



# mind matters

Diabetes may be affecting much more than your blood sugar—perhaps even your thoughts.

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Are there times when your mind isn't quite working the way it should? Everyone misplaces car keys now and again—that's normal. Researchers are curious about how diabetes may be linked to the development of serious mind matters, such as cognitive decline and forms of vascular dementia, such as Alzheimer's disease. The relationship between diabetes and cognitive changes is not clear. Blood glucose control, however, may help reduce the risks of losing memory and thinking skills.

## Vascular issues

Measuring the links between cognitive problems and diabetes is challenging because it can be difficult to untangle over time the effects of high and low blood glucose levels, high blood pressure, and other risk factors, such as obesity, that often are present, especially in people with type 2 diabetes. These can contribute to blood vessel damage in the brain, which can affect cognition.

## Hypoglycemia

In addition to the role of vascular issues on cognition, hypoglycemia (low blood glucose) raises concerns. Does severe low blood glucose (requiring the help of others), particularly in children or the elderly, cause cognitive problems?

In the immediate term, severe hypoglycemia can cause short-term cognitive impairment, such as slowed ability to accurately subtract numbers. But over time the effects seem to do no long-term damage. A look at adolescents in the Diabetes Control and Complications Trial found that "despite relatively high rates of severe hypoglycemia, cognitive function did not decline over an extended period of time in the youngest cohort of patients with type 1 diabetes," says Gail Musen, Ph.D., an investigator at the Joslin Diabetes Center in Boston.

## A lack of evidence

Not everyone is convinced that the correlation between diabetes and cognitive decline is strong. Many

## Healthful eating and regular exercise may benefit your thinking and memory skills as much as they do your blood sugar levels.

applicable studies don't follow patients for decades, so they have to rely on assumptions of later outcomes. Gerald Bernstein, M.D., director of the Diabetes Management Program at the Friedman Diabetes Institute at Beth Israel Medical Center in New York, has seen longer-term effects.

Because of the strides in medication and therapy for glucose control, Bernstein has a decent sample size of patients whom he has been able to watch over the years. This leads him to say that the cognitive relation to diabetes is overrated and, in some cases, may be unfounded. "I talk to people whom I saw 20 years ago and they've had diabetes for 30 to 40 years," he says. "Their cognition is fine for all practical purposes. There are data where people have done technical cognition studies, which has nothing to do with real living.

"The controls for these studies have not been efficient because you can have altered cognition due to obesity and lack of physical exercise," he says.

### Protecting yourself

If cognitive decline turns out to be strongly related to diabetes, one of the most important ways to protect

yourself is to reach and maintain your targets for blood glucose, blood pressure, blood lipids (cholesterol), and weight—the factors you can work to control. That provides some protection against factors beyond your control.

Lisa Barnes, Ph.D., an associate professor at the Rush Alzheimer's Disease Center in Chicago and a cognitive neuropsychologist, looked at one such factor: race. Type 2 diabetes is twice as common in black people than in white people. She coauthored a 1,437-person study that looked at the effects of race and the possible diabetes-cognition connection. The results showed no significant difference between races and cognition.

Other findings, Barnes says, are possible diabetes connections to Alzheimer's, vascular factors, and higher BMI as predicted factors. It's also possible that diabetes relates to a pathology of Alzheimer's. "If it turns out to be vascular, then changes such as exercising much more, better eating habits, or ceasing smoking could be a major difference," she says. "If it's the pathology, then we could use similar diabetes drugs to slow the progressing of Alzheimer's."


Bonnie Whitehead, Ph.D., who has investigated cognitive function and type 2 diabetes at the University of Alberta in Canada also sees these possible causations as incentives to take care of yourself. "We know that chronic inflammation is associated with type 2, and obesity

is characterized by chronic levels of inflammation," she says. "You also have to look at obesity and inflammation possibly playing a central role in Alzheimer's and how it develops. The connections could very well be there."

### Maintaining awareness

People shouldn't overreact at the slightest bit of forgetfulness—those with diabetes have enough on their plate without creating unnecessary fears about the future. The goal of these findings is to educate, not to scare. "This cognition problem probably won't just come out of nowhere," Barnes says.

Maintaining awareness of your memory and thinking skills is an important self-care behavior. Where in the past you might ignore lacking lucidity, now it's something to share with your doctor. In addition, put people close to you on alert. They may notice something that you don't because it's hard to observe our own changes over time.

Studies that combine two diseases, such as diabetes and Alzheimer's, might find further clues to fighting both. "It becomes possible that Alzheimer's medication could suddenly become relative to diabetes patients or could even become the right prescription," Barnes says. 

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