

BMI is Bologna



By Lila Abassi — February 5, 2016



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The term [body mass index](#) [2], or BMI, was initially coined by a mathematician named Adolphe Quetelet some time in the mid-1800 s. It is a simple ratio of weight in kilograms divided by height in meters, squared (kg/m^2). It was meant to serve as a study tool for Quetelet in measuring the growth of a normal man not to measure fat. Now many companies in the United States are using employee BMIs to estimate healthcare costs, and those with higher BMIs may have to fork over higher health insurance premiums if the Equal Employment Opportunity Commission adopts it as a rule.

According to an [article](#) [3] published in the *International Journal of Obesity*, researchers from the University of California, Los Angeles and Santa Barbara, are saying BMI is deeply flawed as a measure of health. They used data from the most recent National Health and Nutrition Examination Survey (NHANES) to analyze the link between BMI and several other measures of health, including blood pressure, blood glucose, serum cholesterol and triglyceride levels, insulin resistance and C-reactive protein (a marker of inflammation).

What they found is that nearly half of Americans who are deemed either overweight, or obese based merely on their BMI, are healthy.

Jeffrey Hunger, a doctoral student at UCSB s Department of Psychological and Brain Sciences, one of the co-authors on the paper stated, In the overweight BMI category, 47 percent are perfectly healthy. † So to be using BMI as a health proxy particularly for everyone within that category is simply incorrect. Our study should be the final nail in the coffin for BMI.

There are [three chief issues](#) [4] to consider with BMI, as it does not take into account very important physical traits such as bone structure, fat distribution or muscle mass, nor does it take into consideration age or sex. That is why the very first issue is: 1) using BMI as an indirect measure of obesity is erroneous; 2) there will be errors in self-reporting height and weight; 3) there is poor sensitivity and specificity of BMI (sensitivity ability of a measure to correctly identify those with a

condition; specificity ability of a measure to correctly identify those without a condition).

As an individual ages, their percentage of body fat increases and muscle mass decreases, which can underestimate true obesity rates in the elderly who may have inaccurately normal BMIs. On the opposite end of the spectrum, a lean person with high muscle mass may have overestimated body fat. Additionally, there is not a linear relationship between body fat and BMI. A man and a woman with the same BMI most likely means that the woman has proportionately more body fat than the man, since men are most commonly taller than women (and have a greater muscle mass).

If we can be honest with ourselves, how many of us have fibbed about our weight or height at the DMV? I certainly have, and though I am not representative of the whole, I certainly would question the accuracy of self-reported data, especially with sensitive issues such as weight. If age were another variable in the calculation of BMIs, I would suspect that as well.

What is our [alternative](#) ^[5] to the BMI?

There is the Body Adiposity Index which multiplies hip circumference by height and is more accurate than BMI. There is also the Waist Circumference Measurement which can help determine heart disease risk (at risk women > 35 inches and men > 40 inches waist circumference). Another calculation is the waist to hip ratio, where a value over 0.9 for men and 0.85 for women deems the presence of abdominal adiposity. Two other methods are Hydrostatic Weighing and Body Fat Measuring which uses calipers to measure skin and fat from the waist, shoulder blade, biceps and triceps.

We cannot depend on BMI as a reliable metric with which insurance companies can penalize people. Punishing individuals financially will not incentivize the portly to lose weight and it is an entirely wrong approach to making decisions based on a very flawed calculation.

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[4] <http://www.nature.com/ijo/journal/v32/n3s/full/ijo200887a.html>

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