

'Healthy obesity'? Storing fat around waist may not always increase your diabetes risk

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New research adds to the discussion about whether there's such a thing as "healthy obesity" and for whom it applies. UVA scientists found clues in genetics. Credit: Emily Faith Morgan, University Communications

Conventional wisdom holds that storing fat around your belly increases

your risk for type 2 diabetes. But surprising new findings from the University of Virginia School of Medicine suggest that naturally occurring variations in our genes can lead some people to store fat at the waist while protecting them from diabetes.

The unexpected discovery provides a more nuanced view of the role of [obesity](#) in diabetes and related health conditions. The work is published in the journal *eLife*.

The new understanding could also pave the way for treatments tailored to the individual. For example, doctors might prioritize weight loss for patients whose genes put them at increased risk of diabetes, but place less emphasis on weight loss for patients with protective gene variants, the researchers say.

"There is a growing body of evidence for metabolically healthy obesity," said researcher Mete Civelek of UVA's Center for Public Health Genomics. "In this condition, people who would normally be at risk for cardiovascular diseases and diabetes because they are obese are actually protected from adverse effects of their obesity."

Civelek said the study found a genetic link that may explain how this occurs in certain individuals.

Abdominal fat and good health

As medicine grows more sophisticated, understanding the role of naturally occurring [gene variations](#) will play an important role in ensuring patients get the best, most tailored treatments.

Metabolic syndrome, for example, is a cluster of health problems that raises the risk for diabetes, stroke and other serious health issues. The new work by Civelek and his team indicates that variants can

simultaneously predispose some people to [metabolic syndrome](#) while also protecting them from type 2 diabetes.

One of the metrics doctors use to determine whether a patient has metabolic syndrome is abdominal obesity. This is often calculated by comparing the patient's waist and hip measurements. But Civelek's data suggest that for at least some patients, it may not be that simple. In the future, doctors may want to check a patient's genes to determine how to best guide the person down the road to good health.

"We found that among the hundreds of regions in our genomes which increase our propensity to accumulate excess fat in our abdomens, there are five which have an unexpected role," said Yonathan Aberra, the lead author of the study and a doctoral candidate at UVA's Department of Biomedical Engineering. "To our surprise, these five regions decrease an individual's risk for type 2 diabetes."

In addition to the surprising findings, the team created important new tools that are available to all researchers seeking to understand the complexities of gene variations.

"We now need to expand our studies in more women and people from different genetic ancestries to identify even more genes that underlie the metabolically healthy obesity phenomenon," Civelek said. "We plan to build on our findings to perform more experiments to potentially identify a therapeutic target."

More information: Yonathan Tamrat Aberra et al, Predicting mechanisms of action at genetic loci associated with discordant effects on type 2 diabetes and abdominal fat accumulation, *eLife* (2023). [DOI: 10.7554/eLife.79834](https://doi.org/10.7554/eLife.79834)

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