



NUTRITION

What should we tell patients with painful temporomandibular disorders about what to eat?

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According to the American Academy of Orofacial Pain (AAOP) guidelines, “if jaw pain does not increase with jaw function, it is probably not a [temporomandibular disorder].”¹ Functions of the jaw, in addition to supporting the lower one-half of the face, include eating and drinking. Hence, jaw pain can affect the ability to eat and drink and, ultimately, nutritional status. The AAOP guidelines defined temporomandibular disorders (TMD) as a “collective term embracing several clinical problems that involve the masticatory musculature, the temporomandibular joint (TMJ) and associated structures, or both.”¹ TMDs are considered to be the major cause of nondental pain in the orofacial area and affect 10% to 15% of the population.^{2,3} The 2 most common types of painful TMDs are myofascial pain (MP) (that is, muscle-generated pain) and arthralgia (that is, joint-generated pain).^{4,5} Arthralgia is localized to the TMJ and encompasses conditions that originate from and cause pain in the joint. The pain is aggravated by function, such as biting and chewing. Limited jaw movement or locking of the TMJ also may be present and can have a negative impact on mandibular opening, biting, and chewing.⁵⁻⁷ MP is characterized by pain originating from the masticatory and other pericranial muscles, limited mandibular opening, and pain aggravated during function, specifically, eating and chewing.⁸ As a result, patients with TMD often alter their eating habits and compromise the quality of their diet. Both adaptive and maladaptive behaviors are common, as patients with TMD seek to minimize the factors that initiate or further enhance pain.⁹

ABSTRACT

Background and Overview. Patients with painful temporomandibular disorders (TMD) commonly report problems eating, owing to limited mandibular opening and pain and discomfort with biting and chewing. Consequently, painful TMD may affect dietary intake and nutritional status.

Conclusions. Treatment of painful TMD is multifaceted and involves pharmacologic, physical, and cognitive behavior and dietary therapies. Painful TMD may influence the quality of dietary intake and eating behaviors. There is a dearth of established guidelines and validated measures that clinicians can use to assess and manage diet and nutritional well-being in patients with this disorder. The authors present recommendations in an effort to guide clinicians on how to help patients with painful TMD improve the quality of their diets and avoid or minimize eating-related pain.

Practical Implications. Providing comprehensive care for patients with painful TMD should include diet evaluation and recommendations for eating comfortably and supporting nutrition. An interprofessional approach may help improve treatment outcomes. Research is needed to develop evidence-based guidelines for diet and nutrition that clinicians can use in the care of patients with painful TMD.

Key Words. Temporomandibular disorders; orofacial pain; diet; nutrition

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Painful TMD also can influence appetite and the mechanical and sensory factors related to eating and drinking. In this article, we review the impact of TMD on diet, describe potential influences on nutritional status, and provide recommendations for diet evaluation (Table 1¹⁰⁻¹²) and approaches to maximize a patient’s ability to eat comfortably and consume a healthy diet.

TABLE 1

Interview guide for clinicians.	
QUESTION	RECOMMENDED ACTIONS FOR “YES” RESPONSES
Has the condition of your jaw altered your diet?	Probe for more information by using the following statements or questions: <ul style="list-style-type: none"> ■ Please describe how you have changed your eating and drinking habits and the duration of these changes. (This will help the provider tailor future advice.) ■ Have you stopped eating any foods because of your pain? If yes, which foods? (See below and Table 2 for suggestions to address patients’ responses.) ■ Would you want to add these foods back into your diet if there were ways to do so that would not cause pain? (A positive response reflects a patient’s willingness to develop adaptive behaviors.)
Is it painful to open your mouth to eat, bite, or chew?	Suggest that peeling, cutting, and chopping food can make eating easier and less painful. Recommend limiting the consumption of sticky foods like peanut or almond butter to help avoid painful eating.
Are you avoiding any specific food groups, such as fresh fruits, fresh vegetables, whole-grain breads, or nuts, because of pain associated with TMD*?	If the patient avoids eating fruits and vegetables, suggest that he or she peel fruits and vegetables that have skin and chop, mince, or mash them. If needed, suggest cooking vegetables such as squash, carrots, broccoli, and cauliflower until they are tender before cutting them to help reduce painful eating. Suggest that, typically, eating toasted and cut whole-grain breads can be less painful than eating soft white breads. Suggest that the patient break thin pretzel sticks and other thin crackers into small pieces to reduce the need to open the mouth wide and minimize biting and chewing. Suggest that the patient finely chop nuts and add to hot cereals, yogurt, or puddings.
Have you avoided going out for meals or eating with others because of TMD?	Suggest that the patient try restaurants that serve cut, chopped, or pureed foods (for example, Asian, Middle Eastern, or Indian restaurants, restaurants specializing in soups, or restaurants that accommodate special orders).
How has your weight changed? If you are unsure, tell me whether your waistline feels tight or loose (hint: 10 lbs = 1 clothing size).	If the patient reveals unintentional weight loss, encourage the patient to see a physician and a registered dietitian nutritionist for medical nutrition therapy. If the patient reveals unintentional weight gain, suggest that the patient consider seeking the counseling of a registered dietitian nutritionist for medical nutrition therapy to avoid unintentional weight gain and to improve the quality of the patient’s diet.
Are you taking any vitamin, mineral, herbal, or other dietary supplements?	Probe for more information by asking the following question: What do you take, how often, how much, and why? Probe for additional information by asking whether the supplement does what the patient thought it would do. Oral health care professionals can use decision support tools and databases such as Lexicomp Online (Wolters Kluwer) and National Medicines Comprehensive Database to evaluate the risks of interactions, side effects, and potential benefits. ¹
* TMD: Temporomandibular disorders. † Sources: Natural Medicines Comprehensive Database, ¹⁰ Lexicomp Online for Dentistry, ¹¹ and Donaldson and Touger-Decker. ¹²	

We also provide diet recommendations that clinicians can share with patients (Table 2).

THE STATE OF SCIENCE (OR THE LACK OF IT)

Investigators have suggested that having painful TMD may influence eating-related quality of life (ERQoL) and dietary intake and, subsequently, can negatively impact nutritional status if the patient experiences painful TMD over an extended period.^{9,13-15} Clinicians can use patient assessment tools, such as the TMD-specific Oral Health Impact Profile⁹ (which has questions related to ERQoL), the Manchester Orofacial Pain Disability Scale,¹⁶ and Kurita and colleagues¹⁷ score of chewing ability, to identify difficulties with mandibular opening, biting, and chewing in patients with painful TMD; however, these tools^{9,16,17} do not include questions that ascertain patients’ actual food and beverage consumption. To our

knowledge, there are no validated measures available for clinicians to assess diet and nutritional status or ERQoL in patients with painful TMD. Despite reports among patients with painful TMD regarding their ability or inability to eat, there is a dearth of published research and evidence-based guidelines regarding dietary management for patients with painful TMD.^{15,18}

IMPACT OF TEMPOROMANDIBULAR DISORDER ON DIET AND NUTRITIONAL STATUS

Chronic pain conditions, by nature of their duration, have the potential to exert a long-term impact on dietary

ABBREVIATION KEY. AAOP: American Academy of Orofacial Pain. ERQoL: Eating-related quality of life. MP: Myofascial pain. TMD: Temporomandibular disorders. TMJ: Temporomandibular joint.

TABLE 2

Guide to food choices and preparation hints for patients with temporomandibular disorders.*	
FOOD GROUP	FOOD OPTIONS AND PREPARATION HINTS
Fruits	<ul style="list-style-type: none"> ■ Peel all fruits with hard or chewy skin (for example, apples, peaches, plums, pears). ■ Chop whole (peeled) fruits. ■ Use the blender to puree or “sauce” any fruits. ■ Make smoothies with any peeled fruits in the blender, adding ice, milk (cow, soy, almond), or yogurt.
Vegetables	<ul style="list-style-type: none"> ■ Wash, steam, or cook greens such as spinach, chard, kale, or collards for 2 to 3 minutes, finely chop into a ribbonlike thickness. ■ Chop tomatoes. ■ Peel and finely chop cucumbers. ■ Peel and either shred or finely chop or mince root vegetables like carrots, parsnips, or beets. If chopped, cook after chopping. ■ Cook broccoli, cauliflower, or other similar vegetables until tender, then chop. ■ For patients who like “juicing,” suggest that they juice or make smoothies with any vegetables by following the juicing machine instructions. Similarly, if the patient is unable to eat whole pieces of vegetables, suggest making vegetable soups and purees. ■ Peel, cook until tender, and chop other vegetables with skin. ■ Cook, chop, and mash potatoes (white or sweet). ■ As needed or desired, use a blender to convert vegetables into juices or try purchasing commercial vegetable or tomato juices.
Legumes and Nuts	<ul style="list-style-type: none"> ■ Cook legumes and mash or puree legumes that are larger than the size of a pea. ■ Use nut butters (any nuts can be used).
Protein Foods	<ul style="list-style-type: none"> ■ Cook poultry or meats until tender; moisten with broth, gravies, or other sauces; and cut into bite-size pieces. ■ Cook and cut fish into bite-size pieces, soften with sauces as desired; make into tuna salad. ■ Chop tofu and tempeh into bite-size pieces; tempeh may need moistening.
Dairy and Nonlactose Products	<ul style="list-style-type: none"> ■ Consume all milk products, yogurt, and cheese as tolerated.
Dairy Alternatives	<ul style="list-style-type: none"> ■ If the patient experiences difficulty or is unable to eat protein foods or nut butters, try alternatives such as meal replacement beverages (for example, instant breakfast and whey protein beverages or powder).
Grains	<ul style="list-style-type: none"> ■ Prepare hot cereals. ■ Try couscous, quinoa, farro, rice, and other cooked grains. ■ Cook orzo and other small pasta until tender. ■ Cut thin toast into small pieces.
<p>* Note. The extent to which foods may be cut, chopped, or pureed varies with the extent of the patient’s discomfort or pain and jaw opening. The guidelines provided are intended to help patients select healthful and preferred foods and enjoy eating. Overall principles include the following: cut all foods well, select moist foods or use gravies or sauces to moisten foods to a comfortable consistency, peel fruits (with the exception of berries) and vegetables that have skin, chop whole foods to consistencies that can be comfortably tolerated, limit jaw opening to the extent that is comfortable, take small bites of food, and chew slowly.</p>	

intake and, consequently, on nutritional status. Symptom burden is “the subjective, quantifiable prevalence, frequency, and severity of symptoms placing a physiologic burden on patients and producing multiple negative, physical, and emotional patient responses.”¹⁹ Clinicians should assess the level of symptom burden experienced by patients with TMD as it can impact patients’ meals, snacks, and socialization around mealtime. For example, patients may exhibit maladaptive eating behaviors, such as avoiding nutrient-rich foods, if they think that eating certain foods will exacerbate their TMD pain.¹⁵ Clinicians often recommend that patients with TMD eat a “soft” diet and avoid eating fiber-rich foods such as whole grains, fruits, and vegetables, which can further compound maladaptive behaviors. Although the clinician’s primary aim may be to decrease the patient’s masticatory effort by suggesting a mechanically altered diet, the recommendation for a soft diet may be too broad and nonspecific. For example, biting and chewing “cottony” soft breads or rolls can require more mandibular movement than eating thinly sliced, toasted, and cut whole-grain breads, cooked grains, or chopped vegetables and fruits, all of which are

richer in dietary fiber and nutrients. Thus, because eating the soft roll actually may require greater masticatory effort, it may be more difficult for the patient to chew than the chopped vegetable.

Raphael and colleagues²⁰ explored dietary fiber intake in a sample of women with MP and found that classification of food as “hard” or “soft” varied among study participants. The investigators of this study reported that the severity of MP was associated significantly with reduced dietary fiber intake. Although this study²⁰ was published in 2002, to our knowledge, no additional studies have been published on this topic, and anecdotal evidence from clinicians continues to support that these maladaptive behaviors still exist. Mehra and Wolford²¹ explored serum nutrient levels in a small sample of patients with complex TMD who had implants. They found a variety of micronutrient deficiencies in the sample; however, they did not explore dietary intake. They concluded that patients with TMD should receive dietary counseling.²¹ Although the results of this study revealed clinical and serum nutrient deficiencies of iron and vitamins B₆ and B₁₂ among

participants, the study investigators did not examine the nutrient or dietary fiber intake of participants.

The potential impact of a diet low in dietary fiber and lacking fresh fruits and vegetables and whole grains depends on the duration of the diet and the health and well-being of the patient. A low-fiber diet can increase the risk of experiencing constipation. A diet lacking fresh fruits and vegetables can increase the risk of experiencing deficiencies in vitamin C, folate, and other micronutrients, and can lead to reduced dietary fiber intake. These dietary patterns are in direct conflict with recommendations from the American Heart Association,²² American Diabetes Association,²³ American Cancer Society,²⁴ US Department of Agriculture,²⁵ and other agencies that promote chronic disease prevention and health.

TALKING POINTS WITH PATIENTS

When taking a patient's history, the clinician is likely to reveal the patient's challenges with mandibular opening, biting, and chewing. Table 1¹⁰⁻¹² provides clinicians with interview questions and suggested responses. Determining whether and how patients' TMD pain has altered their diets and ability to bite and chew comfortably and properly will provide insight into the impact that the level of their symptom burdens is having on their dietary intakes. Clinicians should refer patients who have difficulty meeting energy and nutrient needs, who have a poor appetite, or who exhibit unintentional weight changes to a registered dietitian nutritionist for medical nutrition therapy. Clinicians can encourage patients' adaptive behaviors by providing dietary guidance tailored to match each patient's functional limitations and nutritional needs as well as relevant written materials. Table 2 provides recommendations for patients to improve the quality of their diets and subsequent nutritional status. Clinicians can advise patients to use their knives and forks as they might their teeth, consciously cutting foods into small pieces, as well as provide recommendations on how to modify food selections to reduce mandibular workload and minimize jaw pain (Table 2). Although mechanically altering the patient's diet to enable pain-free eating is the goal, in some instances, patients may benefit from taking liquid oral supplements to meet their energy, protein, and micronutrient needs.

CONCLUSIONS

Management of painful TMD is multifactorial and often involves pharmacologic, physical, and cognitive behavior and dietary therapies. Taking an interprofessional team approach may improve patients' treatment outcomes and well-being. Additional research and evidence is necessary to establish associations among diet, energy, macronutrients, and micronutrients in patients with painful TMD, as well as to establish guidelines for adjusting

patients' diets to avoid or minimize painful eating and to improve the quality of their diets and ERQoL. ■

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