THE BS INDEX

The problems with BMI

Are you happy with your body? The body positivity community tells us we should love ourselves as we are, but the truth is, a lot of us aren't happy with our bodies. I am one. And for me, it all started with the body mass index (BMI).

I remember discovering the magic formula that could tell you whether you were fat or skinny. I was 14 and living in Joburg with my gran, who had just joined Weight Watchers. She was working out her BMI to see how much weight she had to lose, and so we worked out mine, too. And there I was: 'normal'. But I didn't want to be 'normal'. (Let's just say I had experienced a few cutting remarks that led me to believe I could do with losing a few kilograms.) My BMI result confirmed it for me: if I wanted to be skinny, I had to lose enough weight to be classified as 'underweight'. So I started eating very little and doing sit-ups every night, fixating on this magical number that would make me happy.

I grew out of it eventually, but there are many who don't. When I calculated my BMI again recently, nearly 20 years

Used for more than 200 years, we're only now starting to dive into the problems with using Body Mass Index to measure a healthy weight

BY CHARIS TORRANCE

later, I was classified 'obese'. I work out six days a week, eat small portions of healthy food and don't eat refined sugar at all. Yet – and here's the kicker – in order for me to be classified as 'normal', according to the BMI, I should weigh less than 50 kg. The weight I was as a 14-year-old girl.

I am just one example, but it serves to illustrate why BMI is finally coming under the severe scrutiny it should have all that time ago.

Where does BMI come from?

The BMI is a formula used to work out your body fat – by taking your weight and dividing it by your height, squared. That number theoretically then dictates your health risk for lifestyle diseases such as hypertension, type 2 diabetes, metabolic syndrome, cardiovascular diseases and even depression:

- **A BMI of below 18.5 is 'underweight'.**
- **Between 18.5 and 24.9 is 'normal' or 'ideal'.**
- **Between 25 and 29.9 is 'overweight', therefore the person is at moderate risk.**
- **30 and up is 'obese', meaning this person is at high risk.**

Does this calculation sound arbitrary? That's because it is.

The term 'BMI' was coined in the 1970s by American physiologist Ancel Keys as a way for insurers, researchers, doctors and the government to track health risks among individuals.

'The formula was actually devised by a Belgian, Adolphe Quetelet, in the 19th century, when there were no calculators or computers,' says Anri van Rooyen, co-owner of The Weight Control Clinic and Ariani Health Solutions (drarien.co.za). This weight-to-height index was created as a means to quantify the characteristics of *l'homme moyen* (average man), who, for Quetelet, represented the social ideal.

> 'Each individual woman's body demands to be accepted on its own terms.'
> – Gloria Steinem

'Quetelet was a mathematician, astronomer, statistician and many other things – but a physician he was not,' says Michelle Mellet, a registered dietician at the dietetics practice Metabolica Med (metabolicamed.co.za). The weight-to-height index he came up with was meant to be a relatively easy way to measure trends in the general population. It was not meant to be used to indicate the level of fatness in an individual – he himself said as much.

Physiologist Ancel Keys then popularised the formula because it's much cheaper and easier to use a sum to determine a person's health when related to weight rather than to look at the individual, case by case. Our metabolisms are all different; it's impossible for one formula to apply to us all. Yet by the 1990s, BMI had become the standard.

As the years passed, more and more studies pointed to the flaws in BMI when applied to individuals. But, to this day, it's still used by medical aids, insurance companies, doctors and hospitals to determine what your monthly premium should be, and which medical treatments or interventions you should or shouldn't get.

The point is not that body fat and health aren't linked – they are: more body fat could lead to a greater risk for heart disease, type 2 diabetes,

stroke or even some types of cancer. But fact is that the BMI formula cannot measure an individual's health, or even their body fat.

Many flaws

Mellet and Van Rooyen agree that no health practitioner should use BMI on its own. 'I would never recommend it to any of our weight-loss patients as a progress measurement tool, because it has many flaws,' Van Rooyen says.

1 It's physiologically flawed

There's very little science behind the formula. 'Why do you need to square your height?' Van Rooyen asks. On top of that, it makes no allowance for bone structure, muscle mass or your particular body fat distribution. 'It's supposed to estimate a healthy person's body weight, but you can't just look at weight,' she says. 'Bone is denser than muscle, and it's twice as dense as fat so, if you're a person with strong bone density, healthy good muscle tone and low fat, you will always have a high BMI.'

2 It cannot indicate overall health

'Your total weight doesn't consider your body fat distribution,' Mellet says. 'For example, let's say the two of us have a BMI of 23. But I might have more visceral fat, which is unhealthy, dangerous fat, especially around your organs and in the abdominal area.'

High levels of visceral fat are a risk-indicator for lifestyle diseases, but you can't tell how much visceral fat you have only by looking at your total weight – or even your shape. Visceral fat is often called TOFI (thin outside; fat inside) for that exact reason.

As you age, your body composition changes, and this will affect your BMI too. 'Older people will have a higher fat percentage, but they also have a low total body weight because they have a very low muscle mass,' Mellet says. 'They might have a healthy BMI, but because they have a higher fat percentage, they're at risk for bone fractures and lower immunity.' Moreover, some diseases make you lose weight. 'Weight loss is a common symptom with type 1 diabetes, for example, so someone with type 1 diabetes might have a low BMI.'

In fact, athletes would always have a high BMI. 'Because they will often have a higher weight, their BMI will be much higher, yet it's not because they have more fat but because they have more muscle,' Mellet points out. Exercising alone will affect your BMI. 'As soon as you start exercising, your lean body mass will improve, so your muscle, bone, and water composition goes up and the fat comes down.' But your BMI might stay the same, or even go up – which can be crushing to someone trying to make the right choices.

3 It kills motivation and can cause eating disorders

Van Rooyen sees this often with clients. 'Let's say you're eating healthily and exercising – your muscle mass goes up 2 kg and your fat mass comes down 2 kg, but effectively your BMI stays the same. You immediately think your exercise and eating regime is not working.' What happens next is, you either lose all motivation and give up, or you go more extreme in order to see 'better' results.

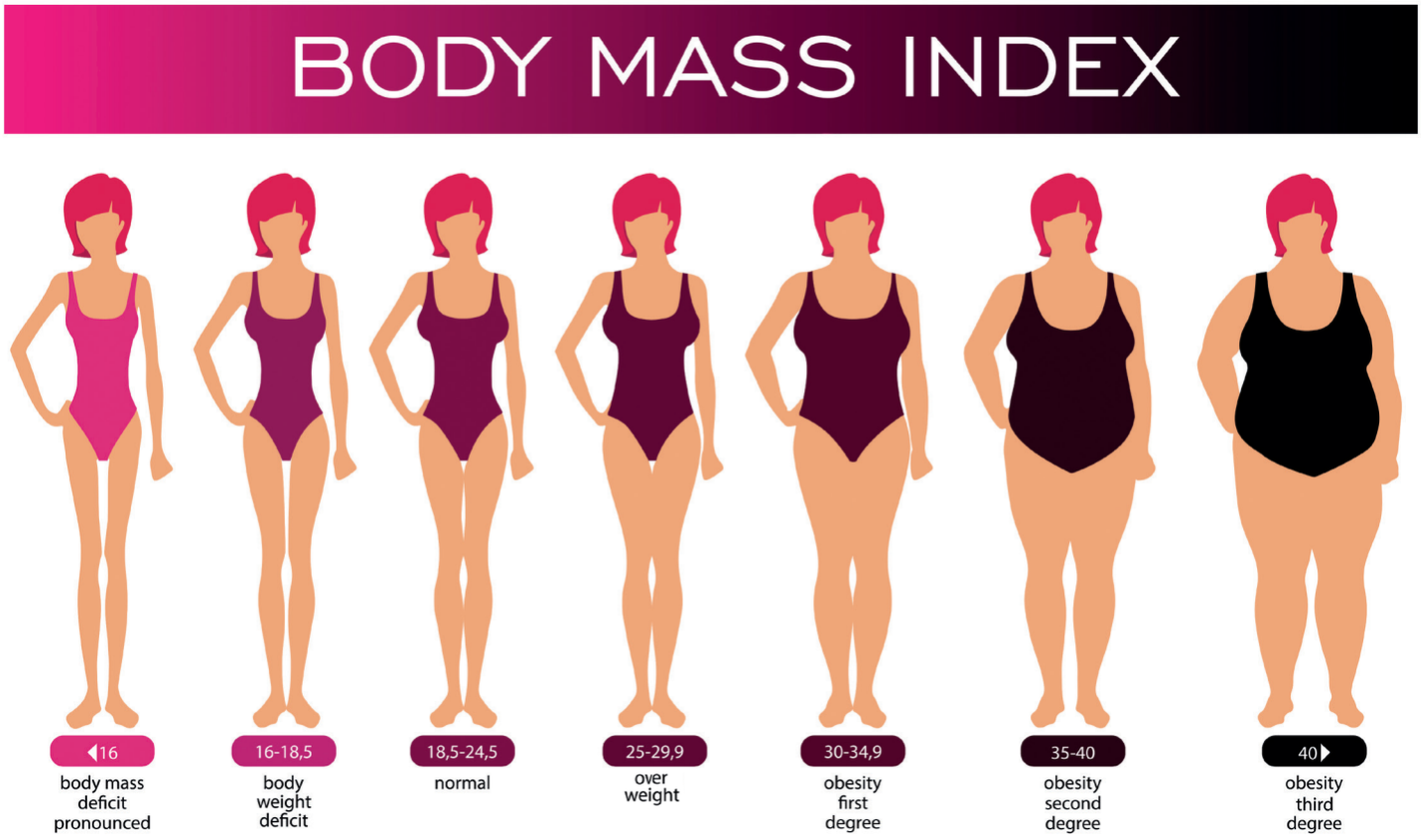
> 'Don't waste so much time thinking about how much you weigh. There is no more mind-numbing, boring, idiotic, self-destructive diversion from the fun of living.'
>
> – Meryl Streep

4 It doesn't reflect the women of today

In Quetelet's day, women were significantly shorter and did not exercise: they had little muscle mass. 'The BMI measurement for women assumes a sedentary lifestyle, but that's not reflective of people today, especially women,' Van Rooyen says. And that's not even getting into the fact that women tend to have more body fat than men with the same BMI.

5 It doesn't consider other ethnicities

Belgian Quetelet based his formula on Anglo-Saxon male populations, and American Keys found that his own studies corroborated BMI as a correlation between body weight and height – 'except in the case of a small group of "Bantu Men" [his words] from South Africa'. In Keys' opinion, that wasn't reason enough to discredit it.



'Asian people are often under-estimated by BMI, while BMI overestimates fatness and health risks in black people,' Mellet says.

This can result in Asian communities being under-diagnosed for critical conditions and black communities can be over-diagnosed, and their health risks overstated. Because their higher BMI indicates perceived 'health risks', black people may pay more in insurance and medical aid contributions.

6 It was never meant for individuals

The Quetelet index was never made for individuals. 'It was meant to measure the health risks in entire populations,' Van Rooyen says. 'Just like the average number of children per household is 2.5… You don't assume there are half-children out there.' Averages apply to general populations, not to individuals.

Are there alternatives?

We've come a long way since the 19th century. 'There are plenty of machines and scales that can be used to measure how much fat, muscle, water and bone you have in your body,' Mellet says. 'Of course, they are often very expensive.'

Some experts argue that a better predictor for risk of lifestyle diseases is your waist-to-height ratio, the idea being that if your waist measures less than half your height, your life expectancy will increase. 'That comes with its own problems,' Van Rooyen says. 'Not every-one loses centimetres around their waist; they may lose around their buttocks or bust.' Better indicators are cholesterol, triglyceride, blood pressure and blood sugar levels.

'In some cases, your BMI can give you a rough idea of your health and your weight, but it should never be used in isolation,' Mellet says. A health professional will be able to put that number in context for you.

Let go of labels

It can be hard to let go of a concept you've been told is accurate and true for so long. But evaluating your health profile based on your BMI does a disservice to you and creates shame and discrimination, which, in the end, won't help any of us make better, healthier choices.

We need to ask ourselves why we are so obsessed with labels. We need to stop making assumptions about other people's health based on their body size.

And if we really want to improve our health, we should look at the life we live and the choices we make instead of the number on our scale or our BMI.

We need to define for ourselves what being healthy is for us, and make the changes that will get us there. Because we should all love our bodies, and letting an utterly arbitrary number determine whether we are worthy of that love is ridiculous. ❖

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