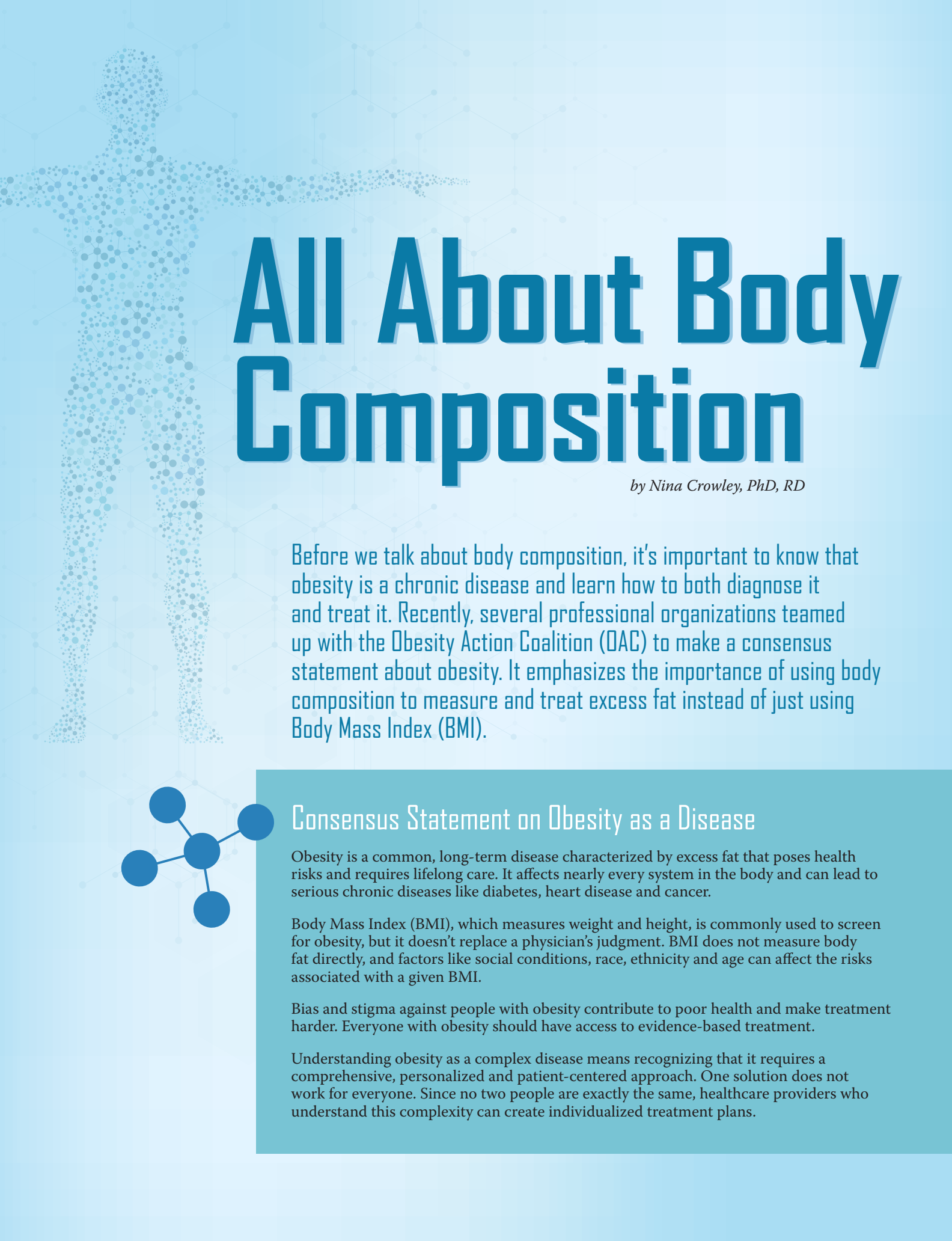




All About Body Composition

by Nina Crowley, PhD, RD

Before we talk about body composition, it's important to know that obesity is a chronic disease and learn how to both diagnose it and treat it. Recently, several professional organizations teamed up with the Obesity Action Coalition (OAC) to make a consensus statement about obesity. It emphasizes the importance of using body composition to measure and treat excess fat instead of just using Body Mass Index (BMI).



Consensus Statement on Obesity as a Disease

Obesity is a common, long-term disease characterized by excess fat that poses health risks and requires lifelong care. It affects nearly every system in the body and can lead to serious chronic diseases like diabetes, heart disease and cancer.

Body Mass Index (BMI), which measures weight and height, is commonly used to screen for obesity, but it doesn't replace a physician's judgment. BMI does not measure body fat directly, and factors like social conditions, race, ethnicity and age can affect the risks associated with a given BMI.

Bias and stigma against people with obesity contribute to poor health and make treatment harder. Everyone with obesity should have access to evidence-based treatment.

Understanding obesity as a complex disease means recognizing that it requires a comprehensive, personalized and patient-centered approach. One solution does not work for everyone. Since no two people are exactly the same, healthcare providers who understand this complexity can create individualized treatment plans.

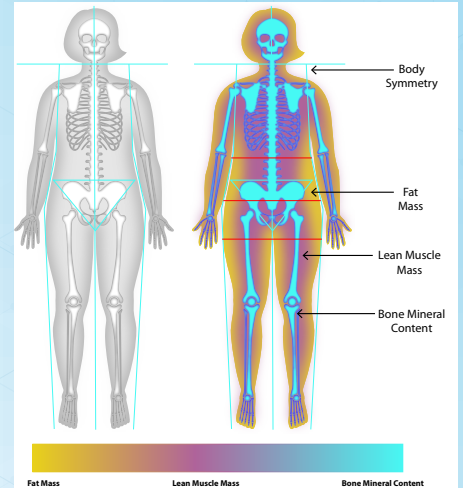
Assessment of Obesity

The American Medical Association (AMA) acknowledges that BMI is not a perfect measure and has often been misused, especially for different groups of people. They suggest using BMI with other methods like body composition, visceral fat, waist circumference and genetic factors. The Obesity Medicine Association (OMA) recommends using percent body fat, waist circumference and an obesity staging system to better check for excess fat. They emphasize that where the fat is located, especially around internal organs, is important for understanding health risks related to obesity.

Body Composition Assessment Methods

Body composition assessment measures different parts of the body, such as fat, muscle, bone and water, instead of just weight. This helps health professionals create personalized health plans. Common methods for assessing body composition include DEXA, Bod Pod and BIA.

- **Dual-Energy X-Ray Absorptiometry (DEXA):** DEXA scans use low-level X-rays to measure body fat, bone density and lean, soft tissue. These scans are safe because they use very little radiation. However, not all DEXA machines can tell the difference between types of fat or work for people with higher body weights. The accuracy depends on using the same machine each time, proper calibration and trained technicians.
- **Air Displacement Plethysmography (Bod Pod):** The Bod Pod measures body volume by seeing how much air your body displaces inside a small chamber. Since fat is lighter than muscle, this method accurately estimates how much of each is in your body. You will need to wear a swimsuit and a hair cap to avoid trapping air, which might be uncomfortable for some people.
- **Bioelectrical Impedance Analysis (BIA):** BIA devices send a small electrical current through your body to measure how quickly it travels through fat and muscle, which conduct electricity at different speeds. There are various types of BIA devices: hand-to-hand (measures upper body), foot-to-foot (home scales that measure lower body) and the most accurate, hand-to-foot (measures the whole body). Incorporating waist circumference measurements with BIA data helps estimate visceral fat. Multi-frequency BIA devices can measure both intracellular and extracellular water for more precise results.



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Each method has its advantages and limitations, so the best choice depends on your needs, availability and comfort level. Here are a few things to consider:

- **Size/Weight Limits:** Ask about weight limits before making an appointment to avoid surprises or discomfort. Many DXA devices have a weight limit of 350 pounds, while some BIA devices can accommodate up to 500 pounds.
- **Comfort on/in Device:** Some people may not feel comfortable in a BOD POD or a DXA machine. Additionally, some BIA devices are small and can be unstable to stand on with your legs spread apart for an accurate measurement.
- **Amount of Time:** Find out how long the measurement takes. DXA and BOD POD measurements take longer than a BIA measurement, which typically takes less than a minute.
- **Clothing Required:** BOD POD measurements require a bathing suit and swim cap, whereas for a BIA measurement, you only need to remove your shoes and socks.
- **Validation Equations:** Ensure the equations used for measurements consider people with higher body weights.
- **Understanding Results:** Make sure your team has a plan for explaining the results to you so you can use this information in your care plan.

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Understanding Your Body Composition Results

Each body composition measurement technique gives you different information. Generally, you’ll get details about your body fat, muscle mass and other important metrics.

What Body Composition Tests Measure:

Muscle Mass

Fat Free Mass (FFM)

Fat Free Mass (FFM) includes all parts of your body that are not fat. This includes bones, muscles, vital organs, connective tissue and water. When we divide the body into two parts, it’s Fat Mass and Fat-Free Mass. Having too little FFM can make daily activities harder, lower your quality of life, lead to fat buildup and increase the risk of muscle and bone loss. On the other hand, having more FFM is linked to burning more energy and having better strength and muscle function. When losing weight, the ‘quarter FFM rule’ suggests that less than 25% of the weight you lose should come from FFM for it to be considered healthy.

Lean Body Mass (LBM)

Lean Body Mass (LBM) is the weight of lean soft tissue, which includes everything except fat and bones. It is typically measured using DXA scans of the arms and legs. LBM is a bit larger than muscle mass because it includes water, skin and connective tissues.

Skeletal Muscle Mass (SMM)

Skeletal Muscle Mass (SMM) refers to the muscles attached to your bones. These muscles help you move and maintain your posture. Having a healthy amount of skeletal muscle is important for strength, metabolism and daily activities. Losing a lot of muscle can reduce your metabolism, make it harder to move and lower your quality of life. Monitoring your SMM is important, especially if you are trying to build muscle through strength training and eating more protein. During weight-loss, it is important to focus on both diet and exercise to keep your lean muscle mass.

Segmental Skeletal Muscle Mass

This measures the muscle mass in each limb (right arm, left arm, right leg, left leg) and the torso. It helps detect muscle imbalances from past or recent injuries, like fractures and immobilization. It may also indicate neuromuscular problems that need further investigation.

// Regular body composition checks help ensure you keep your muscle mass and maintain a high metabolism. //

Fat Mass

Fat Mass Percentage

This tells you what percentage of your total body weight is fat. There isn't a universally defined healthy body fat percentage, but having too much body fat, especially around internal organs, is linked to higher risks of health problems like heart disease, diabetes and certain cancers. During weight loss, the goal is to reduce excess body fat while keeping lean muscle mass and staying hydrated. Monitoring fat mass percentage helps check the effectiveness of weight-loss programs or treatments.

Visceral Adipose Tissue (VAT)

The best way to measure VAT is with a whole-body MRI, but this method is often impractical or unavailable. However, studies have shown that using Bioimpedance Analysis (BIA) with waist circumference measurements can be 97% as accurate as an MRI. Combining waist circumference with BIA gives a good understanding of body composition and its impact on health.



Body Composition Changes During Weight-loss

When you lose a lot of weight, you often lose both fat and muscle. While losing fat is the main goal, keeping muscle is important for health, strength and metabolism. Losing too much muscle can lower your resting metabolic rate (RMR), making it harder to keep the weight off. Age-related changes, like losing muscle and gaining fat, make this even harder. Regular body composition checks help ensure you keep your muscle mass and maintain a high metabolism.

These insights can help you set realistic fitness goals, track your progress and create a plan that fits your needs. With this knowledge, you can work with healthcare providers to make informed choices for a healthier, more balanced life.

For more information about body composition and obesity, check out the OAC Health Talk on the topic: www.obesityaction.org/healthtalks

About the Author:

Nina Crowley, PhD, RD, advocates for effective communication about weight and health, a patient-centered approach and better access to care for people with obesity. She has more than 16 years of experience at the Medical University of South Carolina's Metabolic and Bariatric Surgery Program. Now, she is the Professional Affiliations and Education Manager for seca's medical body composition division. Nina is a thought leader, public speaker and content producer in the obesity care community. She also holds several leadership positions in obesity care organizations, including the Obesity Action Coalition's (OAC) Board of Directors.





ABOUT THE OBESITY ACTION COALITION (OAC)

The Obesity Action Coalition (OAC) is a National non-profit organization dedicated to giving a voice to individuals affected by obesity and helping them along their journey toward better health. Our core focuses are to elevate the conversation of weight and its impact on health, improve access to obesity care, provide science-based education on obesity and its treatments, and fight to eliminate weight bias and discrimination.



VIBRANT COMMUNITY



NATIONAL AWARENESS CAMPAIGNS



ANNUAL CONVENTION



ADVOCACY



PUBLIC EDUCATION

LEARN, CONNECT, ENGAGE

The OAC knows that the journey with weight can be challenging but we also know that great things happen when we learn, connect and engage. That is why the OAC Community exists. Our Community is designed to provide quality education, ongoing support programs, an opportunity to connect, and a place to take action on important issues.

Through the OAC Community, you can get access to:

- Weight & Health Education • Community Blogs
 - Community Discussion Forum
 - Ongoing Support • Meaningful Connections
- AND MUCH MORE**



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