

# Depression may trigger diabetes in older adults

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Chronic depression or depression that worsens over time may cause diabetes in older adults, according to new Northwestern University research.

This is the first national study to suggest that depression alone -- and not lifestyle factors like being overweight -- can trigger Type 2 diabetes in adults 65 and older, a population with a high prevalence of diabetes and depression. The report will be published April 23 in *Archives of Internal Medicine*.

The study examined 4,681 men and women 65 and older from Forsyth County, N.C.; Sacramento County, Calif.; Washington County, Md.; and Pittsburgh, Pa., annually for 10 years.

"This means doctors need to take depressive symptoms in older adults very seriously because of the effect it has on the likelihood of developing diabetes," said Mercedes Carnethon, lead author of the study and assistant professor of preventive medicine at Northwestern's Feinberg School of Medicine.

An estimated 2 million older adults suffer from clinical depression, the second highest incidence of any age group. People 65 and older also have the highest prevalence of Type 2 diabetes.

"Diabetes is a scourge," said Carnethon. "It causes heart disease, blindness, kidney disease, leg amputations and lowered cognitive

function because it essentially degrades the small and large blood vessels."

The study differed from prior research in several ways. It is the first to examine the connection between increasing symptoms of depression over time and the incidence of diabetes.

Previous studies linking diabetes to depression have been based on a one-time measure of depressive symptoms. A single measure could be based on an episode or event that has caused a person to feel blue for a limited amount of time.

Carnethon's study measured depressive symptoms at a single point in time as well as depressive symptoms over time. This approach paints a more accurate depiction of depressive symptoms. By measuring depressive symptoms before diabetes developed, she and colleagues were better able to investigate the causal effect between mood and diabetes.

The Northwestern study also factored out other known lifestyle causes of diabetes such as being overweight or getting little physical exercise.

"We know that overweight and obesity are the primary risk factors for diabetes and most people with Type 2 diabetes are overweight or obese," Carnethon said. "But even after we adjusted for [statistically accounted for] body mass index (measure of height versus weight), we still saw a residual association between depression and diabetes."

In addition, the study considered a key biological factor – a high level of inflammation common in depressed people -- that might have explained the link between depression and diabetes. Inflammation is estimated by the levels of an inflammatory protein in the blood called C-reactive protein. But even after accounting for levels of the protein, depressive

symptoms were still associated with the development of diabetes.

Carnethon theorizes that the culprit responsible for diabetes in persons who are depressed is a high level of a stress hormone, cortisol. High levels of cortisol may decrease insulin sensitivity and increase fat deposits around the waist (a risk factor for diabetes). While her study was limited to older adults, she believes high cortisol levels in depressed younger adults may also put them at risk for diabetes.

Insulin enables glucose (sugar) to enter the body's cells to be used as fuel. When people are under acute stress or are depressed, the cells in the pancreas are suppressed and secrete less insulin to enable the body to sweep glucose out of the bloodstream. Compounding the problem, high cortisol levels decrease the muscles' sensitivity to insulin, which also could result in elevated glucose levels, Carnethon said.

"When you're depressed or under stress your body is trying to keep glucose in the bloodstream because it needs it for immediate energy," Carnethon noted. "So, it's blocking insulin action. And you may even be producing more glucose because your body thinks it needs the sugar."

Carnethon said the study shows the importance of screening older adults for depressive symptoms. "It's not a normal condition for older adults to be depressed," she said. "I think a lot of people say, 'Oh, they're old, they should be depressed. What does it matter if they're a little bit down?' Well, it does matter and you should treat it aggressively because it has effects on health beyond that of mood."

Source: Northwestern University

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