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THOUGHT LEADERSHIP

The Problem with BMI:

Addressing Inequities in Obesity Screening

Even in 2024, harmful weight-based stereotypes persist, including that individuals living with obesity are "lazy, gluttonous, and lacking willpower or self-discipline." As such, many people believe individuals living with obesity essentially choose to do so. While use of GLP-1s have shown promising evidence of weight loss in Americans living with obesity, will their rising popularity impact the stigma surrounding obesity? Some researchers actually worry that GLP-1s will do more harm than good.

"And to be clear, [obesity] is not a choice. This is an actual disease process," **Fatima Cody Stanford**, MD, an obesity medicine specialist and the equity director of the endocrine division at Massachusetts General Hospital, explained during a recent **Omada webinar**. "Unlike other disease processes, obesity is a disease that you wear, and we make judgments associated with that."

Despite the **consensus** among global healthcare stakeholders that obesity is a complex, multifactorial chronic disease, unfair judgments still appear in healthcare settings. One study found that both registered nurses and student nurses held negative perceptions of patients with obesity, and baseline visit data from 40 physicians showed that they were **less likely to respect** patients with higher BMIs, and some even **allocated less time** to care for them. Researchers have **proposed** that this form of stigmatization "interferes with implementation of effective obesity prevention efforts," with **one study** demonstrating an associated 60% increased risk of patient death.

Forging a future with more empathetic, equitable and effective treatment for obesity requires healthcare settings to confront this stigma, and its role in contributing to systemic healthcare practices impacting patients' weight health that remain in place today. There may be no better place to start than with the origins of the most widely used obesity screening tool: BMI (Body Mass Index). With its checkered past and at times questioned clinical merits, BMI's ubiquity in modern healthcare should be carefully considered.

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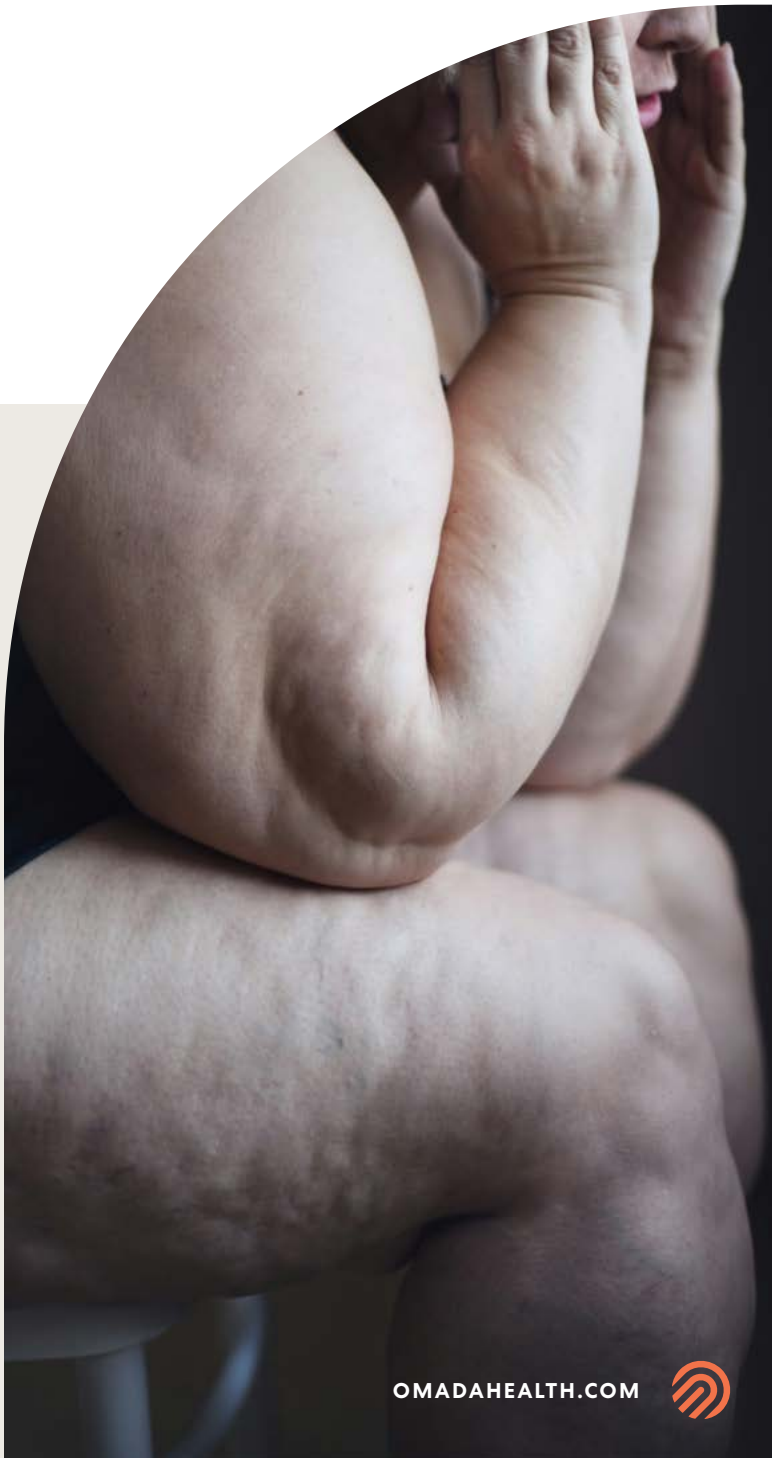

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> **FATIMA CODY STANFORD, MD**

BMI is Based on "The Average Man" of the Mid-19th Century

In the mid-19th century, a Belgian mathematician named Adolphe Quetelet took an interest in anthropometry, the scientific study of proportions of the human body. His **attempt** to measure and characterize 'l'homme moyen'—the average man—by the values of measured variables, produced the Quetelet Index. This was his way to roughly estimate body fat percentage, by dividing weight by the square of height. Today, we know his creation as BMI, or Body Mass Index, though the term wasn't **coined** until nearly a century after his death.

However, there were major limitations to Quetelet's academic experiment. First, all of the participants measured to characterize "the average man" were western European men. **That's right. No women. All white.** Also, height and weight were the only measurements taken. "You'll notice that I never, not once in that chronology of events, ever brought up medicine or science," Dr. Stanford said when recapping the events that led to Quetelet's Index. "And yet, it is what we use today to determine what health looks like."

This context begs the question: why is BMI a standard measure of health nearly two centuries after it was conceived?

Adolphe Quetelet

Source: Wikimediacommons.org/Public Domain

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How BMI Took Hold in Healthcare

By the mid-20th century, the Quetelet's Index hadn't yet been adopted, and the life insurance industry spent ample time experimenting with "standard weight" tables measuring age and weight to evaluate life insurance **risks**. At the time, most of the U.S. insured population was white and the life insurance industry's main concern was linking weight and health, with little concern for racial health differences. In fact, key stakeholders involved with helping create the industry's "standard weight" tables were speculated to be motivated by advancing eugenics claims about an overtly **racist factor** in obesity. However, these tables were not sustainable due to their rigidity and lack of patient context.

Ancel Keys, a Berkeley- and Cambridge-trained physiologist, was asked to help find a more universal, permanent solution to the life insurance industry's standardized weight tables. His answer: the Quetelet Index, which he renamed Body Mass Index (BMI). He made the recommendation despite the fact that a study he conducted failed to show BMI was an accurate predictor of heart disease, his **stated motive**.

Keys noted that BMI was "**easy to calculate**" and, unlike the standardized tables, BMI's method doesn't vary over time. Since life insurers had noticed their higher weight policyholders were more likely to die early than those of average weight, BMI's simple formula to measure excess weight was vastly appealing. BMI spread from life insurers, to health researchers and into the clinical realm by the 1980s. Today, people with BMIs in the "obese" category pay **22% more**, on average, for health insurance than those in the "normal" range.

Keys' recommendation to boil obesity down to one, reductive screening tool may have been influenced by more than the search for a simple method to measure excess fat. He was not without his own biases, as he allegedly **described** obesity as "disgusting," "a health hazard," and " ethically repugnant".

BMI's Place Today and its Faults

Today, BMI is practically omnipresent in healthcare and is the most widely used **screening tool** for obesity. It is noted in most medical records, can factor into life insurance policies, determines eligibility for weight loss medications, and can even affect access to **joint-replacement surgery** and **fertility treatment**. A BMI between 18.5 and 24.9 is almost universally considered a "healthy weight", between 25 and 29.9 is "overweight", and 30 and above is "obese".

There's only one problem—a higher BMI doesn't necessarily mean an individual is less healthy.

BMI	WEIGHT STATUS
18.5 and 24.9	"healthy weight"
25 and 29.9	"overweight"
30 and above	"obese"

A **2013 meta-analysis** by the National Center for Health Statistics looked at 97 studies covering nearly 3 million people. They concluded that individuals with "overweight" BMIs were 6% less likely to die in a given year than their "normal range" BMI counterparts. Relying on BMI has also been shown to **over-predict** cardiometabolic disease for black Americans and **under-predict** risk for Asian Americans.

BMI's legacy is a complicated one too often devoid of science. Take, for example, the 1997 World Health Organization **decision** to update its 1995 report and change a BMI above 30 from being classified as "overweight" to "obesity" without any discussion. **The New York Times** commented this helped establish "a booming new market for diet pills for the obese practically served to the companies on a silver platter." The medical and social ramifications of the 1997 decision were vast, and the **AMA** officially designated obesity as a chronic disease in 2013. But that designation didn't distinguish between obesity in terms of excess weight harmful to health or a BMI above 30.

On one hand, AMA **policy** acknowledges that BMI is correlated with the amount of fat mass in the general population. However, it clearly loses predictability when applied individually. Take well-trained athletes, for example, for **whom** BMI cannot be used as a direct measurement of body fat content.

Here's one way Dr. Stanford illustrated the innate problem with relying solely on BMI. "If you lose 20 pounds very quickly, did your health really improve? Maybe it didn't. Maybe you still have heart failure. Your BMI looks better, but it doesn't tell me about your health. So it's not really a health metric, it's just a number and it just tells us your height and your weight."

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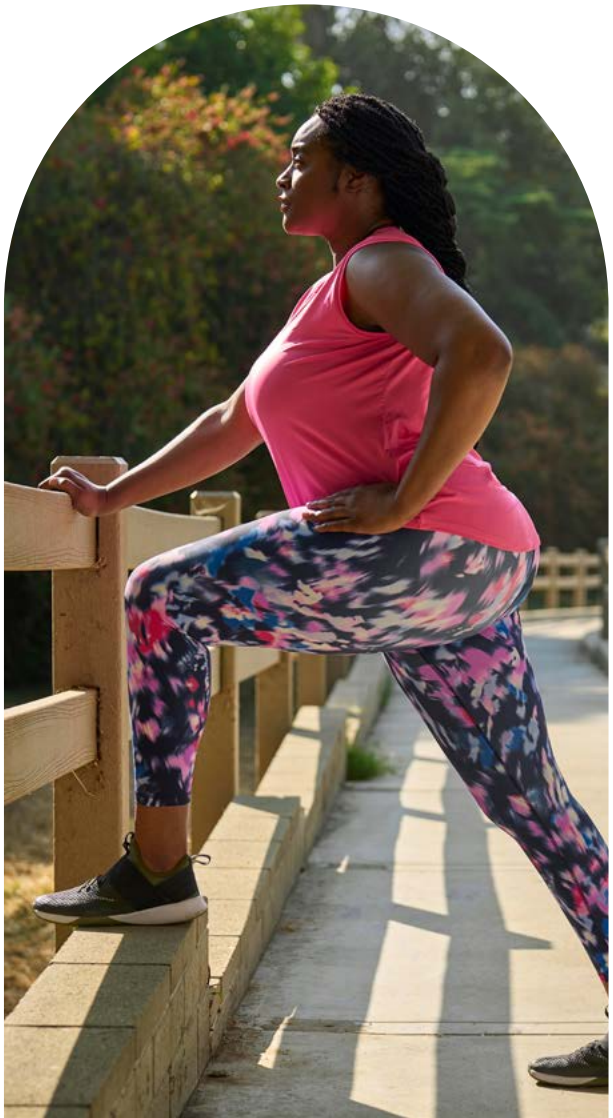

What's the alternative to BMI?

Because it's so widely used in healthcare, BMI's origins failure to consider factors like race may have a lingering, outsized and negative impact on our efforts to address health equity. Many healthcare providers who assess and treat patients with obesity may not know that BMI is based primarily on data collected from previous generations of **non-Hispanic white male populations**; and they should. According to the American Medical Association's official **policy**, BMI should be used in conjunction with other clinically-validated measures of risk to better evaluate individual weight health, including but not limited to:

- Measurements of visceral fat
- Body adiposity index
- Body composition
- Relative fat mass
- Waist circumference
- Genetic and metabolic factors

Despite its flaws, BMI is useful for screening on a population level. It becomes far more problematic on an individual member level because of its racial and gender bias. The current array of alternative obesity screening methods are, generally, inconvenient to attain, intrusive, too costly, or all of the above. For these reasons, and in accordance with federal regulation, Omada uses BMI in our application and eligibility criteria. However, given BMI's limited ability to diagnose or assign risk on an individual member level, Omada requires anyone in the "overweight" BMI range to have an additional risk factor to participate in our program.

BMI's Place in the Age of GLP-1-Fueled Inequity

Obesity conversations are rapidly evolving in the wake of GLP-1s bursting onto the scene. There may be little debate about whether or not these drugs work, but who exactly are they working for? While these drugs may have the capacity to reshape obesity care, some **health experts believe** GLP-1s are actually worsening obesity disparities, primarily because of barriers to access and cost.

U.S. obesity rates have been **rising for decades**, and they're consistently higher for Black and Latino Americans. If medications like GLP-1s **aren't broadly improving** inequities present in obesity care, then the updating of screening, risk assessment and prevention methods should certainly be prioritized.

Data is available to show that BMI alone doesn't work as a weight health risk assessment tool for everyone, particularly racial, ethnic and gender groups not represented by Quetelet's 200-year-old anthropometry experiment. Evaluating patients with as much clinical accuracy as possible is a far more pragmatic and proactive approach than waiting on drug prices to drop. As employers and payers continue to grapple with questions about who will benefit most from weight loss medications, it's clear that obesity screening tools should build on and go beyond BMI on the individual member level.

Why question and explore the origins and processes behind our current guidelines and practice? Without doing so, we perpetuate healthcare inequities and miss out on opportunities to offer better clinical accuracy in predicting and improving disease outcomes.

Like any complex chronic condition, an imperfect screening tool like BMI should be supported by TMI––too much information. Additional health context in the framework of obesity medicine can lead to more understanding in medical settings and lessen the impact of stigma. Or, as Dr. Stanford put it: "We must treat individuals with obesity with dignity, kindness, respect, and get rid of our biases. Let's work towards advocacy. This is the most prevalent chronic disease in human history, and if we treat obesity, we treat the 230 plus chronic diseases that come along with it." ●

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