

RE-EVALUATING WHAT BMI SAYS ABOUT YOUR HEALTH

Relevant for: Developmental Issues | Topic: Health & Sanitation and related issues

To enjoy additional benefits

CONNECT WITH US

June 30, 2023 10:42 am | Updated 10:42 am IST

COMMENTS

SHARE

READ LATER

BMI though widely relied upon as a health index seems not to measure up to scrutiny. It is now regarded in many circles as arbitrary and unscientific. | Photo Credit: Getty Images/iStock Photo

Here's a public health riddle. [India is said to be among the least obese countries](#) in the world, with an average Body Mass Index (BMI) of less than 22. BMI – the ubiquitous tool believed to measure fat and fitness – would classify most Indians as healthy. But more Indians than ever are at risk of type 2 diabetes, high blood pressure and cholesterol levels. Obesity, experts warn, is [a “ticking time bomb”](#).

The paradox is built within the tool of choice – the BMI, a simple calculation that divides an individual's weight in kilograms by the square of their height in meters. The most-repeated myths about fitness are “the lower the BMI, the healthier you are...or that obesity happens *only* when you're not eating well or exercising regularly”, says Suruchi Gupta, a Gurugram-based nutritionist. Both claims misleading and untrue.

The [American Medical Association \(AMA\) on June 14](#) this year accepted that BMI was an “imperfect way to measure body fat”, for it “does not account for differences across race/ethnic groups, sexes, genders, and age-span” and had caused “historical harm”. AMA's decision echoed a longstanding consensus among experts and activists that BMI is flawed, discriminatory and takes away targeted attention from health crises such as the [‘alarming prevalence’ of non-communicable diseases](#).

BMI has become the favoured tool to answer a complex public health question: how does weight affect a person's risk for disease and chronic health conditions? Its history, however, shows that BMI never promised scientific rigour.

Some 200 years ago, a Belgian astronomer and statistician Adolphe Jacques Quetelet wanted to study humans and develop ‘social laws’, like the laws of physics. He pored through available datasets to find the ‘average man’, using the height and weight of Caucasian, middle-aged men from France and Scotland. The ‘Quetelet's Index’, the first iteration of the BMI, helped identify a “type of perfection”, he wrote in *A Treatise on Man and the Development of his Faculties*, and everything else “would constitute deformity or disease... or monstrosity”. Quetelet intended for it to be a population-level tool only, cautioning its use on individuals. “It's not going to work,” he wrote.

Quetelet's work was picked up by Francis Galton in the 1860s, at a time when scientific racism in the form of Social Darwinism was at its peak. Scientists like Galton argued to the tune of eugenics, that some human species are superior to others, and the perfect human species can be established if 'deformed' individuals are eliminated (mass sterilisation campaigns were conducted for people of colour, immigrants, people with mental illness and disabled individuals). A document from Canada's Eugenics Archive confirms Galton built upon Quetelet's notion of the 'average man'.

Enter Ancel Keys, a century later, who saw fatness as a crisis, called it "ethically repugnant" and insisted on finding ways to measure body fat. Keys conducted a study centring White, wealthy men, and concludes "the BMI proves to be, if not fully satisfactory, at least as good as any other relative weight index as an indicator of relative obesity". Even if imperfect, as a proxy indicator it's right half of the time. He [published his findings in 1972](#), recording the birth of the Body Mass Index.

Around this time, a push came from big pharma and health insurance companies. The infamous Metropolitan Life Insurance Company, for instance, used the BMI formula to create height and weight tables, sourcing data from White policyholders to decide the 'average ideal weight'. Life insurance companies "were instrumental in categorising bodies and raising public awareness of the dangers of obesity", [explained medical sociology expert Amanda M. Czerniawski](#). The 'overweight' people were charged a higher premium for availing services.

An illustration from a 1965 Kaiser Permanente member newsletter.

The National Institutes of Health (NIH) in the U.S. concurrently conferred about the health implications of obesity, eventually revising their definition of obesity to tie it with BMI cut-offs in 1995. The WHO later recommended BMI as an 'objective measure', and further lowered the threshold of what it means to be fat. The research for these revisions was funded by two pharma companies making weight-loss drugs at the time.

A *BMJ* article later revealed the International Obesity Task Force, which suggested these revisions, was funded by Abbott and Roche, two pharma companies making weight-loss drugs at the time. Both their drugs were approved by the U.S. FDA in 1999, available to a larger demographic of people now classified as 'overweight' and 'obese'.

Mounting evidence since has led people to reconsider the logic of BMI. For one, BMI doesn't understand weight entirely, is unable to distinguish between muscle mass and body fat. Muscle and bone are denser than fat and thus weigh more; explaining why people with larger body frames (like athletes) have a higher BMI and older adults (who lose muscle mass) tend to rank lower. Six obesity care organisations in January put out a statement concurring that [BMI is "not a measure of body fat"](#); among other things, it failed to capture the uneven distribution of body fat.

In a quantitative analysis of studies covering more than 6,00,000 men and women, titled "The epidemiology of overweight and obesity: public health crisis or moral panic?", researchers found most people in the '25-30' BMI range considered 'overweight' were not associated with high mortality risk. BMI clumsily threads the needle between obesity and mortality, mistaking correlation for causation. People who are obese have a high BMI, but it is not necessarily true that a high BMI implies obesity.

The science around 'fat' is constantly evolving. It is known that excess body fat increases the risk of non-communicable diseases, such as type 2 diabetes, heart conditions and 13 types of cancers. An [analysis in Science journal](#), however, found 'obese' people (with a BMI of 30 or

more) carried a lower cardiovascular risk, and those in the 'normal' range were metabolically unhealthy and had a higher mortality risk – what it called the “obesity mortality paradox”. The researchers concluded there “is an urgent need for accurate, practical, and affordable tools” for assessing obesity and related metabolic disorders.

“The harm of BMI is that it may fool people — even physicians — who are not aware of its imperfect nature.” Dr. Sunil Kohli, physician

Experts argue BMI is an ill-researched and “overly simplistic” statistical tool. Research has found at least 59 different types of obesity, making one measure of ‘body fat’ impractical. Quetelet was also no scientist or researcher, but a statistician. The measure also relies only on self-reported weight and height, disregarding other influences such as bone density, muscularity, sex, age, genetic differences, per a study in the *International Journal of Obesity*. [Social factors such as poverty and education](#) also influence weight and obesity. AMA’s present statement acknowledges this blind spot: that it was designed only for White, wealthy, cis-men. The tool doesn’t account for gender or sex differences, even though studies show that women have more fat mass and less muscle mass than men. A 2003 study published in *JAMA* also found there is no significant mortality risk among Black women until a BMI of 37.

Body fat also varies across ethnic and racial groups. Asian Indians, for instance, suffer from the Y-Y paradox, explains Dr. Sunil Kohli, in that “at the same BMI, we have more visceral fat — the fat inside the stomach — than Europeans do.” The reverse is true for most Black people and Polynesians, who have a lower fat mass. Since Indians are prone to abdominal obesity, they are at higher risk of type 2 diabetes and heart diseases, [studies show](#). [WHO notes that BMI underestimates health risks](#) for South Asians, and the optimal health for Indians would then be a low BMI. (WHO refused to reduce the cut-off from 25 to 22 to classify as ‘normal’ citing scientific disagreement). A 2010 paper flagged BMI’s “unethical” use, arguing that “by using BMI in a non-ethnically sensitive way, we are failing these patients”.

BMI makes sense, because it is simple, inexpensive and easy. India’s aviation body shapes fitness norms for aircrew based on BMI; companies like Zerodha encourage employees to lower their BMI as part of their health wellness program (the initiative was censured by activists for being unscientific and biased). “Everyone is aware of their height; for measuring weight you need to stand on a weighing scale — it’s as simple as that,” explains Ms. Gupta. The internet is populated with easy-to-access BMI tables that categorise fitness, requiring little skill or technique, and better still, offering algorithmic assurance to those who are ‘unhealthy’.

Unlike other diagnoses such as heart disease, however, BMI stigmatises the individual as ‘overweight’ or ‘obese’, with research showing that weight-based shame further leads patients to delay or avoid medical care.

“BMI is one method of tracking your weight and identifying potential weight-related problems,” says Ms. Gupta. Like a Rapid Antigen Test for COVID-19, it *may* help screen for chronic health conditions without promising the accuracy of an RT-PCR test. In cases of heart or fatty liver disease, it is entirely redundant because BMI doesn’t assess fat distribution in the body.

Some argue for employing BMI as a preliminary screening tool and verifying results with scientifically-sound assessments: waist to hip ratio, waist circumference, triceps and subscapular skinfold thickness. The fifth round of the National Family Health Survey (NFHS) assessed abdominal obesity through waist circumference. , which research shows is effective in diagnosing weight-related diseases such as type 2 diabetes. Biomarkers such as triglycerides (a type of fat), blood pressure, sugar levels, heart rate, inflammation, and stress levels are instructive measures of metabolic health, though they are costlier and require medical

expertise.

Dr. Kohli concurs that it's an imperfect measure, but here to stay, since it offers utility in measuring population-level trends. "It's a crude indicator – but also an easily measurable indicator."

"For 1.2 billion people, if you want to understand how many people are overweight and underweight, BMI is the easiest data to capture, which also costs the least amount," he says. The data generates an initial hypothesis, giving "a rough idea as to where you want your healthcare interventions".

BMI is a social product of its time, a proxy indicator for health when data is missing, and at once a tool and a diagnosis. Unlike other diagnoses such as heart disease, however, BMI labels the individual as 'overweight' or 'obese', leaving one vulnerable to facing stigma in personal and professional life. Weight-based shame may further lead patients to delay or avoid medical care, Bryn Austin, a professor at Harvard T.H. Chan School of Public Health, noted. A 2018 study published in *BMC* noted how this stigma may further drive mortality risk, trigger liminal health concerns such as eating disorders and even explain why BMI correlates with poor health.

Even among its proponents, the consensus is: BMI is useful, as long as one knows its limitations. The most incriminating of them being that it risks flattening a complex public health issue — one shaped by social and biological determinants — into a straight line, one that erroneously links fatness with poor health. The latest data shows every one in four persons is either diabetic or at risk of diabetes, with obesity playing a role. But misguided health interventions can overlook people in need of early diagnosis, treatment and care.

"There are multiple factors to health than just weight, BMI, or fat percentage alone," Dr. Kohli says.

The 'obesity epidemic' is a worrying sum of moving parts: lifestyles, diets, access to health care, genetics, the cities we inhabit, complex social histories. Proxy indicators can no longer present answers as absolute truths. Activists argue that science has to beyond assigning people numbers or placing them into categories — straight jackets that were never designed for them, but still form the basis of public health interventions.

COMMENTS

SHARE

[health](#) / [obesity](#) / [diabetes](#)

BACK TO TOP

Comments have to be in English, and in full sentences. They cannot be abusive or personal. Please abide by our [community guidelines](#) for posting your comments.

We have migrated to a new commenting platform. If you are already a registered user of The Hindu and logged in, you may continue to engage with our articles. If you do not have an account please register and login to post comments. Users can access their older comments by logging into their accounts on Vuukle.

END

CrackIAS.com