

### Definition

Obesity is an abnormal accumulation of body fat, usually 20% or more over an individual's ideal body weight. Obesity is associated with increased risk of illness, disability, and death.

### Description

Obesity traditionally has been defined as a weight at least 20% above the weight corresponding to the lowest death rate for individuals of a specific height, gender, and age (ideal weight). Twenty to forty percent over ideal weight is considered mildly obese; 40–100% over ideal weight is considered moderately obese; and 100% over ideal weight is considered severely, or morbidly, obese. More recent guidelines for obesity use a measurement called BMI (body mass index) which is the individual's weight multiplied by 703 and then divided by twice the height in inches. BMI of 25.9–29 is considered overweight; BMI over 30 is considered obese. Measurements and comparisons of waist and hip circumference can also provide some information regarding risk factors associated with weight. The higher the ratio, the greater the chance for weight-associated complications. Calipers can be used to measure skin-fold thickness to determine whether tissue is muscle (lean) or adipose tissue (fat).

### Causes and symptoms

Much concern has been generated about the increasing incidence of obesity among Americans. Some studies have noted an increase from 12% to 18% occurring between 1991 and 1998. Other studies have actually estimated that a full 50% of all Americans are overweight. The World Health Organization terms obesity a worldwide epidemic, and the diseases which can occur due to obesity are becoming increasingly prevalent.

Excessive weight can result in many serious, potentially life-threatening health problems, including hypertension, Type II diabetes mellitus (non-insulin dependent diabetes), increased risk for coronary disease, increased unexplained heart attack, hyperlipidemia, infertility, and a higher prevalence of colon, prostate, endometrial, and, possibly, breast cancer. Approximately 300,000 deaths a year are attributed to obesity, prompting leaders in public health, such as former Surgeon General C. Everett Koop, M.D., to label obesity "the second leading cause of preventable deaths in the United States."

The mechanism for excessive weight gain is clear—more calories are consumed than the body burns, and the excess calories are stored as fat (adipose) tissue. However, the exact cause is not as clear and likely arises from a complex combination of factors. Genetic factors significantly influence how the body regulates the appetite and the rate at which it turns food into energy (metabolic rate). Studies of adoptees confirm this relationship—the majority of adoptees followed a pattern of weight gain that more closely resembled that of their birth parents than their adoptive parents. A genetic predisposition to weight gain, however, does not automatically mean that a person will be obese. Eating habits and patterns of physical activity also play a significant role in the amount of weight a person gains. Recent studies have indicated that the amount of fat in a person's diet may have a greater impact on weight than the number of calories it contains. Carbohydrates like cereals, breads, fruits, and vegetables and protein (fish, lean meat, turkey breast, skim milk) are converted to fuel almost as soon as they are consumed. Most fat calories are immediately stored in fat cells, which add to the body's weight and girth as they expand and multiply. A sedentary lifestyle, particularly prevalent in affluent societies, such as in the United States, can contribute to weight gain. Psychological factors, such as depression and low self-esteem may, in some cases, also play a role in weight gain.

At what stage of life a person becomes obese can affect his or her ability to lose weight. In childhood, excess calories are converted into new fat cells (hyper-plastic obesity), while excess calories consumed in adulthood only serve to expand existing fat cells (hypertrophic obesity). Since dieting and exercise can only reduce the size of fat cells, not eliminate them, persons who were obese as children can have great difficulty losing weight, since they may have up to five times as many fat cells as someone who became overweight as an adult.

Obesity can also be a side-effect of certain disorders and conditions, including:  
Cushing's syndrome, a disorder involving the excessive release of the hormone cortisol  
hypothyroidism, a condition caused by an underactive thyroid gland  
neurologic disturbances, such as damage to the hypothalamus, a structure located deep within the brain that helps regulate appetite  
consumption of certain drugs, such as steroids or antidepressants

The major *symptoms* of obesity are excessive weight gain and the presence of large amounts of fatty tissue. Obesity can also give rise to several secondary conditions, including:  
arthritis and other orthopedic problems, such as lower back pain  
hernias  
heartburn  
adult-onset asthma  
gum disease  
high cholesterol levels  
gallstones  
high blood pressure  
menstrual irregularities or cessation of menstruation (amenorrhea)  
decreased fertility, and pregnancy complications  
shortness of breath that can be incapacitating  
sleep apnea and sleeping disorders  
skin disorders, arising from the bacterial breakdown of sweat and cellular material in thick folds of skin or from increased friction between folds  
emotional and social problems

### **Prevention**

Obesity experts suggest that a key to preventing excess weight gain is monitoring fat consumption rather than counting calories, and the National Cholesterol Education Program maintains that only 30% of calories should be derived from fat. Only one-third of those calories should be contained in saturated fats (the kind of fat found in high concentrations in meat, poultry, and dairy products). Because most people eat more than they think they do, keeping a detailed food diary is a useful way to assess eating habits. Eating three balanced, moderate-portion meals a day—with the main meal at mid-day—is a more effective way to prevent obesity than fasting or crash diets. Exercise increases the metabolic rate by creating muscle, which burns more calories than fat. When regular exercise is combined with regular, healthful meals, calories continue to burn at an accelerated rate for several hours. Finally, encouraging healthful habits in children is a key to preventing childhood obesity and the health problems that follow in adulthood.