Medical and Societal Costs and Impacts of Obesity and Overweight

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This year (2003), expenditures for health care in the United States continue to rise and are estimated to reach $1.66 trillion. Much of these costs can be attributed to the diagnosis and treatment of chronic diseases and conditions such as diabetes, obesity, cardiovascular disease and asthma. [1] There is accumulating evidence that much of the morbidity and mortality associated with these chronic diseases may be preventable. However, a small amount of the health care cost is directed towards prevention.

- Approximately 129 million U.S. adults are overweight or obese which costs this Nation anywhere from $69 billion to $117 billion per year ($92.6 billion in 2002).
- In 2000, an estimated 17 million people (6.2 percent of the population) had diabetes, costing the U.S. approximately $132 billion. On average, people with diabetes lose more than 8 days per year from work, accounting for 14 million disability days.
- Heart disease and stroke are the first and third leading causes of death in Nevada and the United States. This year alone, 1.1 million Americans will have a heart attack. Cardiovascular diseases cost the Nation more than $300 billion each year.
- Nevada ranks first with the highest asthma prevalence in the nation. Approximately 23 million adults and 9 million children have been diagnosed with asthma at some point within their lifetime, with costs near $14 billion per year.

> ***"So many of our health problems can be avoided through diet, exercise and making sure we take care of ourselves. By promoting healthy lifestyles, we can improve the quality of life for all Americans, and reduce health care costs dramatically."***
> ***Tommy G. Thompson, Secretary of the U.S. Department of Health and Human Services***

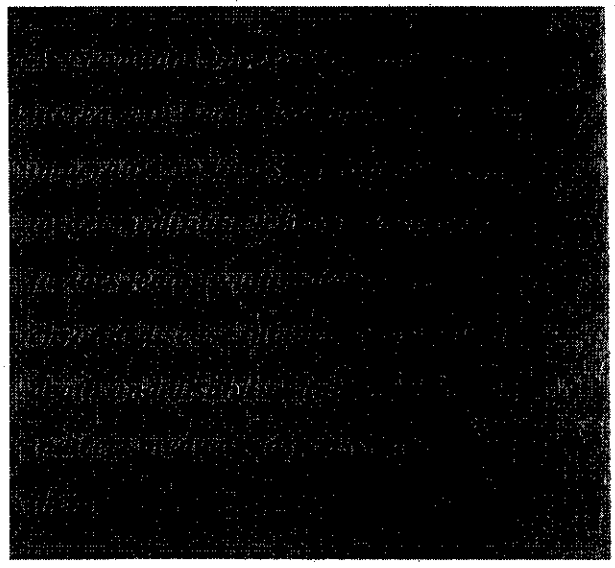
For many Americans, individual behavior and lifestyle choices influence the development and course of these chronic conditions. "Unhealthy" behaviors, such as a poor diet, lack of physical activity, and tobacco use are risk factors for many chronic conditions and diseases. A high calorie diet and a sedentary lifestyle commonly result in excessive weight gain.

Overweight and obesity are risk factors for a large number of chronic diseases, most significantly, type-II diabetes, coronary, and congestive heart failure, stroke and hypertension. Encouraging individuals to adopt healthy habits, lifestyles and practices will, not doubt, reduce the burden of chronic disease in communities throughout Nevada and the United States.

Recently, public and private efforts and programs are increasingly designed to promote healthy behaviors. Employers are becoming more aware that overweight and obesity, lack of physical activity, and tobacco use are adversely affecting the health and productivity of their employees and ultimately, the businesses' bottom line. As a result, innovative employers are providing their employees with a variety of work-site-based health promotion and disease prevention programs. These programs have been shown to improve employees' health, increase productivity and yield a significant return on investment for the employer. For example, a recent review of health promotion and disease management programs found a significant return on investment for these programs, with cost-effectiveness (benefit-to-cost ratios) ranging from $1.49 to $4.91 (median of $3.14) in benefits for every dollar spent or about 314% saving.

It is estimated that the U.S. will spend $1.66 trillion on health care expenditures. [2] The medical care costs of people with chronic diseases account for more than 75 percent of the entire nation's medical care costs.[3] Chronic disorders, such as obesity, diabetes and cardiovascular diseases, also account for the majority of deaths each year. As the U.S. population ages substantially over the next several decades, the prevalence of chronic diseases, and their impact on health care costs, will likely increase.

Increasingly, there is clear evidence that the major chronic conditions that account for most of the morbidity and mortality in Nevada and the nation, and the enormous direct and indirect medical costs associated with them, in large part are preventable, and that to a considerable degree they stem from, and are exacerbated by, individuals' behaviors. Each individual's health is shaped by many factors including but not limited to health policies and access to preventive medical care, behavioral choices,[4] and social circumstances. Individual susceptibility, genetics and the environmental determinants related to home, school or the entire community also play significant role.



In particular, overweight and obesity, lack of physical activity, and smoking greatly increase the risk of developing most serious chronic disorders. Most of the dollars spent on health care in the U.S. however, are for the direct care of chronic medical conditions, while only a very small portion is targeted on preventing those conditions. [5] As Nevadans observe this continuous increase in health care expenditures, it is imperative to focus on strategies that target modifiable chronic disease risk factors leading ultimately to reduce chronic disease incidence, prevalence, death and disability and the direct and indirect medical costs associated with them.

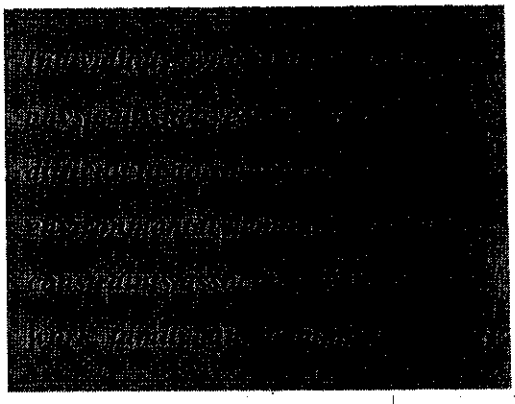
This presentation summarizes recent research findings on the prevalence, effects and costs of some of these key preventable conditions related to overweight and obesity and highlights the findings of several very successful prevention programs that make common sense "cents"[6] and save public resources.

Excess of Body Weight (BW) - Overweight and Obesity

Obesity is the largest epidemic in the history of Nevada and the nation. The prevalence of overweight and obesity has increased dramatically in recent years, doubling since 1980, and now is seen by the CDC as one of the top threats to the health of the Nation. [7]

Weight gain is a direct function of an imbalance between the amount of calories consumed and the amount of calories expended by an individual. While there are some genetic determinants of obesity, much, if not most, of the recent increase in prevalence of obesity in the U.S. population stems from changes in people's diets and the level of their physical activity.

To some extent, these dietary changes may reflect the greater availability of pre-packaged foods, low-cost-big-portion restaurant meals, and soft drinks, all of which may be high in sugar, calories, and/or fat. This increase in obesity has occurred even though the public generally is maybe more educated about what constitutes a healthy diet and ingredients in food products have become more clearly identified on labels.



On the other side of the equation, changing people's habits related to physical activity has proved to be a challenging task. Individuals, who want to be more physically active, often find it difficult to do so because of environmental demands, and other constraints associated with their work, family, and community.

According to a recent study by the National Center for Health Statistics (NCHS), less than a third of US adults engage in regular leisure-time physical activity, and only about one-fifth of adults engage in a high level of overall physical activity. [8] One study looked at adults who were trying to lose, or not to gain weight and found that less than 20 percent of the individuals were following recommendations about increasing physical activity and reducing calories. [9] Also notable is a finding that only 42.8 percent of obese people who had routine checkups in the past twelve months had been urged during those visits to lose weight. [10]

Body mass index (BMI) is currently used to define weight in adults. Individuals with BMI of 25 to 29.9 are considered overweight and those with a BMI of 30 or over are obese. When BMI is equal or more than 18.5 and is less than 25 the body weight is considered healthy and normal. BMI is calculated solely on the basis of individual height and weight; the calculation does not take into consideration gender, the proportion of fat and muscle, or different body shapes.

Waist circumference is also an independent predictor of risk factors and morbidity. [11] Obesity and overweight in children and adolescents are not specifically defined; they are considered to be overweight at or above the 95th percentile of the sex-specific BMI for age growth charts.

Prevalence of Overweight and Obesity

Recent estimates indicate that more than129 million U.S. adults are considered to be overweight or obese. [12] Approximately two-thirds of the adult population are either overweight or obese, and slightly less than one-third are obese. [13] These estimates are based on self-reported measures of height and weight and consequently are most likely under-estimates. [14]

Even though their specific prevalence estimates may differ somewhat, all studies in recent years have shown dramatic increases in the prevalence of overweight and obesity. One study determined that obesity rose from 22.9 percent to 30.5 percent between 1988 and 2000, while extreme obesity, defined as a BMI of 40 or over, increased from 2.9 percent to 4.7 percent over this period. [15]

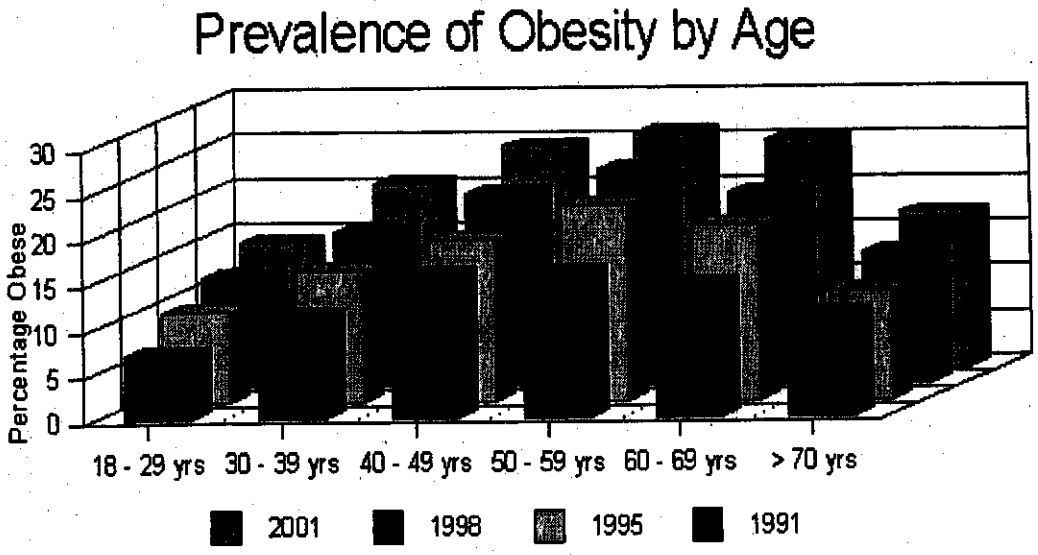


Figure. 1 - Prevalence of Obesity among U. S. Adults, by Age Groups

Behavioral Risk Factor Surveillance System; Self-reported Data. www.cdc.gov/nccdphp/dnpa/obesity/trend/prev_char.htm

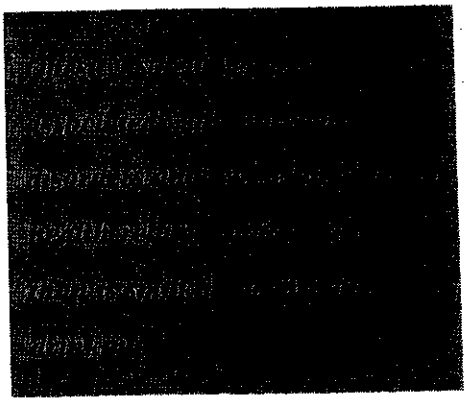
The prevalence of overweight and obesity is high and increasing among all ages (Figure 1), in men and women, across different racial and ethnic groups, and across education and income levels. The age group with the smallest proportion of obese people is ages 18 through 29 years. However, this same age group has shown the largest percentage increase in obesity of all age groups, rising from 7.1 percent in 1991 to 14 percent in 2001-a 97 percent increase. [16, 17]

Dramatic increases in the prevalence of overweight and obesity also have occurred in children and adolescents of both sexes, with approximately 15.3 percent of children aged 6 to 11 years and 15.5 percent of adolescents aged 12 to 19 years considered to be overweight. [18] The prevalence in adolescents has almost tripled in the past twenty years. [19] More than 10 percent of children aged 2 through 5 years are overweight. [20]

As is the case with adults, children and adolescents have become less physically active and are consuming more calories. They also have greater access to increasingly larger portions of foods high in calories, fat, and sugar. Research has shown that children will eat more when served large portions than they will when they serve themselves, [21] and when adolescents eat on their own and not with their families; they are less likely to eat healthy food including fruits and vegetables. [22]

Effects of Overweight and Obesity

Overweight and obesity significantly affects the health, quality of life, and life expectancy of the U.S. population. Excess weight is a risk factor for a large number of diseases and chronic conditions it can contribute to the onset of these disorders and it can make them worse. Conversely, overweight individuals can reduce the risk for some chronic disorders by losing as little as 5 percent to 15 percent of their weight. [23]



Obesity is believed to be associated with more chronic disorders and worse physical health-related quality of life than is smoking or problem drinking. [24] Estimates of the deaths of U.S. adults due to causes related to obesity range from 280,000 to 325,000 each year. [25, 26, 27, 28, 29] Overweight and obesity raise the risk for type 2 diabetes, cardiovascular diseases (CVD) including hypertension, coronary heart disease, congestive heart failure, angina pectoris, and stroke and increase the risk for some cancers including breast, colon/rectal and uterine.

Additionally, overweight and obesity raise the risk for asthma, sleep apnea and respiratory problems, high cholesterol levels, gout, osteoarthritis and musculoskeletal disorders, gallbladder disease, urinary bladder control problems, poor female reproductive health including complications of pregnancy, menstrual irregularities, infertility, and irregular ovulation. Overweight and obesity also can reduce mobility and physical endurance, can lead to psychological disorders, and can result in social, academic, and job discrimination. [30, 31, 32, 33, 34, 35, 36]

Estimates of the number of years of life lost as a result of overweight and obesity range as high as 20 years of life lost for certain age and racial/ethnic groups. For example, a 20-year-old white male could realize a 17 percent reduction in life expectancy due to obesity (Figure 2). [37]

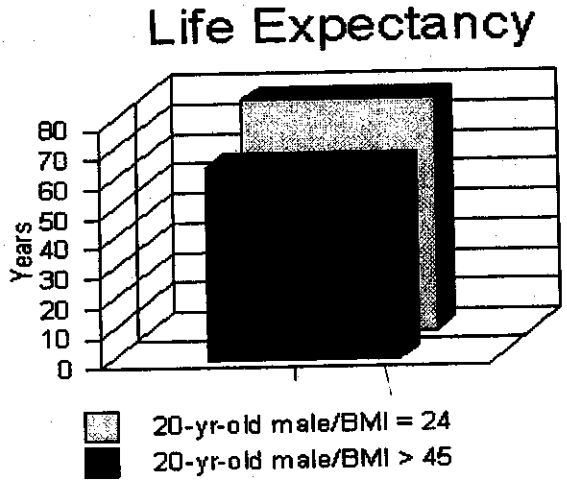
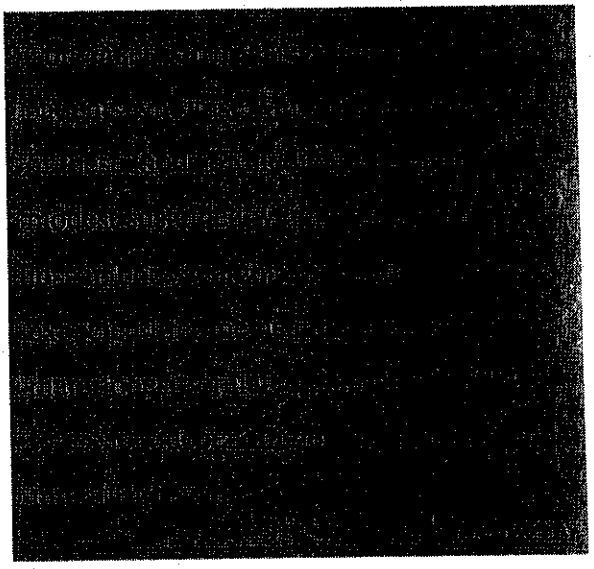


Figure 2. Estimates of Life Expectancy as a result of overweight-obesity Fontaine KR, Redden DT, Wang C, Westfall AO, Allison DB. Years of life lost due to obesity. *JAMA* 2003; 289(2): 187-193.

Years of life lost are simple measures of mortality, and do not reflect the full impact of obesity on morbidity and quality of life. It has been suggested that measuring the number of *healthy, disability-free* years of life lost might be more informative than focusing only on actual years lost. [38] Researchers have suggested that in terms of the physical quality of life, the effect of obesity can be the equivalent of aging as much as 30 years. [39]

Costs of Overweight and Obesity

Several national and state public health agencies and researchers have provided many estimates of the costs of overweight and obesity. These estimates differ according to their scope (e.g., the individual person, a particular company or health plan, or the U.S.), the timeliness of the data, and the methods used to derive them, including how obesity is defined, how the prevalence of obesity is determined, what associated disorders are included, the degree to which these disorders and obesity are considered to be associated, how costs are defined, and the assumptions used in calculating those costs.



As with other chronic conditions, estimates may focus on direct costs to the community, including the costs of health care services, physicians and other health care professionals, hospital admissions, and medicines; indirect costs, such as loss of productivity caused by absenteeism, disability, and premature death; or personal costs, such as reduced earnings, higher insurance costs, reduced quality of life, and out-of-pocket expenses for individuals. [40] These cost estimates are approximations, and it becomes even more difficult to estimate the costs of the effects of obesity over very long periods of time.

Health care utilization research has shown that as body mass increases, health care utilization and costs increase. [41] Obesity may account for as much as a 36% increase in costs for inpatient and ambulatory care for individuals; that is a greater increase than that attributed to aging 20 years, smoking, or problem drinking. [42] In addition to using more physician and hospital services, obese individuals have high annual costs for medications, particularly those for diabetes and cardiovascular disease (CVD). One researcher estimated that obese individuals might pay as much as 77 percent more for medications compared to non-obese individuals. [43] Conversely, there is evidence that patients who lose weight reduce their use of these kinds of medications, and even modest sustained weight loss (a reduction of 10 percent in body weight) may reduce expected lifetime health care costs for major obesity-related diseases by $2,200 to $5,300, depending on age, gender, and initial BMI value. [44, 45, 46, 47, 48]

Most estimates of total (direct and indirect combined) costs of overweight and obesity to the Nation range from $69 to $117 billion per year. [49, 50, 51, 52, 53] This figure includes $61 billion for direct costs and $56 billion for indirect costs. The American Obesity Association estimates that the costs for treating major chronic diseases and disorders attributed to obesity were about $102 billion for direct costs alone in 1999. (These amounts represent 27 to 31 percent of the total costs

of treating chronic diseases and conditions attributable to obesity and overweight. [54, 55] Included in these estimates were $6.7 - $7.4 billion for arthritis; $25.5 - $30.6 billion for heart disease; $18.4 - $20.5 billion for type 2 diabetes; $8.3 - $9.6 billion for hypertension; and $6.1 - $8.1 billion for stroke.

One recent study examined a representative sample of 9,867 adults ages 19 and older, with data from the 1998 Medical Expenditure Panel Survey (MEPS) and the 1996 and 1997 National Health Interview Survey (NHIS) ,[56, 57]. This study computed aggregate overweight and obesity attributable medical spending for the U. S. and for select payers. Combined, such expenditures accounted for 9.1 percent of total annual U.S. medical expenditure in 1998 and may have been as high as $78.5 billion ($92.6 billion in 2002). According to the same study, the difference in medical spending for an individual who is overweight (BMI $\geq$ 25 and < 30) and a person who normal weight (BMI $\geq$ 18.5 and < 25) was $247 per year. For most part, this result was not statistically significant. However, major differences appeared for those who were obese (BMI > 30). The average increase in spending for an obese individual over a person of normal weight was $732 per year.

According to the most recent Nevada Behavior Risk Factor Surveillance (BRFSS) data, 19.5 % of the states adult population was obese in 2001. Based on the findings of Eric Finklestein and associates, [56, 57] the average increase in the annual medical spending associated with obesity in Nevada would be about $214 million after adjusting to age. Moreover, Medicare and Medicaid may finance as much as half of these costs, with Medicare covering the larger share due to the more substantial medical problems associated with obesity in the elderly. Researchers have found that obese people who reach 65 years of age have much larger annual Medicare expenditures than non-obese people. For the period between 1996 and 1998, a 15%t increase in annual per capita Medicare spending is attributable to being overweight, and a 37% increase is attributed to being obese. [58]

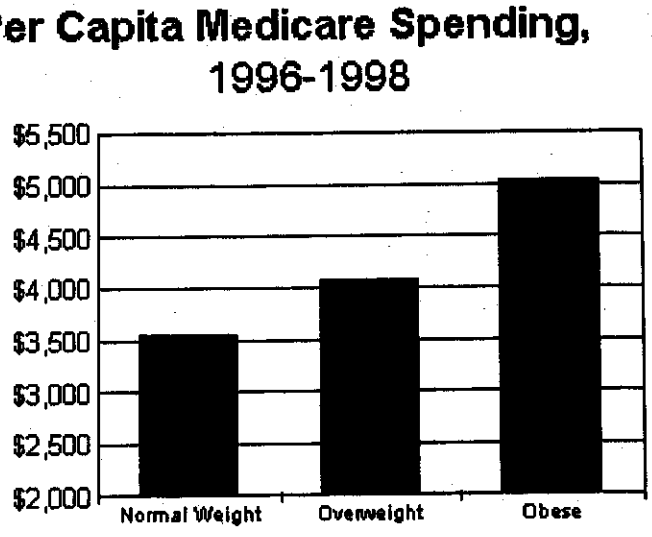


Figure 3. American Obesity Association/The Lewin Group. *Costs of Obesity*. September 13, 2000.

Employers and businesses bear a sizable portion of costs associated with treating obesity-related conditions, primarily in terms of lost productivity and the increased cost of health and disability

insurance. Studies of overweight and obese employees have shown that obese employees take more sick leave than non-obese employees and are twice as likely to have high-level absenteeism (seven or more health-related absences during the last six months). [59, 60]

In addition, another study found a reduction in the use of sick leave and disability pension by obese employees in the second and third years following surgical treatment of their obesity. [61] An analysis of business costs in the late 1980s through the mid-1990s found that in 1994, due to conditions associated with obesity employees lost 39.3 million workdays (a 50 percent increase since 1988); made 62.7 million visits to physician offices (a 88 percent increase); had 239 million restricted activity days (a 36 percent increase), and 89.5 bed-days (a 28 percent increase). [62, 63]

The costs to U.S. businesses of obesity-related health problems in 1994 added up to almost $13 billion, with approximately $8 billion of this paying for health insurance expenditures, $2.4 billion for sick leave, $1.8 billion for life insurance, and close to $1 billion for disability insurance

Points of intervention

- Targeted education programs, based on identified health risks and interests.
- Focused education programs, which support individuals throughout process of lifestyle, change.
- Smoking cessation, weight management, nutrition and cholesterol management, and fitness activities.
- Integrated one-stop workshops, including multi-session classes, individual counseling, and self-directed modules.
- Maintenance strategies, which include ongoing awareness, interactive campaigns, group support with on-site services (e.g., fitness facilities, cafeteria/vending programs, and walking routes).

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3. CDC website: www.cdc.gov/nccdphp

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