

# Extreme obesity may shorten life expectancy up to 14 years

July 8 2014

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Adults with extreme obesity have increased risks of dying at a young age from cancer and many other causes including heart disease, stroke, diabetes, and kidney and liver diseases, according to results of an analysis of data pooled from 20 large studies of people from three countries. The study, led by researchers from the National Cancer Institute (NCI), part of the National Institutes of Health, found that people with class III (or extreme) obesity had a dramatic reduction in life expectancy compared with people of normal weight. The findings appeared July 8, 2014, in *PLOS Medicine*.

"While once a relatively uncommon condition, the prevalence of class III, or extreme, obesity is on the rise. In the United States, for example, six percent of adults are now classified as extremely obese, which, for a person of average height, is more than 100 pounds over the recommended range for normal weight," said Cari Kitahara, Ph.D., Division of Cancer Epidemiology and Genetics, NCI, and lead author of the study. "Prior to our study, little had been known about the risk of premature death associated with extreme obesity."

In the study, researchers classified participants according to their body mass index (BMI), which is a measure of total body fat and is calculated by dividing a person's weight in kilograms by their height in meters squared. BMI classifications (kilogram/meter-squared) are:

- Normal weight: 18.5-24.9
- Overweight: 25.0- 29.9

- Class I obesity: 30.0-34.9
- Class II obesity: 35.0-39.9
- Class III obesity: 40.0 or higher

The 20 studies that were analyzed included adults from the United States, Sweden and Australia. These groups form a major part of the NCI Cohort Consortium, which is a large-scale partnership that identifies risk factors for cancer death. After excluding individuals who had ever smoked or had a history of certain diseases, the researchers evaluated the risk of premature death overall and the risk of premature death from specific causes in more than 9,500 individuals who were class III obese and 304,000 others who were classified as normal weight.

The researchers found that the risk of dying overall and from most major health causes rose continuously with increasing BMI within the class III obesity group. Statistical analyses of the pooled data indicated that the excess numbers of deaths in the class III obesity group were mostly due to heart disease, cancer and diabetes. Years of life lost ranged from 6.5 years for participants with a BMI of 40-44.9 to 13.7 years for a BMI of 55-59.9. To provide context, the researchers found that the number of years of life lost for class III obesity was equal or higher than that of current (versus never) cigarette smokers among normal-weight participants in the same study.

The accuracy of the study findings is limited by the use of mostly self-reported height and weight measurements and by the use of BMI as the sole measure of obesity. Nevertheless, the researchers noted, the results highlight the need to develop more effective interventions to combat the growing public health problem of extreme obesity.

"Given our findings, it appears that class III obesity is increasing and may soon emerge as a major cause of early death in this and other countries worldwide," said Patricia Hartge, Sc.D., Division of Cancer

Epidemiology and Genetics, and senior author of the study.

**More information:** Kitahara CM, Flint AJ, Berrington de Gonzalez A, Bernstein L, Brotzman M, et al. (2014) Association between Class III Obesity (BMI of 40 kg/m<sup>2</sup>) and Mortality: A Pooled Analysis of 20 Prospective Studies. *PLoS Med* 11(7): e1001673.  
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Provided by National Cancer Institute

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