Nutrition Interventions for Obesity

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KEYWORDS

• Obesity • Dietary therapy • Energy balance • Weight loss
• Maintenance of weight loss • Weight-reducing diet

KEY POINTS

- Obesity is a complex, chronic disease that requires a period of negative energy deficit followed by restoration of energy balance to successfully reduce body weight.
- Multiple dietary strategies have been shown to be effective for reducing body weight. The particular components of the dietary strategy, including macronutrient balance, amount of energy deficit, and foods/food types, can have an impact on adherence and comorbid risk factors.
- Maintenance of weight loss of 3% or more of body weight can lead to significant improvements in risk factors. Specific guidance should be provided on strategies that are most effective for weight loss maintenance to help sustain risk factor improvements and reduce body weight.

INTRODUCTION

Obesity is among the most prevalent chronic diseases in the United States and much of the world, contributing to substantial morbidity, mortality, and health care expenditures. Nearly every health care professional has to manage obesity or comorbid conditions related to obesity. The most recent NHANES (National Health and Nutrition Examination Survey) data show that 36.5% of American adults fit the definition of obesity.[1] Prevalence of obesity is significantly higher in certain subgroups, with Hispanic Americans and African Americans having rates of 42.5% and 47.8%, respectively.[2] Globally, approximately 600 million people have obesity, with more of the world's inhabitants overweight than underweight, and most of the world's population living in countries where overweight and obesity cause more deaths than underweight.[3]

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Med Clin N Am ■ (2016) ■–■
http://dx.doi.org/10.1016/j.mcna.2016.06.012 **medical.theclinics.com**
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Although the causes of obesity are multifactorial, the common pathway is a sustained state of positive energy balance, leading to an increase in fat mass. The excess accumulation and storage of adipose tissue that defines obesity leads to a wide array of comorbid conditions. To successfully treat obesity, the primary tenet of nutrition therapy is to create a negative energy balance, leading to reduction of fat stores that are being used as a source of energy. Weight loss of 3% or more of body weight can lead to clinically meaningful improvements in risk factors associated with obesity. This article provides an overview of obesity and its classification, dietary strategies for treatment, expected outcomes and challenges, and considerations for successful maintenance of weight loss. It discusses specific nutrition considerations for patients with obesity and common comorbid conditions, and addresses several popular claims for diets and weight loss supplements.

Background and Classification

Obesity is a condition of excess accumulation and storage of adipose tissue, which is a metabolically active tissue that has many bodily functions in addition to energy storage, including hormone synthesis and thermoregulation. Obesity is associated with nearly 200 comorbid conditions, including cardiometabolic disorders (eg, type 2 diabetes, cardiovascular disease, hypertension, dyslipidemia), gastrointestinal disorders (eg, gallbladder disease, pancreatitis, esophageal reflux), mechanical disorders (eg, osteoarthritis of weight-bearing joints, hypoventilation), numerous cancers, and mental health conditions (eg, depression), as well as functional limitations and decreased health-related quality of life.[4]

Obesity is most commonly defined by body mass index (BMI; body weight [kg [/height [meters] squared) greater than or equal to 30 kg/m^2. For adults, a normal BMI is defined as 18.5 to 25 kg/m^2, overweight as BMI 25 to 29.9 kg/m^2, and obesity as BMI greater than or equal to 30 kg/m^2, with severe obesity defined as BMI greater than or equal to 40 kg/m^2 (**Table 1**). BMI is highly correlated with total body fat, based on studies of body composition using various techniques in the general population, and is positively associated with morbidity and mortality.[5–7] However, BMI has several limitations. First, BMI does not distinguish fat from lean mass. BMI can underestimate body fat in older adults, because people tend to lose lean mass and accumulate fat mass with age; conversely, very lean individuals with high muscle mass, such as highly trained athletes, have less body fat than predicted by calculated BMI.[8] Next, as with any attempt to categorize a continuous phenomenon, the association with other disease risks in the lower ranges of abnormal BMI (ie, overweight) are not as consistent on an individual level.[7] In addition, BMI does not account for body fat distribution, which can alter risk associations. Visceral adipose tissue, most commonly found in

Table 1
BMI classification

Weight Classification	BMI (kg/m^2)
Underweight	<18.5
Normal weight	18.5–24.9
Overweight	25–29.9
Obesity class 1	30–34.9
Obesity class 2	35–39.9
Obesity class 3	40+

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