. psychosocial factors: Major psychological factors associated with painful TMD include somatization[73,74], anxiety[67,73], depression[73,74], obsessive-compulsive feelings[75], catastrophizing[76(pg216)], emotional stress[73], physical symptom reporting[76(pg216)], and fear avoidance behavior (i.e., fear of pain from jaw movement)[76(pg216,217)]. Lack of family support, access to care, and stigma are examples of social factors influencing TMD.[76(pg216)] Emotional stress and other psychosocial factors predispose children over the age of six to sleep bruxism.[77] Depression, anxiety, posttraumatic stress disorder, psychologic distress, and sleep dysfunction may influence TMD prognosis and symptoms.[20,78] Higher pain intensity in the orofacial region correlated with greater impact on quality of life including difficulty with prolonged jaw opening, eating, and sleeping.[78] Persistent TMD pain has been associated with other comorbid pain complaints and pain-related disability.[27] Currently, evidence to support that psychological therapies alone effectively reduce TMD pain is limited.[79]
5. systemic, developmental, and pathologic: Rheumatic diseases such as systemic lupus erythematosus, juvenile idiopathic arthritis (**JIA**), and psoriatic arthritis can involve the TMJs.[28,80,81] Imaging studies confirm the majority of children with JIA demonstrate TMJ degeneration, regardless of the presence of pain.[80,82] Connective tissue disorders involving generalized joint laxity or hypermobility (e.g., Ehler Danlos syndrome, Marfan syndrome) show an association with chronic pain and TMD signs and symptoms.[83-85] Congenital or acquired hypoplasia, pathologic hyperplasia, bifidity, and condylar tumors represent a unique category of TMDs.[81,86]
6. biochemical, genetic, and endocrine factors: Although there are no specific biomarkers for TMD, studies of patients with painful TMD show elevations in inflammatory cytokines (e.g., interleukins, tumor necrosis factor) and neurotransmitters (e.g., glutamate, serotonin, cortisol).[87,88] Genes influence biological systems involved with pain processing and the study of genetic polymorphisms related to pain sensitivity is an active area of research.[4(pg200),89] Both genetic variations and mutations in specific genes (e.g., catechol-O-methyl-transferase; glucocorticoid or serotonin receptor genes) increase the risk of developing orofacial pain and TMD.[4(pg200),90] The role of hormones (e.g., estrogen)in the etiology of TMD is debatable. Females have a higher prevalence of symptomatic TMD than males;[9] however, a clear relationship between TMD development and estrogen levels related to menstrual or pregnancy status has not been established[4(pg199),74,91]. A systematic review demonstrated TMJ symptom reporting may be related to depression and somatization during puberty, especially in females.[74]

Screening for TMJ health

Obtaining a patient's dental history guides the practitioner's clinical assessment to make an accurate diagnosis and develop a comprehensive preventive and therapeutic program for each patient.[92] The following questions represent a TMD screening history:[28,93(pg38)]

- do you have difficulty opening your mouth?
- do you hear noises within your jaw joint?
- do you have pain in or around your ears or your cheeks?
- do you have pain when chewing, talking, or using your jaws?
- do you have pain when opening your mouth wide or when yawning?
- has your bite felt uncomfortable or unusual?
- does your jaw ever lock or go out?
- have you ever had an injury to your jaw, head, or neck? If so, when? How was it treated?
- have you previously been treated for a temporomandibular disorder? If so, when? How was it treated?

The following procedures are components of a basic TMD screening evaluation:[93(pg38)]

- palpation of the muscles of mastication for tenderness;
- palpation of the lateral capsule of the TMJs;

- palpation and listening for TMJ sounds; and
- evaluation of mandibular range of motion.

Based upon the results of the screening history and examination, the need for a more detailed history and/or clinical examination or other diagnostic assessments to determine or rule out TMD can be made.

Diagnosing TMD

TMD diagnosis is based upon information collected from a detailed history, clinical examination, and ancillary aids (e.g., imaging, laboratory tests, diagnostic casts, diagnostic anesthesia) if indicated.[21,93(pg36),94(pp50-56)] Classification systems based on common symptoms and signs assist with TMD diagnosis.[94(p63)] TMD symptoms include acute or chronic (i.e., greater than three months) jaw pain, focal or widespread jaw pain, ear pain, headaches, and other subjective findings (e.g., muscle tension, fatigue). TMD signs include TMJ sounds, TMJ locking or catching, altered pattern of mouth opening, and limited mandibular opening (interincisal distance less than 40 mm for adults, 36 mm for adolescents, 32 mm for children).[15,21] Patients with TMD often present with complaints of painful masticatory structures[93(pg1)], and tender areas can be identified by palpating the jaw muscles and TMJs.[21] Lateral tongue scalloping, buccal mucosa ridging, tooth mobility, and excessive dental wear can provide additional diagnostic information regarding parafunctional habits associated with TMD.[93(pg36)] Dental and medical conditions occasionally mimic TMD. Dental pain[95], sinus pain[96], ear pain[97], headaches[98], neoplasias[99], parotid diseases[100], cervical dysfunction[101], and Eagle's syndrome[102] can cause symptoms similar to TMD. Identification of the patient's source of pain (e.g., joint, muscle) aids in the diagnosis and management of TMD.[93(pg36);94(pg53)]

TMJ imaging provides diagnostic information related to the hard and soft tissue components of the TMJs. In some cases, imaging is needed to make a baseline assessment or monitor for change related to trauma or a developing facial asymmetry, or when patients fail to respond to conventional treatment.[103] Additional indications for joint imaging include new TMJ sounds (e.g., crepitus, clicking, popping).[39,103] Panoramic radiographs detect gross hard tissue changes; however, they are not sensitive enough to rule out signs of degenerative TMJ disease (e.g., subcortical cysts, surface erosions, osteophyte formation, sclerosis).[104] Panoramic radiography is more reliable for evaluating the mandibular condyle than the articular eminence or fossa of the TMJs,[105] and does not permit evaluation of the joint space, soft tissues, or condylar motion.[28] Cone-beam computed tomography (CBCT) imagining detects bony abnormalities within the TMJ with high sensitivity but exposes a patient to more radiation than the panoramic image.[106] Magnetic resonance imaging (**MRI**) provides visualization of soft tissues, specifically the position and contours of the TMJ disc when opened and closed mouth views are included in the imaging protocol.[94(pg51)] Contrast-enhanced MRI detects active hard tissue degeneration and joint inflammation[28,103,107] and is considered the gold standard for evaluating patients with JIA.[82,108] Ultrasound is a noninvasive imaging method for viewing superficial lateral aspects of the TMJ; however, the capability to detect signs of active synovitis is low compared with MRI.[109,110]

Diagnostic classification of TMDs include:[4(pp201-203),111,112]

1. TMJ disorders:
   - temporomandibular joint disorders (joint pain, arthralgia, disc condyle complex disorders [e.g. disc displacement with reduction, disc displacement without reduction]);
   - ankylosis of joint (fibrous and bony ankylosis);
   - other specific joint disorders not elsewhere classified (fibrous adhesion and adherence);
   - hypermobility disorders (subluxation, luxation, dislocation);
   - primary osteoarthritis of other specified joint (degenerative joint disease, osteoarthritis, osteoarthrosis);
   - rheumatoid arthritis, serology unspecified (systemic arthridities including JIA, psoriadic arthritis, reactive arthritis);
   - idiopathic aseptic osteonecrosis;
   - disorder of ligament (ligamentous laxity);
   - structural anomalies primarily affecting one body system, unspecified (aplasia);
   - other specified anomalies of jaw size (hyperplasia, hypoplasia); and
   - neoplasm (benign or malignant).
2. Masticatory muscle disorders:
   - myalgia (local myalgia, myofascial pain with or without pain referral, centrally-mediated myalgia);
   - certain specified disorders of synovium or tendon (tendonitis, myositis);
   - spasm;
   - contracture of muscle;
   - dental parafunctional disorders (includes hypertrophy of chewing muscles); and
   - neoplasm (benign or malignant).
3. Other
   - headache or orofacial pain associated with chronic pain secondary to TMDs;
   - movement disorders (lack of coordination, fasciculation, other specified primary dystonia, other specified disorder associated with tremor);
   - fractures (condylar or subcondylar process); and
   - chronic primary pain.

Treatment of TMD

TMD therapeutic recommendations are inconsistent across systematic reviews and published guidelines.[4(pg224),113] Therapeutic outcome measures commonly used in randomized controlled trials include pain scores (e.g., visual analogue scale), maximum mandibular opening, jaw function, and jaw movement.[114] Treatment goals include restoration of function, decreased pain,

decreased aggravating or contributing factors, and improved quality of life.[76(pp215-7),115] Conservative and reversible therapies are effective in reducing most TMD symptoms in most patients including children.[3,115,116] Both active and passive treatment modalities have been advocated for TMD management. Active modalities include patient participation whereas passive modalities (e.g., occlusal splint, acupuncture), do not.[113,117] Effective early management of acute TMD (e.g., anti-inflammatory medication, education) can reduce the potential for developing chronic pain.[4(pg225),118] Combined approaches may be more successful in treating chronic TMD than single treatment modalities[119]; however, evidence-based strategies for children and adolescents have yet to be established.[6,115,117]

Jaw function is painless for many patients with disc displacement with reduction.[4(pg224),120] These patients may present with pain-free TMJ clicking, and generally no treatment is needed aside from reassurance and explanation of the condition.[4(pg224),120]

Treatment of TMD can be divided into reversible and irreversible treatment. Reversible therapies may include:

- patient education (e.g., describing the nature of the disorder, the significance of predisposing, precipitating, and perpetuating factors, anatomy of the TMJ, management options, and goals of therapy).[4(pp225-227),115]
- physical therapy (e.g., jaw exercises, dry needling, transcutaneous electrical nerve stimulation [TENS], ultrasound, iontophoresis, massage, TMJ distraction and mobilization, thermotherapy, coolant spray and stretch therapy).[4(pp232-235),39,113,115,121-123]
- behavioral therapy (e.g., biofeedback, relaxation training, cognitive behavioral therapy [CBT] for developing behavior-coping strategies and modifying perceptions about TMD, habit reversal and awareness of daytime bruxing, avoiding excessive chewing of hard foods or gum, voluntary avoidance of stressors, treatment of co-morbid behavioral health conditions, obtaining adequate, uninterrupted sleep).[39,113,115,124]
- pharmacotherapy (e.g., nonsteroidal anti-inflammatory drugs, anxiolytic agents, muscle relaxants).[125,126] Current evidence does not support the use of opioid analgesics for chronic TMD.[113] While antidepressants (e.g., tricyclic antidepressants, serotonin norepinephrine reuptake inhibitors) sometimes are prescribed for adults with chronic orofacial pain conditions, evidence supporting the use of these agents in children and adolescents is lacking.[4(pp227-229),39,115,126-128]
- occlusal splints. The goal of appliance therapy is to provide orthopedic stability to the TMJ or alter the patient's occlusion temporarily to decrease parafunctional activity and pain.[129,130] Adolescents treated with occlusal splints showed significantly lower pain intensity compared to those treated with relaxation therapy alone.[130] Occlusal stabilization splints are made of hard or soft acrylic, cover teeth on either the maxillary or mandibular arch, and normally are worn at nighttime. In a balanced appliance, all teeth are in occlusion when the patient's jaw is closed in a stable mandibular physiologic posture.[4(pg236)] Dentoalveolar growth and development and erupting teeth present challenges for occlusal splint use in patients with mixed dentition.[131] Additional reversible therapies for orofacial pain reported in studies of adult patients include TMJ arthrocentesis[82,132,133], TMJ injections[132], nerve blocks[134], acupuncture[135], trigger point injections[39,134], and off-label use of botulinum toxin A injections.[134,136]

Irreversible therapies for TMD include occlusal adjustments, orthodontics, and surgery. Occlusal adjustment (including restorative care) and orthodontics strictly for the treatment of TMD are not supported as part of evidence-based care as they neither prevent nor treat TMD.[61,137-139] Surgical intervention (orthognathic surgery, open joint TMJ surgery, and TMJ reconstruction) should be limited to cases of severe degeneration or destruction following trauma or tumor resection.[81,115,140]

Recommendations

1. Every comprehensive oral evaluation should include a screening history and clinical assessment of TMJ health.[92] Screening questions should address the presence of head and neck pain and mandibular dysfunction, previous orofacial trauma, and current symptoms (e.g., location, timing, characteristics).[141(pp25-27)]
2. In the presence of a positive history and/or signs and symptoms of TMD, a focused TMD examination (e.g., palpation of masticatory and associated muscles and the TMJ's, documentation of joint sounds, occlusal analysis, and assessment of active and passive range of mandibular opening) should be performed.[93(pg38),142(pg50)]
3. Joint imaging is recommended when the primary source pain appears to come from the TMJ or when crepitation or bite changes are noted clinically.[103,143]
4. A TMD diagnosis should be made before providing information regarding treatment and prognosis.[141(pg28)]
5. Acute TMD often can be managed with education and analgesics (e.g. nonsteroidal anti-inflammatory drugs), whereas chronic TMD may require a multimodal approach (e.g., physical therapy, behavior evaluation, medications).[119]
6. Anti-inflammatory medications are indicated for TMJ inflammation and arthritis, while physical therapy techniques may provide more benefits to individuals with a TMD that is muscular in nature.[4(pg232)]
7. Opioids are not indicated for chronic TMD, and medical consultation is warranted if advanced or long-term pharmacologic management is needed.[125]
8. Referral should be made to other dental or medical health care providers, including those with expertise in TMD, oral surgery, behavioral health, or pain management, if the diagnostic and/or treatment needs are beyond the treating dentist's scope of practice.[142(pg68)]

9. Consider reversible therapies for all patients, including children and adolescents, with signs and symptoms of TMD.[130,143] In general, irreversible therapies are to be avoided or considered only as a last option.[130,144,145]

References

1. American Academy of Pediatric Dentistry. Guidelines for temporomandibular disorders in children and adolescents. Chicago, Ill.: American Academy of Pediatric Dentistry; 1990.
2. American Academy of Pediatric Dentistry. Acquired temporomandibular disorders in infants, children, and adolescents. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2019;379-86.
3. Greene CS. Managing the care of patients with temporomandibular disorders: A new guideline for care. J Am Dent Assoc 2010;141(9):1086-8.
4. American Academy of Orofacial Pain. Differential diagnosis and management of TMDs. In: Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management. Klasser GD, Reyes MR, eds. 7th ed. Batavia, Ill.: Quintessence Publishing Co, Inc; 2023:194-236.
5. American Academy of Orofacial Pain. Diagnostic classification of orofacial pain. In: Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management. Klasser GD, Reyes MR, eds. 7th ed. Batavia, Ill.: Quintessence Publishing Co, Inc; 2023:70-1.
6. Christidis N, Lindstrom Ndanshau E, Sandberg A, et al. Prevalence and treatment strategies regarding temporomandibular disorders in children and adolescents – A systematic review. J Oral Rehabil 2019;46(3):291-301.
7. da Silva CG, Pacheco-Pereira C, Porporatti AL, et al. Prevalence of clinical signs of intra-articular temporomandibular disorders in children and adolescents: A systematic review and meta-analysis. J Am Dent Assoc 2016;147(1):10-8.
8. Hongxing L, Astrøm AN, List T, Nilsson IM, Johansson A. Prevalence of temporomandibular disorder pain in Chinese adolescents compared to an age-matched Swedish population. J Oral Rehabil 2016;43(4):241-8.
9. Minervini G, Franco R, Marrapodi MM. Prevalence of temporomandibular disorders in children and adolescents evaluated with diagnostic criteria for temporomandibular disorders: A systematic review and meta-analysis. J Oral Rehabil 2023;50(6):522-30.
10. Minervini G, Marrapodi MM, Cervino G, et al. Congenital cranio-facial abnormalities in paediatric population: A systematic review on temporomandibular disorders. J Clin Pediatr Dent 2023;47(5):12-8.
11. Valesan LF, Da-Cas CD, Reus JC, et al. Prevalence of temporomandibular joint disorders: A systematic review and meta-analysis. Clin Oral Investig 2021;25(2):441-53.
12. Manfredini D, Colcilovo F, Stellini E, Favero L, Guarda-Nardini L. Surface electromyography findings in unilateral myofascial pain patients: Comparison of painful vs. non painful sides. Pain Med 2013;14(2):1848-53.
13. Nilsson IM. Reliability, validity, incidence and impact of temporomandibular pain disorders in adolescents. Swed Dent J Suppl 2007;(183):7-86.
14. Graue AM, Jokstad A, Assmus J, Skeie MS. Prevalence among adolescents in Bergen, Western Norway, of temporomandibular disorders according to the DC/ TMD criteria and examination protocol. Acta Odontol Scand 2016;74(6):449-55.
15. Schiffman E, Ohrbach R, Truelove E, et al. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for clinical and research applications: Recommendations of the International RDC/TMD Consortium Network and Orofacial Pain Special Interest Group. J Oral Facial Pain Headache 2014;28(1):6-27.
16. Köhler AA, Helkimo AN, Magnusson T, Hugoson A. Prevalence of symptoms and signs indicative of temporomandibular disorders in children and adolescents. A cross-sectional epidemiological investigation covering two decades. Euro Arch Paediatr Dent 2009;10(1):16-25.
17. Academies of Sciences, Engineering, and Medicine. Temporomandibular Disorders: Priorities for Research and Care. Washington, DC: The National Academies Press; 2020:92. Available at: "https://doi.org/10.17226/25652". Accessed March 1, 2024.
18. Ekberg E, Nilsson IM, Michelotti A, et al; International Network for Orofacial Pain and Related Disorders Methodology (INfORM). Diagnostic criteria for temporomandibular disorders-INfORM recommendations: Comprehensive and short-form adaptations for adolescents. J Oral Rehabil 2023;50(11):1167-80. Available at: "https://onlinelibrary.wiley.com/doi/10.1111/joor.13488". Accessed February 8, 2024.
19. Nilsson IM, Ekberg E, Michelotti A, et al; International Network for Orofacial Pain and Related Disorders (INfORM). Diagnostic criteria for temporomandibular disorders-INfORM recommendations: Comprehensive and short-form adaptations for children. J Oral Rehabil 2023;50(2):99-112.
20. Rongo R, Ekberg E, Nilsson IM, et al. Diagnostic criteria for temporomandibular disorders in children and adolescents: An international Delphi study–Part 2–Development of Axis II. J Oral Rehabil 2022;49(5):541-52.
21. Rongo R, Ekberg E, Nilsson IM, et al. Diagnostic criteria for temporomandibular disorders (DC/TMD) for children and adolescents: An international Delphi study–Part 1–Development of Axis I. J Oral Rehabil 2021;48(7):836-45.
22. International Headache Society. Headache Classification Committee of the International Headache Society (IHS) The International Classification of Headache Disorders, 3rd ed. Cephalalgia 2018;38(1):155-6.

References continued on the next page.

23. Onofri A, Pensato U, Rosignoli C, et al. Primary headache epidemiology in children and adolescents: A systematic review and meta-analysis. J Headache Pain 2023;24(1):8. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9926688/". Accessed February 8, 2024.
24. Sharma S, Slade GD, Fillingim RB, Ohrbach R. A rose by another name? Characteristics that distinguish headache secondary to temporomandibular disorder from headache that is comorbid with temporomandibular disorder. Pain 2023;164(4):820-30.
25. Nilsson IM, List T, Drangsholt M. Headache and comorbid pains associated with TMD pain in adolescents. J Dent Res 2013;92(9):802-7.
26. Rauch A, Schierz O, Körner A, Kiess W, Hirsch C. Prevalence of anamnestic symptoms and clinical signs of temporomandibular disorders in adolescents–Results of the epidemiologic LIFE Child Study. J Oral Rehabil 2020;47(4):425-31.
27. Nilsson IM, List T. Does adolescent self-reported TMD pain persist into early adulthood? A longitudinal study. Acta Odontol Scand 2020;78(5):377-83.
28. Howard JA. Temporomandibular joint disorders in children. Dent Clin North Am 2013;57(1):99-127.
29. Horswell BB, Sheikh J. Evaluation of pain syndromes, headache, and temporomandibular joint disorders in children. Oral Maxillofac Surg Clin North Am 2018;30 (1):11-24.
30. Bae SS, Aronovich S. Trauma to the pediatric temporomandibular joint. Oral Maxillofacial Surg Clin North Am 2018;30(1):47-60.
31. Greco CM, Rudy TE, Turk DC, Herlich A, Zaki HH. Traumatic onset of temporomandibular disorders: Positive effects of a standardized conservative treatment program. Clin J Pain 1997;13(4):337-47.
32. Imahara SD, Hopper RA, Wang J, Rivara FP, Klein MB. Patterns and outcomes of pediatric facial fractures in the United States: A survey of the National Trauma Data Bank. J Am Coll Surg 2008;207(5):710-6.
33. Akhter R, Hassan NM, Ohkubo R, et al. The relationship between jaw injury, third molar removal, and orthodontic treatment and TMD symptoms in university students in Japan. J Orofac Pain 2008;22(1):50-6.
34. Walker BM, Donnell CC. Does dental rehabilitation under general anaesthetic contribute to the development of temporomandibular disorders in children and adolescents? A scoping review. J Oral Rehabil 2023;50(9): 902-13.
35. Leuin SC, Frydendall E, Gao D, Chan KH. Temporomandibular joint dysfunction after mandibular fracture in children: A 10-year review. Arch Otolarygol Head Neck Surg 2011;137(1):10-14.
36. Kaban L. Acquired abnormalities of the temporomandibular joint. In: Kaban LB, Troulis MJ, eds. Pediatric Oral and Maxillofacial Surgery. Philadelphia, Pa.: WB Saunders; 2004:340-76.
37. Güven O. A clinical study on temporomandibular joint ankylosis in children. J Craniofac Surg 2008;19(5):1263-9.
38. Mortazavi N, Tabatabaei AH, Mohammadi M, Rajabi A. Is bruxism associated with temporomandibular joint disorders? A systematic review and meta-analysis. Evid Based Dent 2023;24(3):144. Available at: "https://www.nature.com/articles/s41432-023-00911-6". Accessed February 8, 2024.
39. Dym H, Israel H. Diagnosis and treatment of temporomandibular disorders. Dent Clin North Am 2012;56(1): 149-61.
40. American Academy of Sleep Medicine. Sleep-related bruxism. In: International Classification of Sleep Disorders. Diagnosis and Coding Manual. 3rd ed. Text revision. Westchester, Ill.: American Academy of Sleep Medicine; 2023:372.
41. Lobbezoo F, Ahlberg J, Raphael KG, et al. International consensus on the assessment of bruxism: Report of a work in progress. J Oral Rehabil 2018;45(11):837-44.
42. Manfredini D, Ahlberg J, Lobbezoo F. Bruxism definition: Past, present, and future- What should a prosthodontist know? J Prosthet Dent 2022;128(5):905-12.
43. Ferrari-Piloni C, Barros LAN, Evangelista K, Serra-Negra JM, Silva MAG, Valladares-Neto J. Prevalence of bruxism in Brazilian children: A systematic review and meta-analysis. Pediatr Dent 2022;44(1):8-20.
44. Barbosa TS, Miyakoda LS, Pocztaruk Rde L, Rocha CP, Gavião MBD. Temporomandibular disorders and bruxism in childhood and adolescence: Review of the literature. Int J Pediatr Otorhinolaryngol 2008;72(3):299-314.
45. Castelo PM, Gavião MB, Pereira LJ, Bonjardim LR, Gavião MBD. Relationship between oral parafunctional/nutritive sucking habits and temporomandibular joint dysfunction in primary dentition. Int J Paediatr Dent 2005;15(1):29-36.
46. Manfredini D, Lobbezoo F. Sleep bruxism and temporomandibular disorders: A scoping review of the literature. J Dent 2021;111(103711):1-12.
47. Carlsson GE, Egermark I, Magnusson T. Predictors of signs and symptoms of temporomandibular disorders: A 20-year follow-up study from childhood to adulthood. Acta Odontol Scand 2002;60(3):180-5.
48. Baad-Hansen L, Thymi M, Lobbezoo F, Svensson P. To what extent is bruxism associated with musculoskeletal signs and symptoms? A systematic review. J Oral Rehabil 2019;46(9):845-61.
49. Orradre-Burusco I, Fonseca J, Alkhraisat MH, et al. Sleep bruxism and sleep respiratory disorders in children and adolescents: A systematic review. Oral Dis 2023;00:1-28. Available at: "https://onlinelibrary.wiley.com/doi/10.1111/odi.14839". Accessed February 8, 2024.
50. Kanhouche N, Pizzi GG, Bim NA, et al. Prevalence of bruxism in children and adolescents with cerebral palsy: Systematic review and meta-analysis. Curr Pediatr Rev 2024 Jan 12. doi: 10.2174/0115733963252499231120921 48.

51. Tuncer A, Uzun A, Tuncer AH, Guzel HC, Atılgan ED. Bruxism, parafunctional oral habits and oral motor problems in children with spastic cerebral palsy: A cross-sectional study. J Oral Rehabil 2023;50(12):1393-400.
52. Manfredini D, Lombardo L, Siciliani G. Temporomandibular disorders and dental occlusion. A systematic review of association studies: End of an era? J Oral Rehabil 2017; 44(11):908-23.
53. Myllymäki E, Heikinheimo K, Suominen A, et al. Longitudinal trends in temporomandibular joint disorder symptoms, the impact of malocclusion and orthodontic treatment: A 20-year prospective study. J Oral Rehabil 2023;50(9):739-45.
54. Egermark I, Carlsson GE, Magnusson T. A prospective long-term study of signs and symptoms of temporomandibular disorders in patients who received orthodontic treatment in childhood. Angle Orthod 2005;75(4):645-50.
55. Henrikson T, Nilner M, Kurol J. Signs of temporomandibular disorders in girls receiving orthodontic treatment. A prospective and longitudinal comparison with untreated Class II malocclusions and normal occlusion subjects. Eur J Orthod 2000;22(3):271-81.
56. Henrikson T, Nilner M. Temporomandibular disorders, occlusion and orthodontic treatment. J Orthod 2003;30 (2):129-37; discussion 127.
57. Huang X, Cen X, Liu J. Effect of protraction facemask on the temporomandibular joint: A systematic review. BMC Oral Health 2018;18(1):38.
58. Kim MR, Graber TM, Viana MA. Orthodontics and temporomandibular disorder: A meta-analysis. Am J Orthod Dentofac Orthop 2002;121(5):438-46.
59. Lai YC, Yap AU, Türp JC. Prevalence of temporomandibular disorders in patients seeking orthodontic treatment: A systematic review. J Oral Rehabil 2020;47(2):270-80.
60. Magnusson T, Egermarki I, Carlsson GE. A prospective investigation over two decades on signs and symptoms of temporomandibular disorders and associated variables. A final summary. Acta Odontol Scand 2005;63(2):99-109.
61. Discacciati JA, Lemos de Souza E, Vasconcellos WA, Costa SC, Barros Vde M. Increased vertical dimension of occlusion: Signs, symptoms, diagnosis, treatment and options. J Contemp Dent Pract 2013;14(1):123-8.
62. Kaya MS, Kınay Taran P, Bakkal M. Temporomandibular dysfunction assessment in children treated with the Hall Technique: A pilot study. Int J Paediatr Dent 2020;30(4): 429-35.
63. Bilgic F, Gelgor IE. Prevalence of temporomandibular dysfunction and its association with malocclusion in children: An epidemiologic study. J Clin Pediatr Dent 2017; 41(2):161-5.
64. Thilander B, Rubio G, Pena L, De Mayorga C. Prevalence of temporomandibular dysfunction and its association with malocclusion in children and adolescents: An epidemiologic study related to specified stages of dental development. Angle Orthod 2002;72(2):146-54.
65. Fan XC, Singh D, Ma LS, Piehslinger E, Huang XF, Rausch-Fan X. Is there an association between temporomandibular disorders and articular eminence inclination? A systematic review. Diagnostics (Basel) 2020;11(1):29. Available at: "https://www.mdpi.com/2075-4418/11/1/29". Accessed February 8, 2024.
66. Manfredini D, Segu M, Arveda N, et al. Temporomandibular joint disorder in patients with different facial morphology. A systematic review of the literature. J Oral Maxillofac Surg 2016;74(1):29-46.
67. de Paiva Bertoli FM, Bruzamolin CD, de Almeida Kranz GO, Losso EM, Brancher JA, de Souza JF. Anxiety and malocclusion are associated with temporomandibular disorders in adolescents diagnosed by RDC/TMD. A cross-sectional study. J Oral Rehabil 2018;45(10):747-75.
68. De Boever JA, Carlsson GE, Klineberg IJ. Need for occlusal therapy and prosthodontic treatment in the management of temporomandibular disorders. Part I. Occlusal interference and occlusal adjustment. J Oral Rehabil 2000;27 (5):367-79.
69. Turp JC, Schindler H. The dental occlusion as a suspected cause for TMD: Epidemiological and etiological considerations. J Oral Rehab 2012;39(7):502-12.
70. Thilander B, Bjerklin K. Posterior crossbite and temporomandibular disorders (TMDs): Need for orthodontic treatment? Eur J Orthod 2012;34(6):667-73.
71. Cuenca-Martínez F, Herranz-Gómez A, Madroñero-Miguel B, et al. Craniocervical and cervical spine features of patients with temporomandibular disorders: A systematic review and meta-analysis of observational studies. J Clin Med 2020;9(9):2806.
72. de Oliveira-Souza AIS, de O Ferro JK, Barros MMMB, Oliveira DA. Cervical musculoskeletal disorders in patients with temporomandibular dysfunction: A systematic review and meta-analysis. J Bodyw Mov Ther 2020;24(4): 84-101.
73. Al-Khotani A, Meisha DE, Al Sayegh S, Hedenberg-Magnusson B, Ernberg M, Christidis N. The association between psychological symptoms and self-reported temporomandibular disorders pain symptoms in children and adolescents. Front Oral Health 2021;2:675709. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8757791/". Accessed June 21, 2024.
74. Song YL, Yap AU, Turp JC. Association between temporomandibular disorders and pubertal development: A systematic review. J Oral Rehabil 2018;45(12):1007-15. Available at: "https://onlinelibrary.wiley.com/doi/epdf/10.1111/joor.12704". Accessed February 8, 2024.
75. Lee,YH, Lee KM, Kim,T, et al. Psychological factors that influence decision-making regarding trauma-related pain in adolescents with temporomandibular disorder. Sci Rep 2019;9:18728. Available at: "https://doi.org/10.1038/s41598-019-55274-9". Accessed February 8, 2024.

References continued on the next page.

76. International Classification of Orofacial Pain, 1st edition (ICOP). Cephalalgia 2020;40(2):215-7. Available at: "https://journals.sagepub.com/doi/10.1177/0333102419893823". Accessed February 8, 2024.
77. De Luca Canto G, Singh V, Conti P, et al. Association between sleep bruxism and psychosocial factors in children and adolescents: A systematic review. Clin Pediatr (Phila). 2015;54(5):469-78.
78. Karibe H, Goddard G, Aoyagi K, et al. Comparison of subjective symptoms of temporomandibular disorders in young patients by age and gender. Cranio 2012;30(2):114-20.
79. Penlington C, Bowes C, Taylor G, et al. Psychological therapies for temporomandibular disorders (TMDs). Cochrane Database Syst Rev 2022;8(8):CD013515. Available at: "https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD013515.pub2/full". Accessed March 1, 2024.
80. Ronsivalle V, Marrapodi MM, Tirupathi S, et al. Prevalence of temporomandibular disorders in juvenile idiopathic arthritis evaluated with diagnostic criteria for temporomandibular disorders: A systematic review with meta-analysis. J Oral Rehabil 2024;51:628-37.
81. Choinard AF, Kaban LB, Peacock ZS. Acquired abnormalities of the TMJ. Oral Maxillofac Surg Clin North Am 2018;30(1):83-96.
82. Stoustrup P, Resnick CM, Abramowicz S, et al; Temporomandibular Joint Juvenile Arthritis Working Group. Management of orofacial manifestations of juvenile idiopathic arthritis: Interdisciplinary consensus-based recommendations. Arthritis Rheumatol 2023;75(1):4-14. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10100353/". Accessed February 8, 2024.
83. Bech K, Fogh FM, Lauridsen EF, Sonnesen L. Temporomandibular disorders, bite force and osseous changes of the temporomandibular joints in patients with hypermobile Ehlers-Danlos syndrome compared to a healthy control group. J Oral Rehabil 2022;49(9):872-83.
84. De Coster PJ, Van den Berghe LI, Martens LC. Generalized joint hypermobility and temporomandibular disorders: Inherited connective tissue disease as a model with maximum expression. J Orofac Pain 2005;19(1):47-57.
85. Feldman ECH, Hivick DP, Slepian PM, Tran ST, Chopra P, Greenley RN. Pain symptomatology and management in pediatric Ehlers-Danlos syndrome: A review. Children (Basel) 2020;7(9):146.
86. Kaneyama K Segami N Hatta T. Congenital deformities and developmental abnormalities of the mandibular condyle in the temporomandibular joint. Congenit Anom (Kyoto) 2008;48(3):118-25.
87. Alam MK, Zaman MU, Alqhtani NR, et al. Salivary biomarkers and temporomandibular disorders: A systematic review conducted according to PRISMA guidelines and the Cochrane Handbook for Systematic Reviews of Interventions. J Oral Rehabil 2024;51(2):416-26. Available at: "https://doi.org/10.1111/joor.13589". Accessed March 1, 2024.
88. Shrivastava M, Battaglino R, Ye L. A comprehensive review on biomarkers associated with painful temporomandibular disorders. Int J Oral Sci 2021;13(1):23. Available at: "https://www.nature.com/articles/s41368-021-00129-1". Accessed February 8, 2024.
89. Carvalho Soares FF, Poluha RL, De la Torre Canales G, et al. Effect of genetic polymorphisms on pain sensitivity in the orofacial region: A systematic review. J Oral Facial Pain Headache 2020;34(4):353-3.
90. Ekici Ö, Arıkan Söylemez ES. The association of gene polymorphisms in catechol-O'methyltransferase (COMT) and β2-adrenergic receptor (ADRB2) with temporomandibular joint disorders. Arch Oral Biol 2024;158:105859.
91. Minervini G, Franco R, Marrapodi MM, Fiorillo L, Cervino G, Cicciù M. Prevalence of temporomandibular disorders (TMD) in pregnancy: A systematic review with meta-analysis. J Oral Rehabil 2023;50(7):627-34.
92. American Academy of Pediatric Dentistry. Record-keeping. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2024:559-66.
93. American Academy of Orofacial Pain. Introduction to orofacial pain. In: Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management. Klasser GD, Reyes MR, eds. 7th ed. Batavia, Ill.: Quintessence Publishing Co, Inc; 2023:1,36,38.
94. American Academy of Orofacial Pain. General assessment of the orofacial patient. In: Orofacial Pain: Guidelines for Assessment, Diagnosis, and Management. Klasser GD, Reyes MR, eds. 7th ed. Batavia, Ill.: Quintessence Publishing Co, Inc; 2023:50-6, 63.
95. Renton T. Tooth related pain or not? Headache 2020;60(1):235-46.
96. Stepan L, Shaw CL, Oue S. Temporomandibular disorder in otolaryngology: Systematic review. J Laryngol Otol 2017;131(S1):S50-S56.
97. Burgess A, Celerier C, Breton S, et al. Otogenic temporomandibular arthritis in children. JAMA Otolaryngol Head Neck Surg 2017;143(5):466-71.
98. Viegas RSG, Bussadori SK, Vicente IVRDS, et al. Evaluation of primary headache associated with temporomandibular dysfunction in adolescents from Santos, SP, Brazil: An observational study. J Phys Ther Sci 2018;30(11):1372-6.
99. Bouloux GF, Roser SM, Abramowicz S. Pediatric tumors of the temporomandibular joint. Oral Maxillofac Surg Clin North Am 2018;30(1):61-70.
100. Louredo BVR, Santos-Silva AR, Vargas PA, et al. Clinicopathological analysis and survival outcomes of primary salivary gland tumors in pediatric patients: A systematic review. J Oral Pathol Med 2021;50(5):435-43.
101. Kang JH. Neck associated factors related to migraine in adolescents with painful temporomandibular disorders. Acta Odontol Scand 2021;79(1):43-51.

102. Tanenbaum ZG, Johng SY, Parsa KM, Russo ME, Harley EH. Eagle syndrome in the pediatric population: A case report. Clin Case Rep 2022;10(9):e6148. Available at "https//doi:10.1002/ccr3.6148". Accessed September 21, 2023.
103. Hammer MR, Kanaan Y. Imaging of the pediatric TMJ. Oral Maxillofacial Surg Clin North Am 2018;30(1):25-34.
104. Kaimal S, Ahmad M, Kang W, et al. Diagnostic accuracy of panoramic radiography and MRI for detecting signs of TMJ degenerative joint disease. Gen Dent 2018;66 (4):34-40.
105. Im YG, Lee JS, Park JI, Lim HS, Kim BG, Kim JH. Diagnostic accuracy and reliability of panoramic temporomandibular joint (TMJ) radiography to detect bony lesions in patients with TMJ osteoarthritis. J Dent Sci 2018;13(4):396-404.
106. Iskanderani D, Nilsson M, Alstergren P, Hellén-Halme K. Dose distributions in adult and child head phantoms for panoramic and cone beam computed tomography imaging of the temporomandibular joint. Oral Surg Oral Med Oral Pathol Oral Radiol 2020;130(2):200-8.
107. DeSenna BR, dos Santos S, Franca JP, Marques LS, Pereira LJ. Imaging diagnosis of the temporomandibular joint: Critical review of indications and new perspectives. Oral Radiol 2009;25(2):86-98.
108. Hara GF, de Souza-Pinto GN, Brasil DM, et al. What is the image appearance of juvenile idiopathic arthritis in MRI, CT, and CBCT of TMJ? A systematic review. Clin Oral Investig 2023;27(5):2321-33.
109. Katzburg RW, Conway WF, Ackerman SJ, et al. Pilot study to show the feasibility of high-resolution sagittal ultrasound imaging of the TMJ. J Oral Maxillofac Surg 2017;75(6):1151-62.
110. Marino A, De Lucia O, Caporali R. Role of ultrasound evaluation of temporomandibular joint in juvenile idiopathic arthritis: A systematic review. Children (Basel) 2022;9(8):1254.
111. World Health Organization. Diseases of the digestive system (K00-K93). In: International Statistical Classification of Diseases and Related Health Problems. 10th Revision (ICD-10). 2019. Available at: "https://icd.who.int/browse10/2019/en#/K07.6". Accessed June 25, 2024.
112. World Health Organization. Diseases of the digestive system. In: International Statistical Classification of Diseases and Related Health Problems. 11th Revision (ICD-11). Available at: "https://icd.who.int/browse/2024-01/mms/en#897101649". Accessed June 25, 2024.
113. Busse JW, Casassus R, Carrasco-Labra A, et al. Management of chronic pain associated with temporomandibular disorders: A clinical practice guideline. BMJ 2023;383: e076227. Available at: "https://www.bmj.com/content/383/bmj-2023-076227.long". Accessed February 8, 2024.
114. Ooi K, Aihara M, Matsumura H, et al. Therapy outcome measures in temporomandibular disorder: A scoping review. BMJ Open 202219;12(8):e061387. Available at: "https://bmjopen.bmj.com/content/12/8/e061387.long". Accessed February 8, 2024.
115. Scrivani SJ, Khawaja SN, Bavia PF. Nonsurgical management of pediatric temporomandibular joint dysfunction. Oral Maxillofac Surg Clin North Am 2018;30(1):35-45.
116. Bodner L, Miller VJ. Temporomandibular joint dysfunction in children: Evaluation of treatment. Int J Pediatr Otorhinolaryngol 1998;44(2):133-7.
117. Singh BP, Jayaraman S, Kirubakaran R, et al. Occlusal interventions for managing temporomandibular disorders. Cochrane Database Syst Rev 2017;2017(11):CD012850. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6485535/". Accessed June 25, 2024.
118. Montinaro F, Nucci L, d'Apuzzo F, Perillo L, Chiarenza MC, Grassia V. Oral nonsteroidal anti-inflammatory drugs as treatment of joint and muscle pain in temporomandibular disorders: A systematic review. CRANIO® 2022:1-10. Available at: "https://pubmed.ncbi.nlm.nih.gov/35129419/". Accessed February 8, 2024.
119. Brighenti N, Battaglino A, Sinatti P, et al. Effects of an interdisciplinary approach in the management of temporomandibular disorders: A scoping review. Int J Environ Res Public Health 2023;20(4):2777. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9956386/pdf/ijerph-20-02777.pdf". Accessed February 8, 2024.
120. Poluha RL, Canales GT, Costa YM, et al. Temporomandibular joint disc displacement with reduction: A review of mechanisms and clinical presentation. J Appl Oral Sci 2019;27:e20180433. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6382319/". Accessed March 9, 2024.
121. Medlicott, MS, Harris SR. A systematic review of the effectiveness of exercise, manual therapy, electrotherapy, relaxation training, and biofeedback in the management of temporomandibular disorder. Phys Ther 2006;86(7): 955-73.
122. Mina R, Melson P, Powell S, et al. Effectiveness of dexamethasone iontophoresis for temporomandibular joint involvement in juvenile idiopathic arthritis. Arthritis Care Res (Hoboken) 2011;63(11):1511-6.
123. Nowak Z, Chęciński M, Nitecka-Buchta A, et al. Intramuscular injections and dry needling masticatory muscles in management of myofascial pain. Systematic review of clinical trials. Int J Environ Res Public Health 2021;18 (18):9552. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8465617/". Accessed March 15, 2024.
124. Yao L, Sadeghirad B, Li M, et al. Management of chronic pain secondary to temporomandibular disorders: A systematic review and network meta-analysis of randomised trials. BMJ 2023;383:e076226. Available at: "https://www.bmj.com/content/383/bmj-2023-076226#:~:text=Conservative%20therapies%20include%20jaw%20exercise,level%20laser%20therapy%2C%20and%20acupuncture". Accessed February 8, 2024.

References continued on the next page.

125. Romero-Reyes M, Arman S, Teruel A, Kumar S, Hawkins J, Akerman S. Pharmacological management of orofacial pain. Drugs 2023;83(14):1269-92.
126. Clark MV, Donnell CC, Durham J, Balasubramaniam R. Pharmacological management of orofacial pain – A clinician's guide. Oral Surg 2020;13(4):422-49.
127. Windsor RB, Sierra M, Zappitelli M, McDaniel M. Beyond amitriptyline: A pediatric and adolescent oriented narrative review of the analgesic properties of psychotropic medications for the treatment of complex pain and headache disorders. Children (Basel) 2020;7(12):268. Available at: "https://www.semanticscholar.org/paper/Beyond-Amitriptyline%3A-A-Pediatric-and-Adolescent-of-Windsor-Sierra/81f8d995db8bd5a0c9feb4f91523dbd9c328b97f". Accessed February 8, 2024.
128. Cooper TE, Heathcote LC, Clinch J, et al. Antidepressants for chronic non-cancer pain in children and adolescents. Cochrane Database Syst Rev 2017;8(8):CD012535. Available at: "https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD012535.pub2/abstract". Accessed February 8, 2024.
129. Wahlund K, Larsson B. Long-term treatment outcome for adolescents with temporomandibular pain. Acta Odontol Scand 2018;76(3):153-60.
130. Wahlund K, Larsson B. The course of pain intensity and frequency of adolescents treated because of temporomandibular disorders: A long-term follow-up. Clin Exp Dent Res 2020;6(4):407-14.
131. Casazza E, Giraudeau A, Payet A, Orthlieb JD, Camoin A. Management of idiopathic sleep bruxism in children and adolescents: A systematic review of the literature. Arch Pediatr 2022;29(1):12-20.
132. Derwich M, Mitus-Kenig M, Pawlowska E. Mechanisms of action and efficacy of hyaluronic acid, corticosteroids and platelet-rich plasma in the treatment of temporomandibular joint osteoarthritis–A systematic review. Int J Mol Sci 20219;22(14):7405.
133. Siewert-Gutowska M, Pokrowiecki R, Kamiński A, Zawadzki P, Stopa Z. State of the art in temporomandibular joint arthrocentesis–A systematic review. J Clin Med 2023;12(13):4439.
134. Szperka CL, Gelfand AA, Hershey AD. Pattern of use of peripheral nerve blocks and trigger point injections for pediatric headache; Results of a survey of the American Headache Society Pediatric and Adolescent Section. Headache 2016;56(10):1597-607.
135. Fernandes AC, Duarte Moura DM, Da Silva LGD, De Almeida EO, Barbosa GAS. Acupuncture in temporomandibular disorder myofascial pain treatment: A systematic review. J Oral Facial Pain Headache 2017;31(3):225-32.
136. Delcanho R, Val M, Guarda Nardini L, Manfredini D. Botulinum toxin for treating temporomandibular disorders: What is the evidence? J Oral Facial Pain Headache 2022;36(1):6-20. Available at: "https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10586579/". Accessed February 8, 2024.
137. Ding L, Chen R, Liu J, Wang Y, Chang Q, Ren L. The effect of functional mandibular advancement for adolescent patients with skeletal class II malocclusion on the TMJ: A systematic review and meta-analysis. BMC Oral Health 2022;22(1):51.
138. List T, Axelsson S. Management of TMD: Evidence from systematic review and meta-analysis. J Oral Rehabil 2010;37(6):430-51.
139. Jiménez-Silva A, Carnevali-Arellano R, Venegas-Aguilera M, Reyes-Tobar J, Palomino-Montenegro H. Temporomandibular disorders in growing patients after treatment of class II and III malocclusion with orthopaedic appliances: A systematic review. Acta Odontol Scand 2018;76(4):262-73.
140. Resnic CM. Temporomandibular joint reconstruction in the growing child. Oral Maxillofac Surg Clin North Am 2018;30(1):109-21.
141. Sharav Y, Benoleil R. The diagnostic process. In: Orofacial Pain and Headache. 2nd ed. Hanover Park, Ill.: Quintessence; 2015:25-8.
142. Tal M, Villanueva L, Devor M. Anatomy and neurophysiology of orofacial pain. In: Sharav Y, Benoleil R, eds. Orofacial Pain and Headache. 2nd ed. Hanover Park, Ill.: Quintessence; 2015:50, 68.
143. Nitzan DW, Heir WM, Dolwick MF, et al. Pain and dysfunction of the TMJ. In: Orofacial Pain and Headache. 2nd ed. Hanover Park Ill.: Quintessence; 2015:626-8.
143. Wahlund K, Larsson B. Predictors of clinically significant outcome for adolescents with temporomandibular disorders. Oral Facial Pain Headache 2017;31(3):217-24.
144. Koh H, Robinson PG. Occlusal adjustments for treating and preventing temporomandibular joint disorders. J Oral Rehabil 2004;31(4):287-92.
145. Rey D, Oberti G, Baccetti T. Evaluation of temporomandibular disorders in Class III patients treated with mandibular cervical headgear and fixed appliances. Am J Orthod Dentofacial Orthop 2008;133(3):379-81.