

## Original Article

# Causes and consequences of adult obesity: health, social and economic impacts in the United States

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Obesity has been identified as an epidemic in the United States for more than two decades and yet the numbers of overweight and obese adults and children continue to grow. Currently, the rates of both overweight and obesity in the US are 61% and 14% in adults and children, respectively. Among US adults aged 20–74 years, the prevalence of overweight (defined as BMI 25.0–29.9) has increased from 33% in 1980 to 35% of the population in 1999. In the same population, obesity (defined as BMI  $\geq$  30) has nearly doubled from approximately 15% in 1980 to an estimated 27% in 1999. The percentage of children and adolescents who are defined as overweight has more than doubled since the early 1970s. About 14% of children and adolescents are now seriously overweight. Obesity burdens the health care system, strains economic resources, and has far reaching social consequences. The disease is associated with several serious health conditions including: type 2 diabetes mellitus, heart disease, high blood pressure and stroke. It is also linked to higher rates of certain types of cancer. Obesity is an independent risk factor for heart disease, hypoxia, sleep apnea, hernia, and arthritis. Obesity is the seventh leading cause of death in the US. The total cost of overweight and obesity by some estimates is \$100 billion annually. Others put the cost of health care for obesity alone at \$70 billion. Other annual costs associated with obesity are 40 million workdays of productivity lost, 63 million doctors' office visits made, and 239 million restricted activity days and 90 million bed-bound days. Emotional suffering may be among the most painful aspects of obesity. American society emphasizes physical appearance and often equates attractiveness with slimness, especially for women. Such messages may be devastating to overweight people. Many think that obese individuals are gluttonous, lazy, or both, even though this is not true. As a result, obese people often face prejudice or discrimination in the job market, at school, and in social situations. Feelings of rejection, shame, or depression are common. Since the 1950s, national dietary recommendations have come to acknowledge obesity as a significant societal trend. The Surgeon General's 2001 Call To Action, *Healthy People 2010*, and the *Dietary Guidelines for Americans 2000* all emphasize the importance of healthy weight. There are some new tools available to help in the fight against overweight and obesity: Weight Control Information Network, *The Third National Cholesterol Education Program's Adult Treatment Panel*, and *The Practical Guide: Identification, Evaluation, & Treatment of Overweight & Obesity in Adults* from the National Institutes of Health and National Heart Lung and Blood Institute.

**Key words:** economic, health, impact, obesity, social.

## Introduction

Obesity has been identified as an epidemic in the United States for more than two decades and yet the numbers of overweight and obese adults and children continue to grow. This disease burdens the health care system, strains economic resources, and has far-reaching social consequences. This paper gives a brief overview of the current situation, its probable causes, and its consequences. Additionally it outlines the latest initiatives in the US designed to combat the obesity epidemic.

## Demographics of US overweight and obesity

Currently, the rates of both overweight and obesity in the US are 61% in adults and 14% in children.<sup>1</sup> Among US adults aged 20–74 years, the prevalence of overweight (defined as BMI 25.0–29.9) increased from 33% in 1980 to 35% in 1999

(based on NHANES II 1980 and NHANES III 1999 data).<sup>2</sup> In the same population, obesity rates nearly doubled from 15% in 1980 to 27% in 1999.<sup>3</sup> The percentage of overweight children and adolescents has more than doubled since the early 1970s. Obesity preys on both genders, all ages, and all racial and ethnic groups.

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### **Economic impacts**

The total cost of overweight and obesity in 2000 by some estimates was \$117 billion, with \$61 billion direct and \$56 billion indirect costs.<sup>4</sup> Direct health care costs refer to preventive, diagnostic, and treatment services related to overweight and obesity (e.g. physician visits, hospital and nursing home care). Indirect costs refer to the value of wages lost by people unable to work because of illness or disability, as well as the value of future earnings lost by premature death.<sup>4</sup> Others put the cost of health care for obesity alone at \$70 billion. Additional annual costs associated with obesity are 40 million workdays of productivity lost, 63 million doctors' office visits made, 239 million restricted activity days and 90 million bed-bound days.<sup>5</sup> Most of the costs associated with obesity are due to type 2 diabetes, coronary heart disease, and hypertension.<sup>6</sup>

### **Health risks**

Obesity is associated with several serious health conditions including type 2 diabetes mellitus, heart disease, high blood pressure, and stroke. Both modest and large weight gains are associated with significantly increased risk of disease. For example, a weight gain of 11–18 pounds increases a person's risk of developing type 2 diabetes to twice that of individuals who have not gained weight, while those who gain 44 pounds or more have four times the risk of developing type 2 diabetes.<sup>7</sup>

Obesity is also linked to higher rates of certain types of cancer. Obesity is an independent risk factor for heart disease, hypoxia, sleep apnea, hernia, and arthritis. Morbidity from obesity may be as great as from poverty, smoking, or problem drinking.<sup>8</sup> Obesity is the seventh leading cause of death in the US. Approximately 300 000 deaths are attributed to obesity each year, comparable to the 400 000 deaths attributed to tobacco products.<sup>9</sup>

### **Social consequences including discrimination**

Emotional suffering may be among the most painful aspects of obesity. American society emphasizes physical appearance and often equates attractiveness with slimness, especially for women. These consequences may be devastating to overweight people. Many think that obese individuals are gluttonous, lazy, or both, even though this is not true. As a result, obese people often face prejudice or discrimination in the job market, at school, and in social situations. Feelings of rejection, shame, or depression are common. A 1991 study found that 100% of formerly severely obese patients preferred to be deaf, dyslexic, diabetic, have heart disease or bad acne than to be obese again, that 91.5% preferred leg amputation, and 89.4% blindness.<sup>10</sup> All (100%) preferred to be a normal weight person than a severely obese multi-millionaire.<sup>10</sup>

### **Environmental factors**

Environment strongly influences obesity. This includes lifestyle behaviors such as what and how much a person eats, as well as his or her level of physical activity. Americans tend

to eat high-fat foods and put taste and convenience ahead of nutrition. The Centers for Disease Control (CDC) report stated, 'Clearly, genes related to obesity are not responsible for the epidemic of obesity because the US gene pool did not change significantly between 1991 and 1999'.<sup>1</sup>

Lack of exercise is an important factor. Sedentary Lifestyle Syndrome, or 'SeDS', is the term developed by more than 200 of the nation's leading physiologists to diagnose the growing epidemic of physical inactivity and its relationship to chronic, preventable diseases. Sedentary is defined as engaging in less than 30 minutes of moderate physical activity, equivalent to brisk walking, each day.<sup>11</sup> More than 60% of US adults do not engage in the recommended amount of physical activity. Approximately 25% of US adults are not active at all. Inactivity increases with age and is more common among women than men and among those with lower income and less education.<sup>12</sup> In the US, only 22% of adults are regularly physically active five times per week for at least 30 minutes; 15% get the recommended amount of vigorous activity at least three times per week for at least 20 minutes; and 25% do no physical activity at all in their leisure time.<sup>12</sup> Among young people aged 12–21, almost 50% are not vigorously active on a regular basis. Female adolescents are much less physically active than male adolescents. Physical activity declines dramatically with age during adolescence.

Another environmental factor affecting the American obesity trend is portion size. While serving sizes are based on the US Department of Agriculture (USDA) Food Guide Pyramid, many Americans eat greater quantities.<sup>13</sup> Portion size is the actual amount of a specific food an individual eats. Portion sizes vary greatly in the US, based on gender, activity level, age, appetite and where and when food is obtained and eaten.

A 1996 study found that girls and women drank 17 oz when served a large size soda and only 9 oz when served a small. On average, people ate 165 candy-coated chocolate bits when given a 2 lb bag and 112 when given a 1 lb bag. People eat approximately 50% more hedonistic foods, like candy, chips, crisps, popcorn, when they come in bigger packages. With non-indulgent foods, the increase is usually 25%.<sup>14</sup>

The National Restaurant Association's Dinner Decision Making study found that most consumers rank portion size as one of the 10 'hallmarks of a great place'.<sup>15</sup> Fast food outlets feature gigantic 'value meals' and 'supersizes', and table-service restaurants have swapped 10-inch plates (once the industry standard) for 12-inch plates.

Between 1977–78 and 1994–96, consumption of food prepared away from home increased from 18% to 32% of total calories. The USDA reported that American total daily caloric intake has risen from 1854 kcal to 2002 kcal over the last 20 years. This significant increase, 148 calories per day, theoretically works out to an extra 15 pounds each year.<sup>16</sup>

A survey commissioned by the American Institute for Cancer Research (AICR) found that most Americans believe the kind of food they eat is more important for managing

weight than the amount of food they eat.<sup>19</sup> Most (78%) respondents said that eating certain types of food while avoiding others was more central to their weight management efforts than eating less food.<sup>17</sup> According to AICR, people are eating more and wondering why they are getting fatter. One reason is a too-narrow focus. Americans tend to concentrate too exclusively on cutting fat, or going on fad diets that restrict carbohydrates, sugar, or some other factor. Such strategies fail to address the larger picture of total calories consumed. According to the AICR survey, most Americans are unaware that portions they consume have increased in size. Six in ten (62%) of survey respondents said that portions served in restaurants are the same size or smaller compared to 10 years ago. Eight in 10 said the portions eaten at home are the same or smaller. Americans under 35 years of age were more likely to recognize that their food portions have grown compared to baby-boomers aged 35–54 and Americans 55 years or older.<sup>17</sup>

### Benefits of weight loss

While overweight and obesity are associated with an increased risk of disease and death,<sup>18</sup> weight loss (as modest as 5–15% of excess total body weight) reduces the risk factors for some diseases. A weight loss of 10 pounds has been associated with a 34% drop in triglyceride levels, a 16% decrease in total cholesterol, a 12% decrease in LDL cholesterol and an 18% increase in HDL cholesterol. A 20-pound loss in a patient with non-insulin dependent diabetes mellitus could restore 35% of the diabetes-related reduction in life expectancy. In addition, an average weight loss of 5–10% from baseline can reduce or negate the need for certain medications used to treat diabetes such as insulin or oral hypoglycemic agents.<sup>12</sup>

### Current US strategies

*The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity* outlines strategies that communities can use in helping to address the problems.<sup>12</sup> The strategies are organized in categories: communication, action, research, and evaluation (CARE). CARE strategies include ensuring daily physical education for all school grades; improving food options on campuses and at school events to include low-fat and low-calorie items, as well as more fruits, vegetables, whole grains and low-fat or non-fat dairy products. CARE strategies include a call for more community facilities to be available for physical activity for all people, including on weekends, and at work sites. CARE strives to reduce the time Americans spend watching television and in other sedentary behaviors, to change the perception of obesity so that health, not personal appearance, becomes the chief concern, to increase research on the behavioral and biological causes of overweight and obesity, and to direct research toward prevention and treatment, and toward ethnic/racial health disparities. CARE proposes to educate health care providers and health profession students on the prevention and treatment of overweight and obesity across the lifespan.<sup>12</sup>

### Healthy People 2010

*Healthy People 2010* is a set of health objectives for Americans to achieve during the first decade of the new century.<sup>19</sup> *Healthy People 2010* is designed to achieve two overarching goals. Goal 1 is to increase the quality and years of healthy life. This goal is to help individuals of all ages increase life expectancy and improve their quality of life. Goal 2 is to eliminate health disparities among different segments of the population. *Healthy People 2010* builds on national initiatives of the last two decades. Like its two predecessors, *Healthy People 2010* was developed through a broad consultation process, built on the best scientific knowledge, and designed to measure programs over time. Leading federal agencies with the most relevant scientific expertise developed the 28 focus areas of *Healthy People 2010*. The Healthy People Consortium, an alliance of more than 350 national membership organizations and 250 state health, mental health, substance abuse, and environmental agencies, worked together to develop the guidelines. Additionally, through a series of regional and national meetings and an interactive web site, more than 11 000 public comments on the draft objectives were received. The Secretary's Council on National Health Promotion and Disease Prevention Objectives for 2010 also provided leadership and advice in the development of national health objectives.

### Dietary Guidelines for Americans 2000

The *Dietary Guidelines* provide the basis for US federal policy and nutrition education activities.<sup>20</sup> Specifically, the *Dietary Guidelines* provide advice for healthy Americans ages two years and over about food choices that promote health and prevent disease. The National Monitoring and Related Research Act of 1990 requires that the secretaries of Agriculture and Health and Human Services periodically publish this joint report. The report must (1) contain nutrition and dietary information and guidelines for the general public, (2) be based on the preponderance of scientific and medical knowledge current at the time of publication, and (3) be promoted by each federal food, nutrition, or health program. The *Dietary Guidelines* include 10 basic principles for healthy eating, grouped under an ABC scheme: Aim for fitness, Build a healthy base, and Choose sensibly. The most recent edition is the first to emphasize physical activity.

To help Americans use the *Dietary Guidelines*, the USDA Center for Nutrition Policy and Promotion published the first in a series of brochures *How much are you eating?*<sup>21</sup> This 6-page brochure explains the difference between portion and serving size, encourages appropriate portions, and gives tips on making sensible food choices.

### The Practical Guide: Identification, Evaluation, and Treatment of Overweight & Obesity in Adults

The North American Association for the Study of Obesity (NAASO) and the National Heart, Lung, and Blood Institute (NHLBI) developed a Guide regarding overweight and obesity.<sup>21</sup> It is based on the *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and*

*Obesity in Adults: Evidence Report* developed by the NHLBI Expert Panel and released in 1998. The Expert Panel used an evidence-based methodology to develop key recommendations for assessing and treating overweight and obese patients. The goal of the *Practical Guide* is to provide the tools needed to effectively manage overweight and obese adult patients.<sup>21</sup>

### **Weight-control Information Network**

The Weight-control Information Network (WIN) is a national information service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), National Institutes of Health.<sup>22</sup> Established in 1994, it provides health professionals and consumers with science-based information on obesity, weight control, and nutrition. WIN provides publications, including fact sheets, and brochures, article reprints, and conference and workshop proceedings. WIN produces videos and taped lectures on weight loss and control-related topics. *WIN Notes*, a quarterly newsletter for health professionals, features the latest information on obesity, weight control, and weight-related nutritional disorders. *WIN Notes* lists resources from other organizations and reports on the National Task Force on Prevention and Treatment of Obesity activities.

### ***The Third National Cholesterol Education Program's Adult Treatment Panel, The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults***

The 1988 NHBLI Adult Treatment Panel I (ATP I) provided the first strategy for primary prevention of coronary artery disease among individuals with high levels of low-density lipoprotein cholesterol, and those with borderline high LDL levels and multiple risk factors for coronary heart disease.<sup>23</sup> In 1993, ATP II emphasized the importance of intensive cholesterol management in persons with established coronary artery disease. The new ATP III guidelines update the recommendations for clinical management of high blood cholesterol and recommends that all adults aged 20 years or older complete a fasting lipoprotein profile (total cholesterol, LDL cholesterol, HDL cholesterol, and triglyceride) every five years. This recently published ATP III states, 'while the new guidelines maintain intensive LDL cholesterol treatment among patients with CHD, its major new feature is a focus on primary prevention in persons with multiple risk factors.' Specifically, the ATP III guidelines emphasize the same aggressive lowering of LDL-cholesterol (<100 mg/dL) among persons with type 2 (non-insulin dependent) diabetes mellitus as those with known heart disease. Its 3-step 'Therapeutic Lifestyle Changes' treatment plan intensified the emphasis on the use of nutrition, weight management and exercise in the treatment of high cholesterol levels. Changes from previous ATP reports include an increase in the allowance of daily calories from fat. The new recommendations allow up to 35% of daily calories from total fat as against the previous 30%. A higher fat intake often is needed for persons with high triglycerides and low HDL cholesterol to keep

lipids from worsening. However, both reports recommend less than 7% of calories from saturated fat. Special dietary emphasis includes the consumption of foods containing plant sterols, sterols, and foods high in soluble fibre. ATP III emphasized regular physical activity, as defined by the US Surgeon General's Report on Physical Activity, as a way to lower serum cholesterol.

### ***HealthierUS Initiative***

The *HealthierUS* Initiative is based on the premise that increasing personal fitness and becoming healthier is critical to achieving a better and longer life.<sup>24</sup> The *HealthierUS* Initiative follows the simple formula that 'every little bit of effort counts.' The federal administration has identified four keys for a healthier America: (1) Be physically active every day; (2) Eat a nutritious diet; (3) Get preventive screenings; and (4) Make healthy choices. To promote physical activity, the administration has a *HealthierUS* website, promoting the use of public lands and water, declaring a fee-free weekend in America's National Parks and Federal Lands, and encouraging Americans to enjoy the outdoors. To improve diets, the federal administration is enhancing the National 5 A Day for Better Health Program, promoting nutrition curriculum and education in schools, and supporting an Eat Smart-Play Hard Campaign. To increase participation in preventive screenings, the administration is creating a Healthy Communities Innovation Initiative, raising awareness of diabetes screening, especially for women, and strengthening and improving Medicare.

As part of the *HealthierUS* Initiative the National Policy and Resource Center on Nutrition and Ageing in conjunction with the US Administration on Ageing has introduced *Steps to Healthy Ageing: Eating Better and Moving More*. This 2-part program is geared to the special needs of older adults.<sup>25</sup>

### **Summary**

Overweight and obesity are the result of a variety of social, behavioral, cultural, environmental, and physiological factors.<sup>26</sup> The United States is beginning to acknowledge the severity of its obesity epidemic and related health problems. Addressing nutrition and physical activity jointly is essential to prevention and treatment of overweight and obesity. Because of its complex etiology, no single approach to weight management is adequate. Considering that obesity is difficult to reverse and that weight reduction and maintenance of weight loss are complex tasks, emphasis should be on lifelong prevention through good nutrition and physical activity.

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