

Obesity: “Can the Battle Be Won?”



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KEYWORDS

- Obesity • Weight loss pharmacotherapy • Bariatric surgery • Nutritional deficiencies

KEY POINTS

- Overweight and obesity affects more than 60% of the adult population in the United States.
- Obesity is associated with an increased rate of diabetes mellitus type 2, obstructive sleep apnea, dyslipidemia, fatty liver disease, hypertension, degenerative joint disease, and some cancers.
- The US Food and Drug Administration has approved 4 medications in the last few years to help with weight loss: phentermine-topiramate (Qsymia), lorcaserin (Belviq), bupropion-naltrexone (Contrave), and liraglutide (Saxenda).
- Bariatric surgery is an effective tool for weight loss and treatment of comorbid conditions. All bariatric procedures have potential risks and complications. Postsurgery patients need long-term vitamin supplementation and nutritional monitoring.

DEFINING OVERWEIGHT AND OBESITY

Since 1985, the National Institutes of Health (NIH) has been using the body mass index (BMI) to define overweight and obesity. In 1998, the BMI cutoffs for overweight and obesity were modified to those that are in current use (**Table 1**).¹ The BMI is calculated by dividing a person’s weight in kilograms and the squared height in meters (kg/m^2). The BMI is used to classify overweight and obesity and to estimate relative risk of disease compared with normal weight. The BMI is not diagnostic of health status, rather, it is a screening tool, and is not without flaw. For example, many lean athletes may have a high BMI because of high muscle mass. According to BMI criteria, a BMI less than $18.5 \text{ kg}/\text{m}^2$ is underweight, 18.5 to $24.9 \text{ kg}/\text{m}^2$ is normal weight, 25 to $29.9 \text{ kg}/\text{m}^2$ is overweight, 30 to $34.9 \text{ kg}/\text{m}^2$ is obesity (class I), 35 to $39.9 \text{ kg}/\text{m}^2$ is obesity (class II), and greater than $40 \text{ kg}/\text{m}^2$ is severe obesity (class III). The severe obesity class is sometimes further divided into superobese (BMI, 50 – $59.9 \text{ kg}/\text{m}^2$) and super-super-obese (BMI, $>60 \text{ kg}/\text{m}^2$). To calculate the BMI, a free tool is available at the National Heart, Lung, and Blood Institute (NHLBI) Web site: http://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm.

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Table 1
Classification of overweight and obesity by body mass index, waist circumference, and associated disease risk.

	BMI (kg/m ²)	Waist circumference in inches		
		Obesity Class	Men ≤40 in. Women ≤35 in.	Men >40 in. Women >35 in.
Underweight	<18.5		—	—
Normal ^a	18.5–24.9		—	—
Overweight	25.0–29.9		Increased	High
Obesity	30.0–34.9	I	High	Very high
	35.0–39.9	II	Very high	Very high
Extreme obesity	≥40	III	Extremely high	Extremely high

^a Increased waist circumference can also be a marker for increased risk even in persons of normal weight.

From National Institutes of Health, National Heart, Lung, and Blood Institute in cooperation with the National Institute of Diabetes and Digestive and Kidney Diseases. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report. NIH Publication no. 98-4083. Available from: http://www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.pdf.

In addition to the BMI, accessing fat distribution is an important factor. Abdominal circumference measurement gives more information for determining health risk than BMI alone. For consistency, waist measurements should be taken at the level of the ileac crest (**Fig. 1**).² The apple (android) and pear (gynoid) shapes refer to extra weight in the abdominal (visceral) area versus the hip/buttock/thigh (subcutaneous), respectively. Visceral weight is associated with greater risk of cardiometabolic disease.³ The risk of cardiometabolic diseases (coronary heart disease, hypertension, and type-2 diabetes) is increased, even in people with a normal BMI, if the waist circumference is larger than 40 inches for men or 35 inches for women.

OBESITY TRENDS

The prevalence of overweight and obesity in the United States is staggering. The 2011 to 2012 National Health and Nutrition Examination Survey (NHANES) reports 69% of US adults are overweight, 35% have a BMI greater than 30 kg/m², 14.5% have a BMI greater than 35 kg/m², and 6.4% have a BMI greater than 40 kg/m² (**Fig. 2**).⁴ The NHANES data for overweight, obesity, and severe obesity from 1960 to 2012 are depicted in **Fig. 3**. One can see the steep increase in obesity starting in 1980 and continuing through 2005. During the last 12 to 15 years, the prevalence of obesity has not changed significantly.⁵ However, the prevalence of severe obesity (BMI >40 kg/m²) is still increasing.⁶

CONSEQUENCES OF OBESITY

Obesity affects most every organ system in the body (**Fig. 4**).⁷ With a greater BMI comes increased risk for cardiometabolic diseases, such as hypertension, dyslipidemia, cardiovascular disease (CVD), hypercoagulability causing blood clots, and type 2 diabetes. Certain cancers are associated with obesity, including breast, colon, uterine, pancreatic, kidney, and prostate. Risk of obstructive sleep apnea, degenerative joint disease, gallbladder disease, nonalcoholic fatty liver disease, pseudotumor cerebri, gastric reflux, and infertility are all increased with excess weight. Mental health disorders, including depression, anxiety, and body image disorders, are seen with obesity.⁸

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