

Gut-brain connection affects overall health

Q I have been hearing about the gut-brain connection. Can you explain what that means and how what I eat makes any difference? — **KM, Greenville**

A The gut-brain axis is something I never learned about in my training and even during my years of active patient care. The science of nutrition continues to evolve, and I asked Bryce Pugh, a first-year ECU Brody Medical student with an interest in neurosurgery and passion for brain health, to provide a great explanation for you. Here is what he wants you to know.

Have you ever experienced “butterflies in your stomach” or noticed your mood changing when hunger strikes? It’s easy to see how certain emotions, such as nervousness or hunger, might forge a connection between our gut and brain.

While these may seem like nothing more than old sayings, current research suggests that there is a remarkable gut and brain connection, known as the gut-brain axis. Scientists suggest the connection plays a big role in our physical, social, and mental health.

I will describe how this works a little later, but the key concept to remember for a healthy gut is diversity in what we eat. I grew up eating a traditional southern diet and it was easy to have a plate full of yellow or brown food. The first step is to make sure your plate has a variety of different colors, particularly from colorful fruits and vegetables.

These foods are typically rich in fiber, a type of carbohydrate, that the “good bacteria” in your gut love. These bacteria are essential to maintain



FILE PHOTO/THE DAILY REFLECTOR

Dr. Rebecca Laurine, a family medicine resident with the Brody School of Medicine, sautés vegetables at a culinary workshop in 2022. Make sure your plate has a variety of different colors, particularly from colorful fruits and vegetables. These foods are typically rich in fiber, a type of carbohydrate, that the “good bacteria” in your gut love.

a healthy gut. When your gut bacteria are happy and healthy, they send those good signals to your brain.

Eating fast-food several times a week is likely negatively impacting more than just your physical health. It’s not just about what you eat though. It can be

just as important to your gut-brain axis to get regular exercise, quality sleep, and take steps to manage your stress. Overall health will only come by taking a holistic approach.

We can see how what we eat will cause our gut to talk to our brain, but the gut-brain axis is a two-way street. Let’s look at how the brain sends signals to the stomach. This is most apparent when we feel stressed. Maybe you have an important upcoming event or a conversation you are not looking forward to, your brain will signal anxiety and stress

and your gut will react to that signal. You might experience “butterflies in your stomach,” or digestive discomfort. Your gut and brain are in sync, and when one is feeling troubled, the other can feel it too.

I am really intrigued by the major impact that the gut-brain axis can have on overall health. New discoveries link the gut-brain connection to disorders like anxiety and depression, Parkinson’s disease, irritable bowel syndrome, multiple sclerosis and obesity.

The gut-brain axis is not the only, or even a primary, cause for many of these disorders but it does play a large role. You can work towards improving it, starting today, by nurturing this special connection between the gut and brain.

Your lifestyle and daily choices, especially your diet, make a difference. When we eat, we are directly providing our gut with information that will be turned into signals to our brain. So, what should we eat? There is no magic diet, super food, dietary

supplement or secret recipe to achieve great health. Rather, it is the general patterns that we follow throughout our lives that make a big difference. And there is not a one-size-fits-all answer. You should find what healthy lifestyle habits work for you and what you enjoy.

Before we look at more dietary suggestions, let’s take another view of how the gut-brain axis works. I like to think of it as if your gut and brain are two towns. These towns have mail carriers that deliver important letters and messages back and forth. This “mail route” is the gut-brain axis and is a complex system of nerves, hormones and other chemicals that link your brain and digestive system. Just as letters travel on the mail route, information travels back and forth on the gut-brain axis to impact your emotions, stress response and even your thoughts.

Some other foods that your gut loves are whole grains, legumes and fermented foods. Dark leafy greens like kale, spinach, and collard greens are one of the most powerful additions you can make to your diet.

Dr. Kolasa will write more about fermented foods like kefir, yogurt, some cottage and other cheeses with live cultures, sauerkraut, other fermented vegetables, kombucha without sugar and tempeh.

Scientists may be on the brink of exciting discoveries leading to enhanced well-being and healthier, happier futures. Your choices matter. By feeding both your belly and your mind, you’re contributing to a promising journey of holistic health and vitality.

Professor emeritus **Kathy Kolasa**, a registered dietitian nutritionist and Ph.D., is an affiliate professor in the Brody School of Medicine at ECU.

ASK THE DOCTORS

Heat illness ranges from annoying to life threatening

Q I had a scare exercising on a hot day. I got a terrible headache, my skin got clammy and I felt really weak. I was sure I was going to faint. I had to get into a cool bath to start feeling better. I drank plenty of water and was sweating a lot. Shouldn’t that have protected me?

A You have described the symptoms of heat exhaustion. It’s a heat-related illness on a spectrum that ranges from unpleasant to life-threatening.

These illnesses occur when the body begins to exceed the fairly narrow span of core temperature of 97 to 99 degrees Fahrenheit that it needs to function properly.

When you begin to overheat, your body takes immediate steps to counteract it. The first is cooling the blood by sending it to the surface of the skin. It causes the red-ened flush we get during exercise. This is accompanied by sweating, which provides surface moisture for an evaporative effect. When these are insufficient, core body temperature will begin to rise. That’s when heat illness sets in.

Known as hyperthermia, heat illnesses are a serious health threat. On the milder side are heat cramps. These are painful muscle spasms that can occur during or after strenuous exercise in hot weather. While not an immediate threat to health, they can be a warning sign of heat exhaustion.

In heat exhaustion, core body temperature begins to rise. In addition to resting and gradually rehydrating, it’s important to cool the skin to reverse the effects of excessive heat. This can be done with a bath or shower, or by spraying or sponging the skin with cool water.

If left untreated, heat exhaustion will progress to heat stroke. This is a medical emergency. Without immediate medical intervention, heat stroke can cause permanent disability, and potentially lead to death.



EVE GLAZIER



ELIZABETH KO

Heat stroke occurs when the body loses all control over maintaining core temperature. The symptoms are similar to those of heat exhaustion. However, in heat stroke, the body stops producing sweat. Skin becomes dry, red and hot to the touch. Someone with heat stroke will also have a rapid and pounding pulse, confusion and eventually lose consciousness.

You’re correct that drinking plenty of water, which the body needs to produce sweat, is crucial to preventing heat-related illnesses. However, sometimes it’s not enough. In areas of high humidity, sweat evaporates far more slowly, if at all. This cancels out the body’s primary cooling mechanism.

Exercise is another factor. The action of our muscles generates a large amount of heat. When exercising in hot weather, it’s possible to raise core body temperature to dangerous levels. This is known as exercise-induced hyperthermia.

To stay safe, exercise early in the day, when it’s cooler. Spend the heat of the day in a cool place. If your home is inadequate in this regard, use public spaces, such as malls, public libraries and senior citizen centers, which are air-conditioned. Many communities open dedicated cooling centers during a heat wave.

We have experienced extended heat waves all over the United States this summer. Please take the potential threat of these hot days seriously.

Eve Glazier, M.D., MBA, is an internist and associate professor of medicine at UCLA Health. **Elizabeth Ko, M.D.**, is an internist and assistant professor of medicine at UCLA Health.

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