

## The Giving Season Is Upon Us

If you are a **government employee** who understands the full impact of Temporomandibular Disorders (TMD) on individuals, their loved ones and society-at-large, please help us continue to *change the face of TMJ* by designating The TMJ Association as your **Combined Federal Campaign (CFC) charity #12102**.



Ask your **mail carrier or family members and friends serving in the military to consider pledging their support to The TMJ Association**. If they don't already have a chosen charity, they may be glad to help!

**State employees** in *Arizona, California, Connecticut, Florida, Maryland, Massachusetts, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Washington and Wisconsin* can also contribute through the State Employee Contribution Campaign by writing in The TMJ Association on the donor form.

**United Way and other nonprofit corporate donor programs** are underway and these are great ways to improve the plight of TMD patients. Simply write The TMJ Association on your donor form.

**If you don't participate in any of these campaigns, you can still help by [donating directly to The TMJA!](#)**

## Are you a TMD patient with Tinnitus?

It's a ringing sound, a buzzing, a hiss.... It can be soft or loud, intermittent or present all the time, affecting one ear or both. In whatever way it affects you, it's damned annoying, unpleasant, distracting. Indeed, it is considered the worst problem affecting human beings after pain and dizziness. What it is is tinnitus, a sound in your ears that seems to come out of nowhere that you hear and sometimes other people can hear as well. And it's mysterious.

For generations, hearing specialists have speculated about what causes the sound.

They know that tinnitus increases with age (up to a point, after which it peters out) and it can occur in association with various diseases or with the use of certain drugs. Researchers have come up with theories, but as yet no hard and fast evidence has established what actually generates the sounds. One theory says that tinnitus is caused by abnormal firing (hyperactivity) of the auditory sensory cells in the inner ear. Another says that disease or damage to these cells causes a "phantom" sound to be transmitted to the brain. Still a third neuromuscular theory suggests that abnormal stimulation of the muscles that control the ear drum and bones of the middle ear is at fault. Sadly, there are as yet no truly effective treatments for tinnitus. What *has* emerged over the years, however, from what many patients have told The TMJ Association and from clinical studies, is that the risk for tinnitus is higher among TMD patients than people without TMD.

### **TMD subgroups**

Now comes a study to suggest that not all TMD patients have the same degree of risk. The study makes use of the fact that TMD diagnosis has grown more refined over the years, using criteria that enable classifying patients into three major subgroups. The groups are based on whether symptoms primarily involve pain in the chewing muscles associated with the TM joint (called MPD for myofascial pain diagnosis); whether symptoms chiefly relate to displacement of the disc that separates the head of the mandible from the skull (called DD for disc displacement), or whether the joint itself is affected by degenerative arthritic changes (called DJD for degenerative joint disease). These are not mutually exclusive groups, since patients can have symptoms spanning all three categories.

The study conducted by Susee Ravuri of the University of Washington Dental School was based on a large number of volunteers seen at three sites (the Universities of Washington, Minnesota and Buffalo). Of the initial 705 subjects seen, 614 met the diagnostic criteria for TMD and were classified according to the three TMD subtypes. They were also assessed for the presence of tinnitus and answered other health and behavior questions. The remaining 91 subjects served as controls. Tinnitus was reported by 41 percent of the TMD population compared to only 5.5 percent in the controls. However, when analyzed by subtype, the rate of tinnitus in the MPD group was 48 percent, compared to 15.6 percent in the non-MPD group (who had been diagnosed as either DD, DJD or both). Patients diagnosed with MPD only had the still higher tinnitus rate of 64.3 percent.

### **Risk factors**

The study also considered whether other factors might contribute to the risk of tinnitus, such as pain when mild pressure was applied to various sites in and around the TM joint, the presence of oral habits like tooth clenching or grinding, headaches in the temporal region, and psychological symptoms such as anxiety and depression. Here the factor that stood out in relation to tinnitus was headaches in the temporal region. Thirty-seven percent of patients with a diagnosis of MPD only (no DD and no DJD) had tinnitus, but that percentage increased to 52 percent if they also had temporal headaches. MPD patients overall experienced a higher number of painful pressure sites compared with the other subgroups, and if they also reported tinnitus, they scored higher on scales of anxiety, pain intensity, and interference of pain with daily activity. Interestingly, oral habits such as clenching or grinding or other abnormal jaw movements were not found to be associated with tinnitus.

### **A follow-up study**

The original subjects were followed for a period of 7.8 years and then follow-up studies were conducted on 388 subjects. Of this smaller-sized and older-aged group, 279 subjects were diagnosed with TMD and classified by subtype, but the rate of tinnitus had dropped to 28 percent compared with the 41 percent in the baseline study (consistent with studies that show declines in tinnitus with age). In the follow-up group,

the highest tinnitus rate (30 percent) was found in the MPD subgroup.

### Summary

The availability of diagnostic criteria to classify TMD patients into three distinct but not mutually exclusive subgroups has enabled an analysis indicating different risks for tinnitus per subgroup. The risk for tinnitus is greatest in patients who present with MPD (pain in the masticatory or chewing muscles associated with the TM joint). If these patients also report headaches in the temporal region, their risk for tinnitus is at least three times higher for tinnitus than MPD patients without headaches. These findings lend some support to the neuromuscular theory as a basis for tinnitus, the idea that excessive tension or other dysfunctional stimulation of the masticatory muscles affects nearby ear muscles leading to the generation of tinnitus sounds.

### Reference

#### [TINNITUS AND TEMPOROMANDIBULAR JOINT DISORDER SUBTYPES](#)

RAVURI, SUSEE PRIYANKA

Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology , Volume 124 , Issue 3 , e194 - e195

## Patients with Chronic Migraine More Likely to Suffer from TMD

In a recent study, researchers found that patients with chronic migraines which usually occur for more than 15 days a month are likely to experience three times more severe symptoms of Temporomandibular disorder (TMD) than patients with an episodic migraine.

"Migraine patients are more likely to have signs and symptoms of TMD, but the reverse is not true. There are cases of patients with severe TMD who don't present with migraine," said Dedora Grossi, lead author of the study and principal investigator for the project. The TMD may increase the frequency and severity of migraine attacks though it does not directly cause migraine, said researchers. "Our findings show the association with TMD exists but is less frequent in patients with rare or episodic migraine," said Grossi.

"This information alone should change the way clinicians examine patients with migraine. If migraine sufferers tend to have more severe TMD, then health professionals should assess such patients specifically in terms of possible signs and symptoms of TMD, " she explained.

A migraine is a neurological disease which gets triggered with genetic and environmental factors, whereas temporomandibular disorder includes series of factors that magnify the sensitivity of migraine attacks. Suffering from the TMD on top of migraine may worsen the migraine attacks in terms of both severity and frequency, shows the study.

Source: Above is an excerpt from the article, *Chronic migraine magnified by Temporomandibular disorder: Study*: <http://www.ibtimes.sg/chronic-migraine-magnified-by-temporomandibular-disorder-study-16914>

## Migraine and Coronary Artery Disease: A Genetic Connection

There has long been an association between migraine headaches and vascular (blood vessel) dysfunction of some kind, underscored by epidemiological studies and other research. New evidence for a **genetic** connection now comes from the analysis of several large data sets of each condition based on Genome Wide Association Studies

(GWAS). GWAS have been used to compare the genomes of a large number of patients who have a particular disease with a control group not having the disease. Investigators know that scattered across human genomes are hundreds of thousands of single places in the long chain of DNA where there is a variant of one or another of the four nucleotides that make up the genetic code (A, C, T and G). These sites are called single nucleotide polymorphisms, SNPs, pronounced SNPs. What investigators hope to find in a GWAS is that the genomes of the diseased group share certain SNPs in common, which distinguishes them from the control group. These SNPs can then serve as biomarkers of risk for the disease. Indeed, they usually are located in or near a gene involved in the disease process.

A group of Norwegian investigators\* who had access to a number of independent GWAS studying SNPs associated with either chronic migraine (defined as at least 15 days a month of headaches for three months) or coronary artery disease (CAD) went the next step: They compared the SNPs found independently for the two diseases and discovered overlaps. Using complex statistical methods they further honed their search to zero in on three SNPs which turned out to be located inside genes of interest. Of this set the strongest link was to a gene that codes for phosphatase and actin regulator 1 protein. This protein is highly expressed in the brain, where it regulates synaptic activity and the forms of branches of nerve cells (dendrites). But it is also expressed in arteries where it is involved in the function of the endothelial cells lining the blood vessel walls, and in regulating the tension on the walls (called vasomotor "tone"). Investigators expect to use this kind of information as well as from the other genes of interest to shed light on pathogenic mechanisms that underlie both migraine and CAD.

\*Reference: Winsvold BS, Bettella F, Witoelar A, Anttila V, Gormley P, et al. (2017) Shared genetic risk between migraine and coronary artery disease: A genome-wide analysis of common variants. PLOS ONE 12(9): e0185663.  
<https://doi.org/10.1371/journal.pone.0185663>

## Why Head and Face Pain Cause More Suffering

Hate headaches? The distress you feel is not all in your – well, head. People consistently rate pain of the head, face, eyeballs, ears and teeth as more disruptive, and more emotionally draining, than pain elsewhere in the body.

Duke University scientists have discovered how the brain's wiring makes us suffer more from head and face pain. The answer may lie not just in what is reported to us by the five senses, but in how that sensation makes us feel emotionally.

The team found that sensory neurons that serve the head and face are wired directly into one of the brain's principal emotional signaling hubs. Sensory neurons elsewhere in the body are also connected to this hub, but only indirectly.

The results may pave the way toward more effective treatments for pain mediated by the craniofacial nerve, such as chronic headaches and neuropathic face pain.

"Usually doctors focus on treating the sensation of pain, but this shows we really need to treat the emotional aspects of pain as well," said Fan Wang, a professor of neurobiology and cell biology at Duke, and senior author of the study. The results appear online Nov. 13 in Nature Neuroscience.

Pain signals from the head versus those from the body are carried to the brain through

two different groups of sensory neurons, and it is possible that neurons from the head are simply more sensitive to pain than neurons from the body.

But differences in sensitivity would not explain the greater fear and emotional suffering that patients experience in response to head-face pain than body pain, Wang said. Personal accounts of greater fear and suffering are backed up by functional Magnetic Resonance Imaging (fMRI), which shows greater activity in the amygdala – a region of the brain involved in emotional experiences – in response to head pain than in response to body pain.

"There has been this observation in human studies that pain in the head and face seems to activate the emotional system more extensively," Wang said. "But the underlying mechanisms remained unclear."

To examine the neural circuitry underlying the two types of pain, Wang and her team tracked brain activity in mice after irritating either a paw or the face. They found that irritating the face led to higher activity in the brain's parabrachial nucleus (PBL), a region that is directly wired into the brain's instinctive and emotional centers.

Then they used methods based on a novel technology recently pioneered by Wang's group, called CANE, to pinpoint the sources of neurons that caused this elevated PBL activity.

"It was a eureka moment because the body neurons only have this indirect pathway to the PBL, whereas the head and face neurons, in addition to this indirect pathway, also have a direct input," Wang said. "This could explain why you have stronger activation in the amygdala and the brain's emotional centers from head and face pain."

Source: *Duke Today*, Why Head and Face Pain Causes More Suffering, 11/13/17.  
<https://today.duke.edu/2017/11/why-head-and-face-pain-causes-more-suffering>

## Meet Kolia...



I am 36 years old and have been living with Temporomandibular Disorders (TMD) and was diagnosed with Trigeminal Neuralgia in 2008.

My TMD diagnosis was made in 2006. I have been to numerous dental and maxillofacial professionals over the years. Insurance coverage limits my treatments. I have gone through multiple root canals and teeth

replacements on my right joint, which is where all of my nerve and joint pain occurs. I have a droop in my face and often my muscle contracts on my right side. I frequently have my joint pop out of socket, and often have to hold it in while eating, yawning etc. I prefer to eat alone due to the noise and the fact that holding my joint is embarrassing.

I have worked a very tough corporate job for the past 11 years, and I have always been hesitant about jaw replacement surgery, despite my provider's recommendation. I am looking forward to having children at this point, because of the ages of me and my spouse, and hope that shortly after having children I could commit to surgical

interventions. I have had injections, bone grafts, etc.

I am beyond grateful for the resources and the personal stories provided on [www.tmj.org](http://www.tmj.org). Thank you all.

## Clinical Studies: Volunteers Needed

*The TMJA has been informed of the following clinical studies seeking qualified candidates to help in research. Read on to see if you are eligible to participate.*

### **Comparative Study of Women Considering or Currently Receiving Botox® Injections for TMJ Pain**

Are you a woman within the Los Angeles or New York City areas with TMJ pain in facial muscles, who has either:

- a. recently had Botox® injections for your pain or
- b. not had Botox® for your pain but has thought about such treatment?

If either is true for you, you may qualify for an observational research study centrally administered by the New York University College of Dentistry. It is funded by the National Institutes of Health (NIH). The purpose of this study is to understand potential health risks that may be caused by treating "TMJ pain" with Botox® injections. Potentially eligible women must first complete a brief interview via telephone to confirm eligibility. [Click here for further study information and details.](#)

### **Maternal Chronic Pain Study**

A high proportion of women with children experience chronic pain conditions such as temporomandibular disorders, low back pain, headache, and fibromyalgia. Parenting with chronic pain is a unique challenge that many parents face. Oregon Health & Science University, Stanford, and Seattle Children's Hospital are conducting a study to learn more about the impact of maternal chronic pain in hopes of helping mothers and families in the future.

This study might be a good fit for you if:

- You are a mother who has had chronic pain for 6 months or longer
- You have a child between the ages of 8 and 12 years old

Participants will complete online questionnaires and electronic diaries. Compensation is provided.

Learn more at: <http://www.ohsu.edu/.../studi.../Maternal-Chronic-Pain-Study.cfm>

## NIH Funding Opportunities

Basic and Clinical Research

In an effort to promote greater understanding of TMD, and to develop safe and effective evidence-based diagnostics and treatments, The TMJ Association promotes and encourages basic and clinical research on Temporomandibular Disorders. [We invite you to view a listing of the latest National Institutes of Health \(NIH\) funding opportunities for scientists interested in advancing TMJ research.](#)

[Population Health Interventions: Integrating Individual and Group Level Evidence \(R01\)](#)

### Clinical Trials Not Allowed

To improve health and reduce the burden of disease, scientific research needs to be implemented at the population level in addition to the biological and clinical levels. The purpose of this funding opportunity announcement (FOA) is to support multilevel, transdisciplinary population health interventions that target underlying social, economic, and environmental conditions in an effort to improve health outcomes.

### Family-Centered Self-Management of Chronic Conditions (R21 Clinical Trial Optional) A Family-Centered Self-Management of Chronic Conditions (R01 Clinical Trial Optional)

The purpose of this Funding Opportunity Announcement (FOA) is to encourage research that seeks to build the science of family-centered self-management (FCSM) in chronic conditions.

### mHealth Tools for Individuals with Chronic Conditions to Promote Effective Patient-Provider Communication, Adherence to Treatment and Self-Management (R01 Clinical Trial Optional) mHealth Tools for Individuals with Chronic Conditions to Promote Effective Patient-Provider Communication, Adherence to Treatment and Self-Management (R21 Clinical Trial Optional)

purpose of this initiative is to stimulate research utilizing Mobile Health (mHealth) tools aimed at the improvement of effective patient-provider communication, adherence to treatment and self-management of chronic diseases. With the rapid expansion of cellular networks and substantial advancements in Smartphone technologies, it is now possible - and affordable - to transmit patient data digitally from remote areas to specialists in urban areas, receive real-time feedback, and capture that consultation in a database. These mHealth tools, therefore, may facilitate more timely and effective patient-provider communication through education communication around goal setting, treatment reminders, feedback on patient progress, and may improve health outcomes. This announcement encourages the development and testing of interventions utilizing mHealth technologies. There is also an interest in studying mHealth technologies in underserved populations.

### Trans-NIH Strategic Plan for Research on Women's Health (NOT-OD-17-108)

ORWH was established in the Office of the NIH Director by the Public Health Service Act to (a) identify projects and multidisciplinary research related to women's health; (b) encourage research on sex differences and promote coordination among research entities; (c) assist NIH efforts to include women as subjects in clinical research; and (d) develop opportunities and support for women in biomedical careers. These efforts will continue to be part of the office's core mission. ORWH is tasked with the development of a trans-NIH strategic plan for women's health research that promotes allocation of NIH resources for conducting and supporting these research efforts across NIH Institutes and Centers.

### Blueprint Neurotherapeutics Network: Small Molecule Drug Discovery and Development for Disorders of the Nervous System (UH2/UH3) Blueprint Neurotherapeutics Network: Small Molecule Drug Discovery and Development for Disorders of the Nervous System (U44)

NIDCR is interested in neurotherapeutics development for painful disorders of the orofacial region including **temporomandibular joint disorder**, trigeminal neuropathies, burning mouth syndrome, and other conditions. Recent advances in genomics and phenotyping of subjects with orofacial pain conditions have expanded the scope of potential targets to treat these conditions. Receptor systems, ion channels, and pro- and anti-inflammatory molecules have been implicated in chronic pain. NIDCR is interested in supporting research that will lead to highly efficacious and specific pharmacological treatments of subjects with orofacial pain disorders. Investigators are encouraged to contact NIDCR program staff to discuss potential research projects prior to application submission to determine alignment of the

planned studies with priorities of the Institute mission and strategic plan.

[Neuroskeletal Biology of the Dental and Craniofacial Skeletal System \(R01\)](#)

[Neuroskeletal Biology of the Dental and Craniofacial Skeletal System \(R21\)](#)

The purpose of this Funding Opportunity Announcement (FOA) is to encourage research on the role of the nervous system in metabolism, homeostasis, remodeling and/or regeneration of the postnatal dental and craniofacial skeletal system (DCS) in health and disease. The objectives are to enhance basic science knowledge about interactions between the peripheral and central nervous systems (PNS/CNS) and the DCS, and facilitate development of strategies to optimize normal function, reduce the impact of disease, and develop capacity to repair and regenerate injured teeth and craniofacial bones.

## Research E-Newsletter

*Cutting Edge - COPCs Research Advances*, is an electronic newsletter published by the Chronic Pain Research Alliance, an initiative of The TMJ Association. Developed to keep the medical-scientific community abreast of



recent research advances, this publication contains abstracts of recently published studies on the epidemiology, pathophysiology and clinical management of Chronic Overlapping Pain Conditions. These conditions include **temporomandibular disorders**, chronic low back pain, chronic migraine and tension-type headache, endometriosis, myalgic encephalomyelitis/chronic fatigue syndrome, fibromyalgia, vulvodynia, irritable bowel syndrome and interstitial cystitis/painful bladder syndrome.

The most current issues are now available for your review at:

[http://www.cpralliance.org/New\\_Findings](http://www.cpralliance.org/New_Findings). If you would like to receive future issues of *COPCs Research Advances*, [click here to register](#).

## Educational Brochures on Chronic Overlapping Pain Conditions

This brochure addresses Chronic Overlapping Pain Conditions (COPCs), how COPCs are diagnosed, the complexity of the chronic pain experience, and how to work with your health care provider to develop a treatment plan. It is available by [postal mail](#) or as a [PDF on our website](#).

## Educational Brochures on TMD

*Your Guides for Temporomandibular Disorders* - This brochure written by the TMJA is a straightforward, easy-to-read booklet that guides patients in how to make health care decisions. It is available [by mail](#) or as a [PDF on our website](#) and we encourage you to share it with your friends, health care professionals and family members.

*TMJ Disorders* - This brochure is produced and distributed by the National Institute of Dental and Craniofacial Research in partnership with the Office of Research on Women's Health, components of the National Institutes of Health (NIH) in Bethesda, Maryland. Part of the U.S. Department of Health and Human Services, NIH is one of the world's foremost medical research centers and the federal focal point for medical

research in the United States. This booklet is available in English and Spanish at: <https://www.nidcr.nih.gov/OralHealth/Topics/TMJ/TMJDisorders.htm>.

## Dental Care Guide

*Temporomandibular Disorders, Dental Care and You*

The TMJ Association developed this guide to provide you with oral hygiene self-care tips that you can do at home, as well as suggestions for future dental appointments. Routine maintenance of your teeth and gums should reduce the risk of dental disease and the need for invasive dental treatments. [Click here to view on our website.](#)

## TMJ Science Journal

Our latest issue of *TMJ Science*, which includes the summary and recommendations from our 8th scientific meeting—*How Can Precision Medicine Be Applied to Temporomandibular Disorders and Its Comorbidities*—is now available. We hope you're impressed with how far the science of Temporomandibular Disorders has come. [We invite you to read this new publication which is available in the publication section of our website as a pdf file.](#)

## Support Our Work

The TMJ Association (TMJA) is the only patient advocacy organization fighting for the best science that will lead to a greater understanding of Temporomandibular and related disorders, as well as safe and effective treatments. We cannot *change the face of TMJ* without YOU.

[Click HERE to make a tax-deductible online contribution today!](#)



## 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 (TMD). For over 25 years, we have shared reliable information on TMD with people like you. We invite you to visit our website, [www.tmj.org](http://www.tmj.org).

- If you're not currently receiving *TMJ News Bites* and would like to [be on our mailing list, sign up here.](#)
- [Past issues of TMJ News Bites](#) are also available on our website.

[info@tmj.org](mailto:info@tmj.org) [www.tmj.org](http://www.tmj.org)

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