

Harmful effects of being overweight underestimated

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The current advice from doctors to maintain a BMI of between 18.5 and 25 is supported by this study. Credit: University of Bristol

The harmful effects of being overweight have been underestimated, according to a new study that analysed body mass index (BMI), health and mortality data in around 60,000 parents and their children, to establish how obesity actually influences risk of death. The University of Bristol study is published today in the *International Journal of*

Epidemiology.

Previous studies have suggested that the optimum BMI, at which the risk of [death](#) is minimised, appears to be above the range normally recommended by doctors, leading to claims it is good for [health](#) to be mildly overweight. However, scientists suspect these studies do not reflect the true [effect](#) of BMI on health, because early stages of illness, health-damaging behaviours, such as cigarette smoking, and other factors can lead to both lower BMI and increased risk of death. This makes it difficult to estimate how BMI actually influences risk of death (the causal effect), as opposed to the observed association between BMI and risk of death. This aim of this study was to assess the causal link between BMI and risk of death.

Using HUNT, a Norwegian population-based health cohort study based in a rural county with 130,000 residents, the Bristol Medical School team, with co-workers from the Norwegian University of Science and Technology, were able to see how mortality in the parents related to both their own BMI (the conventional approach) and to the BMI of their [adult children](#). Because BMI of parents and their offspring is related, due to genetic factors, offspring BMI is an indicator of the BMI of the parents. The BMI of adult children is not influenced by illness among the parents, therefore using offspring BMI avoids the problems inherent in simply relating the BMI of the parents to their risk of death.

The health records of around 30,000 mother and child pairs and 30,000 father and child pairs were assessed to examine the extent to which BMI may influence mortality [risk](#) in a situation that is not biased by "reverse causation"—illness leading to low BMI rather than BMI influencing illness.

The team found that when offspring BMI was used instead of the parent's own BMI, the apparent harmful effects of low BMI were

reduced and the harmful effects of high BMI were greater than those found in the conventional analyses. Importantly, the results suggest that previous studies have underestimated the [harmful effects](#) of being overweight.

The current advice from doctors to maintain a BMI of between 18.5 and 25 is supported by this study, and the widely reported suggestion that being overweight may be healthy is shown to be incorrect.

Dr David Carlsake, the study's lead author and Senior Research Associate from the MRC Integrative Epidemiology Unit (IEU) at the University of Bristol, said: "An alarming increase in obesity levels across the world which have risen from 105 million in 1975 to 641 million in 2014, according to a recent *Lancet* study, create concern about the implications for [public health](#)."

"This study demonstrates that correlation is not causation and that when it comes to public health recommendations we need to be cautious interpreting data based on associations alone. We found that previous studies have underestimated the impact of being overweight on mortality and our findings support current advice to maintain a BMI of between 18.5 and 25."

Professor George Davey Smith, Director of the MRC IEU and Professor of Clinical Epidemiology at the University of Bristol, added: "We are used to seeing conflicting studies purporting to show that something is either good or bad for our health. These generally come from naïve observational studies, which can produce seriously misleading findings. More robust approaches for identifying the causal effects of factors influencing health, such as the methods applied in this study, are required if we are to make recommendations for public health based on reliable evidence."

More information: David Carslake et al. Confounding by ill health in the observed association between BMI and mortality: evidence from the HUNT Study using offspring BMI as an instrument, *International Journal of Epidemiology* (2017). [DOI: 10.1093/ije/dyx246](https://doi.org/10.1093/ije/dyx246)

Provided by University of Bristol

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