

## **The History and Faults of the Body Mass Index and Where to Look Next**

Category: Quality Health Care, Patient Safety & Best Practices; Oral Presentation

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Most people know the common anthropometric index, body mass index (BMI). They are familiar with its usage in healthcare and research settings, but do they know of its origin? Adolphe Quetelet (1796-1874), a Belgian statistician, mathematician, and astronomer inspired by his passion for statistical analysis first created the Quetelet index (weight divided by height squared) while attempting to establish quantifiable characteristics of the 'normal man'. Physiologist Ancel Keys (1904-2004) officially coined the term "body mass index" and provided evidence to support its widespread current usage in 1972 through his study in which he analyzed 12 samples of 7,426 'healthy' men. BMI now exists on almost all Electronic Medical Records, is used as a factor to assess various disease risks, and is used everyday in the healthcare setting.

We must question whether or not using an anthropometric index originally established and rebranded by non-medical professionals offers the best, most accurate medical assessment of our patients. It is time to introduce a new anthropometric index of weight that is not only a more accurate predictor of disease risk, a more accurate determination of body fat percentage and adiposity, and a better representation of a patient's health - but one that is inclusive to both women and minorities as well. These groups were not included at all, or only comprised a small percentage, of the 7,426 men in the 1972 Ancel Keys study. Different indices that may be superior replacements to BMI due to their ability to accurately assess abdominal fat - which is associated with insulin resistance, metabolic disease, and cardiovascular disease - include, but are not limited to, waist-to-hip ratio, waist-to-height ratio, waist circumference, and a body shape index. It is important that we replace the usage of BMI in the healthcare setting and EMR with a different anthropometric index that considers height, sex, and race differences; accounts for abdominal adiposity which is highly associated with cardiometabolic risk; and accurately predicts the relationship between obesity, mortality, and diseases such as CVD, hypertension, insulin resistance, and type 2 diabetes.

### **Learning Objectives**

Discuss the history, origin and usage of body mass index.

Describe the faults in BMI and in the 1972 Ancel Keys study that sparked the widespread current usage of BMI in the United States, particularly relating to gender and race/ethnicity.

Identify and discuss potential replacements of our current widespread anthropometric index, body mass index, such as waist-to-hip ratio, waist-to-height ratio, waist circumference, and a body shape index.

## References and Resources

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