

INTEGRATIVE HEALTH APPROACHES FOR TREATING MIGRAINES POCKET GUIDE

FAST FACTS

- In the United States, around 20% of the population is affected by migraine headaches. However, because they are often misdiagnosed, the percentage may be much higher.^[i]
- According to the American Migraine Foundation, one in four households in the United States has at least one person suffering from migraine headaches.^[ii]
- Depression and anxiety are more common in people with migraine headaches than in those without.^[iii]
- According to the Global Burden of Disease Study, migraine headaches are a leading cause of disability worldwide, especially within the 15-49 age range.^[iv]
- Migraine attacks are three times more common in women.^[v]

WHAT ARE MIGRAINE HEADACHES?

Migraine headaches cause a painful throbbing or intense pulsating, usually in one side or area of the head. Migraine headaches can last anywhere from four to 72 hours and are reoccurring. The pain experienced during a migraine headache can be so intense that it interferes with daily activities.

When experiencing a migraine headache (with and without aura), common associated symptoms are nausea, pain related with moving the head, vomiting, neck pain, and increased sensitivity to smells, light, and noise.

A migraine headache can present with or without aura. An aura is a sense or sensation that usually *precedes* the headache and can include visual blind spots, temporary blindness, tingling in your face or hands, flashes of light, and/or other visual changes. A migraine with aura (sometimes referred to as a “classic migraine”) is a headache that coincides with or occurs shortly after these visual or other sensory disturbances.

Although once considered a vascular headache disorder, recent advances in the understanding of migraine headaches have found that migraine headaches are a “complex, variable disorder of nervous system function.”^[vi] This means that scientists do not fully understand the physiology of migraine headaches at this time.

Migraine headaches can appear in stages:^{[vii][1]}

Prodrome

Prior to experiencing a migraine headache (one to two days), changes in the following may occur:

- Mood.
- Neck stiffness.
- Food cravings.
- Constipation.
- Increased yawning.
- More frequent urination.
- Increased thirst.

Aura

People may experience an aura before or during migraines or not at all. An aura is a nervous system disturbance that is reversible and is usually experienced visually but can also manifest in other ways. These symptoms usually appear gradually and then are present for up to an hour. Some examples of aura include:

- Bright flashes of light.
- Blurred vision.
- Temporary blindness.
- Pins and needles in arms and legs.
- Loss of hearing.
- Trouble speaking.
- Auditory disturbances.
- Numbness on one side of the body.

^[1] Please note, not everyone with migraine headaches will experience these stages.

Attack

A migraine attack can last anywhere from a few hours to three days (72 hours) depending on whether you treat the migraine and if the intervention is effective. People may experience migraines rarely or several times a month or week. In severe cases, migraines can occur daily. You may experience the following during a migraine:

- Pulsating or throbbing pain on one or both sides of your head.
- Nausea and/or vomiting.
- Sensitivity to sound, light, smells, and touch.

Postdrome

Once the migraine attack has ended, you may experience fatigue, feel drained, or confusion. However, some people report feeling elation. Please note that sudden head movements may cause the pain to return briefly.

Migraine Triggers

Migraines can be triggered by a number of different variables, including:^{vii}

- Hormones. Estrogen fluctuations can trigger migraines so events such as having your period, menopause, and pregnancy can cause migraine headaches. Taking an oral contraception and/or hormone replacement therapy can increase migraine headaches. One of the main reasons folks find relief when they're on contraceptives is because it minimizes the fluctuations, some women have reported that their migraine headaches have decreased when taking oral contraception or hormones.
- Alcohol (especially wine).
- Too much caffeine or caffeine withdrawal.
- Stress.
- Anxiety.
- Intense sensory stimuli (such as strong sunlight or loud noises).
- Strong scents and odors.
- Tobacco use.
- Medications.
- Too much or too little sleep.
- Fasting or skipping meals.
- Aspartame.
- Monosodium glutamate (MSG).
- Exercise (frequency and intensity can impact the development of migraine headaches).
- Certain foods can sometimes trigger migraines on an individual basis.

Consistency is key to migraine prevention. Migraines are often triggered by changes in schedule, eating behaviors, and sleep patterns.

What are the conventional ways of treating migraine headaches?

There is no universal cure for migraine headaches and no absolute

way to prevent a migraine from happening. Nevertheless, prevention and treatment of migraine headaches is crucial and effective. Research has shown that after each migraine attack, another attack becomes more likely with some people developing chronic daily migraines. With the proper treatment, migraine headache attacks can significantly decrease and even become rare.^v Conventional treatments for migraine headaches include medication and behavioral approaches (such as tracking migraine triggers and psychotherapy).

Pharmaceutical Interventions

There are three main types of medications recommended or prescribed to people with migraine headaches:

1. Medications that lessen migraine pain:
 - Acetaminophen
 - Naproxen
 - Ibuprofen
 - Barbiturates
 - Narcotics
 - Dichloralphenazone
2. Medications (triptans) that help prevent migraines by constricting blood vessels and interrupting the chain of chemical reactions believed to cause migraine headaches.
3. Medications (CCRP monoclonal antibody) that interrupt or antagonize the effect of the calcitonin gene-related peptide (CGRP), which is a small protein found in the nerves in the head and neck and is involved in pain transmission. During migraine attacks, levels of CGRP increase and it is hypothesized that these proteins may be responsible for migraine attacks. There are two types of CGRP inhibitor medications:
 - **Monoclonal antibodies:** These are usually given as an injection over a series of months or quarterly and are used as a preventative. These drugs take longer to start working but are considered safe because there are few drug interactions, few side effects, they do not cross the blood brain barrier in high concentrations, and there is no real risk of kidney or liver

damage. Examples of CGRP inhibitors that are monoclonal antibodies and have been approved by the FDA for migraine prevention include:

- Aimovig (erenumab-aooe).
 - Ajoovy (fremanezumab).
 - Emgality (galcanezumab-gnlm).
 - Vyepti (eptinezumab-jjmr).
- **CGRP receptor antagonists (gepants):** These are pills can be taken as a preventative or during a migraine attack to decrease pain. These drugs work quickly because they penetrate the brain. However, because they are metabolized by the liver, they can potentially interact with other medications or cause liver damage. Examples of CGRP inhibitors that are receptor antagonists and have been approved by the FDA for migraine prevention and acute treatment include:
 - Ubrelvy (ubrogepant).
 - Nurtec ODT (rimegepant sulfate).

When migraine sufferers begin to experience headaches weekly, doctors will start to focus on other medications that may assist with migraine prevention. Acute medications should not be used for more than 10 days a month. If you have more than four headache days a month, it is important to look into ways to prevent future migraines.

Some people with chronic migraine headaches have also found medications typically prescribed for other chronic conditions can be effective. These medications include antidepressants, antihistamines, herbal medications, anti-seizure medications, and some blood pressure medications. Botulinum toxin injections have also been used to help with migraine prevention.

What are some tips to help prevent and treat migraines?

To learn more about the recommended use and appropriateness of the above pharmaceutical interventions to help prevent and treat migraine headaches, please visit the following resources:

- American Headache Society's Prescription Preventives for Migraine Guide: https://americanheadachesociety.org/wp-content/uploads/2020/10/AHS_Preventive_Treatment_Spinoff-V1.1.pdf
- American Headache Society's Selecting an Acute Treatment for a Migraine Patient: <https://americanheadachesociety.org/news/acute-treatment-for-migraine/>
- European Headache Federation's Guideline for the Treatment of Headache: https://ehf-org.org/wp-content/uploads/2013/12/JHP-suppl-S1-S47_by-Paolo.pdf

Behavioral/Therapeutic Interventions

Although medication is usually the first line of defense, behavioral interventions can be very effective in keeping migraine headaches at bay.

Tracking Migraine Triggers

It is important for people with migraine headaches to keep a log of their personal triggers. Understanding the role of lifestyle factors such as stress, anxiety, eating patterns, exercise, sleep, medication, food, and drink can help paint a picture of what factors under the individual's control are influencing the development of their migraines.

Food and Diet

A number of studies have looked at the impact of food choice as it relates to migraine triggers and frequency.

A systematic review of 43 randomized control trials on the role of diet and nutrition in migraine triggers found that alcohol and caffeine were the most common migraine triggers.^[viii]

The consumption of certain foods is also reported as a migraine trigger. An observational study looked at diet quality in 164 women with chronic migraines and 169 women with episodic migraines. The quality of the participants' diets were analyzed using the Healthy Eating Index (HEI) and classified into three diet-quality groups: "poor," "needs improvement," and "good." Women who had chronic migraines scored significantly lower on the HEI, indicating that their diet was not as nutrient rich (according to the Dietary Guidelines for Americans). Additionally, higher scores on the HEI were negatively correlated with chronic migraines.^[ix] In other words, the more nutritious your diet, the fewer problems you may have with migraines.

Dehydration and lack of water consumption are also migraine triggers. A study looking at water consumption found that those who consumed the most water had the lowest pain severity, shortest headaches duration, decreased migraine disability, and decreased migraine frequency (all $P < 0.001$).

Psychotherapy

Given that lifestyle factors can play a large role in the development of a migraine attack, some migraine sufferers find relief in seeing a psychotherapist. Studies have found that people with migraines report experiencing significantly more perceived stress and higher levels of depression than those who do not have migraines.^[x]

Additionally, 80% of participants in a research study reported stress as a migraine trigger.^[xi] Seeking the counsel of a trained psychotherapist and incorporating stress reduction methods is a key step for addressing triggers and reducing the impact migraine headaches have on an individual's life.

Side Effects/Safety Concerns

Psychotherapy, when delivered by a well-trained certified therapist, is widely considered a safe way of addressing migraine triggers and reducing the impact of migraines on day-to-day living. Note that any form of therapy can unearth uncomfortable emotions and may cause you to experience increased levels of psychological discomfort.

Evidence

Systematic reviews on the use of psychotherapy to assist in migraine prevention and reduction have found anywhere from a 20-67% improvement in migraine headache symptoms with psychotherapy alone.^[xiii]

A systematic review performed by Cochrane did not find that psychotherapeutic interventions had long-lasting effects on migraine headache frequency or the number of migraine days. However, small numbers of participants, a lack of high-quality evidence, and long-term follow up (only four studies followed patients over a long period of time) may have influenced study results.^[xiii]

The Mayo Clinic and the American Migraine Foundation both include a type of psychotherapy, Cognitive Behavioral Therapy (CBT), in their recommended behavioral interventions to address migraine headache frequency and stress-related triggers. A systematic review of 10 research studies on CBT found that seven of the 10 research studies reported significant benefits to engaging in CBT in comparison to a no-treatment control group, and those treated with antidepressants and relaxation techniques^[xiv] Interestingly, CBT plus relaxation and CBT plus placebo were more statistically significant than taking antidepressants alone or antidepressants plus CBT. However, due to the heterogeneity of the research designs and methodological inadequacies, more studies are needed to truly understand the role of CBT for people experiencing migraine headaches.

To better understand the process of psychotherapy and begin looking for a therapist and ways that psychotherapy can help you, please visit: <https://www.nimh.nih.gov/health/topics/psychotherapies/index.shtml>.

Neuromodulation Devices

Neuromodulation devices are designed to modulate or manipulate nervous system activity to reduce migraine headache frequency and intensity. Most neuromodulation devices require the administration or supervision of a physician or a prescription. These devices are reported to not only be preventative but can also be used during a migraine attack to address pain.

Neuromodulation devices can be an attractive alternative for people who have conditions or health issues that do not allow them to take migraine headache medication. Examples of neuromodulation devices that have been (FDA) approved are:

- Supraorbital Transcutaneous Neurostimulation
- Single-Pulse Transcranial Magnetic Stimulation
- Noninvasive Vagal Nerve Stimulation
- Trigeminal Nerve Stimulator

Neuromodulation devices that are still under investigation and are not currently FDA approved or readily available include:

- Auricular Noninvasive Vagal Nerve Stimulation (auricular

t-VNS)

- Transcranial Direct Current Stimulation (tDCS)
- Percutaneous Mastoid Electrical Stimulation (PMES)
- Transcutaneous Occipital Nerve Stimulation (tONS)
- Caloric Vestibular Stimulation (CVS)

To learn more about the different types of neuromodulation devices, please visit: <https://headachejournal.onlinelibrary.wiley.com/doi/full/10.1111/head.13586>.

External Trigeminal Nerve Stimulation devices are placed externally on the head and emit mild electrical signals to stimulate branches of the trigeminal nerve, which in turn modulates the brain activity of a targeted region. A recent systematic review published in JAMA found that in the two randomized control trials reviewed, the use of eTNS to address acute migraine headache was associated with improved pain ratings two hours and 24 hours post-administration^[xv].

Cefaly is a new eTNS device that is approved by the FDA as an over-the-counter option to treat migraine headache pain and related symptoms. The Cefaly device works by transmitting small electrical impulses that stimulate a branch of the trigeminal nerve (this nerve releases chemicals that expand the blood vessels which can cause a migraine) called the supraorbital nerves, which in turn can reduce the frequency and intensity of migraine attacks. The device is placed on the forehead, between the eyes, and will automatically shut off at the end of a 60-minute treatment session. It is reported that this device not only reduces acute migraine attack intensity but also the frequency of migraine headaches. For an acute migraine attack, relief from symptoms should occur within 60 minutes post device administration. To reduce the frequency and intensity of future migraine attacks, it is recommended that the device be administered 20 minutes every day.

Cefaly is fully covered under Veterans Health Administration benefits for the treatment of acute migraine headaches. For civilians, Cefaly is not universally covered by insurance and costs \$350 for the device and reusable electrodes.

A randomized control trial of 446 participants with a diagnosis of migraine headache (according to the International Classification of Headache Disorders) of more than year and two to eight migraines headaches a month compared two hours of the CEFALY Cefaly Abortive Program (active group) to two hours of a sham device program (control group). The study found that those who received the Cefaly Abortive Program were significantly more likely to be free from pain ($p=.0167$) and most bothersome symptom ($p=.0006$) two hours post-administration in comparison to the sham group^[xvi].

Remote Electrical Neuromodulation (RENS) Devices

An alternative to trigeminal nerve stimulation, non-invasive vagus nerve stimulation, and single-pulse transcranial magnetic stimulation are remote electronic neuromodulation (RENS) devices. The Nerivio is a newly FDA approved RENS device for

at-home use to address the acute pain caused by migraine attacks in people with a diagnosis of episodic and/or chronic migraine. The Nerivio device is indicated for acute treatment of migraine with or without aura in patients 12 years of age or older and is considered a safe and effective alternative to pharmacological treatment of migraine headaches. It is also non-invasive, battery operated, wearable, wireless, and is self-administered by the patient through a smartphone application. The device should be worn for 30-45 minutes within the first two hours of migraine onset and is placed on the lateral upper arm. The Nerivio device uses electrical signals to stimulate peripheral nerves causing the release of the neurotransmitters serotonin and noradrenalin, resulting in pain relief which have an analgesic effect.

This device can be obtained via a prescription from your doctor depending on insurance coverage and requirements. If you are a veteran, this device is available at no cost and for civilians it will cost \$10.00 for 12 doses and then \$99.00 for a refill.

There is also an evidence base supporting the use of the RENS device for the treatment of migraine headaches. A recent randomized double-blind placebo-controlled trial of 252 adults who met the criteria for migraine headaches (according to the International Classification of Headache Disorders) and reporting having two to eight headaches a month were randomized to either receive the RENS device (126 participants) or a sham device (126 participants). Participants were instructed to use the device within an hour of the onset of migraine headache for 30-45 minutes. The study found that the RENS device was significantly more effective than the sham device for achieving reduction in pain ($p < .0001$), complete pain relief (participants reporting they were pain free) ($p < .003$), and a reduction in most bothersome symptoms ($p < .008$) two hours post treatment. Participants in the RENS group also reported a significant reduction in most bothersome symptoms 48 hours post treatment than those in the sham group^[xvii]

Another study looked at the use of the RENS device in children (ages 12-17). A one-armed multicenter trial of children who met the classification of migraine headache (according to the International Classification of Headache Disorders) with or without aura who reported at least three migraine headaches monthly for the two months prior were instructed to use the RENS device at the onset of a migraine headache for four qualifying headaches within a two-month period. Participants recorded their pain intensity, migraine symptoms, and functionality before they used the RENS device, two hours post-administration, and 48 hours later. Seventy-one percent of participants reported that they experienced significant pain relief, 35% reported they were no longer experiencing any pain, and 69% participants reported increased functionality two hours post-administration^[xviii].

Are there integrative health approaches to treating migraine headaches?

It is estimated that over 50% of people with migraine headaches use integrative medicine approaches to prevent and address their migraine symptoms.^[xix] Integrative medicine practices may not only help address migraine triggers and frequency of attacks, but also

decrease migraine-related symptoms during an attack.

Acupuncture

Acupuncture is a practice in which a trained specialist called an acupuncturist stimulates specific points on the skin called acupoints, usually with a needle. Stimulating acupoints increases the release of chemicals like endorphins (naturally-produced pain reducers) in the body and brain. These chemicals may directly impact how a person experiences pain.

Side Effects

- Slight bleeding and bruising at the acupoint site.
- Fainting.
- Convulsions (rare).
- Pain or soreness at the acupoint site (which may be important for effectiveness).

Evidence

A Cochrane systematic review of 22 trials (with 4,985 participants) on the effectiveness of acupuncture for the prevention of episodic migraine concluded that adding acupuncture is an effective adjunctive treatment to usual care for people with migraine headaches.^[xx]

Another systematic review and meta-analysis of 28 randomized control trials (with 2,874 patients) on the impact of acupuncture on migraines reported that acupuncture had less adverse side effects, was more effective, and improved intracranial blood circulation when compared with medications. The authors also reported that acupuncture lowered pain scores, reduced the frequency of migraine attacks, and increased treatment effectiveness more than sham (placebo) acupuncture.^[xxi]

Exercise

Although for some people exercise can trigger migraine headaches, there is a body of evidence supporting its use for the prevention of future migraines. This is especially true when you exercise consistently and develop a routine. Large population-based studies have found that lack of exercise is associated with increased frequency of migraine headaches.^[xxii] Nevertheless, excessive and intense exercise can also be a migraine trigger.^[xxiii]

Side Effects

If you exercise with approval from your physician and the supervision of a trainer, side effects are minimal. Additionally, as exercise can be a migraine trigger, instituting an exercise regime that is not excessive or too intense and is followed consistently is important.

Some possible side effects include:

- Fatigue
- Pain and soreness
- Injuries
- Developing exercise obsession

- Migraine headache

Research

A systematic review and meta-analysis of six randomized control trials (357 total patients) found that there is moderate-quality evidence that aerobic exercise therapy decreases the number of migraine days. Additionally, a review of the individual studies showed reductions in pain intensity (ranging from 20-54%) and attack duration (ranging from 20-27%).^[xx]

A randomized control trial looking at aerobic exercise (45 minutes, tree times per week, bike/cross-trainer/brisk walking) to help treat migraine headaches found that those in the exercise group, experienced a significant reduction in migraine headache burden and increased ability to participate in exercise activities. Compared to the beginning of the study, the exercise group also experienced a significant reduction in pain intensity, duration, and migraine frequency.^[xxi]

Mindfulness Meditation

Meditation is a practice that involves consciously exerting control over breathing and attending nonjudgmentally to the present moment. It produces multiple physiological and chemical effects such as decreased heart rate, blood pressure, and cortisol (stress hormone) levels.

Side Effects

Meditation is widely considered a safe way of addressing physical and mental symptoms; side effects are rare.

- Although rare, there have been reports that engaging in breathwork has worsened symptoms of patients with psychiatric problems, such as anxiety. If you are attending a breathwork class, please make sure to alert your instructor of any condition you may have.
- Excessive, rapid breathing can drop carbon dioxide levels and change the pH of the blood, causing tingling, muscle cramps, light-headedness and, on rare occasions, seizures. If you are susceptible to seizures, consult your doctor before engaging in any type of meditation that includes intensive breathwork.

Research

A meta-analysis of 10 randomized control trials and one non-randomized, controlled clinical trial (with 315 patients included) looking at people with migraine or tension-type headache found that mindfulness meditation significantly reduced pain intensity and headache frequency when compared with a control group. Specifically, mindfulness-based stress reduction (MBSR) had the greatest impact on pain intensity ($P < 0.000$), and an intervention of eight weeks had the greatest impact on symptom reduction ($P < 0.000$).^[xxiii]

A randomized control trial looking at the impact of MBSR on 40 participants with the diagnosis of migraine and/or chronic tension-type headache found that headache pain and quality of life

significantly improved after engaging in eight weeks of MBSR.^[xxiv]

A recent publication in JAMA reported on a randomized control trial where 89 adult participants with four to 20 migraine days a month received either two hours of MBSR or a headache educational intervention for eight weeks (participants were blinded to group assignment). MBSR and the educational intervention had similar reductions in number of headache days; however, the MBSR group reported significantly improved functionality (measured using a disability scale), quality of life, self-efficacy, pain catastrophizing, and depression. These effects were sustained during the follow-up period (36 weeks). Additionally, participants in the MBSR group also showed a change in their perception and tolerance of pain when it was induced in a laboratory setting.

Biofeedback

Biofeedback is a self-regulation technique in which an individual learns to control physiological processes through the monitoring of these processes on devices such as a computer screen or a personal device. The device or computer program converts these physiological processes into meaningful information (visual or auditory), which enables the participant to change these processes through the use of breath, posture, thoughts, and expressions.^[xxv] Biofeedback has been found to help with relaxation, reduce stress, and decrease blood pressure. There are a number of different biofeedback methods, including heart rate, brainwaves, breathing, temperature, muscle contraction, skin charge, and sweat gland activity.^[xxvi] Biofeedback can be done with or without a biofeedback-trained professional.

Side Effects

Biofeedback is generally considered safe. If you have a medical condition and/or an implanted device, please speak with your doctor before starting biofeedback.

Evidence

A study looked at 37 patients with migraine headaches who received an intervention of neurofeedback and biofeedback three times a week for an average of six months. The study found that the combined biofeedback and neurofeedback intervention was more effective in decreasing headache frequency than medication alone. Additionally, the impact of the intervention lasted for an average of 14.5 months after the six month treatment ended.^[xxvii]

Another study looked at 27 patients with migraine headache who received eight, 30-minute sessions of a biofeedback intervention (EMG-biofeedback, temperature-biofeedback, and relaxation training) and were instructed to engage in progression muscle relaxation at home. The study found headache intensity significantly decreased after eight sessions of the biofeedback intervention in comparison to the control group. The intervention also decreased headache frequency by 1.9 days and significantly improved headache-related disability, psychological stress, depression, anxiety, and irritation.^[xxviii]

Supplements

Herbs and supplements involve taking a plant extract in liquid, powder, or pill form, usually orally, to either maintain or improve an individual's health. The most-used herbs and supplements for migraines are similar to those that treat chronic pain (in that they decrease inflammation in the body), but some are used specifically for migraine headaches. These include:

- Curcumin.
- Vitamin B1.
- Feverfew.
- Magnesium.
- CoQ10.

Several of these (especially CoQ10) may take a few months to be effective.

Side Effects

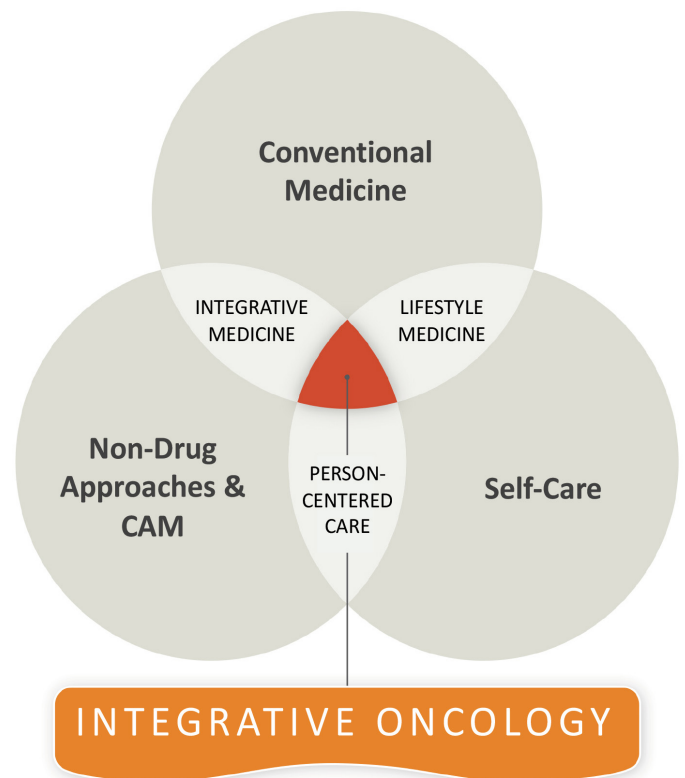
- To learn more about one or more of the above herbs or supplements and their potential side effects, please visit: <https://www.mayoclinic.org/drugs-supplements> or <https://www.fda.gov/Food/DietarySupplements/UsingDietarySupplements/default.htm>.
- If you are currently taking prescription medication to treat your migraine headaches, do not begin taking supplements until you have spoken to your physician as there may be interactions that can occur with your medications.

Bottom Line

Conventional therapies work for migraine headaches, and your doctor or primary care provider will most likely recommend or offer you those treatments first. Usually, you will be offered medications and told to track the behaviors, situations, and food choices that trigger migraines or increase their frequency. For people who find that life-related stress and mental health issues, trigger migraine headaches, psychotherapy (usually CBT) will be recommended. However, many find that adding integrative

modalities (such as acupuncture, mindfulness, biofeedback, and/or vitamins or herbs) into their treatment plan can augment migraine prevention and decrease the frequency and intensity of their migraine headaches. To review the latest research on integrative medicine interventions to address migraine headache symptoms, please visit: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6559232/>

If you would like to learn more about how to find treatments for migraine headaches, please visit: <https://www.mayoclinic.org/diseases-conditions/migraine-headache/diagnosis-treatment/drc-20360207>



References:

- [i] Scripps. (2020, September 6). *5 Surprising Facts About Migraine Headache*. Retrieved from https://www.scripps.org/news_items/6103-surprising-facts-about-migraine
- [ii] Migraine Headache Foundation. (2020, September 8). *Migraine is an extraordinarily prevalent neurological disease, affecting 39 million men, women and children in the U.S. and 1 billion worldwide*. Retrieved from <https://migraineresearchfoundation.org/about-migraine/migraine-facts/#:~:text=Nearly%201%20in%204%20U.S.,ages%20of%2018%20and%2044.>
- [iii] World Health Organization (2020, September 6). *Headache Disorders*. Retrieved from <https://www.who.int/en/news-room/fact-sheets/detail/headache-disorders>
- [iv] Steiner, T. J., Stovner, L. J., Vos, T., Jensen, R., & Katsarava, Z. (2018). Migraine is first cause of disability in under 50s: will health politicians now take notice?. *The journal of headache and pain*, 19(1), 17. <https://doi.org/10.1186/s10194-018-0846-2>
- [v] National Institute of Neurological and Stroke. (2020, September 6) *Migraine Information Page*. Retrieved from <https://www.ninds.nih.gov/Disorders/All-Disorders/Migraine-Information-Page>
- [vi] Charles, Andrew. "The Pathophysiology of Migraine: Implications for Clinical Management." *The Lancet Neurology* 17, no. 2 (February 2018): 174–82. [https://doi.org/10.1016/S1474-4422\(17\)30435-0.](https://doi.org/10.1016/S1474-4422(17)30435-0)
- [vii] Mayo Clinic. (2020, September 7). *Migraine*. Retrieved from <https://www.mayoclinic.org/diseases-conditions/migraine-headache/symptoms-causes/syc-20360201>
- [viii] Hindiyeh, N. A., Zhang, N., Farrar, M., Banerjee, P., Lombard, L., & Aurora, S. K. (2020). The Role of Diet and Nutrition in Migraine Triggers and Treatment: A Systematic Literature Review. *Headache*, 10.1111/head.13836. Advance online publication. <https://doi.org/10.1111/head.13836>
- [ix] Hajjarzadeh, S., Nikniaz, Z., Shalilhamadi, D., Mahdavi, R., & Behrouz, M. (2019). Comparison of Diet Quality Between Women With Chronic and Episodic Migraine. *Headache*, 59(8), 1221–1228. <https://doi.org/10.1111/head.13623>
- [x] Eskin, M., Akyol, A., Çelik, E. Y., & Gültekin, B. K. (2013). Social problem-solving, perceived stress, depression and life-satisfaction in patients suffering from tension type and migraine headaches. *Scandinavian journal of psychology*, 54(4), 337–343. <https://doi.org/10.1111/sjop.12056>
- [xi] Kelman L. (2007). The triggers or precipitants of the acute migraine attack. *Cephalalgia: an international journal of headache*, 27(5), 394–402. <https://doi.org/10.1111/j.1468-2982.2007.01303.x>
- [xii] Sullivan, A., Cousins, S., & Ridsdale, L. (2016). Psychological interventions for migraine: a systematic review. *Journal of neurology*, 263(12), 2369–2377. <https://doi.org/10.1007/s00415-016-8126-z>
- [xiii] Sharpe, L., Dudeny, J., Williams, A., Nicholas, M., McPhee, I., Baillie, A., Welgampola, M., & McGuire, B. (2019). Psychological therapies for the prevention of migraine in adults. *The Cochrane database of systematic reviews*, 7(7), CD012295. <https://doi.org/10.1002/14651858.CD012295.pub2>
- [xiv] Harris, P., Loveman, E., Clegg, A., Easton, S., & Berry, N. (2015). Systematic review of cognitive behavioural therapy for the management of headaches and migraines in adults. *British journal of pain*, 9(4), 213–224. <https://doi.org/10.1177/2049463715578291>
- [xv] VanderPluym, J. H., Halker Singh, R. B., Urtecho, M., Morrow, A. S., Nayfeh, T., Torres Roldan, V. D., Farah, M. H., Hasan, B., Saadi, S., Shah, S., Abd-Rabu, R., Daraz, L., Prokop, L. J., Murad, M. H., & Wang, Z. (2021). Acute Treatments for Episodic Migraine in Adults: A Systematic Review and Meta-analysis. *JAMA*, 325(23), 2357–2369. <https://doi-org.liboff.ohsu.edu/10.1001/jama.2021.7939>
- [xvi] Kuruvilla DE, Starling AJ, Tepper SJ, Mann JI, Johnson M. A phase 3 randomized, double-blind, sham-controlled trial of e-TNS for the acute treatment of migraine (TEAM). Presented at 2021 AHS Annual Scientific Meeting; June 3-6. Abstract IOR-02.
- [xvii] Yarnitsky, D., Dodick, D. W., Grosberg, B. M., Burstein, R., Ironi, A., Harris, D., Lin, T., & Silberstein, S. D. (2019). Remote Electrical Neuromodulation (REN) Relieves Acute Migraine: A Randomized, Double-Blind, Placebo-Controlled, Multicenter Trial. *Headache*, 59(8), 1240–1252. <https://doi-org.liboff.ohsu.edu/10.1111/head.13551>
- [xviii] Hershey, A. D., Lin, T., Gruper, Y., Harris, D., Ironi, A., Berk, T., Szperka, C. L., & Berenson, F. (2021). Remote electrical neuromodulation for acute treatment of migraine in adolescents. *Headache*, 61(2), 310–317. <https://doi-org.liboff.ohsu.edu/10.1111/head.14042>
- [xix] Wells, R. E., Beuthin, J., & Granetzke, L. (2019). Complementary and Integrative Medicine for Episodic Migraine: an Update of Evidence from the Last 3 Years. *Current pain and headache reports*, 23(2), 10. <https://doi.org/10.1007/s11916-019-0750-8>
- [xx] Linde, K., Allais, G., Brinkhaus, B., Fei, Y., Mehring, M., Vertosick, E. A., Vickers, A., & White, A. R. (2016). Acupuncture for the prevention of episodic migraine. *The Cochrane database of systematic reviews*, 2016(6), CD001218. <https://doi.org/10.1002/14651858.CD001218.pub3>
- [xxi] Ou, M. Q., Fan, W. H., Sun, F. R., Jie, W. X., Lin, M. J., Cai, Y. J., Liang, S. Y., Yu, Y. S., Li, M. H., Cui, L. L., & Zhou, H. H. (2020). A Systematic Review and Meta-analysis of the Therapeutic Effect of Acupuncture on Migraine. *Frontiers in neurology*, 11, 596. <https://doi.org/10.3389/fneur.2020.00596>
- [xxii] Amin, F. M., Aristeidou, S., Baraldi, C., Czapska-Ciepiela, E. K., Ariadni, D. D., Di Lenola, D., Fenech, C., Kampouris, K., Karagiorgis, G., Braschinsky, M., Linde, M., & European Headache Federation School of Advanced Studies (EHF-SAS) (2018). The association between migraine and physical exercise. *The journal of headache and pain*, 19(1), 83. <https://doi.org/10.1186/s10194-018-0902-y>
- [xxiii] Koppen, H., & van Veldhoven, P. L. (2013). Migraineurs with exercise-triggered attacks have a distinct migraine. *The journal of headache and pain*, 14(1), 99. <https://doi.org/10.1186/1129-2377-14-99>
- [xxiv] Lemmens, J., De Pauw, J., Van Soom, T., Michiels, S., Versijpt, J., van Breda, E., Castien, R., & De Hertogh, W. (2019). The effect of aerobic exercise on the number of migraine days, duration and pain intensity in migraine: a systematic literature review and meta-analysis. *The journal of headache and pain*, 20(1), 16. <https://doi.org/10.1186/s10194-019-0961-8>
- [xxv] Krøll, L. S., Hammarlund, C. S., Linde, M., Gard, G., & Jensen, R. H. (2018). The effects of aerobic exercise for persons with migraine and co-existing tension-type headache and neck pain. A randomized, controlled, clinical trial. *Cephalalgia: an international journal of headache*, 38(12), 1805–1816. <https://doi.org/10.1177/0333102417752119>
- [xxvi] Gu, Q., Hou, J. C., & Fang, X. M. (2018). Mindfulness Meditation for Primary Headache Pain: A Meta-Analysis. *Chinese medical journal*, 131(7), 829–838. <https://doi.org/10.4103/0366-6999.228242>
- [xxvii] Seng, E. K., Singer, A. B., Metts, C., Grinberg, A. S., Patel, Z. S., Marzouk, M., Rosenberg, L., Day, M., Minen, M. T., Lipton, R. B., & Buse, D. C. (2019). Does Mindfulness-Based Cognitive Therapy for Migraine Reduce Migraine-Related Disability in People with Episodic and Chronic Migraine? A Phase 2b Pilot Randomized Clinical Trial. *Headache*, 59(9), 1448–1467. <https://doi.org/10.1111/head.13657>
- [xxviii] Frank, D. L., Khorshid, L., Kiffer, J. F., Moravec, C. S., & McKee, M. G. (2010). Biofeedback in medicine: who, when, why and how?. *Mental health in family medicine*, 7(2), 85–91.
- [xxix] Mayo Clinic. (2020, September 9). *Biofeedback*. Retrieved from <https://www.mayoclinic.org/tests-procedures/biofeedback/about/pac-20384664>
- [xxx] Stokes, D. A., & Lappin, M. S. (2010). Neurofeedback and biofeedback with 37 migraineurs: a clinical outcome study. *Behavioral and brain functions: BBF*, 6, 9. <https://doi.org/10.1186/1744-9081-6-9>
- [xxxi] Kondo, K., Noonan, K. M., Freeman, M., Ayers, C., Morasco, B. J., & Kansagara, D. (2019). Efficacy of Biofeedback for Medical Conditions: an Evidence Map. *Journal of general internal medicine*, 34(12), 2883–2893. <https://doi.org/10.1007/s11606-019-05215-z>