The TMJ Association, Ltd.

TMJ News Bites

Issue 1, 2026

Introducing the TMD IMPACT Research Network Teams

We continue to spotlight the research teams who were awarded TMD IMPACT grants at the University of Pittsburgh, University of Michigan, and the University of Southern California, each working to advance understanding and care for people with temporomandibular disorders (TMD).

TMD IMPACT stands for "TMD Collaborative for IMproving PAtient-Centered Translational Research" and is funded by the National Institutes of Health (NIH).

Last month we featured the University of Pittsburgh. This month we are highlighting the University of Michigan. Stay tuned for the University of Southern California in our next issue.

The 360˚ CHAT-TMD Initiative: Three Leaders, One Mission in Transformative TMD Research

We received the following article from the 360 Chat-TMD Center at the University of Michigan for inclusion in TMJ News Bites.

We are excited to announce a milestone in TMD research—a $13 million-plus NIH-NIDCR IMPACT Center grant bringing together the University of Michigan School of Dentistry (UMSD), Mass General Brigham (Massachusetts General Hospital and Brigham and Women's Hospital; MGB), and Harvard School of Dental Medicine (HSDM**)** in an unprecedented, multi-institutional and interdisciplinary effort to advance understanding and care for TMD.

A United Front Against TMD Complexity

TMD affects approximately 10% of Americans and often presents alongside other chronic pain conditions, making diagnosis and management a persistent challenge. The 360° Collaborative Hub for Artificial Intelligence (AI) in TMD Research (360° CHAT-TMD) leverages collective strengths in multiple fields

from these national leading institutions, with patient-centered translational research in TMD and chronic overlapping pain conditions (COPCs) such as migraine and fibromyalgia.

What Sets 360° CHAT-TMD Apart?

- Integrated Data Science Infrastructure: Development of cutting-edge AI and digital twin technologies and methods that will aggregate and harmonize patient data across all institutions. See some of our already available resources (https://360tmd.ai).
- Standardized Training Programs: Implementation of unified educational resources and career development pathways for future clinician-scientists.
- Interdisciplinary Mechanistic Research: Joint studies exploring (neuro)imaging, biomarkers, and clinical factors driving TMD and chronic pain, powered by advanced AI and machine learning (ML).
- Technological Innovation for Collaboration: Deployment of digital tools—including mobile chatbots—for remote phenotyping, cohort mapping, and patient engagement on a national scale.

Click here to read full article

Clemson Research Team Outlines New Framework and Tools to Advance TMJ Research

A Clemson University-led research team supported by the TMD IMPACT R34 Planning Grant has published two major papers advancing the study of temporomandibular joint (TMJ) disorders.

In the *Journal of Dental Research*, the team introduces a new research framework that integrates TMJ structure, function, and pain through a comprehensive multiscale approach. This framework addresses longstanding fragmentation in the field by connecting biomechanics, cellular and molecular processes, neural signaling, and pain mechanisms into a unified model for understanding disease onset and progression.

In a companion paper in *Advanced Science*, the researchers present an innovative 3D whole-joint mapping method that quantitatively characterizes the spatiotemporal cellular and molecular landscape of the TMJ. This high-resolution mapping platform enables detailed analysis of how structural and biological changes evolve over time and how they relate to joint function and pain.

Together, these advances provide powerful new conceptual and technical tools for investigating TMJ disorders. By linking structural, functional, and pain-related data, the TMD IMPACT team's work lays critical groundwork for improved diagnostics and more targeted, mechanism-based therapeutic strategies.

New Public Health Framework for TMD

Building on findings from the 2020 National Academies report on TMD, members of the multidisciplinary NASEM TMD Forum emphasized in a recent publication in BMC Global Public Health the urgent need to improve recognition and management of TMD within the U.S. healthcare system. Although TMD affects millions of Americans and contributes to significant pain, disability, and economic burden, care is often fragmented because medical and dental providers operate in separate silos.

This commentary advocates for bridging the medical and dental divide to better address the complex needs of individuals with TMD and reduce the public health burden of these conditions.

Key points from the article include:

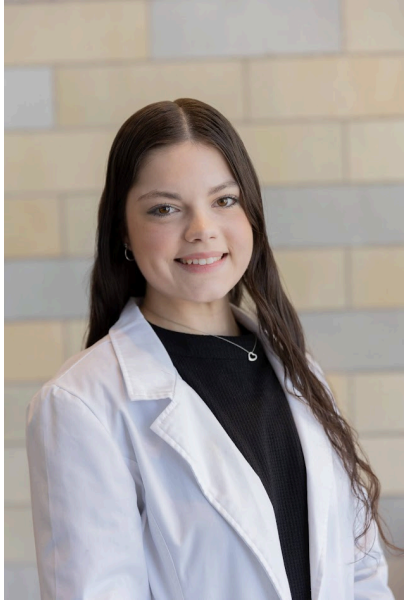
- High public health impact: Approximately 4.8% of U.S. adults experience TMJ region pain, yet coordinated, evidence-based care is lacking.
- Medical–dental gap: Medical clinicians frequently overlook TMD in broader musculoskeletal care, while dentists often lack training to manage comorbid medical conditions or make appropriate medical referrals. This divide leaves many patients navigating care independently.
- Outdated paradigms: Historically, dental occlusion was overemphasized as a primary cause of TMD, leading to invasive treatments with limited evidence. Contemporary understanding recognizes TMD as a set of multifactorial conditions requiring biopsychosocial care models.
- Care pathway proposal: The authors propose a structured, interdisciplinary care pathway that:
    - Allows entry through dental, medical, or allied health clinicians,
    - Uses standardized tools for early assessment and conservative management,
    - Facilitates clear referral protocols for complex cases or specialist care.
- Goals of the framework: Improve early identification, reduce unnecessary interventions, enhance provider training across disciplines, and ensure evidence-based, patient-centered care for people with TMD.

Source: Prodoehl J, Cowley A, Durham J, Lodes M, Rindal B, Mackey S. *Bridging the medical-dental divide: a public health imperative for temporomandibular disorders*. BMC Glob Public Health. 2025 Nov 4;3(1):97. doi: 10.1186/s44263-025-00217-y. PMID: 41189035; PMCID: PMC12587699.

TMJ Cartilage Regeneration: A New Endeavor into TMJ Therapy

This article is based on an interview of Hannah Bonelli, PhD Student, at the University of Pennsylvania by Aamena Wahab, a TMD patient and high school student in Illinois.

New research conducted by Hannah Bonelli and her team in the Gottardi Lab marks a hopeful turn in the struggle for a deeper understanding of the temporomandibular joint (aka TMJ or jaw joint). On behalf of The TMJ Association, I interviewed Hannah to raise awareness of her exciting new research.



Hannah found inspiration for her research in an unlikely place: her childhood gymnastics practice. “I was a competitive gymnast and I experienced a lot of injuries, particularly orthopedic ones,” she recalls. Today, Bonelli is a fourth-year PhD student in bioengineering at the University of Pennsylvania, pursuing research to better understand joint tissues – an interest sparked by those childhood injuries. After completing her undergrad education in biomedical engineering at Rowan University, she turned her focus to a small but complex joint most overlook: the TMJ. Bonelli explains, “I’m studying cartilage regeneration in the TMJ, particularly in cases of osteoarthritis.” In other words, she’s researching how to help the body regenerate new cartilage for people whose jaw joints may be worn out or damaged.

Bonelli says she chose the TMJ, in part, because it’s been neglected by researchers. “The orthopedic space is already very congested with thousands of people working on similar topics. The TMJ is a joint that anatomically fits in the orthopedic and dental fields, but it receives very little attention from both groups. And so, this really inspired me to focus on it,” she says. In fact, Bonelli sees herself not just as a laboratory scientist but as an advocate helping to raise awareness. “I kind of want to advocate for the TMJ and for temporomandibular disorders (TMD). I want to bring these issues to light for other people… how prominent they actually are,” she explains. Her excitement about this research is palpable and infectious: she remarks on “how complex this joint is [with] two types of cartilage in the TMJ instead of just one, like other joints.”

In the lab, Bonelli tackles TMJ problems with a classic tissue-engineering approach. “My research is really focusing on two main questions,” she says. “The first is: can we find easily accessible cells that can mimic native TMJ cartilage? The second is: can we combine those cells with a biomaterial scaffold to repair the joint?” To address the cell question, Bonelli looks to unique tissue sources. Bone-marrow stem cells can grow cartilage but harvesting them is painful. As a result, her team turned to simpler biopsies. “We’re currently studying cartilage progenitor cells that we derive from behind the ear — just by a simple biopsy punch,” Bonelli explains. Progenitor cells are specialized early cells that can develop into specific types of cells, playing a crucial role in the development and growth of tissue. In other words, a tiny sample of ear cartilage yields stem-like cells that can make a new cartilage matrix that resembles the native TMJ.

Bonelli’s lab is developing a way to repair damaged jaw cartilage. They start with pig knee cartilage and wash it to remove all the animal cells, leaving behind a natural framework that’s perfect for new cells to grow on. Bonelli explains, “This framework already contains many of the ingredients that help cartilage grow and communicate with cells.” The next step is to add stem cells. Once planted, the stem cells can settle in, multiply, and start turning into cartilage cells, gradually filling in and rebuilding the damaged tissue. “By

combining the stem cells with this material, we hope to actually regrow the cartilage in the jaw joint," she says.

In the long run, Bonelli hopes this engineered construct can be an option between conservative therapy and full joint replacement. "I think my research could really fall in this middle-ground category," she says. One day, a patient might receive a minimally invasive implant to renew the degrading cartilage, and "maybe… it buys a patient a few years, and they don't need to get a replacement right away". In other words, better-regenerating tissue could prolong natural joint function and delay life-altering surgery.

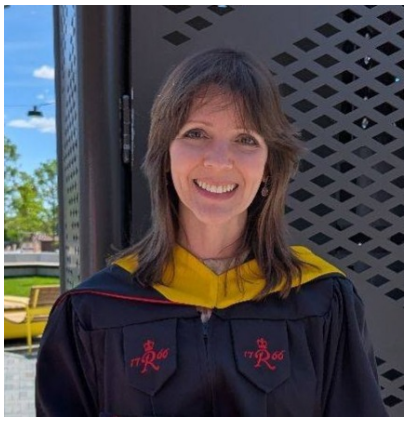
What Can We Do to Help?

I asked Hannah this very question– and her answer was both motivating and inspiring. She urges those affected with TMD to share their stories and spread awareness. "Hearing their stories will always serve as motivation in the back of my mind when days in the lab get tough," she says. "The research field is growing, and many are becoming more aware of how much we still need to learn about the TMJ," Bonelli tells us. "Please keep sharing your experiences and needs with us, because it's so valuable to the progression of science." In her words, "We're all in this together, no matter what role you play in the story." Patient perspectives help researchers identify real-world needs and test practical solutions.

Advocacy groups like The TMJ Association have been key bridges. "The TMJA does a great job bridging that gap, allowing researchers to come in contact with patients," Bonelli notes. She credits these groups with helping scientists better understand the daily realities of living with TMD. Moving forward, Bonelli believes awareness is the most valuable support anyone can provide to TMD research. "We have to attack advocacy from all angles…patients can bring a perspective that no one else can."

Patient Spotlight - Meet Lori

How it Started



My TMJ disorder story began one day as I was sitting in my car eating chocolate-covered pomegranate seeds, when I felt a shift and sharp pain in my jaw. I had never had an issue with my jaw prior to that moment. For weeks afterward, I was unable to eat solid food or eat around other people. Even sipping a smoothie was painful sometimes. My primary care doctor suggested over-the-counter pain relievers and several weeks of rest.

How was I supposed to rest my jaw? The jaw joint is essential for eating and speaking. For a professional singer and vocal instructor, it's even more complicated. TMJ disorder can be exceptionally destructive to the lives of singers and other musicians and is one of the top two most common vocal dysfunctions worldwide. Often, TMJ disorders do not impair normal vocal function, but serious symptoms emerge under the demands of professional singing (Osman, 2023).

Singing – something that had always brought me joy, and on which my livelihood and identity depended – became physically painful. My voice teacher at the time understood what TMJ disorder can mean for a vocalist and provided support and helpful exercises, but beyond that I had little guidance on how to manage my symptoms. I talked myself out of auditions and even turned down opportunities, telling myself that I just needed time to rest so I could show up fully for my existing commitments.

For months at a time, I was able to control my symptoms and lifestyle well enough that no one would have known anything was wrong. It wasn't easy to find providers willing to treat me, but once I did, I tried everything: physical therapy, nightguards, acupuncture, medications, orthodontic work. I was even scheduled for surgery at one point, which I didn't go through with. I never stopped believing that eventually I would recover, just like any other injury in the past. In truth, that day has never come – and recovery has looked different than I once imagined.

New Direction

My experience with TMJ disorder was one of several factors that led me to change careers. I returned to graduate school to study clinical mental health counseling. At the same time, I had been saving for years for orthodontic treatment to realign my bite. My misalignment was considered complex and I found only one orthodontist in my area willing to treat me. I had to pay for it entirely out of pocket. I showed up for my first day of class at Rutgers University in my late 30's with braces and rubber bands which my orthodontist made as discreet as possible.

My journey living with a TMJ disorder – experiencing the fragmented health system, with significant gaps in provider knowledge and support (of which I am only scratching the surface here) – inspired me to do my own research during my studies. Fortunately, during my final year, the counseling department allowed me to pursue an independent study on TMJ disorder and mental health.

What I Learned from My Research

While conducting my literature review, I came across studies linking certain Selective Serotonin Reuptake Inhibitors (SSRIs) with nocturnal bruxism (teeth grinding) (Gadd et al., 2024; Garrett & Hawley, 2018; Geniş & Hocaoğlu, 2020). I had been taking one of these SSRIs for years. These medications are sometimes prescribed to TMJ sufferers who clench or grind their teeth in an effort to decrease anxiety that may contribute to these habits.

By this point, I had completed my orthodontic treatment. With my bite realigned, I regained a lot of jaw function, yet I was still waking up every morning with pain and soreness. I had always thought of SSRIs as safe and thoroughly tested, which made it hard to accept the findings I was reading. After sharing the articles with my advisor and a peer, I decided anything was worth trying and pursued a medication change. Within a few weeks, I consistently stopped waking up with jaw pain. It was the most significant improvement I had experienced in nearly 10 years.

All of my providers knew that I had TMJ disorder and that I was taking this particular SSRI – and none were aware of SSRI-associated bruxism. If I had

not pursued a graduate-level independent study, I might still be coping with this pain every morning.

Where to Go from Here

Now that I have begun working as a therapist in the mental health field, I hope to provide support to other individuals living with chronic pain and share what I have learned about TMJ with other clinicians. I am grateful for The TMJ Association for their commitment to advancing TMJ research, their advocacy for patients, and for taking the time to listen to me and be a support as I find my next steps.

Continuing the Momentum: TMJ Patient-Led RoundTable as the New Home for National TMD Collaboration

The TMJ Patient-Led RoundTable was originally conceived in 2016 under the leadership of Terrie Cowley, Danica Marinac-Dabic, and John Kusiak as a neutral forum where all stakeholders could come together to address shared challenges in TMDs. That early collaboration led to a white paper and ultimately informed the National Academies of Sciences, Engineering, and Medicine (NASEM) 2020 report on TMD, helping to elevate TMD as a national health priority.

Building on this foundation, the NASEM Forum on Temporomandibular Disorders (2021–2025) was established to provide an ongoing, neutral setting in which public- and private-sector experts and stakeholders could explore opportunities for collective action to improve TMD research and care. The Forum focused on emerging issues, facilitated cross-sector collaboration, and fostered long-term multidisciplinary relationships—all with the goal of improving outcomes for people living with TMD. Central to this work was advancing a TMD research agenda that reflects their biological complexity, clinical heterogeneity, and frequent comorbidities with other chronic overlapping pain conditions.

Due to federal funding cuts, the NASEM TMD Forum activities have ended. Its mission, collaborative framework, and body of work are being carried forward through the TMJ Patient-Led RoundTable. This transition ensures continuity and preserves the neutral, inclusive space needed to address the complex scientific, clinical, and policy challenges facing the TMD community.

While important progress has been made, including the launch of the NIH-funded IMPACT Research Network, significant gaps remain. Persistent challenges in clinical care pathways, education, and the long-standing divide between dentistry and medicine continue to affect patients. Expanded research, coordinated data efforts, and sustained advocacy remain critical.

The RoundTable is uniquely positioned to address these unmet needs by convening patients, clinicians, researchers, and other stakeholders in a constructive, collaborative environment. Priorities moving forward include advancing integrated care pathways, strengthening and expanding research, continuing development of the TMJ patient registry, and ensuring meaningful integration of data resources generated across IMPACT and other research programs.

Although the NASEM Forum has formally ended, its purpose endures. Through the RoundTable, this essential work continues, focused on collaboration informed by science, and grounded in the lived experiences and needs of people with TMDs.

Guideline Update: Dental Work and Joint Replacement

In a long-awaited update, the American Academy of Orthopaedic Surgeons (AAOS) and the American Association of Hip and Knee Surgeons (AAHKS) revised guidance on dental procedures for patients undergoing hip or knee replacement.

The groups found little evidence that prophylactic antibiotics before dental work reduce periprosthetic joint infection (PJI) risk, and limited evidence that routine preoperative dental screening lowers infection rates.

Updated timing recommendations include:

- After arthroplasty:
    - Non- or minimally invasive dental procedures may proceed after 1 day.
    - Invasive procedures (e.g., extractions, oral surgery) should be delayed 3 months.

- Before arthroplasty:
    - Wait 3 weeks after invasive dental procedures or resolution of dental infection.
    - Minimally invasive procedures require only a 1-week interval.

Many recommendations are based on limited evidence or expert opinion, and the organizations call for further research to refine future guidance.

More information can be found at: https://www.aaos.org/quality/quality-programs/implant-infections-in-patients-undergoing-dental-procedures/

Continuing Education Opportunities

Harvard Interdisciplinary Pain & Headache Rounds

The Harvard Interdisciplinary Pain and Headache Rounds is a complimentary, year-long lecture series dedicated to advancing evidence-based education in pain and headache care. Through interactive seminars and forums, the program brings together clinicians, researchers, students, patients, and policy leaders to foster collaboration and thoughtful discussion.

With a history spanning more than 20 years—including programs originally held in the historic Ether Dome at Massachusetts General Hospital—the Rounds now reach participants in over 80 countries through a virtual format, expanding access for clinicians and patients worldwide.

Presented through a collaboration between Mass General Brigham and Harvard School of Dental Medicine, with additional academic partners, the series explores both established research and emerging approaches to patient care.

Pre-registration is required for each session to receive the Zoom link. Participants seeking CME/CE credit will receive credit information at the beginning of each lecture. Zoom Registration | Mailing List
Learn more: https://www.painandheadacherounds.com/

Chronic Overlapping Pain Conditions

The Chronic Pain Research Alliance, an initiative of The TMJ Association, in partnership with the International Pelvic Pain Society, developed the Continuing Medical Education (CME) program on Chronic Overlapping Pain Conditions (COPCs) titled, “A Biopsychosocial Approach to the Clinical Management of Chronic Overlapping Pain Conditions.”

If you are interested in obtaining a copy of the course’s PowerPoint slide set and corresponding slide notes for teaching purposes, please contact CPRA’s Director, Christin Veasley by email cveasley@cpralliance.org.

Lived Experience Survey Opportunity

A collaboration led by Ryan Wexler, ND, MS, at the National University of Natural Medicine is examining how lived experience with chronic pain intersects with professional work in pain-related fields.

The anonymous, online survey is open to adults engaged in pain-related research, clinical care, or caregiving and takes approximately 10–15 minutes to complete. The study aims to better understand how lived experience may shape motivations, professional identity, and disclosure practices within the pain field, with the goal of informing future conversations about equity, inclusion, and research culture.

Participation is voluntary, confidential, and uncompensated. Interested individuals can participate by completing the survey at https://redcap.link/painperspectives.

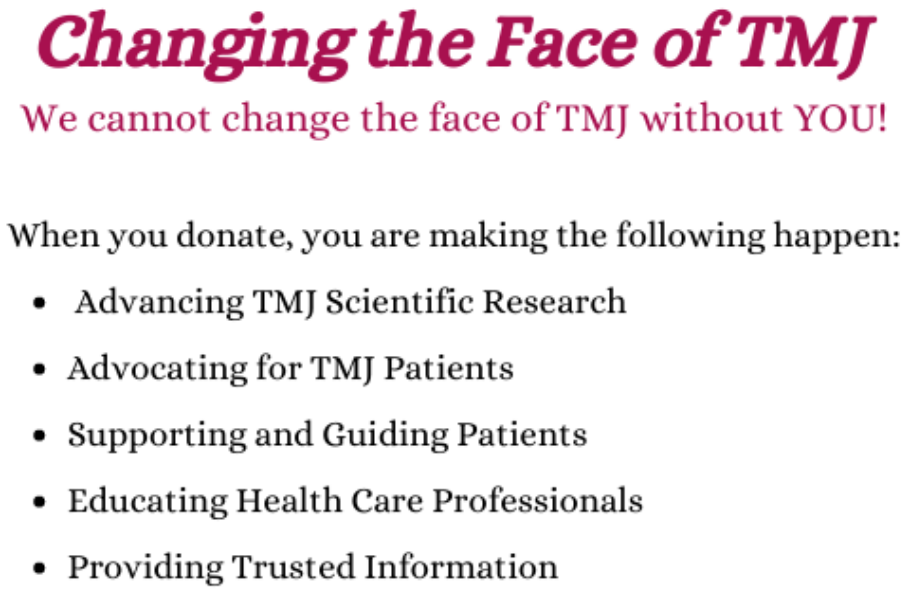
Complementary Pain Therapies Survey

Researchers at the University of Rochester are conducting a survey to learn about people's experiences and opinions to inform future research, policy, and patient care with complementary therapies for chronic pain. **If you have chronic pain, no matter how you feel about complementary therapies, they want to hear from you!** If you complete the survey and provide your contact information, you will be entered into a drawing to receive $50.

They are eager to hear from people:

- Who have never tried complementary therapies for pain
- Who have tried them and stopped
- Who are currently using complementary therapies to treat pain

You can complete the survey here: https://redcap.link/qdynczed. If clicking it does not work, please copy and paste the link into your browser.



The TMJ Association is the *ONLY* patient advocacy organization fighting for the best science that will lead to a greater understanding of TMD and related

conditions, as well as treatments that will help and not harm patients.

We cannot change the face of TMJ without YOU. Make a tax-deductible contribution today! Your contribution is more than a donation. It is how we will ensure that patients with TMD have a voice — through education, patient support and advocacy.

We cannot do this important work without you! Thank you for your generosity.

About The TMJ Association ... *Changing the Face of TMJ*

The TMJ Association, Ltd., is a nonprofit, patient advocacy organization whose mission is to improve the quality of health care and lives of everyone affected by Temporomandibular Disorders (TMDs, aka "TMJ"). For 35 years, we have shared reliable information on TMDs with people like you. We invite you to visit our website, www.tmj.org.

The TMJ Association, Ltd., P.O. Box 26770, Milwaukee, WI 53226

info@tmj.org | www.tmj.org

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