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Understanding Childhood Obesity

An Epidemic of Excess

Obesity has gone prime time as an American health issue. It's everywhere: in every neighborhood, every mall, every school and every workplace.

Obesity is more than a cosmetic concern. It doesn't just impact the way we look. It can change the course of our lives, and not for the better. It sets us on a fast track toward medical complications like heart disease, type 2 diabetes, high blood pressure and high cholesterol.

However, there's good news: Obesity can be stopped. And it doesn't take high-tech treatments or cutting-edge medications. Really, the solution begins and ends with the daily decisions we make.

The American Heart Association has developed this booklet to show how extensive the obesity problem — particularly in children — has become, why it is dangerous and how you can fight back.

How bad is it?

- *About one in three children and teens in the U.S. is overweight or obese.*
 - *Overweight kids have a 70–80 percent chance of staying overweight their entire lives.*
 - *Obese and overweight adults now outnumber those at a healthy weight; nearly seven in 10 U.S. adults are overweight or obese.*
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Today, about one in three American kids and teens is overweight or obese, nearly triple the rate in 1963.¹

With good reason, childhood obesity is now the No. 1 health concern among parents in the United States, topping drug abuse and smoking.² Among children today, obesity is causing a broad range of health problems that previously weren't seen until adulthood. These include high blood pressure, type 2 diabetes and elevated blood cholesterol levels. There are also psychological effects: Obese children are more prone to low self-esteem, negative body image and depression.

Excess weight at young ages has been linked to higher and earlier death rates in adulthood.³ Perhaps one of the most sobering statements regarding the severity of the childhood obesity epidemic came from former Surgeon General Richard Carmona, who characterized the threat as follows:

*"Because of the increasing rates of obesity, unhealthy eating habits and physical inactivity, we may see the first generation that will be less healthy and have a shorter life expectancy than their parents."*⁴

Obesity has also risen dramatically in adults. Today over 144 million Americans, or 66 percent of adults age 20 and older, are overweight or obese (BMI at or above 25). That is nearly seven out of every 10 adults. Additionally, 33 percent (over 71 million) of adults are classified as obese (BMI at or above 30).⁵ Obese Americans now outnumber overweight Americans, which means that individuals who are above a healthy weight are significantly, not slightly, above a healthy weight.⁶ Some experts project that by 2015, 75 percent of adults will be overweight, with 41 percent obese.^{7,8}



What does it mean to be Obese or Overweight?

Overweight and obese are screening labels used for ranges of weight that are above what is generally considered healthy for a given height and may increase the risks for certain diseases or health problems. Overweight and obese are defined differently in children and adults because the amount of body fat changes with age. Also, BMI in children is age- and sex-specific because body fat differs based on growth rates and developmental differences in boys and girls.

Definitions for Adults

For adults over age 20, overweight and obesity ranges are determined by using weight and height to calculate a number called the “body mass index” (BMI), which usually correlates with a person’s body fat.

For adults, BMI is calculated by dividing body weight in pounds by height in inches squared, then multiplying that number by 703.

$$\text{BMI} = (\text{Weight in Pounds}) \div \{(\text{Height in inches}) \times (\text{Height in inches})\} \times 703$$

For adults over age 20, BMI values of:

- Less than 18.5 are considered underweight.
- 18.5 to less than 24.9 are considered normal weight.
- 25.0 to less than 29.9 are considered overweight.
- 30.0 or greater are considered obese, or about 30 pounds or more overweight.
- Extreme obesity is defined as a BMI of 40 or greater.

Definitions for Children

Age- and sex-specific growth charts are used to calculate BMI in children and teens (ages 2–20) using a child’s weight and height, then matching their BMI to the corresponding BMI-for-age percentile for their age and sex. The percentile shows how a child’s weight compares to that of other children of the same age and gender. For example, a BMI-for-age percentile of 65 means that the child’s weight is greater than that of 65 percent of other children of the same age and sex.

Children and teens whose BMI-for-age is:

- In the 95th percentile or higher are considered obese.
- Between the 85th and less than the 95th percentile are considered overweight.
- Between the 5th and less than the 85th percentile are considered normal weight.
- Below the 5th percentile are considered underweight.

Take Action!

Find out if you or your children are at risk for certain health problems. Visit the Centers for Disease Control’s free online BMI calculators for adults and children at <http://www.cdc.gov/healthyweight/assessing/bmi/>. Knowing your risk is the first step!

It’s important to remember that BMI is a tool. It may not always accurately describe weight classification for some individuals such as athletes, so a doctor or healthcare professional should make the final determination.



Causes of Obesity

There is no one cause of obesity. It can be influenced by lifestyle habits, environment and genetics. But, in the majority of cases, it boils down to a pretty simple equation: *We are taking in more calories than we are burning.*

Some common issues leading to this calorie imbalance include:

Portions Are Growing: Portion sizes have increased, especially when we eat away from home. “Value menu” items are all the rage. Although we consider these a bargain, they’re a bad deal when it comes to good health.

Poor Nutrition: Our eating habits have led us to a kind of modern-day “malnutrition.” Many of us fill up on “empty calories” or foods with no or minimal nutritional value. These choices are often high in fat, sodium, added sugars and calories but low in the nutrients we need to be healthy and strong. At the same time, we’re ignoring healthy options like fruits, vegetables, whole grains and fat-free or low-fat (1%) dairy products.

Eating Out More: Unhealthy food and beverage choices can be found all around us, in places like fast-food restaurants and convenience stores. These options are ready-made and fit our on-the-go lifestyles.

Moving Less: Almost one in four children do not participate in any free-time physical activity. Additionally, the average American child spends four to five hours in front of the TV, computer or video games every day.

Bigger Portions

So what does it all mean?

- Americans are eating more.
- Portions have grown dramatically.
- People eat more when served bigger portions.

Portion Size Affects How Much People Consume

Today, food-service establishments are offering us a lot more for our money than they used to. And we’re taking them up on it. For example, 20 years ago an average serving of fries was 2.4 ounces. Today it’s 6.9 ounces. An average cheeseburger had 333 calories. Today it’s 590. To put these calorie increases into perspective, between 1971 and 2000 the average American adult consumed 250 to 300 more calories every day. That adds up to an additional 26 to 31 pounds in just one year. Kids are also getting more calories than they need. Adolescents today eat on average 8 percent more than 30 years ago.⁹

The simple fact is that we eat what’s in front of us. If larger portions are put on the plate, we eat more. This means we’re getting more calories, which leads to increased body weight.^{10, 11}

Did you know a surplus of about 3,500 calories results in a one-pound weight gain? 110–165 calorie surplus daily can result in gaining 10+ pounds in a year.

Take Action!

Taking in fewer calories by controlling portions is a critical step in managing weight. Learn the proper serving sizes and pay attention to the Nutrition Facts panel on foods.

Teach kids to focus on their own fullness rather than rewarding them for eating whatever is set before them — i.e., cleaning their plates. Studies show that kids who learn to listen to their bodies will eat less than those taught to clean their plates.¹²

Portion Size vs. Serving Size¹³

Portion size is the amount of a single food item served in a single eating occasion, such as a meal or a snack. Many people confuse portion size with serving size, which is a standardized unit of measuring foods — for example, a cup or ounce — used in dietary guidance, such as the Dietary Guidelines for Americans. Portion size is the amount offered to a person in a restaurant, the amount offered in the packaging of prepared foods or the amount a person chooses to put on their plate. For example, bagels or muffins are often sold in sizes that constitute at least two servings, but consumers often eat the whole thing, thinking that they have eaten one serving. They don’t realize that they have selected a portion size that was more than one serving.

Less Nutrition/Poor Choices

So what does it all mean?

- **Americans are eating more and more foods that are high in calories but don't meet their nutritional needs.**
- **A majority of Americans are not getting enough vitamins and nutrients through healthy foods, such as fat-free or low-fat dairy, whole grains, fruits and vegetables.**
- **French fries are the most common vegetable consumed by children.**

Americans aren't just overeating. The foods they're choosing often do not meet their nutritional needs. They are not getting the proper amount of fruits, vegetables and dairy products and are instead opting for "empty calorie" foods, i.e., foods high in calories but low in nutrients (vitamins, minerals, protein, carbohydrates, etc.). These empty-calorie foods are often high in saturated and *trans* fat, sodium and cholesterol.

Fruits and Vegetables

Most Americans do not eat enough fruits and vegetables. According to a 2007 national study, three out of four American adults are not getting at least five servings of fruits and vegetables every day. (The daily recommendation is eight to nine servings, based on a 2000 calorie diet!).¹⁴

Children are not getting enough fruits and vegetables either. Fewer than one in 10 high school students get the recommended amounts of fruits and vegetables daily.¹⁵

French fries are the most common source of vegetable consumed by children and make up one-fourth of children's vegetable intake. Juice, which may lack important fiber found in whole fruits, accounts for 40 percent of children's daily fruit intake.¹⁶

Take Action!

Eat fruits and vegetables at EVERY meal. Skip the fried veggies – frying adds fat and calories.

Whole Grains

The American Heart Association recommends that at least half of your grain intake come from whole-grain foods, which are high in fiber and other beneficial nutrients. Dietary fiber helps you feel fuller longer and reduces the total number of calories you eat because fiber slows digestion in your stomach. Whole-grain foods may reduce your LDL or "bad" cholesterol levels and has been associated with a decreased risk of developing cardiovascular disease.¹⁷

Ninety-three percent of Americans failed to meet the recommendation to consume 3 ounces per day of whole grains (based on a 2,000-calorie diet).

Take Action!

Make sure to fit whole grains into your daily menu by keeping whole-grain foods (like bread, cereal, brown rice or whole-wheat pasta) in your house because restaurant meals tend to be very low in whole grains.¹⁸ When you do eat out, ask if wheat alternatives are available.

Milk and Dairy

Americans are not getting enough milk and dairy products, which are nutrient-rich and an essential part of a healthy diet. Consuming adequate amounts of dairy contributes to bone health, helps prevent osteoporosis and may lower the risk of high blood pressure and other cardiovascular risk factors by helping to control body weight and fat.¹⁹

In addition to not consuming enough dairy products overall, children may not be selecting low-fat (1%) or fat-free dairy products, resulting in higher calorie and fat intake. In a 2008 survey that asked middle school students what kind of milk they usually drank, the most common answers were whole milk (40%), chocolate milk (34%), and 2% milk (25.8%).²⁰

Take Action!

Teach kids to pick nonfat (skim) or low-fat (1%) dairy products and keep them on hand in your fridge.

Fats

The American Heart Association recommends keeping total fat intake to less than 35 percent of total calories (20 grams per day based on a 2,000-calorie diet) and limiting *trans* fat consumption to less than 1 percent (or about 2 grams based on a 2,000-calorie diet) and saturated fat consumption to less than 7 percent of total daily calories.

Many Americans are consuming more than the recommended amounts of the "bad fats" (saturated and *trans* fats).

Take Action!

The Nutrition Facts panel on food labels can help you make healthy food choices at the grocery store. Check the food label for *trans* fat content and the ingredient list for partially hydrogenated oils. Review both saturated fat and *trans* fat content on the Nutrition Facts panel to avoid substituting one unhealthful fat for another.

Many fried foods and baked goods are high in saturated fats and calories even if *trans* fat-free oils and fats are used. Use liquid vegetable oils instead of animal fats; choose foods that are steamed, broiled, baked, grilled or roasted; and ask restaurant servers about the oil used in food preparation and the nutrition information.

Added Sugars

In recent decades, Americans have increased their consumption of “added sugars,” which are found in carbonated soft drinks, fruit drinks, sports drinks and many processed foods. Added sugars are a common source of “empty calories” because they have little or no nutritional value but contribute additional calories to a food or beverage.

Sugar-sweetened beverages are a major contributor of added sugars to American diets. It is estimated that soft drink consumption alone currently accounts for one-third of added sugar intake in the United States.²¹

Consumption of sweetened beverages has been linked to childhood obesity.²²

Based on a 2000 calorie diet, the American Heart Association recommends limiting sugar-sweetened beverages to 36 ounces per week or less.

Take Action!

Limit the amount of beverages with added sugars your family drinks. Look for no-calorie alternatives to soda, such as water.

Check food labels for added sugars in foods by scanning the ingredients list for sugar, syrups and sugar molecules ending in “ose,” to name a few.

Breakfast

Breakfast really may be the most important meal of the day. Numerous studies have demonstrated that when both children and adults skip breakfast, the nutritional quality of their diets decreases.²³

Sodium

Most Americans consume more than double the amount of their daily recommended level of sodium (salt). The American Heart Association recommends adults eat less than 1,500 mg of sodium per day (and less for children under 14). A diet high in sodium increases the risk of having higher blood pressure, a major cause for heart disease and stroke.

Take Action!

The majority of sodium we consume comes from salt added to the food supply (not from salt we add at the table). Look for “low-sodium” or “sodium-free” items at the grocery store (and skip the salt shaker at the table too).

American Heart Association Dietary Recommendations

The following table outlines the American Heart Association's recommendations for a healthy, nutritious diet for children and adults:

For children²⁴

Age	1 year	2–3 years	4–8 years	9–13 years	14–18 years
Calories					
Female	900	1000	1200	1600	1800
Male	900	1000	1400	1800	2200
Fat	30-40% kcal	30-35% kcal	25-35% kcal	25-35% kcal	25-35% kcal
Milk/dairy	2 cups	2 cups	2 cups	3 cups	3 cups
Lean meat/beans					
Female	1.5 oz	2 oz	3 oz	5 oz	5 oz
Male	1.5 oz	2 oz	4 oz	5 oz	6 oz
Fruits					
Female	1 cup	1 cup	1.5 cups	1.5 cups	1.5 cups
Male	1 cup	1 cup	1.5 cups	1.5 cups	2 cups
Vegetables					
Female	3/4 cup	1 cup	1 cup	2 cups	2.5 cups
Male	3/4 cup	1 cup	1.5 cups	2.5 cups	3 cups
Grains*					
Female	2 oz	3 oz	4 oz	5 oz	6 oz
Male	2 oz	3 oz	5 oz	6 oz	7 oz

For Adults (ages 18 and older) based on 2000-calorie goal²⁵

Grains*	6 to 8 servings per day
Vegetables	4 to 5 servings per day
Fruits	4 to 5 servings per day
Fat-free or low-fat milk and dairy	2 to 3 servings per day
Lean meats, poultry and fish	less than 6 oz per day
Nuts, seeds and legumes	4 to 5 servings per week
Fats and oils	2 to 3 servings per day
Sweets and added sugars	Limit added sugars and limit sugar-sweetened beverages to 36 oz or less per week.

*At least half of the grains should be fiber-rich whole grains.

Eating Out

So what's the big deal?

- **People eat out more than ever before.**
- **When people eat out, they consume more calories than if they eat at home.**
- **Away-from-home meals contain fewer fruits, vegetables and whole grains than foods prepared at home.**

The more people eat out, particularly at fast-food restaurants, the more calories, fat and sodium they tend to consume. This is linked to higher BMIs both in children and adults.²⁶

Eating more fast-food meals is linked to consuming more calories, more saturated fat, fewer fruits and vegetables and less milk.^{27–31} This is especially alarming if you consider how popular fast-food has become with kids. In the late 1970s American children ate 17 percent of their meals outside the home and fast food accounted for 2 percent of total energy intake. By the mid-to-late 1990s, 30 percent of meals were eaten outside the home and fast food contributed to 10 percent of overall energy intake.³²

By making more informed dietary choices away from home, Americans could help reduce calorie consumption and the risk of obesity and its associated health problems.³³

Visit www.heart.org/nutrition for more nutrition tips for your family.

Lack of Physical Activity

So what's the big deal?

- **Adults and children are not getting enough physical activity.**
- **Fitness and physical activity habits established in childhood are key indicators for health in adulthood.**

Physical activity brings lots of positive health benefits, including improved physical fitness, muscle endurance, aerobic (lung) capacity and mental health (including mood and cognitive function). It also helps prevent sudden heart attack, cardiovascular disease, stroke, some forms of cancer, type 2 diabetes and osteoporosis. Additionally, regular physical activity can reduce other risk factors like high blood pressure and cholesterol.

Despite its many benefits, children and adults are not getting as much physical activity as they should. The American Heart Association recommends that children and adolescents (up to age 18) get at least 60 minutes of moderate to vigorous physical activity every day. All adults ages 18–65 should avoid inactivity and get at least 150 minutes per week of moderate-intensity physical activity, which may be done with 30 minutes of moderate-intensity activity on five days of the week. There are additional guidelines for people age 65 and older, women who are pregnant and those ages 50–64 with chronic conditions or physical functional limitations (e.g., arthritis) that affect movement ability or physical fitness.³⁴

About one-third of students in grades 9–12 don't get recommended levels of physical activity. Furthermore, research suggests that extracurricular physical activity levels consistently decrease from elementary to high school, especially in girls. Research also indicates that most adolescents do not participate in moderate physical activity five or more times per week, and these patterns persist into adulthood.^{35–37}

As children age, their physical activity levels tend to decline.^{38, 39} That's why it's important to establish good physical activity habits as early as possible. Kids who are physically fit are much less likely to be obese or have high blood pressure in their 20s and early 30s.⁴⁰

Recent estimates suggest that more than 50 percent of U.S. adults do not get enough physical activity to provide health benefits and 24 percent are not active at all in their leisure time. Physical activity decreases with age, and is less common among women than men and among those with lower incomes and less education.⁴¹

Take Action!

Get moving! Encourage activities that the entire family can do together. If you're currently not active at all, start slowly and build up.

Overweight kids may be discouraged about getting physically active if they feel their skill level is not up to par with their peers, so encourage activities that they can excel at like strength or resistance training.

Technology's Sedentary Seduction

So what's the big deal?

- **Screen time directly contributes to cardiovascular risk.**
- **Most children get more than the recommended limit of two hours of screen time per day.**
- **Limiting daily screen time to two hours or less has positive health effects.**

Americans are spending more free time than ever watching television, surfing online or playing video games.

In addition to being sedentary while sitting on the sofa, people tend to eat while watching TV. Each one-hour increase in television viewing is associated with an additional 167 calories, often through foods commonly advertised on television.⁴²

The American Heart Association and American Academy of Pediatrics recommend that children limit “screen time” (TV, video games and computer) to no more than two hours per day. The reality is that American kids are going well over this limit — and it is taking a toll on their health.

Sticking with the recommended two-hour daily TV limit can have a positive effect on children's health. One study of overweight children ages 4 to 7 found that limiting TV and computer time to less than two hours a day helped reduce caloric intake, sedentary behavior and body mass index over a two-year period.⁴³

Take Action!

Limit screen time to 2 hours a day – for children and adults! Adults set the example for kids.

Don't snack while watching TV. It's easy to get caught up in the show and not realize how much you're eating.

Take the TV and computer out of kids' bedrooms. Children and teens who have a TV or computer in their bedroom watch about an hour and a half more TV per day than those who don't, and they use the computer about 45 minutes more per day.⁴⁴

Parents' Perceptions and Roles

So what's the big deal?

- **Parents are important role models for their children. If parents are unhealthy, children are likely to be unhealthy too.**
- **Parents may not recognize when children have a weight problem.**

Parents are role models whose health attitudes and behaviors play a critical role in the development of their children.

Parents can help overweight children manage their weight; however, they aren't always aware when their children are at risk. In recent studies, parents have shown a high tendency to misperceive their children's weight and failed to identify them as overweight. This has been especially likely if parents themselves are overweight. If parents do not recognize their child as obese or overweight, they are less likely to support them in achieving a healthy weight.⁴⁵

Some parents of overweight children worry about labeling them or hurting their self-esteem. Nevertheless, parents play a critical role in the lifestyle habits of their children both through the habits they model and through the support and awareness they offer.

Take Action!

Calculate the BMI for each member of your family to find out if you are at risk.

Sleep

So what's the big deal?

- **Children need at least nine hours of sleep per night.**
- **Sleep plays an important role in the body's ability to grow, repair and stay well.**

Recent research points to a connection between poor sleep habits and health problems, including obesity. Despite recommendations that children and teens get at least nine hours of sleep every night, only 31 percent of high school students get eight or more hours of sleep on an average school night.⁴⁶ Although more research is needed to determine the exact connection between sleep and obesity, adequate sleep is beneficial to overall mental and physical health.

The Situation in Schools

Over recent decades the school environment has changed drastically. A generation ago schools fostered physical activity, but today many have been forced to deemphasize it to balance shrinking budgets and focus on standardized testing.

Physical Activity in Schools

A recent report revealed that physical education time has declined across many school districts since 2002.⁴⁷ In some areas, school-based physical activity programs have been completely eliminated.⁴⁸

Only 3.8 percent of elementary schools, 7.9 percent of middle schools and 2.1 percent of high schools provide daily physical education or its equivalent for the entire school year. Twenty-two percent of schools do not require students to take any physical education at all.⁴⁹ Physical education is an integral part of developing the "whole" child in social settings and the learning environment.

Nutrition in Schools

Schools offer a wide variety of meal and snack food options, but not always healthy ones. In a 2007 study, 61 percent of competitive foods (foods sold outside of the School Meals program including in vending machines, a la carte items, school store/canteen items, etc.) offered in high schools were fried and high in fat. These calorie-dense, nutrition-poor foods accounted for 83 percent of all food sold.⁵⁰

Schools can be part of the solution, comprehensive nutrition education has proven to be effective in combating obesity, especially among low-income students.⁵¹ Additionally, improving nutrition standards of foods sold in schools can have a positive impact on students' diets.

Early Childhood Programs

Child care settings are also important environments for forming good health habits around children's health habits. Poor diet and physical inactivity at an early age increases the chance for developing serious health problems. Preschool children are consuming too many high calorie, sweetened beverages and foods with low in nutrients.^{52,53} A recent study of children in the Women, Infants and Children (WIC) Feeding Program found that on average, children spent more than twice as much time watching television and using computers than being physically active.⁵⁴

Quality school health programs have a proven return on investment

Despite economic pressure and a focus on test scores, it is possible and productive for schools to foster healthy lifestyle skills for students and staff. In fact, schools that do so often see improved test scores, fewer behavioral problems, increased financial benefits and happier and healthier students and staff. Studies have shown that normal-weight children have higher scholastic achievement, less absenteeism and higher physical fitness levels than their obese counterparts.^{55,56}

Healthcare Settings

So what's the big deal?

- **Healthcare providers are not consistently diagnosing weight problems in children.**
- **Healthcare providers may not feel equipped to talk about nutrition and physical activity with patients.**

Dealing with obesity at the earliest possible stage is optimal for a child's long-term health. However, far too few doctors are adequately addressing the problem in their young patients.

One recent estimate suggests that pediatricians accurately identified and diagnosed only 34 percent of overweight or obese children. Specifically, pediatricians correctly diagnosed 10 percent of overweight children, 54 percent of obese children and 76 percent of severely obese children.⁵⁷

Take Action!

Make it a point to talk to your healthcare provider about your weight (or your child's) at your next visit.

Marketing Food to Kids

So what's the big deal?

- **Advertising does affect consumer behavior — in adults and children.**
- **A dramatic majority of ads targeted at children are for unhealthy products.**
- **Almost no advertising dollars are spent marketing healthy products to children.**

Advertising on television and other forms of electronic media has a massive influence on our lifestyle decisions, particularly young people. It impacts the food preferences, purchase requests and diets of many children and is associated with the increased rates of obesity in this age group.⁵⁸

Young people see more than 40,000 advertisements per year on television alone, and half (50 percent) of all ad time on children's television shows is for food.⁵⁹ Children ages 8–12 see over 50 hours of food advertising a year.

Research shows that exposure to food advertisements produces significant increases in calorie intake in all children and the increase is largest in obese children.⁶⁰

The overarching conclusions are that, along with many other intersecting factors, food and beverage marketing does influence the diet of children and youth. Current food and beverage marketing practices for children do not promote healthy dietary habits.

Take Action!

Turning off the TV is a great way to limit the number of advertisements your family sees.

Market healthy foods to your family. Companies spend almost no ad dollars on fruits and vegetables, so make a pitch for the healthier foods yourself!



Consequences of Obesity

Overall Health Consequences

So what's the big deal?

- **Obesity negatively impacts every organ system in the body.**
- **Obesity is now regarded as more damaging to the body than smoking or excessive drinking.**
- **Obese children have the arteries of a 45-year-old person.**

Obesity and overweight have a negative impact on almost every organ system in the body. In addition to taking a toll on the physical health of children, obesity influences children's quality of life, impacting their physical, social and psychological functioning.⁶¹

There is a direct correlation between increases in body mass index (BMI) and increased risk for numerous other diseases and chronic conditions including diabetes, high blood pressure, asthma, liver problems, sleep apnea and some cancers.⁶²

Heart and Cardiovascular Health Consequences

Being overweight or obese is a major preventable cause of heart disease. Obesity has recently overtaken smoking as the leading cause of premature heart attack.⁶³

A recent study found that children ages 7 to 13 who are overweight are at an increased risk of developing heart disease beginning at age 25.⁶⁴ Teens who are obese and who have high triglyceride levels have arteries similar to those of 45-year-olds.⁶⁵

Type 2 diabetes, which was once referred to as "adult onset" diabetes, is largely preventable with proper diet and physical activity. Until recently, most newly diagnosed cases of diabetes in children were for Type 1, which is mainly genetic in origin. But today, as many as 45 percent of newly diagnosed diabetes cases in children are Type 2. At least 65 percent of people with diabetes die of some form of heart disease or stroke when the disease is left untreated.⁶⁶

Social

Being overweight can have a negative impact on a child's self esteem, behavior, friendships and academic performance.⁶⁷⁻⁷¹

Financial Costs

So what does it all mean?

- **The more overweight an individual becomes, the more expensive they become to the healthcare system.**
- **Obesity is more expensive to the healthcare system than smoking and problem drinking.**
- **9.1 percent of adult medical expenditures can be attributed to obesity.**

While obesity is a major health problem for children and adults, it is a major financial problem for our healthcare system. That's why tackling obesity is the right thing to do, for our health and the bottom line.

Obesity costs doubled in past decade: The cost of treating obesity-related illnesses nearly doubled in the past decade, from \$78 billion in 1998 to \$147 billion in 2008.⁷²

Additionally, indirect costs associated with obesity include lower productivity, increased absenteeism and higher life and disability insurance premiums.⁷³



Out of Balance: Disparities and Racial, Ethnic and Low-Income Groups

So what does it all mean?

- **Certain racial and ethnic groups are more at risk to be obese or overweight.**
- **The prevalence of obesity is rising fastest among African-American and Hispanic populations, making these groups especially at risk.**
- **Low-income families have a greater prevalence of overweight in some populations.**
- **The highest regional prevalence of obesity is consistently in the South.**

Throughout the United States, overweight and obesity have increased in people of all ethnic groups, all ages and both genders. This is not an isolated threat to health, nor one limited to a particular population group.

However, among some racial, ethnic and socioeconomic groups, and within certain geographic regions, the prevalence of obesity and many obesity-related risk factors is especially high.

While personal choices play a role in the rise of obesity, they alone are not responsible for the epidemic we face today. Many children grow up surrounded by unhealthy foods at home and in school. Others lack access to safe places where they can play and be active. Some low-income neighborhoods have many fast-food restaurants, but few stores or markets that sell nutritious foods. And many Americans with limited economic resources simply can't afford to buy healthy foods, join health clubs or participate in organized sports or physical activity programs.

The obesity epidemic threatens everyone, but not everyone is equally at risk. For example, among children and adolescents, obesity is more common in African Americans and Hispanics and the numbers of overweight African-American and Hispanic children are growing faster than the number of overweight Caucasian children.^{74, 75}

Geographic Disparities

The highest regional prevalence of obesity is consistently in the South. Since 1990 every state in the United States has seen an increase in the prevalence of obesity.⁷⁶

2008 State Obesity Rates

State	%	State	%	State	%	State	%
Alabama	31.4	Illinois	26.4	Montana	23.9	Rhode Island	21.5
Alaska	26.1	Indiana	26.3	Nebraska	26.6	South Carolina	30.1
Arizona	24.8	Iowa	26.0	Nevada	25.0	South Dakota	27.5
Arkansas	28.7	Kansas	27.4	New Hampshire	24.0	Tennessee	30.6
California	23.7	Kentucky	29.8	New Jersey	22.9	Texas	28.3
Colorado	18.5	Louisiana	28.3	New Mexico	25.2	Utah	22.5
Connecticut	21.0	Maine	25.2	New York	24.4	Vermont	22.7
Delaware	27.0	Maryland	26.0	North Carolina	29.0	Virginia	25.0
Washington DC	21.8	Massachusetts	20.9	North Dakota	27.1	Washington	25.4
Florida	24.4	Michigan	28.9	Ohio	28.7	West Virginia	31.2
Georgia	27.3	Minnesota	24.3	Oklahoma	30.3	Wisconsin	25.4
Hawaii	22.6	Mississippi	32.8	Oregon	24.2	Wyoming	24.6
Idaho	24.5	Missouri	28.5	Pennsylvania	27.7		

Economic Disparities

Childhood obesity is having a greater impact on children from low-income families. The higher cost of fresh produce and other nutritious foods is cited as one barrier to healthy eating for poorer families. Also, as income increases, adults tend to eat healthier foods and exercise more frequently.⁷⁷

Many poorer families have less access to health clubs, sports facilities or organized sports leagues for children.⁷⁸ Also, the communities where they live tend to offer fewer opportunities to stay healthy such as access to a supermarket.

Disparities in Access to Healthy Foods

People in some communities have limited opportunities to make healthy food choices. In general, poorer and non-white areas tended to have fewer fruit and vegetable markets, bakeries, specialty stores and natural food stores. Predominantly minority and racially mixed neighborhoods had half as many supermarkets as predominantly white neighborhoods.⁷⁹

Access to supermarkets and other food stores is significant because a higher density of healthy food outlets is associated with a lower mean BMI, a lower prevalence of overweight adults, and a lower prevalence of obesity.

Disparities in Physical Activity and Access to Facilities and a Look at the 'Built' Environment

Children's physical activity levels may be influenced — positively or negatively — by the environment in which they live.^{80, 81} Access to parks is a key environmental factor that may impact physical activity levels.^{82, 83} Children who live near parks and other green spaces are more physically active.

Minority adolescents and those from families with lower socioeconomic status have less access to facilities for physical activity (parks, playgrounds, walking paths, etc.).⁸⁴



References

Page 1

- 1 Ogden CL, Carroll MD, Curtin LR, et al. Prevalence of Overweight and Obesity in the United States, 1999-2004. *JAMA* 2006;295:1549-55.
- 2 C.S. Mott Children's Hospital National Poll on Children's Health, 2010, <http://www.med.umich.edu/mott/npch/pdf/020810report.pdf>
- 3 Krebs N, Himes J, Jacobson D, Nicklas T, Guilday P, Styne D. Assessment of child and adolescent overweight and obesity. *J Pediatr*. 2007;120:S193-S228.
- 4 Testimony Before the Subcommittee on Competition, Infrastructure, and Foreign Commerce Committee on Commerce, Science, and Transportation United States Senate "The Growing Epidemic of Childhood Obesity" Statement of Richard H. Carmona, M.D., M.P.H., F.A.C.S., Surgeon General, U.S. Public Health Service, U.S. Department of Health and Human Services.

5 NHANES 2003-06

6 Centers for Disease Control and Prevention, Behavioral Risk Surveillance System.

7 Kaplan JP, et al. *Progress in Preventing Childhood Obesity: How Do We Measure Up?* Institute of Med. Washington, DC: National Acad. Press, 2007.

8 Wang Y, Beydoun MA. The obesity epidemic in the U.S.-gender, age, socioeconomic, racial/ethnic, and geographic characteristics: a systematic review & meta-regression analysis. *Epidemiologic Reviews* 2007;29:6-28.

Page 3

9 Enns CW, Mickle SJ, Goldman JD. Trends in food and nutrient intakes by adolescents in the United States. *Fam Econ Nutr Rev* 2003;15(2):15-27.

10 Mrdjenovic G, Levitsky DA. Children eat what they are served: the imprecise regulation of energy intake. *Appetite* 2005;44:273-282.

11 McConahy KL, Smiciklas-Wright H, Birch LL, Mitchell DC, Picciano MF. Food portions are positively related to energy intake and body weight in early childhood. *J Pediatr* 2002;140:340-347

12 LL Birch, et al., "Clean Up Your Plate: Effects of Child Feeding Practices on the Conditioning of Meal Size," *Learning and Motivation* 18 (1987): 301-317.

13 Division of Nutrition and Physical Activity. Research to Practice Series No. 2. Portion Size. Atlanta: Centers for Disease Control and Prevention, 2006.

Page 4

14 Behavioral Risk Factor Surveillance System. Fruits and vegetables. In: Prevalence and trends data: nationwide (states and DC), 2007. Retrieved at <http://apps.nccd.cdc.gov/BRFSS/display.asp?cat=FV&yr=2007&qkey=4415&state=UB> on May 20, 2009.

15 CDC State indicator report on Fruit and Vegetables, 2009: <http://www.fruitsandveggiesmatter.gov/downloads/StateIndicatorReport2009.pdf>

16 Lorson B, Melgar-Quinonez H, Taylor C. Correlates of fruit and vegetable intake in US children. *J Am Diet Assoc* 2009;109:474-478.

17 Lichtenstein A, et al. Diet and lifestyle recommendations revision 2006: a scientific statement from the American Heart Association Nutrition Committee. *Circulation* 2006;114:82-96.

18 Lin BH, Yen ST. The U.S. Grain Consumption Landscape: Who Eats Grain, in What Form, Where, and How Much? ERR-50. U.S. Dept. of Agriculture, Econ. Res. Serv. November 2007

19 Wang L, Manson JE, Buring JE, et al. Dietary intake of dairy products, calcium, and vitamin D and the risk of hypertension in middle-aged and older women. *Hypertension*. 2008;51:1073-9

20 Zapata LB, Bryant CA, McDermott RJ, Hefelfinger JA. Dietary and physical activity behaviors of middle school youth: the Youth Physical Activity and Nutrition Survey. *J School Health* 2008;78:9-18.

Page 5

21 Guthrie JF, Morton JF. Food sources of added sweeteners in the diets of Americans. *J Am Diet Assoc* 2000;100:43-52.

22 Ludwig DS, Peterson KE, Gortmaker SL. Relationship between consumption of sugar-sweetened drinks and childhood obesity: a prospective, observational analysis. *Lancet* 2001;357:505-508.

23 Siega-Riz AM, Popkin BM, Carson T. Trends in breakfast consumption for children in the United States from 1965-1991. *Am J Clin Nutr* 1998;67:748S-756S.

24 Gidding SS, Dennison BA, Birch LL, et al. Dietary recommendations for children and adolescents. *Circulation* 2005;112:2061-2075.

25 Lichtenstein A, et al. Diet and lifestyle recommendations revision 2006: a scientific statement from the American Heart Association Nutrition Committee. *Circulation* 2006;114:82-96.

Page 6

26 McCrory MA, Fuss PJ, Hays NP, Vinken AG, Greenberg AS, Roberts SB. Overeating in America: association between restaurant food consumption and body fatness in healthy adult men and women. *Obes Res* 1999;7:564-571.

27 Taveras EM, Berkey CS, Rifas-Shiman SL, et al. Association of Consumption of Fried Food Away From Home With Body Mass Index and Diet Quality in Older Children and Adolescents. *Pediatrics* 2005;116:e518-24.

28 Schmidt M, Affenito SG, Striegel-Moore R, et al. Fast-Food Intake and Diet Quality in Black and White Girls. *Arch Pediatr Adolesc Med* 2005;159:626-631.

29 Bowman SA, Vinyard BT. Fast-Food Consumers vs. Non-Fast-Food Consumers: A Comparison of Their Energy Intakes, Diet Quality, and Overweight Status. *J Am Coll Nutr* 2004;23:163-168.

30 Paeratakul S, Ferdinand DP, Champagne CM, et al. Fast-Food Consumption among U.S. Adults and Children: Dietary and Nutrient Intake Profile. *J Am Diet Assoc* 2003;103:1332-1338.

31 French SA, Harnack L, Jeffery RW. Fast Food Restaurant Use among Women in the Pound of Prevention Study: Dietary, Behavioral and Demographic Correlates. *Int J Obes Relat Metab Disord* 2000;24:1353-9

32 Maziak W, Ward KD, Stockton MB. Childhood obesity: are we missing the big picture. *Obes Rev*. 2008;9:35-42.

33 Calories Count: Report of the Working Group on Obesity. Washington, D.C.: Food and Drug Administration, 2004

34 Physical Activity Guidelines for Americans, 2008. Bethesda, Md.: Department of Health and Human Services, 2008. Retrieved May 22, 2009 from <http://www.health.gov/paguidelines/guidelines/default.aspx#toc>.

35 Kvaavik E, Klepp KI, Tell GS, et al. Physical fitness and physical activity at age 13 years as predictors of cardiovascular disease risk factors at ages 15, 25, 33, and 40 years: extended follow-up of the Oslo Youth Study. *Pediatrics* 2009;123(1):e80-6.

36 Physical Activity and Good Nutrition: essential elements to prevent chronic diseases and obesity. Atlanta, Ga.: Centers for Disease Control and Prevention, 2007; Available at <http://www.cdc.gov/nccdphp/publications/aag/dnpa.htm>

37 Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report Surveillance Summaries 2008; 57:1-131.

38 Aaron DJ, Storti MS, Robertson RJ, Kriska AM, LaPorte RE. Longitudinal study of the number and choice of leisure time physical activities from mid to late adolescence. *Arch Pediatr Adolesc Med* 2002;156:1075--80.

39 Trost SG, Pate RR, Sallis JF, et al. Age and gender differences in objectively measured physical activity in youth. *Med Sci Sports Exerc* 2002;34:350--5.

40 Kohl HW, Hobbs KE. Development of physical activity behaviors among children and adolescents. *Pediatrics* 1998;101:549-554.

41 Bélanger M, Gray-Donald K, O'Loughlin J, et al. Participation in organized sports does not slow declines in physical activity during adolescence. *Int J Behav Nutr Phys Act*. 2009;6:22.

42 Maziak W, Ward KD, Stockton MB, et al. Childhood obesity: are we missing the big picture. *Obes Rev* 2008;9:35-42.

43 Epstein L. A Randomized Trial of the Effects of Reducing Television Viewing and Computer Use on Body Mass Index in Young Children. *Arch Pediatr Adolesc Med*;2008;162:239-245.

44 Generation M: Media in the Lives of 8-18 Year Olds. Menlo Park, Calif.: Kaiser Family Foundation, 2005

Page 7

45 Doolen J, Alpert PT, Miller SK. Parental disconnect between perceived and actual weight status of children: a metasynthesis of the current research. *J Am Acad Nurs Practitioners* 2009;21(3):160-6

46 Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance — United States, 2007. Morbidity and Mortality Weekly Report 2008; 57(SS-4):1-131.

47 McMurrer J. Instructional Time in Elementary Schools: A Closer Look at Changes for Specific Subjects. Washington, D.C.: Center on Education Policy, 2008.

48 National Association for Sport and Physical Education and American Heart Association. 2006 shape of the nation report: Status of physical education in the USA. Reston, Va.: National Association for Sport and Physical Education, 2006.

49 Centers for Disease Control and Prevention. School Health Policies and Programs Study (SHPPS) 2006. *J School Health* 2007;27(8).

- ⁵⁰ Snelling AM, Korba C, Burkey A. The national School Lunch and competitive food offerings and purchasing behaviors of high school students. *J School Health* 2007;77:701-705.
- ⁵¹ Foster GD, Sherman S, Borradaile KE, Grundy KM, Vander Veur SS, Nachmani J, Karpyn A, Kumanyika S, Shults J. A policy-based school intervention to prevent overweight and obesity. *Pediatrics* 121:4(e794-802)2008 Apr
- ⁵² LaRowe TL, Moeller SM, Adams AK. Beverage patterns, diet quality, and body mass index of US preschool and school-aged children. *Journal of the American Dietetic Association*.2007; 107(7):1124-33.
- ⁵³ Davis MM, Gance-Cleveland B, Hassink S, Johnson R, Paradis G, Resnicow K. Recommendations for prevention of childhood obesity. *Pediatrics*. Vol. 120 Supplement December 2007, pp. S229-S253
- ⁵⁴ Nelson JA; Carpenter K; Chiasson MA. Diet, activity, and overweight among preschool-age children enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). HYPERLINK "http://www.medscape.com/medline/publicationbrowser/123?pmid=16539790" *Prev Chronic Dis*. 2006; 3(2):A49
- ⁵⁵ Shore SM, Sachs ML, Lidicker JR, et al. Decreased scholastic achievement in overweight middle school students. *Obesity* 2008;16:1535-1538.
- ⁵⁶ Geier AB, Foster GD, Womble LG, et al. The Relationship Between Relative Weight and School Attendance. *Obesity* 2007;15:2157-2161.
- ⁵⁷ Benson L, Baer HJ, Kaelbar DC. Trends in the diagnosis of overweight and obesity in children and adolescents: 1999-2007. *Pediatrics*. 2009; 123:e153-e158.
- Page 8
- ⁵⁸ Committee on Food Marketing and the Diets of Children and Youth. Food Marketing to Children and Youth: Threat or Opportunity? Washington, D.C.: Institute of Medicine. 2005.
- ⁵⁹ Committee on Communications, American Academy of Pediatrics. Children, adolescents, and advertising. *Pediatrics* 2006;118:2563-2569.
- ⁶⁰ Halford JC. Beyond-brand effect of television food advertisements on food choice in children: the effects of weight status. *Public Health Nutrition* 2007;16:1-8.
- Page 9
- ⁶¹ Maziak W, Ward KD, Stockton MB. Childhood obesity: are we missing the big picture. *Obes Rev* 2008;9:35-42.
- ⁶² Daniels SR, Jacobson MS, McCrindle BW, et al. American Heart Association Childhood Obesity Research Summit: Executive Summary. *Circulation* 2009;119:2114-2123.
- ⁶³ Lavie CJ, Milani RV, Ventura HO. Obesity and cardiovascular disease: risk factor, paradox, and impact of weight loss. *J Am Coll Cardiol* 2009;53:1925-1932.
- ⁶⁴ King KA, Tergerson JL, Wilson BR. Effect of social support on adolescents' perceptions of and engagement in physical activity. *J Phys Activity Health* 2008;5:374-384.
- ⁶⁵ Le J, McCrary D, Zhang D, Raghuvver G. Abstract 6077: Advanced "Vascular Age" in Children with Dyslipidemia. American Heart Association Scientific Sessions, New Orleans, La., November 11, 2008.
- ⁶⁶ Fagot-Campagna A, Pettitt DJ, Engelgau MM, et al. Type 2 diabetes among North American children and adolescents: an epidemiologic review and public health perspective. *J Pediatr* 2000;136:664-672.
- ⁶⁷ Dietz W. Health consequences of obesity in youth: Childhood predictors of adult disease. *Pediatrics* 1998;101:518-525.
- ⁶⁸ Schwartz MB, Puhl R. Childhood obesity: a societal problem to solve. *Obes Rev*. 2003;4(1):57-71.
- ⁶⁹ Strauss RS, Pollack HA. Social marginalization of overweight children. *Arch Pediatr Adolesc Med* 2003;157:746-52.
- ⁷⁰ Koplan JP, Liverman CT, Kraak VA. Preventing Childhood Obesity: Health in the Balance. Washington, D.C.: National Academy of Sciences, 2004.
- ⁷¹ Daniels SR, Jacobson MS, McCrindle BW, et al. American Heart Association Childhood Obesity Research Summit: Executive Summary. *Circulation* 2009;119:2114-2123.
- ⁷² Finkelstein EA, Trogdon JG, Cohen JW, et al. Health Affairs 28, no. 5 (2009): w822-w831 (published online 27 July 2009; 10.1377/hlthaff.28.5.w822)
- ⁷³ Sturm R. The effects of obesity, smoking, and drinking on medical problems and costs. *Health Aff* 2002;21(2):245-253.
- Page 10
- ⁷⁴ Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance – United States, 2007.
- ⁷⁵ Strauss RS, Pollack HA. Epidemic increase in childhood overweight. *JAMA* 2001;28:2845-2848.
- ⁷⁶ Centers for Disease Control and Prevention. U.S. Obesity Trends; <http://www.cdc.gov/nccdphp/dnpa/obesity/trend/maps/>
- Page 11
- ⁷⁷ Income, Education and Obesity. The Colorado Health Foundation. Retrieved May 27, 2009 from: www.coloradohealth.org/WorkArea/downloadasset.aspx?id=3310.
- ⁷⁸ Powell LM, Slater S, Chaloupka FJ. The relationship between physical activity settings and race, ethnicity, and socioeconomic status. *Evidence-Based Preventive Medicine* 2004;1:135-144.
- ⁷⁹ Moore LV, Diez Roux A. Associations of neighborhood characteristics with the location and type of food stores. *Am J Prev Med* 2006;96:325-31.
- ⁸⁰ Handy SL, Boarnet MG, Ewing R, Killingsworth RE. How the built environment affects physical activity: views from urban planning. *Am J Prev Med* 2002;23(suppl):64-73.
- ⁸¹ Saelens BE, Sallis JF, Black JB, Chen D. Neighborhood-based differences in physical activity: an environment scale evaluation. *Am J Public Health* 2003;93:1552-1558.
- ⁸² Cohen DA. Public parks and physical activity among adolescent girls. *Pediatrics* 2006;118:1381-1389.
- ⁸³ Godbey GC, Graefe A, James SW. The Benefits of Local Recreation and Park Services: A Nationwide Study of the Perceptions of the American Public. Ashburn, Va.: National Recreation and Park Association, 1992.
- ⁸⁴ Gordon-Larsen P, Nelson MC, Page P, Popkin BM. Inequality in the built environment underlies key health disparities in physical activity and obesity. *Pediatrics* 2006;117:417-424.

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