

# UK study identifies ideal weight for adults with type 2 diabetes to minimize risk of dying from cardiovascular disease

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New research being presented at this year's [European Congress on Obesity \(ECO\) in Venice, Italy](#) (12–15 May), identifies the optimum body weight range for adults with type 2 diabetes to minimize their risk of dying from any cardiovascular disease, including heart failure, heart disease, stroke, and chronic kidney disease.

The findings, based on health data from the UK Biobank, indicate that for adults aged 65 years or younger, maintaining a [body mass index](#) (BMI) within the normal range of 23–25 kg/m<sup>2</sup> was associated with the lowest risk of dying from cardiovascular disease. But for those over 65 years old, being moderately overweight with a BMI of 26–28 kg/m<sup>2</sup>, had the lowest risk.

Maintaining a healthy weight is crucial for reducing the risk of cardiovascular diseases, particularly for people with type 2 diabetes who are predisposed to cardiovascular disease and death. However, it's not clear whether the optimal BMI range for people with type 2 diabetes varies by age.

To plug these [knowledge gaps](#), researchers explored the age differences in the association between BMI and risk of cardiovascular death in 22,874 UK Biobank participants with a previous diagnosis of type 2 diabetes at the time they enrolled between 2006 and 2010. Patients with prior cardiovascular diseases were not excluded.

The average age of all the participants was 59 years, and around 59% were women. Their cardiovascular health was tracked, using linked health records, for nearly 13 years during which time 891 participants died from cardiovascular diseases.

Researchers analyzed data in two age groups—the elderly (over 65

years) and the middle-aged (age 65 years or younger)—and assessed the relationship between variables such as BMI, waist circumference, and waist-to-height ratio and the risk of cardiovascular death.

The optimal BMI cut-off point was also calculated in different age groups and the findings were adjusted for traditional cardiometabolic risk factors and other factors associated with adverse cardiovascular outcomes including age, sex, smoking history, alcohol consumption, level of physical exercise, and history of cardiovascular diseases.

The analyses found that in the middle-aged group, having a BMI in the overweight range ( $25 \text{ kg/m}^2$  to  $29.9 \text{ kg/m}^2$ ) was associated with a 13% greater risk of dying from cardiovascular disease than those with a BMI in the normal range (less than  $25.0 \text{ kg/m}^2$ ).

However, in the elderly group, having a BMI in the overweight range ( $25 \text{ kg/m}^2$  to  $29.9 \text{ kg/m}^2$ ) was associated with an 18% lower risk of dying compared to having a BMI in the normal range (less than  $25.0 \text{ kg/m}^2$ ).

The relationship between BMI and cardiovascular death risk exhibited a U-shaped pattern, even after stratification by age, so the optimal BMI cut-off point was different in the elderly and middle-aged groups.

For the middle-aged group, the optimal BMI cut-off was  $24 \text{ kg/m}^2$ , whereas for the elderly group, it was  $27 \text{ kg/m}^2$ . Consequently, personalized treatment plans can be developed in [clinical settings](#) by tailoring recommendations to different age groups.

The researchers also found a positive relationship between both waist circumference and waist-to-height ratio and the risk of cardiovascular death. As waist circumference increased, the risk of cardiovascular death also showed a corresponding rise.

When the study population was divided into older and middle-aged categories, this upward trend remained consistent. Similar patterns were observed for the waist-to-height ratio. However, no significant BMI cut-off point was identified.

"Importantly, we demonstrate that optimal BMI for people with type 2 diabetes varies by age, independent of traditional cardiometabolic risk factors," says lead author Dr. Shaoyong Xu from Xiangyang Central Hospital, Affiliated Hospital of Hubei University of Arts and Science, Xiangyang, China.

"Our findings suggest that for older individuals who are moderately overweight but not obese, maintaining rather than losing weight may be a more practical way of reducing their risk of dying from cardiovascular disease."

He adds, "Our findings also indicate that adiposity may offer some protection against fatal diseases to some extent. The possible biological mechanisms that explain this 'obesity survival paradox' in elderly people may be associated with a lower rate of bone mass loss, which reduces the effects of fall and trauma episodes, and greater nutritional reserves to accommodate periods of acute stress."

The authors say that in the future, measures of central obesity, such as [waist circumference](#), would be used to further refine the risk.

This is an [observational study](#), and as such, can't establish cause. And the researchers acknowledge various limitations to their findings, including small numbers of cardiovascular deaths and no information on type of [cardiovascular disease](#) or specific treatments.

They also note that most of the UK Biobank study participants are white, so the findings might not apply to people of other ethnic backgrounds.

Also, the nature of the cohort study may create potential classification errors that could partially affect the conclusions, because anthropometric measurements were only assessed at the start of the study, and body weight may change during the follow-up period.

Provided by European Association for the Study of Obesity

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