

Overweight and Obesity

Factors Contributing to Obesity

Biological, Behavioral, and Environmental Factors Associated with Overweight and Obesity

Is there a quick answer to the question, "what contributes to overweight and obesity?"

The obesity epidemic covered on TV and in the newspapers did not occur overnight. Obesity and overweight are chronic conditions. Overall there are a variety of factors that play a role in obesity. This makes it a complex health issue to address. This section will address how behavior, environment, and genetic factors may have an effect in causing people to be overweight and obese.

Overweight and Obesity: An Overview

- Overweight and obesity result from an energy imbalance. This involves eating too many calories and not getting enough physical activity.
- Body weight is the result of genes, metabolism, behavior, environment, culture, and socioeconomic status.
- Behavior and environment play a large role causing people to be overweight and obese. These are the greatest areas for prevention and treatment actions.

Adapted from, U.S. Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity, 2001

<http://www.surgeongeneral.gov/topics/obesity/>

Overweight and obesity are a result of energy imbalance over a long period of time. The cause of energy imbalance for each individual may be due to a combination of several factors. Individual behaviors, environmental factors, and genetics all contribute to the complexity of the obesity epidemic.

Energy imbalance - When the number of calories consumed is not equal to the number of calories used.



Weight Gain:

Calories Consumed > Calories Used

Weight Loss:

Energy Balance is like a scale. When calories consumed are greater than calories used weight gain results.

No Weight Change:
Calories Consumed = Calories Used

"Despite obesity having strong genetic determinants, the genetic composition of the population does not change rapidly. Therefore, the large increase in . . . [obesity] must reflect major changes in non-genetic factors."

Hill, James O., and Trowbridge, Frederick L. Childhood obesity: future directions and research priorities. *Pediatrics*. 1998; Supplement: 571.

Genetics and the environment may increase the risk of personal weight gain. However, the choices a person makes in eating and physical activity also contribute to overweight and obesity. Behavior can increase a person's risk for gaining weight.

Looking back at the energy balance scale, weight gain is a result of extra calorie consumption, decreasing calories used (physical activity) or both. Personal choices concerning calorie consumption and physical activity can lead to energy imbalance.

Calorie Consumption

In America, a changing environment has broadened food options and eating habits. Grocery stores stock their shelves with a greater selection of products. Pre-packaged foods, fast food restaurants, and soft drinks are also more accessible. While such foods are fast and convenient they also tend to be high in fat, sugar, and calories. Choosing many foods from these areas may contribute to an excessive calorie intake. Some foods are marketed as healthy, low fat, or fat-free, but may contain more calories than the fat containing food they are designed to replace. It is important to read food labels for nutritional information and to eat in moderation.

Portion size has also increased. People may be eating more during a meal or snack because of larger portion sizes. This results in increased calorie consumption. If the body does not burn off the extra calories consumed from larger portions, fast food, or soft drinks, weight gain can occur.

Choosing a variety of healthy foods in the correct portion sizes is helpful for achieving and maintaining a healthy weight. The Dietary Guidelines for Americans is a good

resource to help people guide their dietary habits.
<http://www.usda.gov/cnpp/DietGd.pdf>* (PDF–589K)
or <http://www.health.gov/dietaryguidelines/dga2000/document/frontcover.htm> (html version)

*This document is available in Portable Document Format (PDF). You will need [Acrobat Reader](#) (a free application) to view and print this document.

Calories Used

Our bodies need calories for daily functions such as breathing, digestion, and daily activities. Weight gain occurs when calories consumed exceed this need. Physical activity plays a key role in energy balance because it uses up calories consumed.

Physical activity is any bodily movement produced by skeletal muscles that results in an expenditure of energy with a range of activities such as

- **Occupational work**
Carpentry, construction work, waiting tables, farming
- **Household chores**
Washing floors or windows, gardening or yard work
- **Leisure time activities**
Walking, skating, biking, swimming, playing Frisbee, dancing Structured sports or exercise Softball, tennis, football, aerobics

Regular physical activity is good for overall health. Physical activity decreases the risk for colon cancer, diabetes, and high blood pressure. It also helps to control weight, contributes to healthy bones, muscles, and joints; reduces falls among the elderly; and helps to relieve the pain of arthritis. Physical activity does not have to be strenuous to be beneficial. Moderate physical activity, such as 30 minutes of brisk walking five or more times a week, also has health benefits.

Despite all the benefits of being physically active, most Americans are sedentary. Technology has created many time and labor saving products. Some examples include cars, elevators, computers, dishwashers, and televisions. Cars are used to run short distance errands instead of people walking or riding a bicycle. As a result, these recent lifestyle changes have reduced the overall amount of energy expended in our daily lives. According to the Behavioral Risk Factor Surveillance System, in 2000 more than 26% of adults reported no leisure time physical activity.

The belief that physical activity is limited to exercise or sports, may keep people from being active. Another myth is that physical activity must be vigorous to achieve health benefits. Physical activity is any bodily movement that results in an expenditure of energy. Moderate-intensity activities such as household chores, gardening, and walking

can also provide health benefits. Confidence in one's ability to be active will help people make choices to adopt a physically active lifestyle.

Environment

People may make decisions based on their environment or community. For example, a person may choose not to walk to the store or work because of a lack of sidewalks. Communities, homes, and workplaces each shape health decisions. With fewer options for physical activity and healthy eating, it becomes more difficult for people to make good choices. *The Surgeon General's Call to action to Prevent and Decrease Overweight and Obesity 2000* identified action steps to prevent and decrease obesity and overweight. Below is a table listing the steps related to possible environmental factors.

Location	Environmental Factors	Potential Impact on Energy Balance
Home	<ul style="list-style-type: none"> • Reduce time spent watching television and in other sedentary behaviors • Build physical activity into regular routines 	<ul style="list-style-type: none"> • Increases daily and leisure time physical activity • Increases calories used
Schools	<ul style="list-style-type: none"> • Ensure that the school breakfast and lunch programs meet nutrition standards • Provide food options that are low in fat, calories, and added sugars • Provide all children, from prekindergarten through grade 12, with quality daily physical education 	<ul style="list-style-type: none"> • Decreases excessive calorie consumption • Increases daily physical activity
Work	<ul style="list-style-type: none"> • Create more opportunities for physical activity at work sites 	<ul style="list-style-type: none"> • Increases daily physical activity • Increases calories used
Community	<ul style="list-style-type: none"> • Promote healthier choices including at least 5 servings of fruits and vegetables a day, and reasonable portion sizes 	<ul style="list-style-type: none"> • Decreases in excessive calorie consumption • Increases leisure time physical activity

	<ul style="list-style-type: none"> • Encourage the food industry to provide reasonable food and beverage portion sizes • Encourage food outlets to increase the availability of low-calorie, nutritious food items • Create opportunities for physical activity in communities 	
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Genetics

How do genes affect obesity?

Science shows that genetics plays a role in obesity. Genes can directly cause obesity in disorders such as Bardet-Biedl syndrome and Prader-Willi syndrome.

However genes do not always predict future health. Genes and behavior may both be needed for a person to be overweight. In some cases multiple genes may increase one's susceptibility for obesity and require outside factors; such as abundant food supply or little physical activity.

For more information on the genetics and obesity visit the Obesity and Genetics: A Public Health Perspective web site at

<http://www.cdc.gov/genomics/info/perspectives/obesity.htm>

Other Factors

Diseases and Drugs

Some illnesses may lead to obesity or weight gain. These may include Cushing's disease, and polycystic ovary syndrome. Drugs such as steroids and some antidepressants may also cause weight gain.

A doctor is the best source to tell you whether illnesses, medications, or psychological factors are contributing to weight gain or making weight loss hard.

Resources:

Physical Activity and Good Nutrition: Essential Elements to Prevent Chronic Disease and Obesity: At a Glance 2002

http://www.cdc.gov/nccdphp/aag/aag_dnpa.htm

Healthy Eating Tips

Some tips for healthy eating at home, work, and elsewhere to help you get started.

http://www.cdc.gov/nccdphp/dnpa/heal_eat.htm

PEP: A Personal Energy Plan

The Personal Energy Plan or PEP is a 12-week self-directed, work site program to promote healthy eating and moderate physical activity. The program materials include workbooks for healthy eating and physical activity targeting employees' readiness to change behavior. A coordinator's kit, promotional brochures, and posters are also included in the program.

<http://www.cdc.gov/nccdphp/dnpa/pep.htm>

Obesity and Genetics: A Public Health Perspective

Examines inherited genetic variation as an important risk factor for developing obesity. Studying the genetics of obesity will lead us to a greater understanding of the metabolic condition of obesity and help us explore new options for prevention and treatment.

<http://www.cdc.gov/genomics/info/perspectives/obesity.htm>

Prevalence Among U.S. Adults of a Metabolic Syndrome Associated with Obesity

Findings from the third NHANES Survey (February 2002) estimate that as many as 47 million Americans may exhibit a cluster of medical conditions (a "metabolic syndrome") characterized by insulin resistance and the presence of obesity, abdominal fat, high blood sugar and triglycerides, high blood cholesterol, and high blood pressure.

<http://www.cdc.gov/nccdphp/dnpa/obesity/trend/metabolic.htm>

Understanding Adult Obesity

The National Institute of Health's National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) created a weight-control information network. This site is an online resource for information on obesity, its causes, and health risks, and provides measurement tools and relevant publications on the topic.

<http://www.niddk.nih.gov/health/nutrit/pubs/unders.htm>