



Diabetes

The Effects of Diabetes on the Brain

Here's something that may blow your mind. Did you know that diabetes can affect your brain? Your brain is sensitive to the amount of glucose (sugar) it receives. Both high and low blood sugar can damage blood vessels in the brain. Learn how managing your blood sugar can help keep your body and brain healthy.

You probably know that keeping your blood sugar in your target range is key for managing diabetes and preventing complications like heart disease and vision loss. But did you know that episodes of high and low blood sugar can affect brain function? This is because your brain is sensitive to the amount of sugar it receives.



Managing your blood sugar can help keep your body and brain healthy.

You can help prevent or delay problems by keeping your blood sugar as close to your target levels as possible. Learn about the connection between diabetes and the brain and how managing your blood sugar can help keep your brain and the rest of your body healthy.

The Connection Between Diabetes and the Brain

Your brain is your body's command center. It's made up of nerve cells that keep your body functioning—even while you sleep. It also controls how you feel, learn, and remember. And in order to do all this work, your brain uses sugar in your blood for energy. The brain is the most energy-demanding organ—needing half of all the sugar energy in the body to function properly.

If your blood sugar levels fall outside of your normal range, it can throw your command center off balance. In the same way that diabetes can cause [nerve damage](#) to your eyes, feet, and hands, it can also affect your brain by damaging nerves and blood vessels. This can lead to problems with memory and learning, mood shifts, weight gain, hormonal changes, and over time, other serious problems like [Alzheimer's disease](#). Since both high and low blood sugar levels can cause these harms, it's especially important for people with diabetes to keep their blood sugar at target levels.

Hyperglycemia and the Brain

Because your brain relies on sugar for its energy source, you may think, "*The more sugar I give it, the better off my brain will be.*" But that couldn't be further from the truth. Having frequent episodes of hyperglycemia (high blood sugar) can stress the brain. And because the effects of high blood sugar happen over time and aren't obvious right away, many people don't know that their brain is being affected.

High blood sugar over time damages blood vessels in the brain that carry oxygen-rich blood. When your brain receives too little blood, brain cells can die. This is called *brain atrophy* and can cause problems with memory and thinking and eventually can lead to vascular dementia.

Your doctor will set a personal blood sugar target range for you. You can help protect your brain by keeping your blood sugar as close to your target levels as possible and by eating a diet rich in vegetables, fiber, and fruit along with getting regular physical activity. These healthy habits can help you manage your diabetes and support your brain health.

Hypoglycemia and the Brain

Hypoglycemia (low blood sugar) happens when your blood sugar levels drop below 70 mg/dL and can be extremely dangerous if left untreated. When your brain doesn't get enough sugar, it shuts down the oxygen to the brain. And unlike high blood sugar, which takes time to affect the brain, when you have low blood sugar the signs are often immediate. Symptoms of low blood sugar may include feeling dizzy, shaky, or irritable, and you may have trouble walking or talking. Severe low blood sugar can cause you to pass out or have seizures. It can even put you in a coma.

Some people with low blood sugar may not have any symptoms, which can make it hard to treat early. This is why it's important to check your blood sugar often, so you can [treat your low blood sugar](#) before it causes serious problems. And although it's not clearly understood if low blood sugar causes long-term effects to the brain, some research does show that big dips in blood sugar may be linked to problems with depression, memory, and attention span. If you have any of these problems and have frequent low blood sugar episodes, talk to your doctor, who can help:

- Figure out why you may be having low blood sugar episodes.
- Adjust your medicine, if needed.
- Refer you to a mental health counselor to help with feelings of depression.

Keep Brain Health Top of Mind

There are things you can do to improve or prevent problems with brain health and diabetes, such as:

- Follow a [healthy eating plan](#) that fits your needs.
- Maintain a healthy weight.
- Monitor your blood sugar.
- Keep your blood sugar within target levels.
- Get regular physical activity.
- Take medicine as prescribed.
- Choose not to drink or drink in [moderation](#).
- [Stop smoking](#) if you smoke.
- Manage stress.
- Talk to your doctor about any concerns you may have.

Learn More

- [Monitor Your Blood Sugar](#)
- [Insulin Resistance and Diabetes](#)
- [Prevent Diabetes Complications](#)
- [Diabetes Self-Management Education and Support](#)
- [CDC Diabetes on Facebook](#)
- [@CDCDiabetes on Twitter](#)