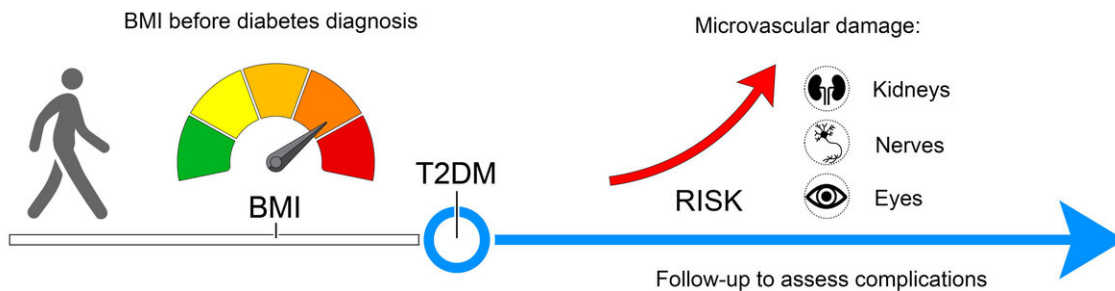


Type 2 diabetes: New evidence underlines the role of obesity in late complications

January 21 2021



The researchers examined data from study participants of the EPIC-Potsdam study who developed type 2 diabetes during the follow-up of the study. Thus, an increase in risk for microvascular complications of type 2 diabetes due to a higher BMI before diabetes diagnosis could be observed. Credit: DIfE

Successful weight loss is considered to be an integral part of the therapy for type 2 diabetes. Nevertheless, studies keep appearing that question the importance of losing weight. However, new data from a large-scale observational study carried out at DIfE in cooperation with the German Center for Diabetes Research (DZD) support the current recommendations of physicians. The findings, published in the journal *Diabetologia*, suggest that obesity and weight gain can lead to vascular disorders, the leading cause of disease and death for people with type 2 diabetes.

A close look at vascular disorders

Weight plays a crucial role in the development of type 2 [diabetes](#). However, little research has been carried out on whether and how obesity and weight changes lead to late complications of type 2 diabetes. In particular, studies providing comparative data between microvascular and macrovascular diseases have so far been lacking. Microvascular disease affects the [small blood vessels](#) and can cause irreversible damage to kidneys, nerves and eyes, and thus lead to dialysis, amputation and blindness. Macrovascular injury, on the other hand, affects the large blood vessels and promote heart attacks and strokes.

Previous studies showed inconsistent results on the impact of obesity on the risk of vascular complications in people with type 2 diabetes. "Most studies, however, start with people who already have diabetes, in whom weight can also be a consequence of drug therapy. We studied body mass index (BMI) before diabetes diagnosis and thus unaffected by treatment", said first author Elli Polemiti, a doctoral student in the Department of Molecular Epidemiology headed by Professor Matthias Schulze at the German Institute of Human Nutrition Potsdam-Rehbruecke (DIfE).

Significance of BMI for the risk of microvascular complications

The team led by Schulze investigated whether the BMI prior to a type 2 diabetes diagnosis and a BMI change after diagnosis are associated with the occurrence of micro- and macrovascular complications. For this purpose, over a period of ten years, the research team observed about 1,000 participants of the EPIC Potsdam study with newly diagnosed type 2 diabetes who were free of other chronic diseases.

The researchers were unable to establish a clear relationship between the BMI and the occurrence of macrovascular complications. However, the situation was different with microvascular complications:

The results suggest that obesity can disrupt the function of the smallest blood vessels, arterioles and capillaries. Each five-point higher BMI at the time of diabetes diagnosis was associated with a 21 percent higher risk of microvascular complications. "This continuously increasing risk is independent of the initial value. That is, a patient with a BMI of 35 compared to 30 has a 21 percent higher risk. Likewise, someone who has a BMI of 28 compared to 23," Elli Polemiti said.

The research team also studied the effects of weight changes after a diabetes diagnosis. Doctors routinely recommend that overweight and obese people with type 2 diabetes lose at least five percent of their body weight to improve their metabolic condition. For a person weighing 80 kilograms, this means a loss of four kilograms. Weight loss can lead to improved blood pressure, blood lipid and blood glucose levels. "Our data reinforce the recommendations for weight management: the greater the weight loss after diagnosis, the lower the risk for microvascular complications. However, if the subjects gained weight instead, the risk also increased," said Professor Matthias Schulze, summarizing the results.

Protect blood vessels via weight control

In their observational study Schulze and his team provide a nuanced look at how overweight can promote late complications of type 2 diabetes. "While we did not observe a clear association between overweight and macrovascular complications, our data for microvascular complications are quite clear. Our results thus underline the importance of [weight](#) loss in preventing severe diabetes-associated complications," said junior researcher Polemiti.

More information: Elli Polemiti et al, BMI and BMI change following incident type 2 diabetes and risk of microvascular and macrovascular complications: the EPIC-Potsdam study, *Diabetologia* (2021). [DOI: 10.1007/s00125-020-05362-7](https://doi.org/10.1007/s00125-020-05362-7)

Provided by Deutsches Zentrum fuer Diabetesforschung

Citation: Type 2 diabetes: New evidence underlines the role of obesity in late complications (2021, January 21) retrieved 27 April 2024 from <https://medicalxpress.com/news/2021-01-diabetes-evidence-underlines-role-obesity.html>

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