

Why do people get headaches and migraines? A child neurologist explains the science of head pain and how to treat it

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There are steps you can take to relieve headache pain and prevent future attacks.

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Curious Kids is a series for children of all ages. If you have a question you'd like an expert to answer, send it to CuriousKidsUS@theconversation.com.

Why do people get headaches? – Evie V., age 10, Corpus Christi, Texas

Whether sharp and stabbing or dull and throbbing, a headache can ruin your day. But your brain doesn't actually feel pain. So what is going on when it feels like your head is in a vise or about to explode?

I am a child neurologist – that is, a doctor who specializes in diseases of the brain in kids. Most of my patients are kids and adolescents who are struggling with headaches.

Head pain is complicated, and there is still a lot to learn about what causes it and how it can be treated. But researchers know there are a few key players that take part in generating pain.

What are headaches?

Nerves communicate information like pain through electrical signals between the body and the brain.

While the brain itself doesn't have any nerve sensors to feel pain, blood vessels in the head and structures that protect and surround the brain do sense pain. When these tissues detect injury or damage, they release chemicals that trigger transmission of electrical signals through nerves to tell the brain the head is hurting.

The brain will also use nerves to signal the body to respond to pain with symptoms like feeling tired, teary eyes, runny nose, upset stomach and discomfort in bright or loud environments. It's not clear why humans evolved to feel these symptoms, but some scientists theorize that this can lead to healthier lifestyle choices to decrease the chance of future headache attacks.

What causes headaches?

Often, headaches are a sign that the body is under some kind of stress. That stress triggers chemical and physical changes to the nerves and blood vessels around your brain, head and neck that can cause headaches.

Many types of stresses can cause headaches, including an infection, allergies, hormone changes during puberty and menstrual cycles, not getting enough sleep, not drinking enough water, skipping meals or drinking too much caffeine or alcohol. Sometimes, headaches happen with emotional stress, like feeling anxious or depressed. Even pressure in your sinuses due to changes in the weather can cause your head to hurt.

One in 11 kids have had a type of severe headache called a migraine. They feel like a pulsing and pounding pain in your head and come with other symptoms, including nausea or being sensitive to lights and sounds. During a migraine, it can be hard to do everyday activities because they can make the pain worse. It is also very common to feel unwell or irritable before the head pain starts and after the pain is gone.



Migraines and chronic headaches can be debilitating.

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Migraines occur when the nerves and other structures used in signaling and interpreting pain aren't working properly, leading to pain and discomfort from stimulation that wouldn't normally provoke this. There are many environmental and genetic factors that contribute to this dysfunction. Some people are born with a higher risk of developing migraines. Most people with migraines have someone in their family who also experiences them.

What can treat and prevent headaches?

Identifying what type of headache you're experiencing is crucial to making sure it is treated properly. Because migraines can be severe, they're the type of headache that most often leads to doctor's visits for both kids and adults.

There are several ways to reduce your chances of having headaches, such as drinking plenty of water and limiting caffeine. Eating, sleeping and exercising regularly are other ways you can help prevent headaches.



Sleep deprivation can worsen headaches.

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While painkillers like ibuprofen are often enough to relieve a headache, prescription medications are sometimes necessary to make head pain more bearable. Some medications can also help control or prevent headache episodes. Physical therapy to exercise the body or behavioral therapy to work on the mind can also help you manage headache pain. There are even electronic devices to treat headaches by stimulating different parts of the nervous system.

It is important to talk with a doctor about headaches, especially if it's a new problem or you experience a change in how they usually feel. Sometimes, brain imaging or blood tests are needed to rule out another health issue.

Recognizing a headache problem early will help your doctor get started on helping you figure out the best way to treat it.

Hello, curious kids! Do you have a question you'd like an expert to answer? Ask an adult to send your question to CuriousKidsUS@theconversation.com. Please tell us your name, age and the city where you live.

And since curiosity has no age limit – adults, let us know what you're wondering, too. We won't be able to answer every question, but we will do our best.

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