

Higher BMI not associated with increased risk of heart attack or death, twin study shows

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This is an image of a weight scale. Credit: CDC/Debora Cartagena

A study of 4,046 genetically identical twin pairs with different amounts of body fat shows that twin siblings with a higher Body Mass Index, as a measure of obesity, do not have an increased risk of heart attack or mortality. The study, conducted by researchers at Umeå University in Sweden, also shows that a higher BMI is associated with an increased

risk of type 2 diabetes. The study is published today in *JAMA Internal Medicine*.

"The results suggest that lifestyle changes that reduce levels of obesity do not have an effect on the risk of death and [heart attack](#), which contradicts conventional understandings of obesity-related health risks," says Peter Nordström, researcher at the Department of Community Medicine and Rehabilitation at Umeå University.

"What the study does show is that there's a strong association between obesity and diabetes, which leads us to conclude that weight reduction interventions can be more effective against diabetes than when it comes to reducing the risk of heart attack and mortality."

In the cohort study, Peter Nordström and research colleagues at Umeå University compared health data from 4,046 monozygotic [twin pairs](#). All twins in the study had different levels of body fat, as measured in BMI. Genetically identical siblings with different BMI provide researchers with a unique opportunity to evaluate obesity-related health risks that are independent of genetic factors.

During a follow-up period of on average 12.4 years, differences between the twins were compared when it comes to incidents of mortality, heart attack and type 2 diabetes. The results clearly showed that twin siblings with a higher BMI did not have an increased risk of mortality or heart attack compared to their thinner counterparts. However, twins with a higher BMI did have an increased risk of developing type 2 diabetes.

The results showed that:

- among twin siblings with a higher BMI (mean value 25.1), there were 203 heart attacks (5 %) and 550 deaths (13.6 %) during the follow-up period.

- among twin siblings with a lower BMI (mean value 23.9), there were 209 heart attacks (5.2 %) and 633 deaths (15.6 %) during the same period.
- among the 65 twin pairs in the study who had a BMI difference of 7 or higher, and where the larger twin siblings had a BMI of 30 or higher, there were still no noticeably [increased risk](#) of mortality or heart attack associated with a higher BMI.

The study, described in the article Risks of Myocardial Infarction, Death, and Diabetes in Identical Twin Pairs With Different Body Mass Index, is based on the Swedish Twin Registry, the largest of its kind in the world. The median age of the twins in the study was 57.5 and participants' ages ranged from 42-92. The cohort study was conducted between 1998 and 2003, with follow-ups regarding incident of mortality, heart attack and [diabetes](#) during a 10 year period until 2013. One study limitation was that weight and length (used to calculate BMI) was self-reported.

More information: *JAMA Internal Medicine*, Risks of Myocardial Infarction, Death, and Diabetes in Identical Twin Pairs With Different Body Mass Index. Peter Nordström, Nancy L. Pedersen, Yngve Gustafson, Karl Michaëlsson and Anna Nordström. [DOI: 10.1001/jamainternmed.20164104](#)

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