Topic Brief: Temporomandibular Disorder Treatment Guidelines

Date: 2/7/2023
Nomination Number: 1029

Purpose: This document summarizes the information addressing a nomination submitted on December 1, 2022 (https://effectivehealthcare.ahrq.gov/get-involved/nominated-topics/Temporomandibular-Disorder-Treatment-Guidelines) through the Effective Health Care Website. This information was used to inform the Evidence-based Practice Center (EPC) Program decisions about whether to produce an evidence report on the topic, and if so, what type of evidence report would be most suitable.

Issue: The nominator is concerned that the evidence supporting guidance is of poor quality and does not take into account the complexity of the condition and comorbid conditions. They are calling for a systematic review and evidence-based guidance.

Program Decision: Though the nomination met all selection criteria it was not selected for further development as a systematic review.

Findings:

- We identified many systematic reviews, but none addressed all interventions of interest. Few were focused on children and adolescents.
- We identified many primary studies, most focused on injections, photobiomodulation, occlusive devices, and stretching/exercise/manual therapy.
- The nominator does not develop clinical guidance
- The National Institute of Dental and Craniofacial Research has recently initiated the a national and transdisciplinary initiative https://www.nidcr.nih.gov/grants-funding/funding-priorities/future-research-initiatives/tmd-collaborative-improving-patientcentered-translational-research-tmd-impact, toward development of novel treatments and therapeutics for TMD. A new review might be more useful when research from this initiative is available for synthesis.

Background

Temporomandibular disorders (TMDs) are a group of more than 30 conditions that cause pain and dysfunction in the jaw joint and muscles that control jaw movement. TMDs include disorders of joints, such as joint pain, disc disorders, and bone destruction; disorders of masticatory muscles, such as myalgia or myofascial pain; and associated headaches. About 11-12 million adults in the US have pain in the region of the temporomandibular joint. The condition is twice as common in women than men, and especially common in women between 35 and 44 years old.

TMDs can be caused by injury, but often the cause is not known, and it is suspected that a combination of genes, psychological and life stressors, and how the patient experiences pain

may play a role in the onset and duration. Symptoms may include pain in the chewing muscles and/or jaw joint, pain that spreads to the face or neck, jaw stiffness, limited movement or locking of the jaw, painful clicking, popping, or grating in the jaw joint when opening or closing the mouth, ringing in the ears, hearing loss, or dizziness, or a change in the way the upper and lower teeth fit together.[1]

The 2020 National Academy of Science and Medicine (NASEM) report on TMD supported the use of a biopsychosocial model of TMDs that could be used across medicine and dentistry to focus on the individual's health and well-being. This model highlights the range of factors and interactions that may need to be considered in the care of individuals with a TMD. [2]

Therapy for TMD may include behavioral change, physical therapy, splints (reversible, removable, intraoral dental splints, also called occlusal orthotics or occlusal splints) pharmacologic therapy (e.g., oral medications for pain, anti-inflammatory injections), and complementary approaches, such as photobiomodulation, a form of light therapy that includes laser, LED and broadband light. Surgical treatments may be recommended for difficult or unresponsive cases. [1]

Guidance is consistent in recommending reversible conservative approaches to treatment[3, 4], and considering surgical intervention when other treatments have been ineffective and symptoms were moderate to severe. Irreversible therapies, including orthodontic treatment, were not recommended in children.

Conclusions from a 2020 NASEM report on this topic include:

- Although considerable research has been conducted in occlusal adjustment and equilibration for temporomandibular disorders (TMDs), these treatments have not been found to be effective.
- Data are inadequate and are of poor quality for most treatments for TMD).
- Research (both systematic reviews and primary studies) is needed to determine safe and effective treatments for TMDs. New research should be tightly linked to the goal of producing evidence for developing clinical practice guidelines
- Evidence-based findings need to be widely disseminated to dentists and other clinicians to ensure that the treatment approaches individuals with a TMD receive are consistently based on the best available evidence and focused on starting with conservative approaches.
- Evidence-based clinical practice guidelines from a trusted source are needed to effectively manage care for individuals with a temporomandibular disorder

In follow-up with the nominator, they voiced their concern with the lack of high-quality evidence and absence of a multi-specialty evidence-based guideline. They confirmed their interest in a systematic review and in a guideline. They are an advocacy group and do not develop guidance, though they have relationships with healthcare providers.

Scope

1. What are the effectiveness, comparative effectiveness, and harms of treatments for temporomandibular disorders (TMDs) in adults?
2. What are the effectiveness, comparative effectiveness, and harms of treatments for temporomandibular disorders (TMDs) in children?

Table 1. Questions and PICOTS (population, intervention, comparator, outcome, timing and setting)

Questions	Adults	Children
Population	Adults 18 years and older diagnosed with temporomandibular disorders Consider sex/gender, presentation of condition (e.g., acute TMD vs. chronic), etiology of the condition, age	Children younger than 18 years diagnosed with temporomandibular disorders Consider sex/gender, presentation of condition (e.g., acute TMD vs. chronic), etiology of the condition, age

Interventions	Psychological/behavioral/self-management (e.g., cognitive-behavioral therapy, self-management)
	
	Physical treatments
	• occlusal (occlusal adjustment, occlusal equilibration, orthodontic treatments)
	• intraoral appliances (e.g., nightguards, splints)
	• physical therapy
	• exercise (e.g., jaw strengthening exercises, manual therapy)
	• other physical therapy interventions (e.g., heat and cold therapy, laser therapy, dry needling, photobiomodulation)
	
	Complementary treatments
	• acupuncture
	• dietary intake and nutrition
	• electrotherapy
	
	Pharmacological treatments
	• oral (e.g., naproxen, acetaminophen, muscle relaxer- cyclobenzaprine, nortriptyline)
	• topical (e.g., diclofenac gel)
	• injections
	  ○ intramuscular injections (e.g., bupivacaine, methylprednisolone, botulinum toxin,
	• prolotherapy (injection of an irritant solution to promote reparative immune response)
	
	Interventional treatments (e.g., arthrocentesis and arthroscopy, operations with direct access to the TMJ, implants)
	
	Combination treatments
		Psychological/behavioral/self-management (e.g., cognitive-behavioral therapy, self-management)
		
		Physical treatments
		• occlusal (occlusal adjustment, occlusal equilibration, orthodontic treatments)
		• intraoral appliances (e.g., nightguards, splints)
		• physical therapy
		• exercise (e.g., jaw strengthening exercises, manual therapy)
		• other physical therapy interventions (e.g., heat and cold therapy, laser therapy, dry needling)
		
		Complementary treatments
		• acupuncture
		• dietary intake and nutrition
		• electrotherapy
		• photobiomodulation
		
		Pharmacological treatments
		• oral (e.g., naproxen, acetaminophen, muscle relaxer- cyclobenzaprine, nortriptyline)
		• topical (e.g., diclofenac gel)
		• injections
		  ○ intramuscular,), injections (e.g., bupivacaine, methylprednisolone, botulinum toxin
		  ○ prolotherapy (injection of an irritant solution to promote reparative immune response)
		
		Interventional treatments (e.g., arthrocentesis and arthroscopy, operations with direct access to the TMJ, implants)
		
		Combination treatments

Comparators	other treatment, treatment as usual, placebo, none	other treatment, treatment as usual, placebo, none
Outcomes	pain, quality of life, harms of treatment	pain, quality of life, harms of treatment

Assessment Methods

See Appendix A.

Summary of Literature Findings

For question 1, focused on adults, we identified 47 systematic reviews. Almost all reviews addressed either physical treatments such as occlusive devices, photobiomodulation and physiotherapy; and pharmacologic interventions, mainly injections. Six reviews looked at multiple categories of interventions but they did not include the full range of interventions included in the PICOTS. One systematic review was developed through the Cochrane Collaboration on psychological treatments[5]. Several reviews mentioned using GRADE[5-11]. As expected there was a diversity of methods and searches which may prove challenging to consolidate for a guideline.

Of the reviews that used GRADE, these findings were moderate or high SOE:

- Cervical manual therapy (MT) treatment is more effective in decreasing pain intensity than placebo MT or minimal intervention, with moderate evidence. [12]
- Based on current evidence, platelet rich plasma (PRP) injections may reduce pain more effectively than placebo injections in TMJ OA at 6 months (level of evidence: moderate) and 12 months (level of evidence: moderate) postinjection.[13]
- Needling may improve mastication related pain in TMD with moderate SOE.[7]

We identified 72 primary studies relevant to adults (question 1). Most focused on physical treatments, various types of injections and photobiomodulation. Few studies provided information about subgroups. Some used physical treatments as comparator, specifically splinting, occlusal interventions, and exercise. Most studies were small with a range of 23 to 160 participants and a median of 45. Ten studies had more than 100 participants. Ongoing studies in Clinicaltrials had a range of 25-189 study participants with a median of 40. The largest ongoing study is on telerehabilitation.

For children, we identified two systematic reviews on adolescents: a Cochrane review on psychological treatment and a review on steroid injections for those with juvenile idiopathic arthritis (JIA) and TMD. We identified three studies: two related physiotherapy and one on photobiomodulation.

Table 2. Literature identified for each Question

Question	Systematic reviews (1/2020-1/2023)	Primary studies (1/2018-1/2023)
Question 1: Adults	Total: 47 Multiple treatment-6 • Counseling therapy; occlusal appliances; manual therapy; laser therapy; dry needling; intramuscular injection of local anesthesia (LA) or botulinum toxin-A (BTX-A); muscle relaxants; hypnosis/relaxation therapy; oxidative ozone therapy[14] • Occlusal appliance, laser, photobiomodulation [15] • Arthrocentesis, injections with diverse drugs, occlusal splints, oral analgesics, self-exercise, massage, or health instruction [16] • Acupuncture, physiotherapy, low-level laser, and massage [17] • Splinting, photobiomodulation, needling, exercise, manual therapy, and patient education, [7] • "Conservative" approaches [18]	Total: 72 Psychological-3 • Multimodal pain program [52] • CBT [53] • Patient education [54] Physical • Dry needling [55-59] • Laser/photobiomodulation [60-77] • Splints [78-83] • Manual therapy/exercise [75, 84-91] • Extracorporeal shock [92] Pharmacological • Botulinum [57, 73, 93-95] • Hyaluronic acid [96-102] • Platelet rich plasma [96, 98, 100, 101, 103-105] • Propranolol [106] • NSAID [107, 108] • Steroid [101]

Question	Systematic reviews (1/2020-1/2023)	Primary studies (1/2018-1/2023)
	Psychological treatment-1 • CBT/any (Cochrane)-1[5] Physical treatment-21 • Occlusive appliance [19-21] • Laser/photobiomodulation [22-27] • Splints [8] • Manual therapy/exercise [6, 9, 11, 12, 28-33] • TENS[34] Pharmacological treatment-14 • Botulinum [35, 36] • Stem cell [37] • Hyaluronic acid [38-40] • Platelet rich plasma [13, 41 38 42] • NSAID [43, 44 45] • Chondroitin [46] Complementary-4 • Acupuncture [47 48 49] • Ozone [10] Interventional-3 [40, 50, 51]	• Prolotherapy [109-113] • Morphine [114] • Glucosamine [115] Complementary- • Acupuncture [116] • Lavender [117] • Radiofrequency [118] • Local Vibratory Stimulation [119] • Traditional Chinese Medicine [120] Interventional • RCT-4 [105, 121-123] Clinicaltrials.gov • Psychological [124] • Physical [125-133] • Pharmacologic [134 135] • Complementary [136 129] • Interventional [137]
Question 2: Children	Total: 2 Psychological treatment-1 • Cochrane-1 [5] Pharmacological treatment-1 • Other-1 [138] Physical treatment-0 Complementary-0 Interventional-0	Total: 3 Physical • RCT-2 [139, 140] Complementary • RCT-1 [141] Psychological-0 Pharmacological-0 Interventional-0 Clinicaltrials.gov • Psychological, physical [142]

The 2020 NASEM report[2] was supported by the National Institute of Dental and Craniofacial Research (NIDCR). NIDCR has recently initiated the a national and transdisciplinary initiative https://www.nidcr.nih.gov/grants-funding/funding-priorities/future-research-initiatives/tmd-collaborative-improving-patientcentered-translational-research-tmd-impact, toward development of novel treatments and therapeutics for TMD.

See Appendix B for detailed assessments of all EPC selection criteria.

Summary of Selection Criteria Assessment

While we found many systematic reviews none addressed all interventions of interest. We found a large number of primary studies covering most interventions in adults, but not children. However the nominator does not have a plan for using the proposed systematic review to promote practice change, although in their nomination they request clinical guidance. We would recommend that AHRQ commission a review if a partner were identified who could develop clinical guidance or fund future research. The scope would require narrowing to be feasible, even

if it were sized as a large. NIDCR is launching an initiative around TMD research. A new review might be more useful when research from this initiative is available for synthesis.

Please see Appendix B for detailed assessments of individual EPC Program selection criteria.

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Appendix A: Methods

We assessed nomination for priority for a systematic review or other AHRQ Effective Health Care report with a hierarchical process using established selection criteria. Assessment of each criteria determined the need to evaluate the next one. See Appendix B for detailed description of the criteria.

Appropriateness and Importance

We assessed the nomination for appropriateness and importance.

Desirability of New Review/Absence of Duplication

We searched for high-quality, completed or in-process evidence reviews published in the last three years (January 2020 to January 2023) on the questions of the nomination from these sources:

- AHRQ: Evidence reports and technology assessments
  - AHRQ Evidence Reports https://www.ahrq.gov/research/findings/evidence-based-reports/index.html
  - EHC Program https://effectivehealthcare.ahrq.gov/
  - US Preventive Services Task Force https://www.uspreventiveservicestaskforce.org/
  - AHRQ Technology Assessment Program https://www.ahrq.gov/research/findings/ta/index.html
- US Department of Veterans Affairs Products publications
  - Evidence Synthesis Program https://www.hsrd.research.va.gov/publications/esp/
  - VA/Department of Defense Evidence-Based Clinical Practice Guideline Program https://www.healthquality.va.gov/
- Cochrane Systematic Reviews https://www.cochranelibrary.com/
- PROSPERO Database (international prospective register of systematic reviews and protocols) http://www.crd.york.ac.uk/prospero/
- PubMed https://www.ncbi.nlm.nih.gov/pubmed/

Impact of a New Evidence Review

The impact of a new evidence review was qualitatively assessed by analyzing the current standard of care, the existence of potential knowledge gaps, and practice variation. We considered whether it was possible for this review to influence the current state of practice through various dissemination pathways (practice recommendation, clinical guidelines, etc.).

Feasibility of New Evidence Review

We conducted a limited literature search in PubMed and PsycInfo for the last five years (January 2018 to January 2023). We reviewed all studies identified titles and abstracts for inclusion. Because of the large search yield, we constrained to RCTs. We classified identified studies by question and intervention to estimate the size and scope of a potential evidence review.

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All Search Strategies

Ovid MEDLINE ALL 1946 to January 26, 2023

Date searched: January 27, 2023

1 *Temporomandibular Joint Disorders/ or *Temporomandibular Joint Dysfunction Syndrome/ (15527)

2 ((temporomandibular or temporo-mandibular or TMD or TMDs or TMJ or TMJs) and (disorder* or dysfunction* or intraarticular or extraarticular or intra-articular or extra-articular or pain* or earache$1 or headache$1)).ti. (6527)
3 or/1-2 (16607)
4 Therapeutics/ or th.fs. (2104621)
5 (effect* or efficac* or intervention$1 or manag* or physiotherap* or therap* or treat*).ti. (5181827)
6 exp Cognitive Behavioral Therapy/ or Self Care/ or Self-Management/ (74824)
7 (cognitive or psycholog* or behavio?r* or self*).ti,ab,kf. (2813682)
8 Cryotherapy/ or Low-Level Light Therapy/ or Occlusal Adjustment/ or Occlusal Splints/ or exp Orthodontics/ or exp Physical Therapy Modalities/ or exp Exercise/ or Dry Needling/ (454344)
9 (cold or cryotherap* or "dry needling" or exercis* or heat or "intraoral appliance$1" or laser$1 or nightguard$1 or night-guard$1 or (occlusal adj3 (adjust* or equilibrat*)) or orthodontic or photobiomodulat* or splint$1 or thermotherap* or therap*).ti,ab,kf. (4447169)
10 exp Complementary Therapies/ or exp Diet/ or exp Electric Stimulation Therapy/ or exp Nutrition Therapy/ or Transcutaneous Electric Nerve Stimulation/ (702734
11 (acupuncture or alternative or CAM or complementary or diet or (electric* adj3 stimulat*) or exercis* or manual* or manipulat* or massag* or nutrition or TENS or "transcutaneous electrical nerve stimulation").ti,ab,kf. (2130918)
12 Acetaminophen/ or Botulinum Toxins/ or Bupivacaine/ or Diclofenac/ or exp Drug Therapy/ or Methylprednisolone/ or exp Muscle Relaxants, Central/ or Naproxen/ or Prolotherapy/ or Anti-Inflammatory Agents, Non-Steroidal/ or cyclobenzaprine.nm,rn. or dt.fs. (3453958)
13 (acetaminophen or botulinum or botulism or bupivacaine or cyclobenzaprine or diclofenac or drug$1 or inject* or medicin$1 or methylprednisolone or naproxen or notriptyline or nonpharmaco* or nonsteroidal or NSAID$1 or pharmaco* or pharmaceutical* or prolotherap* or relaxant$1).ti,ab,kf. (3808717)
14 or/4-13 (14947040)
15 and/3,14 (8883)
16 15 not ((exp Animals/ not Humans/) or (animal model* or bitch$2 or bovine or canine or capra or cat or cats or cattle or cow$1 or dog$1 or equine or ewe$1 or feline or goat$1 or hamster$1 or horse$1 or invertebrate$1 or macaque$1 or mare$1 or mice or monkey$1 or mouse or murine or nonhuman or non-human or ovine or pig or pigs or porcine or primate$1 or rabbit$1 or rat$1 or rattus or rhesus or rodent* or sheep or simian or sow$1 or vertebrate$1 or zebrafish).ti.) (8510)
17 limit 16 to english language (7177)
18 limit 17 to yr="2020 -Current" (1063)
19 (meta-analysis or systematic review).pt. or (meta-anal* or metaanal* or ((evidence or review or scoping or systematic or umbrella) adj3 (review or synthesis))).ti. (802285)
20 and/18-19 (178)
21 limit 17 to yr="2018 -Current" (1563)
22 (controlled clinical trial or randomized controlled trial).pt. or (controlled or placebo$1 or random* or trial*).ti. (989121)
23 and/21-22 (201)
24 23 not 20 (182)
25 Case-Control Studies/ or Cohort Studies/ or Comparative Study/ or Controlled Before-After Studies/ or Cross-Sectional Studies/ or Epidemiologic Studies/ or exp Evaluation Studies as Topic/ or Follow-Up Studies/ or Historically Controlled Study/ or Interrupted Time Series Analysis/ or Longitudinal Studies/ or Prospective Studies/ or Retrospective Studies/ or ("case-control" or cohort$1 or "before-after" or ((comparative or epidemiologic or evaluation) adj3

study) or cross-sectional or follow-up or (historic* adj4 control*) or "interrupted time" or longitudinal$2 or prospective$2 or retrospective$2).ti. (5648490)
26 and/21,25 (450)
27 26 not (20 or 24) (383)

ClinicalTrials.gov
Date searched: January 27, 2023
AREA[OverallStatus] EXPAND[Term] COVER[FullMatch] ("Recruiting" OR "Not yet recruiting" OR "Active, not recruiting" OR "Enrolling by invitation") AND AREA[ConditionSearch] (Temporomandibular OR temporo-mandibular OR TMD OR TMDs OR TMJ OR TMJs) AND AREA[StudyFirstPostDate] EXPAND[Term] RANGE[01/27/2018, 01/27/2023] (92)

PROSPERO
Date searched: January 27, 2023
(((Temporomandibular OR temporo-mandibular OR TMD OR TMDs OR TMJ OR TMJs) AND (disorder* OR dysfunction* OR intraarticular OR extraarticular OR intra-articular OR extra-articular OR pain* OR earache* OR headache*) AND (effect* OR efficac* OR intervention OR interventions OR manag* OR physiotherap* OR therap* OR treat* OR cognitive OR psycholog* OR behavior* OR behavior* OR self* OR adjustment or appliance* OR cold OR cryotherap* OR needling OR equilibrat* or exercis* OR heat OR laser* OR nightguard* OR night-guard* OR occlusal OR orthodontic OR photobiomodulat* OR splint* OR thermotherap* OR acupuncture OR alternative OR CAM OR complementary OR diet OR electric* OR exercis* OR manual* OR manipulat* OR massag* OR nutrition OR TENS OR acetaminophen OR botulinum OR botulism OR bupivacaine OR cyclobenzaprine OR diclofenac OR drug OR drugs OR inject* OR medication OR methylprednisolone OR naproxen OR notriptyline OR nonpharmaco* OR nonsteroidal OR NSAID OR NSAIDs OR pharmaco* OR pharmaceutical* OR prolotherap* OR relaxant OR relaxants))):TI AND (Systematic Review OR Meta-Analysis OR IPD OR PMA OR Network meta-analysis OR Review of reviews):RT WHERE CD FROM 27/01/2020 TO 27/01/2023 (139)

Value
We assessed the nomination for value. We considered whether or not the clinical, consumer, or policymaking context had the potential to respond with evidence-based change, if a partner organization would use this evidence review to influence practice, and if the topic supports a priority area of AHRQ or the Department of Health and Human Services.

Appendix B. Selection Criteria Assessment

Selection Criteria	Assessment
1. Appropriateness	
1a. Does the nomination represent a health care drug, intervention, device, technology, or health care system/setting available (or soon to be available) in the U.S.?	Yes.
1b. Is the nomination a request for an evidence report?	Yes.
1c. Is the focus on effectiveness or comparative effectiveness?	Yes.
1d. Is the nomination focus supported by a logic model or biologic plausibility? Is it consistent or coherent with what is known about the topic?	Yes.
2. Importance	
2a. Represents a significant disease burden; large proportion of the population	Yes. About 11-12 million adults in the US have pain in the region of the temporomandibular joint. The condition is twice as common in women than men, and especially common in women between 35 and 44 years old [1].
2b. Is of high public interest; affects health care decision making, outcomes, or costs for a large proportion of the US population or for a vulnerable population	Yes. About 11-12 million adults in the US have pain in the region of the temporomandibular joint. The condition is twice as common in women than men, and especially common in women between 35 and 44 years old [1].
2c. Incorporates issues around both clinical benefits and potential clinical harms	Yes.
2d. Represents high costs due to common use, high unit costs, or high associated costs to consumers, to patients, to health care systems, or to payers	Yes. About 11-12 million adults in the US have pain in the region of the temporomandibular joint. The condition is twice as common in women than men, and especially common in women between 35 and 44 years old [1].
3. Desirability of a New Evidence Review/Absence of Duplication	
3. A recent high-quality systematic review or other evidence review is not available on this topic	We identified 47 systematic reviews relevant to adults, and 3 systematic reviews relevant to children and adolescents. Of these three included multiple categories of interventions, but none included the full range.
4. Impact of a New Evidence Review	
4a. Is the standard of care unclear (guidelines not available or guidelines inconsistent, indicating an information gap that may be addressed by a new evidence review)?	Most guidance recommends conservative treatment initially such as eating soft foods, NSAIDs and strengthening exercises. The role of other treatments for refractory symptoms is unclear.
4b. Is there practice variation (guideline inconsistent with current practice, indicating a potential implementation gap and not best addressed by a new evidence review)?	Likely because the effectiveness of other treatments such as injections and light therapy are unclear.
5. Primary Research	
5. Effectively utilizes existing research and knowledge by considering: - Adequacy (type and volume) of research for conducting a systematic review - Newly available evidence (particularly for updates or new technologies)	We identified 72 primary studies on adults and three studies in children and adolescents. Most studied injections, photobiomodulation, occlusive appliances, and manual therapy and exercises.

	NIDCR has a recent new initiative around research on TMD. This new research may affect the optimal timing of a new review. The librarian noted that this is an active area of research and based on the search would be an extremely large review, if not two systematic reviews.
6. Value	
6a. The proposed topic exists within a clinical, consumer, or policy-making context that is amenable to evidence-based change and supports a priority of AHRQ or Department of Health and Human Services	Yes, individuals are interested in improved care for people with TMD.
6b. Identified partner who will use the systematic review to influence practice (such as a guideline or recommendation)	The TMJ Alliance is a patient advocacy group. They do not develop guidelines are not working with a group that develops guideline. The impact of a new review on this topic would likely be limited without the involvement of a guideline development group or research funder. AHRQ has reached out to the American Dental Association Department of Evidence Synthesis and Translation Research to gauge interest in developing a guideline on this topic.

Abbreviations: AHRQ=Agency for Healthcare Research and Quality; NIDR=National Institute of Dental and Craniofacial Research; NSAID=nonsteroidal anti-inflammatory drug; TMD=Temporomandibular Disorder; TMJ=Temporomandibular joint