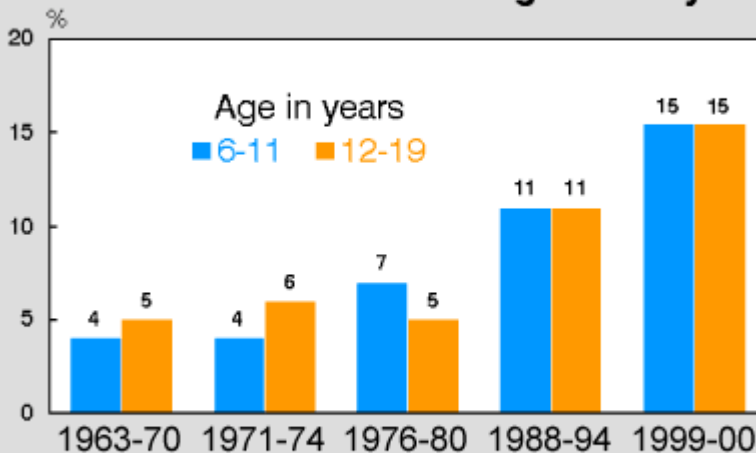


# Childhood Overweight

## Prevalence

In the past 30 years, the occurrence of overweight in children has doubled and it is now estimated that one in five children in the US is overweight. Increases in the prevalence of overweight are also being seen in younger children, including preschoolers. Prevalence of overweight is especially higher among certain populations such as Hispanic, African American and Native Americans where some studies indicate prevalence of >85th percentile of 35-40%. Also, while more children are becoming overweight, the heaviest children are getting even heavier. As a result, childhood overweight is regarded as the most common prevalent nutritional disorder of US children and adolescents, and one of the most common problems seen by pediatricians.

**Figure 1. Prevalence of overweight among children and adolescents ages 6-19 years**



NOTES: Excludes pregnant women starting with 1971-74. Pregnancy status not available for 1963-65 and 1966-70. Data for 1963-65 are for children 6-11 years of age; data for 1966-70 are for adolescents 12-17 years of age, not 12-19 years.  
SOURCE: CDC/NCHS, NHES and NHANES.

## Consequences of Childhood Overweight

Both the short term and long term effects of overweight on health are of concern because of the negative psychological and health consequences in childhood.

Potential Negative Psychological Outcomes:

- Depressive symptoms
- Poor Body Image
- Low Self-Concept
- Risk for Eating Disorders

Negative Health Consequences:

- Insulin Resistance

- Type 2 Diabetes
- Hypertension
- High Total and LDL Cholesterol and triglyceride levels in the blood
- Low HDL Cholesterol levels in the blood
- Sleep Apnea
- Early puberty
- Orthopedic problems such as Blount's disease and slipped capital femoral epiphysis
- Non-alcoholic steatohepatitis (fatty infiltration and inflammation of the liver)

Further, obese children are more likely to be obese as adults, hence they are at increased risk for a number of diseases including: stroke, cardiovascular disease, hypertension, diabetes, and some cancers.

### **Contributors to Childhood Overweight**

- Food Choices - diets higher in calories (including fats and simple sugars) and lower in fruits and vegetables are linked with overweight
- Physical Activity vs. Sedentary Activity - less physical activity and more time spent participating in activities such as watching tv results in less energy expenditure
- Parental Obesity - children of obese parents are more likely to be overweight themselves. There is an inherited component to childhood overweight that makes it easier for some children to become overweight than others. There are a number of single gene mutations ("genetic alterations") that are capable of causing severe childhood overweight, though these are rare. Even children with genetic risk for overweight will still only become overweight if they consume more calories than they use. Parental obesity may also reflect a family environment that promotes excess eating and insufficient activity.
- Eating Patterns - skipping meals or failure to maintain a regular eating schedule can result in increased intakes when food is eaten.
- Parenting Style - some researchers believe that excess parental control over children's eating might lead to poor self regulation of kid's energy intake.
- Diabetes during pregnancy - overweight and type 2 diabetes occur with greater frequency in the offspring of diabetic mothers (who are also more likely to be obese)
- Low Birth Weight - Low birth weight (<2500 g) is a risk factor for overweight in several epidemiological studies.
- Excessive weight gain during pregnancy - Several studies have shown that excessive maternal weight gain during pregnancy is associated with increased birth weight and overweight later in life.
- Formula Feeding - Breast feeding is generally recommended over formula feeding. Although the exact mechanism is unknown, several long-term studies suggest that breast feeding may prevent excess

- weight gain as children grow.
- Parental Eating and Physical Activity Habits - Parents with poor nutritional habits and who lead sedentary lifestyles role model these behaviors for their children, thereby creating an "obesigenic" home environment.
  - Demographic Factors. Certain demographic factors are associated with an increased risk of being overweight in childhood. For example, there is evidence that African-American and Hispanic children 6 to 11 years old are more likely to be overweight than are non-Hispanic white children of the same age. Asian and Pacific Islander children of the same age were slightly less likely to be overweight.

### Measuring Childhood Overweight

Childhood overweight is identified through the measurement of Body Mass Index or BMI. BMI can also be calculated using kilograms (kg) and meters (m), as well as pounds (lbs) and inches (in):

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Ht (m}^2\text{)}}$$
$$\text{BMI} = \frac{\text{Weight (lbs)} \times 703}{\text{Ht (in}^2\text{)}}$$

Once BMI is calculated, it can then be used to determine if a child is overweight or not, by comparing the BMI with the CDC growth charts (<http://www.cdc.gov/growthcharts/>) for children of the same age and sex. Children who have a BMI at or above the 95%, percentile for age and sex are considered overweight. Children with a BMI that falls between the 85%-95% are classified as at risk for overweight. To plot body mass index-for-age percentiles for boys, click [here](#). To plot body mass index-for-age percentiles for girls, click [here](#).

Parents whose children fall in the "at risk for overweight" category should discuss this with their pediatrician or family physician and should carefully monitor their child's growth. Parents whose children fall in the "overweight" category should make an appointment with their pediatrician or family physician to discuss whether treatment is warranted. Screening for other health risk factors (such as blood pressure or lipid profile) may be recommended by your physician. The BMI is just an initial tool in a series of examinations required to determine if your child is overweight. At no time should a child be diagnosed and labeled overweight by a parent, teacher, or other lay (non-medical) individual. Discussions concerning the child's weight should occur only after reviewing his or her condition with a medical professional.

## **Tips for Parents & Caregivers to Help Establish Healthy Eating Patterns with Kids**

- Parents should choose what children can eat, (what foods and drinks are in the home, what foods and drinks are served at meals and snacks, what restaurants they go to, etc) but among those foods, parents should allow kids to choose whether they eat at all and how much to eat.
- Fruits and vegetables, as compared to high calorie snack foods (often high fat and high sugar), should be readily available in the home.
- Serve and eat a variety of foods from each food group.
- Use small portions - child portions are usually very small, particularly compared to adult portions. More food can always be added.
- Bake, broil, roast or grill meats instead of frying them.
- Limit use of high calorie, high fat and high sugar sauces and spreads.
- Use low-fat or nonfat and lower calorie dairy products for milk, yogurt and ice cream.
- Support participation in play, sports and other physical activity at school, church or community leagues.
- Be active as a family - Go on a walk, bike ride, swim or hike together. Limit TV time.
- Avoid eating while watching TV. TV viewers may eat too much, too fast, and are influenced by the foods and drinks that are advertised.
- Replace high-sugared drinks, especially sodas, with water and/or low fat milk.
- Limit fruit juice intake to two servings or less per day (one serving =  $\frac{3}{4}$  cup) - Many parents allow their children unlimited intake of fruit juice (100%) because of the accompanying vitamins and minerals. However, children who drink too much fruit juice may be consuming excess calories.
- Encourage free play in young children and provide environments that allow children to play indoors and outdoors.
- Role model through actions healthy dietary practices, nutritional snacks, and lifestyle activities. Avoid badgering children, restrictive feeding, labeling foods as "good" or "bad," and using food as a reward.

## **Tips for Pediatricians & Other Health Care Professionals to Facilitate the Prevention of Childhood Overweight (from the American Academy of Pediatrics Policy Statement, August 2003).**

### Health Supervision Recommendations:

- Identify and track patients at risk by virtue of family history, birth weight, or socioeconomic, ethnic, cultural, or environmental factors.
- Calculate and plot BMI once a year in all children and adolescents.
- Use change in BMI to identify rate of excessive weight gain relative to linear growth.

- Encourage, support, and protect breastfeeding.
- Encourage parents and caregivers to promote healthy eating patterns by offering nutritious snacks, such as vegetables and fruits, low-fat dairy foods, and whole grains; encouraging children's autonomy in self-regulation of food intake and setting appropriate limits on choices; and modeling healthy food choices.
- Routinely promote physical activity, including unstructured play at home, in school, in child care settings, and throughout the community.
- Recommend limitation of television and video time to a maximum of 2 hours per day.
- Recognize and monitor changes in obesity-associated risk factors for adult chronic disease, such as hypertension, dyslipidemia, hyperinsulinemia, impaired glucose tolerance, and symptoms of obstructive sleep apnea syndrome.

#### Advocacy Recommendations:

- Help parents, teachers, coaches, and others who influence youth to discuss health habits, not body habitus, as part of their efforts to control overweight.
- Enlist policy makers from local, state, and national organizations and schools to support a healthful lifestyle for all children, including proper diet and adequate opportunity for regular physical activity.
- Encourage organizations that are responsible for health care and health care financing to provide coverage for effective obesity prevention and treatment strategies.
- Encourage public and private sources to direct funding toward research into effective strategies to prevent overweight and to maximize limited family and community resources to achieve healthful outcomes for youth.
- Support and advocate for social marketing intended to promote healthful food choices and increased physical activity.

#### **References:**

American Academy of Pediatrics. Prevention of Pediatric Overweight and Obesity: American Academy of Pediatrics Policy Statement; Organizational Principles to Guide and Define the Child Health System and/or Improve the Health of All Children; Committee on Nutrition. *Pediatrics*. 2003;112:424-430

Banis HT, Varni JW, Wallander JL, Korsch BM, Jay SM, Adler R, Garcia-Temple E, & Negrete V. Psychological and social adjustment of obese children and their families. *Child: Care, Health, and Development*. 1998;14,157-173.

Barker M. Birthweight and body fat distribution in adolescent girls. *Arch Dis Child* 1997; 77(5): 381-383.

Barlow SE, & Dietz WH. Obesity evaluation and treatment: Expert Committee recommendations. *Pediatrics*, 1998; 102(3):

URL:<http://www.pediatrics.org/cgi/content/full/102/3/e29>.

Bouchard C and Perusse L. Heredity and body fat. Annual Review of Nutrition, 1988;8:259-77.

Dietz WH. Childhood Weight affects adult morbidity and mortality. J Nutr, 1998;128 (2):411S-414S.

Ebbeling CB, Pawlak DB, Ludwig DS. Childhood obesity: public health crisis, common sense cure. Lancet 2002, 360:473-82.

Gortmaker SL, Must A, Sobol AM, Peterson K, Colditz GA, Dietz WH. Television viewing as a cause of increasing obesity among children in the United States, 1986-1990. Arch Pediatr Adolesc Med. 1996;150(4):356-62.

Satter E. How to Get Your Kid to Eat...But Not Too Much. Bull Publishing Company, 1987.

Haas JS, Lee LB, Kaplan CP, Sonneborn D, Phillips KA, Liang SY. The association of race, socioeconomic status, and health insurance status with the prevalence of overweight among children and adolescents. American Journal of Public Health. 93(12):2105-10, 2003

Johnson SL, Birch LL. Parents' and children's adiposity and eating style. Pediatrics, 1994;94:653-661.

Kinnunen TI, Luoto R, Gissler M, Hemminki E. Pregnancy weight gain from 1960s to 2000 in Finland. Int J Obes 2003; 27:1572-77.

Kuczmarski RJ, Ogden CL, Grummer-Strawn LM, et al. CDC growth charts: United States. Advance data from vital and health statistics; no 314. Hyattsville, Maryland: National Center for Health Statistics. 2000.

Malina RM, Katmarzyk PT, Beunen G. Birth weight and its relationship to size attained and relative fat distribution at 7 to 12 years of age. Obesity Research 1996; 4(4): 385-390.

Obarzanek E, Schreiber GB, Crawford PB, Goldman SR, Barrier PM, Frederick MM, & Lakatos E. Energy intake and physical activity in relation to indexes of body fat: The NHLBI Growth and Health Study. Am J Clin Nutr, 1994;60:15-22.

Sallis JF. Epidemiology of physical activity and fitness and adolescents. Critical Reviews in Food Science and Nutrition, 1993;33:403-408.

Shapiro C, Sutija VG, Bush J. Effect of maternal weight gain on infant birth weight. J Perinat Med 2000; 28:428-31.

Troiano RP and Flegal KM. Overweight children and adolescents: Description, epidemiology, and demographics. Pediatrics, 1998;101(3):497-504.

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