

# Rethinking body mass index for assessing cancer risk

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A study by researchers at Albert Einstein College of Medicine of Yeshiva University suggests that body mass index (BMI)—the most commonly used weight-for-height formula for estimating fatness—may not be the best measure for estimating disease risk, and particularly the risk of certain types of cancer. The study was published today in the online edition of the *American Journal of Epidemiology*.

BMI is calculated by dividing a person's weight (in kilograms) by his or her height in meters squared, or  $W/H^2$ . Most of the early studies that used the formula, starting roughly sixty years ago, were conducted among middle-aged men. BMI has become the most widely-used weight-for-height index in large population studies of children and adults, thanks mainly to its ease of calculation and the ready availability of weight and height data. Newer technologies have since been developed for measuring [body fat](#), but they can be prohibitively expensive and time consuming.

A BMI between 18.5 and 24.9 is considered ideal; obesity is defined as a BMI of 30 or greater. According to the [Centers for Disease Control and Prevention](#), the higher one's BMI, the greater the risk for a range of diseases, including heart disease, [high blood pressure](#), [type 2 diabetes](#) and certain cancers.

"It has long been recognized that BMI is an imperfect indicator of body fat because weight does not distinguish between lean body mass (muscle, bones, blood, water) and fat mass," said lead author Geoffrey C. Kabat, Ph.D., senior epidemiologist in the department of epidemiology & population health at Einstein. "This means that two individuals can have the same BMI but can have very different percentage of body fat." Furthermore, when using weight and height data, a single BMI formula may not be appropriate for all populations and all diseases."

The goal of the current study was to determine whether alternative weight-for-height measures resulted in stronger associations with risk of specific cancers compared to BMI. Using weight and height data on nearly 90,000 Canadian women enrolled in the Canadian National Breast Screening Study, the researchers varied the BMI formula – changing the value of x in  $W/H^x$  – to see whether any of these variations on BMI better predicted the risk of 19 different cancers.

All values of x in  $W/H^x$  that showed significant associations with specific cancers were below the value of 2.0 (i.e., BMI) and included 0.8 for endometrial cancer, 1.3 for lung cancer in those who never smoked, and 1.7 for postmenopausal breast cancer.

While these findings need to be confirmed in other studies, they suggest that the optimal value of  $W/H^x$  may differ depending on the population studied as well as on the disease of interest, and that BMI may not be optimal for all purposes.

**More information:** Dr. Kabat's paper is titled "Scaling of weight-to-height in relation to risk of cancer at different sites in a cohort of Canadian women."

Provided by Albert Einstein College of Medicine

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