

BMI is underestimating obesity in Australia, waist circumference needs to be measured too

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You can be in a healthy weight range according to BMI but overweight according to waist circumference. Credit: www.shutterstock.com

A new [study](#) has found the waistlines of Australian adults are increasing faster than body weight.

Researchers from Deakin and Monash Universities found we need to re-evaluate how we monitor overweight and obesity, as those who are

overweight based on [waist circumference](#) aren't necessarily overweight based on the measure we use – [body mass index](#) (BMI).

So by continuing to use BMI (an indicator of [weight](#) for height), we're underestimating the prevalence of obesity in the Australian population.

Our study compared three surveys of the Australian population, in 1989, 2000 and 2012. It included Australian adults aged 25 to 69 years with information on measured height, weight (measured using electronic scales) and waist [circumference](#) (measured using a flexible steel measuring tape across the abdomen).

We found the average [body weight](#) of Australian adults increased by 5.4kg for women and 7kg for men over the 23-year period. The average waist circumference increased by 10.7cm for women and 7.3cm for men.

We used a mathematical approach called linear regression, which allowed us to compare individuals of the same age, height and weight in 1989 and 2012. We could then estimate whether their waist circumference was the same.

If waist circumference and [body](#) weight were increasing to the same extent, we would expect to see no difference in waist circumference over time. Instead, we found waist circumference for individuals of the same body weight, height and age increased by 6.7cm among women and 2.8cm among men since 1989.

As an example, this means that the average waist circumference for a 45-year-old, 162cm, 64kg woman in 1989 is 75cm, and the average waist circumference of the same woman in 2012 is 82cm – 7cm greater.

We observed this phenomenon across all groups we analysed. That

included age group, smoking status (current, former and those who've never smoked), education level (whether high school was completed) and BMI category (normal weight, overweight or obese).

How can waistlines expand more than weight?

Studies [internationally](#), across a number of high- and low-income countries, have also reported greater increases in waist circumference than would be expected based on increases in body weight.

While we can't deduce why this phenomenon is occurring from the current study, nor previous studies, there are a number of hypotheses.

The most likely explanation is that, as a result of [increasingly sedentary](#) lifestyles, individuals now have relatively less muscle mass and relatively more body fat. So this results in a greater body volume for the same body weight.

Why does this matter?

The major implication of this is that women and men are now at an increased risk of disease for the same body weight.

We know individuals who have an obese waist circumference (greater than 88cm for women or greater than 102cm for men) without having an obese BMI (BMI greater than 30) have a [similar risk](#) of heart disease, type 2 diabetes, high blood pressure and [death](#) as those who we would typically think of as obese. That is, those who have a high waist circumference *and* BMI.

By 2012 [one in five women and one in ten men](#) were obese according to waist circumference but would not be detected as obese by BMI. Instead, BMI categorises these individuals as overweight (half of women and a

quarter of men classified as overweight by BMI had an obese waist circumference) or normal weight (one in ten [women](#) classified as [normal weight](#) by BMI had an obese waist circumference).

To effectively prevent and manage the obesity epidemic we need to accurately monitor the population prevalence. Our study shows using BMI is severely underestimating the actual prevalence of obesity in the Australian population and we should use a new way.

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