

# No evidence of survival advantage for type 2 diabetes patients who are overweight or obese

January 15 2014

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Being overweight or obese does not lead to improved survival among patients with type 2 diabetes. The large-scale study led by Harvard School of Public Health (HSPH) researchers refutes previous studies that have suggested that, for people with diabetes, being overweight or obese could lead to lower mortality for people compared with normal-weight persons—the so-called "obesity paradox."

The study appears in the January 16 issue of the *New England Journal of Medicine*.

"These data dispel the notion that being [overweight](#) or obese confers survival advantage among diabetic patients," said Frank Hu, professor of nutrition and epidemiology at HSPH and senior author of the study.

"Clearly, weight management is an important therapeutic strategy for overweight or [obese individuals](#) with type 2 diabetes."

The researchers analyzed data from 8,970 women in the Brigham and Women's Hospital-based Nurses' Health Study (NHS) and 2,457 men in the Health Professionals Follow-up Study (HPFS) with type 2 diabetes. They calculated participants' body-mass index (BMI) shortly before the diagnosis of diabetes and excluded participants reporting a history of diabetes at baseline or cardiovascular disease or cancer before they were diagnosed with diabetes; underweight participants were also excluded. Participants were followed for a maximum of 36 years (NHS) and 26 years (HPFS). A total of 3,083 deaths were recorded.

The results showed a positive association between BMI at the time of diabetes diagnosis and risk of death from all causes. The lowest risk of death was observed among people of normal weight. Lower mortality was not observed among overweight or obese participants, that is, the findings showed no benefit from being overweight or obese. In addition, there was a dose-response relationship between BMI and mortality among people who had never smoked, such that a higher BMI just prior to diabetes diagnosis was associated with a higher risk of death. This trend was less pronounced among smokers because smokers tend to be leaner than nonsmokers but they have increased risk of death.

The results contradict some previous studies that had shown a benefit-lower risk of death-for patients with chronic illnesses, such as [type 2 diabetes](#), and excess adiposity. The authors cite several limitations in those studies, including small sample sizes, measurement of BMI years after diabetes diagnosis, and failure to properly assess biases from smoking and undiagnosed chronic diseases, which often lead to weight loss.

"In most studies of BMI and mortality, 'normal weight' reference groups are comprised of not only those who are lean and healthy, but also smokers as well as people with existing or undiagnosed illnesses. This can skew the relationship between weight and mortality to make the [normal weight](#) group seem worse off than the overweight and obese groups. As a result, people with higher BMIs might have artificially improved survival rates," said Deirdre Tobias, lead author of the paper and a research fellow in the Department of Nutrition at HSPH. "After carefully controlling for many of these factors in our analysis, we observed that excess weight in those with [diabetes](#) was not advantageous for survival. These findings underscore the importance of addressing methodological biases in the analysis of BMI and mortality."

**More information:** "Body-Mass Index and Mortality among Adults

with Incident Type 2 Diabetes," Deirdre K. Tobias, An Pan, Chandra L. Jackson, Eilis J. O'Reilly, Eric L. Ding, Walter C. Willett, JoAnn E. Manson, Frank B. Hu, *NEJM*, 370:233-244, Jan. 16, 2014.

Provided by Harvard School of Public Health

Citation: No evidence of survival advantage for type 2 diabetes patients who are overweight or obese (2014, January 15) retrieved 5 May 2024 from

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