

# Body Mass Index (BMI): Is it Still Reliable?

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In the modern world, an individual's body mass index (BMI), which considers their height in relation to the body weight, is typically used to understand the health status of the individual. Initially, it was used for population studies and gained popularity over the years due to its accessibility and simplicity, which was proposed by Adolphe Quetelet in the 19th century. In addition, this value will serve as a historical benchmark for comparing the data which spanned more than a year and so.<sup>1</sup>

It serves as an invaluable tool in assessing the overall well-being of different demographics/geographic people and it provides standardized guidance on monitoring the prevalence of health status, i.e., underweight, normal weight, and obesity in a group of a particular population.<sup>2</sup> Moreover, it serves an important role in the selection of healthy subjects at baseline phase I clinical trials to understand the pharmacokinetics of the new molecular entities (NMEs).

In continuation, BMI is used as a primary endpoint in clinical trials related to obesity, diabetes mellitus (T2DM), cardiovascular-related disorders, and other joint problems. In recent times, "biological BMI" scores, derived from multi-omics data (proteins and metabolites) and clinical laboratory tests from blood are more accurate to delineate hidden health risks.<sup>3</sup>

On the other hand, individual health is a result of various complicated confounders such as including genetics, lifestyle, nutrition, and environmental factors. Two or more individuals with the same BMI may have different health conditions, because, in terms of defining the status of health and it does not consider the covariates such as muscle mass, bone density, and the distribution of fat. For example, individuals with high muscle mass will be considered overweight or obese, although, their body fat percentage is very low. In a similar vein, older adults are more prone to metabolic disorders due to excess visceral fat, and they may have a normal BMI range.<sup>2</sup>

Of note, our understanding of health and genetics is increasing, thus leading to precision and personalized medicine. Alongside, technologies such as dual-energy X-ray absorptiometry (DEXA), air displacement plethysmography, and bioelectrical impedance analysis (BIA) give more precise information on a person's bone density, muscle mass, and body fat percentage. In continuation, we may need to consider the economics, and suitability to the different populations and not solely rely on BMI levels.<sup>4,5</sup>

Overall, while BMI has played a significant role in health-related issues of different geographic people; there are some other factors

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that play a major contribution to health and disease risk. Hence, humanity will benefit from taking a more thorough look at BMI in addition to body composition, cardio metabolic health markers, and individual behaviors.

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