

Can High BMI in Youth Affect Cancer Risk Later On?

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Men with overweight or obesity at age 18 years may have a higher risk of 17 different cancers later in life, according to recent research from the University of Gothenburg. The findings also describe how the youth obesity epidemic is expected to affect cancer incidence over the next 30 years.

In August 2023, a study on higher cancer risk in men who had lower aerobic fitness recorded at the time of compulsory conscription for military service at the age of 18 was published by this research team in the [British Journal of Sports Medicine](#).

In two new studies—published by Onerup et al in the journals [Obesity](#) and [Cancer Medicine](#)—the same research team is now focusing on body mass index (BMI), and their results are independent of the participants' aerobic fitness level. According to the reports, higher BMI at age 18 can be linked to even more cancers later in life than poor fitness at the same age.

High BMI at conscription was associated with a higher risk of 17 cancers: lung, head and neck, brain, thyroid, esophageal, stomach, pancreatic, liver, colon, rectal, kidney, and bladder cancers, as well as malignant melanoma, leukemia, myeloma, and lymphoma (both Hodgkin and non-Hodgkin).

Higher Risk Seen at ‘Normal’ BMI

For several cancer types, cancer risk was already elevated at a BMI of 20 to 22.4—which is within the usually-used range of normal weight (BMI = 18.5–24.9). These included head and neck, esophageal, stomach, pancreatic, liver, and kidney cancers, as well as malignant melanoma and non-Hodgkin lymphoma.

“This suggests that the current definition of ‘normal’ weight may be applicable primarily for older adults, while an optimal weight as a young adult is likely to be in a lower range. Our research group has drawn similar conclusions regarding BMI in early adulthood and later cardiovascular disease,” said senior author of both studies **Maria Åberg, MD, PhD**, Professor of Family Medicine at Sahlgrenska Academy at the University of Gothenburg.

One cancer type studied deviated from this pattern—prostate cancer was more common among those without overweight or obese at the time of enlistment. One likely explanation is that men of normal weight

are more likely to seek care for prostate problems, potentially leading to more early health-care contacts and diagnoses.

Higher Mortality With Higher BMI

The researchers also studied mortality rates after cancer diagnosis in this group. Of the 1,489,115 men studied who enlisted in Sweden between 1968 and 2005, 84,621 were diagnosed with some form of cancer during the follow-up period.

The analyses showed that men who were overweight or obese were two to three times more likely to die within 5 years of being diagnosed with Hodgkin lymphoma and skin, thyroid, bladder, and prostate cancers, and 1.4 to two times more likely to die from head and neck, rectal, and kidney cancers.

Elevated Risks in the Future

The link with high BMI was strongest for abdominal cancers, including esophageal, stomach, and kidney cancers, with a three to four times higher risk for obese men at enrollment. An unhealthy weight seemed to explain about 15% to 25% of cases of these cancers in Sweden today.

In 30 years, the researchers expect an increase in the proportion of cancer cases linked to youth overweight and obesity, calculated based on overweight and obesity in today's 18-year-old men in Sweden. For stomach cancer, the proportion rises to 32%, and for esophageal cancer, to 37%. Based on the current prevalence of youth overweight and obesity in the United States, more than one in two cases of these two cancers could be linked to high BMI in the late teenage years in 30 years.

Aron Onerup, MD, PhD, is a postdoctoral researcher at Sahlgrenska Academy at the University of Gothenburg, as well as at St. Jude Children's Research Hospital, and is first author of both the recent studies. He commented, "Overweight and obesity at a young age seems to increase the risk of developing cancer, and we see links between unhealthy weight and cancer in almost every organ. Given the alarming trend of obesity in childhood and adolescence, this study reinforces the need to deploy strong resources to reverse this trend."

Disclosure: For full disclosures of the study authors, visit onlinelibrary.wiley.com.

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