STATE OF ARKANSAS

The Impact of Obesity:
Economics, Health, Prevention & Treatment

2000

Presented by
Obesity Task Force

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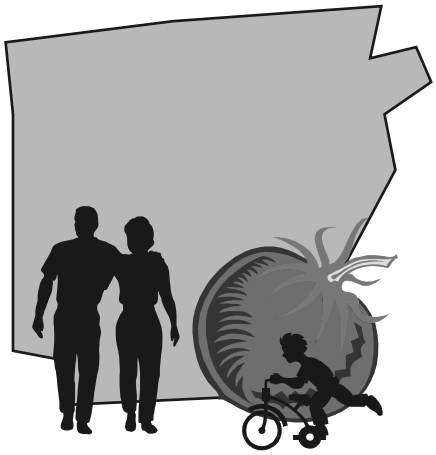
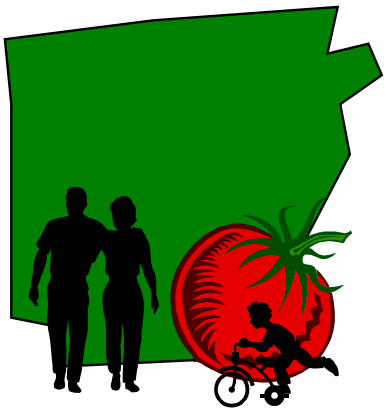


Obesity Task Force

Carole Garner MPH, RD, LD, Chair



Acknowledgments

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The Task Force especially thanks Marilou Brodie for her time and meticulous reviews of each draft of this document.

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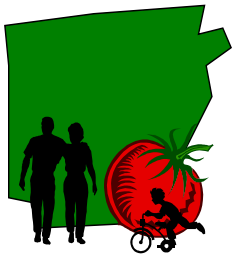

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EXECUTIVE SUMMARY ----
The Impact of Obesity:
Economics, Health, Prevention & Treatment

It can be argued that Arkansans live in a toxic environment regarding physical activity and food. This current environment favors an imbalance between food intake and physical activity that can contribute to obesity and chronic disease. It is easy to find and purchase large amounts of unhealthful foods. Heavily funded advertising encourages over-consumption. This hyper-availability of palatable and varied food is a constant challenge to people's drive to eat. Our society is structured such that most people do not need to be physically active during a typical day.

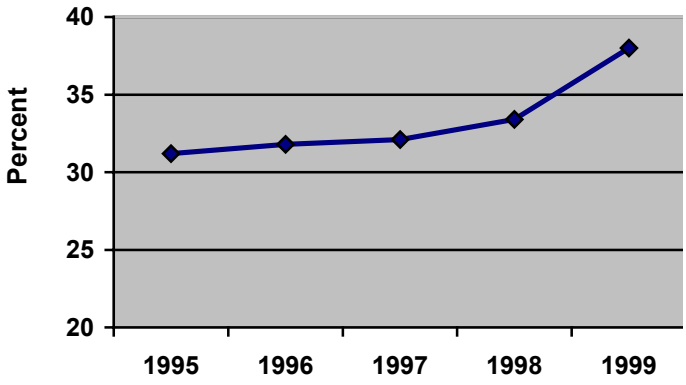
> To put the prevalence of obesity in context, the American population includes 600,000-700,000 persons living with HIV, 8 million with cancer, 16 million with diabetes, 22 million with heart disease, and 58 million with serious obesity-related health conditions.

In the 1999 Arkansas legislative session, the Senate and the House of Representatives passed SCR 8 calling for the development of a study of the effect of obesity in both adults and children including (a) economic impact, (b) health implications, and (c) recommendations for action to combat this epidemic. The Arkansas Department of Health was charged with the lead to establish an Obesity Task Force to complete the study. Task force members represented a wide range of expertise in the areas of nutrition, obesity treatment and research, community and public health, physical activity, public policy, social marketing, communication and consumer research. See Appendix for listing of Task Force members.

Cost to the State - Economics

"Because treating everyone affected by obesity will bankrupt the health care system, our only realistic option is to invest in obesity prevention...preventing weight gain among the non-obese, the weight gain that accompanies aging, further weight gain among the already obese…and to promote weight loss for those who are overweight." William H. Dietz MD, PhD, Director of Nutrition and Physical Activity, Centers for Disease Control and Prevention.[1]

Figure 1S. Obesity Trends in Arkansas Adults, 1995-99



In Arkansas in 1999, hospital charges alone for obesity-related conditions was in excess of $125 million. Nearly two-thirds of these dollars came from state and federal government sources.

The cost of obesity is comparable to that of other chronic diseases, yet it receives disproportionately less attention. Given the high prevalence of obesity as shown in *Figure 1S* and the associated elevated rates of health service use and cost, there is a significant potential for a reduction in health care expenditures through obesity prevention efforts.[2]

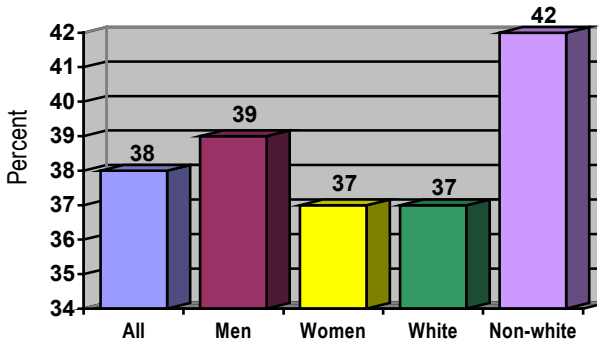
Cost to the State – Health

The Centers for Disease Control and Prevention has stated that of the 30-year increase in life expectancy between 1900 and 1999, only five years can be attributed to curative medicine. The remaining 25 years of the increase represent advances in public health and preventive measures. However, today's health care system is still geared almost exclusively toward treatment of disease. Despite the proven success of preventive medicine, spending by state and federal governments averaged $1,390 per person per year for disease treatment and only $1.21 per person per year for preventive measures.[3]

In Arkansas, four of the top ten leading causes of death in 1998 were chronic conditions, which can be attributed, in part, to obesity, unhealthy eating and physical inactivity. Heart disease was the leading cause of death, followed by cancer and cerebrovascular disease in second and third place respectively, and diabetes as the number seven cause.[4]

Obesity is the most prominent marker of unhealthy lifestyle choices related to diet and physical activity. *Figure 2S* illustrates the obesity problem in Arkansas adults in 1999.

Figure 2S. Obesity in Adults in Arkansas, 1999



A dramatic rise in overweight children has occurred over the past few decades. The current level of obesity among American children has been variously reported as 11% and 24%. In Arkansas, obesity in preschool children has increased by one-third in the past decade, rising from 6.2% to 8.6%.[5] Arkansas students, in the 9th to 12th grade, are reporting almost 11% obesity.[1] Overweight children are at risk for serious health complications. They disproportionately suffer from sleep apnea, hypertension, and type 2 diabetes in childhood and are at greater risk for chronic health problems later in life.

> "Obesity is our biggest food-borne illness."
>
> The International Food Information Council

Recommendations

- Create a statewide, funded, Obesity Council whose purpose is to reduce the prevalence and health-related costs of obesity in Arkansas
- Increase appropriate staff and financial resources within the Arkansas Department of Health dedicated to monitoring, promoting, improving and evaluating nutrition practices and physical activity at home, school, the worksite and in the community
- Develop legislation with appropriate funding to support assessment, planning, evaluation and monitoring, as well as, programmatic activities which address the development and implementation of a comprehensive program to:
  - Raise public awareness of the issue of childhood, adult and geriatric obesity and it's health consequences
  - Educate all stakeholders about the benefits of, and ways to incorporate good nutrition and physical activity

- Incorporate action steps from the *State of Arkansas Comprehensive Child and Adolescent Nutrition Policy – 1999*
- Promote lifelong healthful eating habits via progressive levels of nutrition education from preschool through high school
- Develop a comprehensive program to address the importance of daily physical activity:
  - Increase appropriate staff and resources within the Arkansas Department of Education dedicated to monitoring, evaluating and promoting physical education in every school district in Arkansas;
  - Increase standards and guidelines for mandatory physical education in all grades;
  - Require all schools K-12 to have a certified physical education instructor;
  - Establish a plan for each school to promote lifelong physical activity for students
  - Coordinate with the Great Strides Grant to make neighborhoods safer, more accessible to walking, bicycling, and other activities
  - Improve the physical activity facilities and public accessibility to neighborhood schools and community facilities for all ages
  - Work with communities to enhance the opportunities for physical activity including walking trails or tracks, stairs in public buildings, and safe neighborhood playgrounds
- Provide access to appropriate and effective prevention programs, medical evaluations and interventions (including medical nutrition therapy) for childhood and adult obesity and work toward adequate reimbursement to health care providers via health insurance providers
- Partner with health insurance companies to:
  - Educate their members on obesity
  - Document cost savings for treatment of obesity to justify/support reimbursement to health care providers
- Develop incentives with private industry, such as retail businesses and restaurants, to promote healthy lifestyles
- Partner with produce growers, vendors and manufacturers to develop a plan to enhance the availability of fruits and vegetables in areas of the state which currently have limited access to full-service grocers
- Provide incentives for businesses with worksite wellness programs to promote healthy weight
- Develop appropriate benefits to state agencies and departments that invest in Worksite Health Promotion
- Offer incentives to state employees to participate in effective wellness and weight management programs

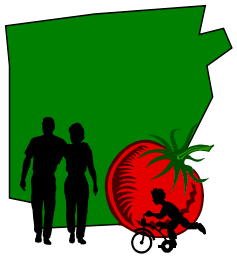
[1] Dietz, W,H. Battling obesity: Notes from the front. Chronic Disease Notes and Reports. 2000; 13(1): 2.

[2] Quesenberry, C.P. Jr, Caan, B., Jacobson, A. Obesity, health services use, and health care costs among members of a health maintenance organization. Arch Intern Med 1998; 158(5): 466-72.

[3] Arkansas Department of Health. 1998 Mortality Statistics: leading causes of death. Available at: http://health.state.ar.us/stats/mort98/MORT503A.HTM.

[4] Arkansas Department of Health. 1999 Pediatric Nutrition Surveillance System.

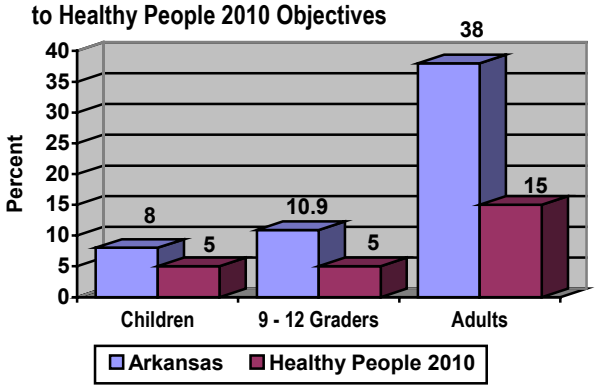
[5] Table 35. Youth Risk Behavior Survey 1999. Centers for Disease Control. MMWR. June 9, 2000.



The Impact of Obesity: Economics, Health, Prevention & Treatment

Arkansas is facing a public health crisis. Obesity is at an all time high. Physical activity levels are insufficient, and eating habits and intakes are inconsistent with recommendations for optimal health. *Figure 1* shows that in Arkansas for 1999, 8% of children aged birth to five, 10.9% of 9th-12th grade students, 38% of all adults and 34% of adults aged 65 and over were classified as obese. It would be unconscionable not to argue for change. Essentially it is the individual's behavior that significantly impacts health. Yet, the individual's behavior is influenced by many subsystems of society: the economy, the political system, social institutions and culture.

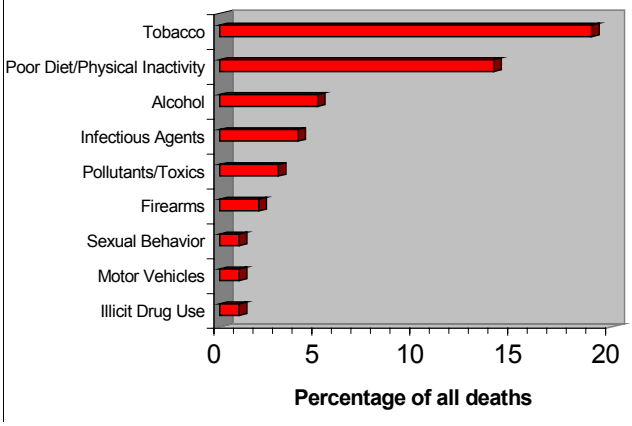
Figure 1. Obesity in Arkansas, 1999 Compared to Healthy People 2010 Objectives



The Centers for Disease Control and Prevention (CDC) has declared obesity an epidemic. The United States and Arkansas desperately needs to attack the problem of poor diet and physical inactivity with an initiative of similar scope and duration to that mounted against tobacco over the last decade. By region, the largest increases in obesity are seen in the South where 30% are obese. The South's rate jumped 67.2% from 1991-1998.

According to the U.S. Dept of Health and Human Services, unhealthy eating habits and physical inactivity are now the nation's second leading actual cause of death and are primary factors in the skyrocketing rates of obesity and the number of overweight persons.[11] *See Figure 2.* It has been estimated that 14% of deaths can be attributed to poor eating and lack of physical activity.[1] Unhealthy eating and physical inactivity are also major causes of heart disease, cancer, stroke, diabetes, high blood pressure, and osteoporosis. The chronic nature of these diet-related diseases leads to staggering health-care costs because drugs and medical care are required for several decades. Those costs are sure to rise as the population ages. Neglecting prevention is like running cars without oil. In time, engines fail and we end up with costly repairs. While people would not be surprised that tobacco causes 420,000 deaths each year, few would guess that high calorie, fatty, salty, vegetable-poor diets, along with physical inactivity, kill about the same number of Americans each year. That's 13 times more than are killed by guns and 20 times more than by illicit drug use.

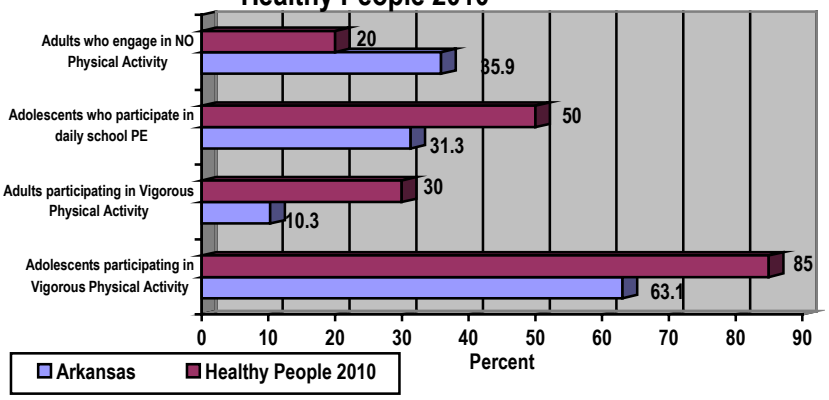
Figure 2. Actual Causes of Death, United States, 1990



The Impact of Obesity

Healthy People 2010 (HP 2010)[2] is a national health promotion and disease prevention initiative that brings together national, state, and local government agencies; nonprofit, voluntary, and professional organizations; businesses; communities; and individuals to improve the health of all Americans, eliminate disparities in health, and improve years and quality of healthy life. The HP 2010 goals related to obesity are 5% or less of the children and adolescents, and 15% or less of adults. As noted in *Figure 1*, Arkansas has a big task to meet these goals. Some of the HP 2010 goals relative to physical activity are noted in *Figure 3*.

Figure 3. Physical Activity, 1998 BRFSS, 1999 YRBS, Healthy People 2010



There is an energy crisis in Arkansas, but it is not at the gas pump or with utility companies. Arkansas has a personal energy crisis. The needle is moving, but it is on the bathroom scale!

How is Obesity defined?

The Body Mass Index (BMI) has been identified by several government guidelines, including the Healthy People 2010 recommendations, as the measure of choice. BMI is a ratio between weight and height that correlates with excess body fat. However, while BMI compares well to body fat, it cannot be interpreted as a certain percentage of body fat. The relationship between fatness and BMI is influenced by age and gender. For example, women are more likely to have a higher percent of body fat than men for the same BMI. At the same BMI, older people have more body fat than younger adults.[2]

BMI is a better predictor of weight-related disease risk than body weight alone for most of the population. However, BMI is not for everyone. Competitive athletes and body builders, women who are pregnant or lactating should not use BMI.

BMI Cutpoints for Adults

We interpret BMI values for adults with one fixed number, regardless of age or sex . See the Appendix for an Adult BMI Table.

Adult BMI	
Underweight	BMI less than 18.5
Normal Weight	BMI of 18.5 to 24.9
Overweight	BMI of 25.0 to 29.9
Obese	BMI of 30.0 or more

BMI is Used Differently with Children Than it is With Adults

As children grow, their body fatness changes. The interpretation of BMI depends on the child's age. Additionally, girls and boys differ in their body fatness as they mature. For children 2 to 20 years of age, a BMI-for-

BMI-for-Age, Children 2-20 years	
Underweight	< 5th percentile
Normal Weight	≥ 5th to < 85th percentile
Overweight	≥ 85th to < 95th percentile
Obese	≥ 95th percentile

age according to sex-specific charts is the standard.[3] See Appendix for BMI-for-Age Charts.

How does BMI relate to health?

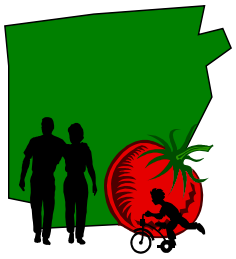
In adults, a high BMI is predictive of death from cardiovascular disease. Diabetes, cancer, high blood pressure and osteoarthritis are also common consequences of overweight and obesity in adults. Obesity itself is a strong risk factor for premature death. It has been shown with children and teens who have a BMI-for-Age above the 95th percentile, that sixty percent of them have at least one risk factor for cardiovascular disease while twenty percent have two or more risk factors.[4]

What has been happening in Arkansas?

Arkansas ranks among the nation's worst with regards to incidence of preventable diseases. The 2000 survey by the United Health Group rated Arkansas 46th in the nation in overall health.[5] Heart disease, stroke, obesity-related diabetes and certain cancers account for a large proportion of Arkansas' poor scores, as well as for 64% of the deaths in Arkansas *(see Table 1)*. Almost all of these chronic, preventable diseases begin in childhood with the establishment of unhealthy lifestyle choices that are linked to obesity.

Table 1: Obesity-Related Morbidity & Mortality in Arkansas and the US, 1999

Select Chronic Diseases	Arkansas (incidence)	U.S. (incidence)	Rank (vs. other states)
Cardiovascular disease (deaths per 100,000) [6]d[6]isease (de	194.4	170.7	10
Stroke (deaths per 100,000) [7]	35.2	26.6	2
Ischemic heart disease (deaths per 100,000) [8]	147.1	127.1	11
High blood pressure [9]	26.4%	23.0%	8
Diabetes mellitus (deaths per 100,000)[10]	22.74	21.25	19
Cancer (deaths per 100,000) [11]	142.1	129.9	6



I. SCOPE & IMPACT

A. Scope

"Because treating everyone affected by obesity will bankrupt the health care system, our only realistic option is to invest in obesity prevention….preventing weight gain among the non-obese, the weight gain that accompanies aging, further weight gain among the already obese…and to promote weight loss for those who are overweight." William H. Dietz MD, PhD, Director of Nutrition and Physical Activity, CDC.[12]

What is the cost in lives and dollars?

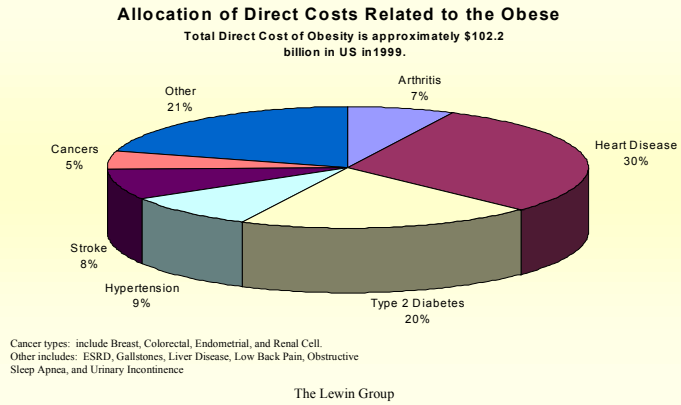
The U.S. Department of Health and Human Services estimates that unhealthy diets and physical inactivity account for at least 310,000 to as many as 580,000 deaths every year due to cancer, cardiovascular diseases and diabetes. [1] In Arkansas, that is 10 to 12 diet related deaths each day.

In Arkansas, four of the top ten leading causes of death in 1998 were chronic conditions, which can be attributed at least in part, to obesity, unhealthy eating and physical inactivity. Heart Disease was the leading cause, followed by Cancer and Cerebrovascular Disease in second and third place respectively, and Diabetes as the number seven cause.[13]

The costs of treating the diseases caused, in part, by unhealthy diets and physical inactivity is soaring. Annual and direct costs related to cancer, coronary heart disease, obesity, diabetes, stroke and osteoporosis now total nearly $550 billion. For Medicare patients alone, the Health Care Financing Administration estimates that coronary heart disease costs U.S. taxpayers $9.8 billion per year and strokes cost an additional $3.7 billion.[1]

The U.S. Department of Agriculture has estimated that healthier diets could prevent at least $71 billion per year in medical costs, lost productivity, and lost lives.[14] It is important to note that this estimate only takes into account diet-related coronary heart disease, stroke, cancer and diabetes and not other diet-related diseases. The Lewin Group and the American Obesity Association have determined that 15 co-morbid conditions were scientifically well established to be a result of obesity. They concluded that the direct health care costs for treating these 15 co-morbid conditions incurred by adults with obesity is $102.2 billion.[15, 16] *See Figure 4.* Studies [12, 17, 18] have estimated that these direct costs (personal health care, hospital care, physician services, allied health services and medications) of obesity-related disability represent 5.7 to 7.8 % of the U.S. health care costs, while

Figure 4. Cardiovascular Diseases and Diabetes Constitute Approximately 70% of Obesity-Related Costs



others estimate it to be nearly 8 %. A review of data to estimate obesity-attributable expenditures on selected employee benefits, including health, life, and disability insurance and paid sick leave by private-sector firms, found the cost of obesity to U.S. business in 1994 to be near $12.7 billion.[19]

It is obvious that the challenges faced by today's health care delivery system have changed enormously. Over the past century, the leading causes of death have shifted from infectious to chronic diseases. These diseases are expensive to treat; many of them cannot be cured so they require years of expensive treatments.

Is an ounce of prevention really worth a pound of cure?

The Centers for Disease Control and Prevention has stated that of the 30-year increase in life expectancy between 1900 and 1999, only five years can be attributed to curative medicine. The remaining 25 years of the increase represent advances in public health and preventive measures. However, today's health care system is still geared almost exclusively toward treatment of disease. Despite the proven success of preventive medicine, spending by state and federal governments averaged $1,390 per person per year for disease treatment and only $1.21 per person per year for preventive measures.[1]

Our current investment in promoting healthy eating and physical activity is pathetically small. Procter and Gamble spends 40 times more promoting Pringles potato chips than the federal government spends promoting fruit and vegetable consumption through its largest nutrition education program for the general public, the 5 A Day Program. McDonald's spends 1,000 times as much. A national 1-cent-per-pound tax on candy would raise about $70 million a year; on chips, $54 million; and other snack foods, $190 million. Because such small taxes are unlikely to have a significant effect on the price, they probably would not be strongly opposed by consumers.[20]

B. Impact

Table 2 presents a few examples of the high costs associated with the treatment of chronic diseases related to obesity in Arkansas.

Table 2. Average inpatient hospital charges for common obesity related conditions and surgical procedures, Arkansas, 1999

CONDITIONS OR PROCEDURES	CASES	AVERAGE HOSPITAL CHARGE 1999
Acute Myocardial Infarction (410)	8,977	$ 21,624
Angina Pectoris (413)	6,342	$ 12,198
Asthma (493)	10,121	$ 8,846
Cardiac Catheterization (37.21 - 37.23)	15,081	$ 23,323
Cardiac Dysrhythmia (427)	35,904	$ 15,901
Congestive Heart Failure (428.0)	37,032	$ 13,313
Coronary Bypass (36.00 - 36.19)	9,472	$ 34,002
Diabetes Mellitus (250)	44,803	$ 11,677

Source: 1999 Arkansas residential inpatients from Arkansas Hospital Discharge System [21]

Note 1: Number of cases may include re-admissions

Based on work by Wolf and Colditz,[17] an estimate of the costs attributable to obesity in Arkansas can be made. *Table 3* includes in-patient data for obesity related conditions. An estimated proportion of the disease attributable to obesity is applied to total medical costs to derive an estimate of the cost of obesity as it relates to hospital care. It should be noted that hospital care is only one part of "direct costs" and these values represent only a portion of the total picture.

Table 3: Estimated charges from obesity related hospitalizations in Arkansas, 1999

CONDITION (ICD-9 CODE)	CASES*	CHARGES*		PROPORTION OF CHARGES (cost) ATTRIBUTABLE TO OBESITY** (%)	CHARGES ATTRIBUTABLE TO OBESITY
		Sum	Per Case		Sum
Diabetes (250)	4,951	40,134,061	8,106	61.0	24,481,777
Coronary Heart Disease (410 - 414)	20,677	411,381,876	19896	17.3	71,169,064
High Blood Pressure (401 – 404)	3,114	28,677,983	9,209	17.0	4,875,257
Gallbladder (574)	3,518	40,646,157	11,554	30.0	12,193,847
Osteoarthritis (715)	4,134	73,716,485	17,832	11.8	8,698,545
Breast Cancer (174)	844	7,986,146	9,462	11.0	878,476
Endometrial Cancer (182)	225	2,520,897	11,204	34.0	857,105
Colon Cancer (153)	1,075	23,487,023	21,848	11.3	2,654,034
TOTALS	38,538	628,550,628	16,310		$ 125,808,105

**Source: 1999 Arkansas residential inpatients from Arkansas Hospital Discharge System* [21]

Note 1: Number of cases may include re-admissions
Warning: Cost proportions attributable to obesity (from Table 3) are applied to charge data
***Wolf & Colditz, 1998* [17]

Although some may argue that direct medical cost estimates fail to account for the increased death rate among obese people and therefore should be 25% lower,[22] they fail to consider indirect costs for obesity, including the loss of future earnings by people who die prematurely. Studies [17, 18] note indirect costs (work days lost due to disease or death) amount to 48 to 50% of the total direct costs and need to be added to the total for a more complete picture. Data on the personal aspects of obesity, i.e. job discrimination, higher insurance premiums, and assistance/adaptations to accommodate poor physical functioning are too fragmentary to allow cost calculation. The cost of obesity is comparable to that of other chronic diseases, yet it receives disproportionately less attention. Given the high prevalence of obesity and the associated elevated rates of health service use and cost, there is a significant potential for a reduction in health care expenditures through obesity prevention efforts.[23]

What financial picture do we see with Medicaid?

Medicaid

In Arkansas in 1999, there were over 360,000 individuals eligible for Medicaid each month.[24] The State's budget is directly impacted by Medicaid expenses. Arkansas's contribution to the total is one dollar for every three from the federal government, for 1999 Arkansas spent $431,161 for obesity related treatment. Diagnosed diabetes among adults has increased 33% in the 1990's,

the same time frame as the increase in obesity.[25] Diabetes led with 29% of Medicaid supported hospitalizations for 1999. See *Table 4* for further information.

Table 4: Medicaid expenses from obesity related hospitalizations in Arkansas, 1999

CONDITION (ICD-9 CODE)	CASES*	MEDICAID EXPENSES		PROPORTION OF CHARGES (cost) ATTRIBUTABLE TO OBESITY** (%)	CHARGES ATTRIBUTABLE TO OBESITY
		Sum	Per Case		Sum
Diabetes (250)	643	1,681,794	2616	61.0	1,025,894
Coronary Heart Disease (410 - 414)	898	2,229,268	2482	17.3	385,663
High Blood Pressure (401 – 404)	260	574,236	2209	17.0	97,620
Gallbladder (574)	250	524,602	2098	30.0	157,381
Osteoarthritis (715)	80	211,718	2646	11.8	24,983
Breast Cancer (174)	36	59,191	1644	11.0	6,511
Endometrial Cancer (182)	3	17,452	5817	34.0	5,934
Colon Cancer (153)	35	182,796	5223	11.3	20,656
TOTALS	2205	5,481,057	2486		$1,724,642

**Source: Special DHS Data-run: Inpatient Hospital Payments for Selected Diagnosis*

***Wolf & Colditz, 1998* [17]

Table 5 notes the distribution of expenditure by payer. Nearly 2/3 of the cost is from governmental sources.

Table 5: Primary payer and disease distribution by obesity related condition in Arkansas, 1999

Condition (ICD-9 Code)*	Primary Payer						Total Cases
	Commercial	Medicaid	Medicare	Other Gov	Self-pay	Other/Unk	
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Diabetes	27	13.8	47.6	1.1	6.2	4.3	13
Coronary Heart Disease	28.9	3.5	59.1	1.8	3.1	3.6	54
High Blood Pressure	21.7	6.8	61.8	1.0	5.7	3.0	8
Gallbladder	36.0	7.4	45.0	1.1	6.0	4.6	9
Osteoarthritis	24.5	2.4	69.8	0.6	0.7	1.9	11
Breast Cancer	42.4	4.6	46.4	1.8	3.0	1.8	2
Endometrial Cancer	35.6	3.6	54.7	0	4.9	1.3	.5
Colon Cancer	22.5	2.3	69.1	1.2	2.0	2.8	2.5
TOTALS	28.4	5.3	57.7	1.4	3.7	3.5	100

** Same Codes as Tables 3 & 4*

Source: 1999 Arkansas residential inpatients from Arkansas Hospital Discharge System[21]

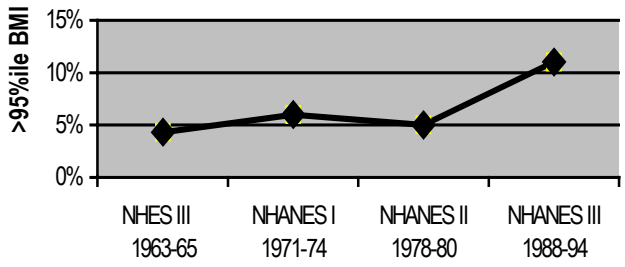
A. Scope

A dramatic rise in overweight children has occurred over the past few decades. The current level of obesity among American children has been variously reported as 11% and 24%.

How common is Childhood Obesity?

National data on childhood nutrition and weight statistics are generally based on a series of surveys that have been conducted since 1963. These surveys include the National Health Examination Survey (NHES) and the National Health and Nutrition Examination Survey (NHANES) series. The latest of these, the NHANES III, reported that 11% of all children aged 6-11 were classified as overweight in the period from 1988-1994, compared with 4.3% during the first survey conducted from 1963-1970.[26] *See Figure 5*.

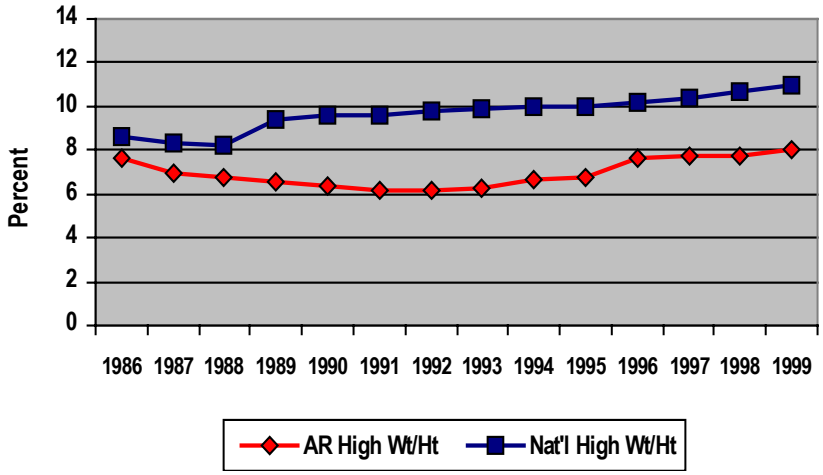
Figure 5. Increase in Childhood Obesity



The increase, nationally, in obesity levels has varied across racial and socioeconomic designations. From 1980 to 1991, the prevalence of overweight increased by nearly 50% among Asian children and nearly 20% among Hispanic children.[27] Overweight and obesity rates are highest among Hispanic American males age 6 to 11 (17%), African American females age 6 to 19 (16%), and adolescents age 12 to 19 from low-income households (16%).

In Arkansas, the growth of childhood obesity has mirrored the national trend. The Arkansas Department of Health's on-going Pediatric Nutrition Surveillance System (PedNSS) of preschool children demonstrates the increasing prevalence of obesity since the early 1990's.[28] *See Figure 6*. Although *Figure 6* ends with 1999, additional Arkansas data indicates the level of obesity has further increased to 8.6% in the first 9 months of 2000.[29]

Figure 6. Prevalence of Obesity* 1986-1999 Arkansas and U.S. WIC Participants – Children Aged Birth through 4 years



CDC-Arkansas Pediatric Nutrition Surveillance System
*High Weight/Height ≥ 95th percentile

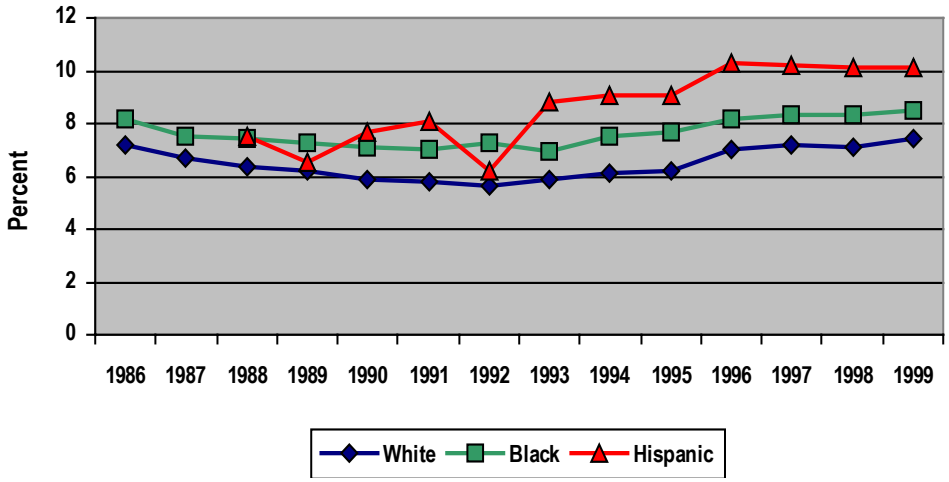
During the same time period, *Figure 7*, shows

Arkansas childhood obesity trends by ethnicity.

During each of the 14 years, similar to national trends, Arkansas Hispanic and black children have shown higher levels of obesity.

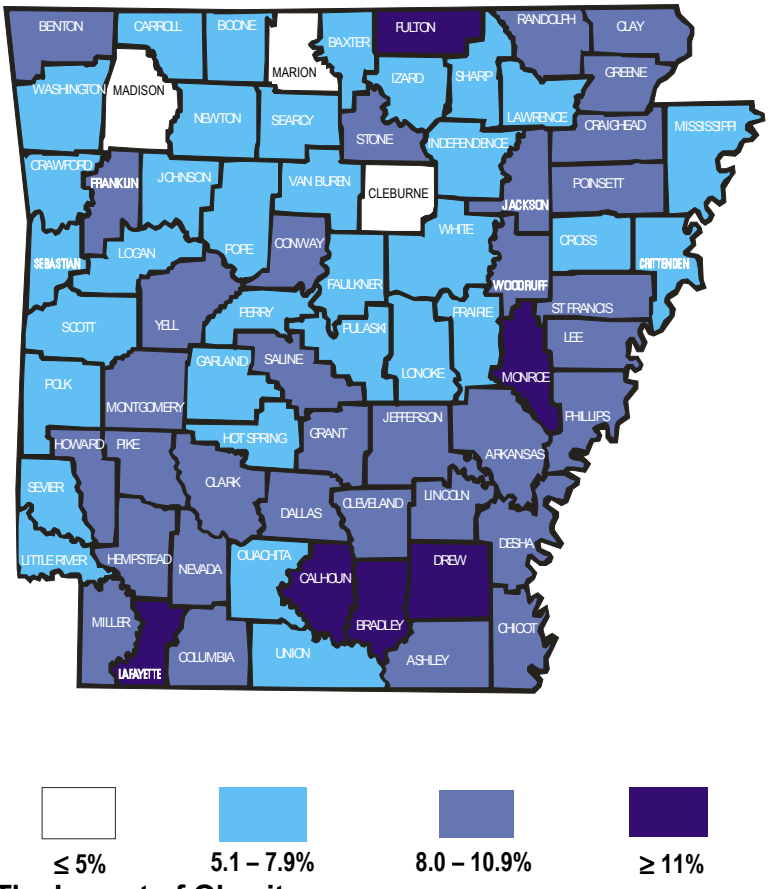
Remembering that the Healthy People 2010 goal is to have ≤ 5% of children in the obese category, only 3 Arkansas counties, in 1999, were at that point. *See Figure 8.* The national prevalence of obesity for 1999 was 11%, in Arkansas 8%. Six Arkansas counties exceeded that level with one, Bradley, having 18.9%.

Figure 7. Prevalence of Obesity* by Ethnicity, 1986-1999 Arkansas WIC Participants - Children Aged Birth through 4 years



CDC-Arkansas Pediatric Nutrition Surveillance System
*High Weight/Height ≥ 95th percentile

Figure 8. Obesity in Arkansas, 1999
WIC Participants – Children Aged Birth through 4 years



Arkansas counties with the highest prevalence of obesity are clustered in the eastern and southern counties. It is important to remember that the 1999 figures represent a single year. Evaluating trends over time produces a better picture. In 1997, 5 counties had obesity figures ≤ 5%. In 1999, these counties range from 5.3 to 6.8%. Conversely, Madison, Cleburne, and Marion have seen shifts from greater than 8% to less than 5%. Of the six ≥ 11% counties in 1999, Bradley and Lafayette have shown high values for several years, while Calhoun, Drew, and Monroe reached double-digit figures in 1998. Fulton County has increased 2% each year since 1997, topping 11% in 1999.

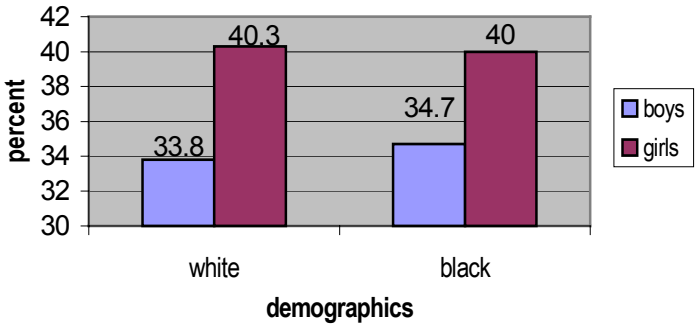
The most recent Youth Risk Behavior Survey (YRBS) indicated that Arkansas, out of all participating states, had the 4th highest rate of obesity (>95%ile BMI) among high school girls.[30] Our overall obesity rate for high school students (males and females) was 10.9%, which is above the national average of 9.9%. Probable reasons for this high level of obesity among our adolescents may be found within this same survey, in which Arkansas adolescents have reported the lowest rate of fruit/vegetable consumption in the nation, and the 3rd lowest rate of participation in physical education classes *(see Table 6)*. In conjunction with Hometown Health activities, three counties have used the YRBS for their high school students. Fulton County found 20.8% obesity, Boone County found 18.4% and Pike County found 18.1%.

Table 6: Obesity, Overweight and Related Factors in Arkansas, 1999

Prevalence of obesity, overweight and related factors	Arkansas	U.S.	Rank (vs. other states)
Preschool obesity (age 0-5, > 95th %ile)[31], see *Figure 6*	8.0 %	11.0%	44
Childhood overweight (age 8-14, > 85th %ile)[32], see *Figure 9*	up to 37 %		
Adolescent obesity (8-12 grade, BMI >95%ile) [33]	10.9 %	9.9 %	7
Self-perceived overweight:			
Adolescent boys (9-12 grade) [33]	21.3 %	23.7 %	25
Adolescent girls (9-12 grade) [33]	43.3 %	36.4 %	3
High school students not eating 5 fruits/vegetables each day [34]	83.6 %	72.7 %	1
High school students not enrolled in physical education class [34]	67.7 %	49.7 %	3

While we have reliable, longitudinal data tracking obesity in preschool children and adolescents, information about the weight and health of children between the ages of 5 and 14 are more scarce. One source of information comes from a project conducted by Arkansas Children's Hospital in conjunction with a multi-state nutrition intervention in the Delta region. As part of this project, height and weight measurements were taken of children ages 8 through 14 who attended school in 5 Delta counties (Crittendon, Jefferson, Lee, Marion, and Phillips). Approximately 430 students were measured. The percentage of these children who are overweight are displayed in *Figure 9*.[32]

Figure 9. Percent Children Overweight in 5 Delta Counties, 1998, aged 8-14



B. Impact

Why is Childhood Obesity a problem?

Overweight children are at risk for serious health complications. They disproportionately suffer from sleep apnea, hypertension, and type 2 diabetes in childhood and are at greater risk for chronic health problems later in life. Moreover, children who are obese are more likely to become obese adults, a condition linked to increased risk of coronary heart disease, type 2 diabetes mellitus, hypertension, dyslipidemia, gall bladder disease, respiratory disease, arthritis and some types of cancer.[35,36]

Immediate Health Problems

A few of the more common complications are listed below:

> Obese children are susceptible to a host of health conditions that appear almost immediately and may or may not persist into adulthood.

- The incidence of **type 2 diabetes** in children has increased from virtually none (1-2%) to approximately 30% of all new cases of diabetes.[37, 38] A study conducted at Arkansas Children's Hospital noted an 800% increase in new cases of childhood type 2 diabetes from 1988 to 1995. The majority of these patients (74%) were African American and 96% were obese.[39]
- **Hyperlipidemia** is commonly seen among obese children, demonstrated by elevated serum low-density liproprotein (LDL)-cholesterol and triglycerides and lowered high-density liproprotein cholesterol levels (HDL).[40]
- Approximately 20-30% of obese children between the ages of 5 and 11 have **hypertension**.[41]
- Obesity accounts for most **gallstones** in children without underlying medical conditions. One study has estimated that the relative risk of gallstones is approximately 4.2 times more likely in obese girls.[42]
- **Asthma** rates as high as 30% have been found among obese children who enrolled in a hospital-based weight loss program.[43] This compares with a national prevalence of 10.6% among poor children and 5.6% among children in the highest income category.[44]
- **Sleep disorders** have been linked to childhood obesity. Studies have reported abnormal sleep rates as high as 94% among obese children.[45] Decreased sleep among obese children, particularly that caused by obstructive sleep apnea, has been linked to significant decreases in learning and memory function.[46]
- Children who are obese may suffer from a variety of **orthopedic ailments**. Blount's disease, for instance, involves bowing of the legs in response to unequal or early excess weight bearing. Approximately 80% of children with Blount's disease are obese, according to one study.[47]
- **Neurological disorders** have also been associated with childhood obesity. For example, *pseudotumor cerebri* is a type of intracranial hypertension that causes headaches, vomiting, and blurred vision. Epidemiological studies have found a 14-fold increase of this condition among children with weights >10% of ideal, and a 20-fold increase among children with weights >20% of ideal.[48]

In addition to adverse health effects, childhood obesity causes a toll on the emotional development of children. Studies of children as young as six years old suggest that overweight individuals are seen as lazy, lying cheating, sloppy, dirty, ugly and stupid.[49] Children consistently rank obese individuals as the least desired friends.[50] Such widespread and early discrimination by their peers affects the obese child's developing body image and self-esteem.

Persistence into Adulthood

> Critical periods for the development of body fat
>
> - gestation and early infancy
> - between the ages of 5 and 7
> - adolescence

Many who are obese in childhood will continue to be overweight as adults. Critical periods of development have long been recognized for many childhood behavioral and health conditions. There are periods in a child's life when acquired body fat is more likely to lead to lifelong obesity.[51] Studies of overweight infants (1 year old) indicate that about 15% of these babies will remain overweight into adulthood compared with normal weight infants.[52] Risk of persistence increases in preschoolers, with 25% remaining obese into adulthood.[53] Eventual adult obesity is even more likely when older children are obese.[54] Studies have shown that obese 10- to 13-year-old children are 6 to 7 times more likely to become obese adults than their normal weight

peers.[55,56] By adolescence, the risk is greatest, with approximately 70% of overweight teens remaining overweight in follow-up studies conducted 7 to 35 years later.[57,58]

Long-term Impact on Health

- A 40-year longitudinal study of overweight children uncovered **double the rate of cardiovascular disease and hypertension** and **triple the rate of diabetes in adulthood** compared to normal-weight children.[59]
- A 30-year longitudinal study found that men who were overweight in early adolescence were **1.5 times more likely to have died (all causes of death)** by the time of the follow-up survey than were their normal weight counterparts.[60]

II. ROOT CAUSES

Several explanations for the current epidemic in childhood obesity have been proposed in recent years. Although the causes are complex and not fully understood at this time, a consensus is forming that much of the increase in obesity is simply due to the fact that Americans are consuming more calories per day than they use.[61,62,63] Decades of overeating and insufficient physical activity are beginning to take their toll. In addition, environmental and socioeconomic factors have been identified as possibly contributing to childhood obesity.

A. Physical Activity

"Our nation's young people are, in large measure, inactive, unfit, and increasingly overweight. In the long run, this physical inactivity threatens to reverse the decades-long progress we have made in reducing death from cardiovascular diseases and to devastate our national health care budget. In the short run, physical inactivity has contributed to an unprecedented epidemic of childhood obesity that is currently plaguing the United States.", the U.S. Secretary of Health and Human Services and the U.S. Secretary of Education.[64]

Physical Education / School Environment

Arkansas has one of the lowest physical education requirements in the nation.

Table 7: Arkansas K-12 Physical Education Requirements[65]

Grade	Schools must offer PE	Students must take PE	Certified Physical Educator Required
K-8	Yes	No	No
9-12	1 credit per year	½ credit in 4 years	Yes

Not surprisingly, 68.7% of Arkansas youth surveyed during 1999 did not attend any physical education class.[66]

After-School Exercise / Home Environment

- ✓ 47% of Arkansas youth do not play on any sports teams.
- ✓ 44.2% of Arkansas high school students watch more than 2 hours of television each day.

Even if children are not enrolled in physical education class, we would like to believe that they are receiving enough exercise through organized athletics conducted after school and on weekends. Interventions that have attempted to decrease television viewing and other sedentary behaviors have proven to be just as effective as those that try to introduce aerobic exercise into the child's day.[67, 68]

Incidental Exercise / Community Environment

At the beginning of the twentieth century, all communities had designs that encouraged walking. As we have become more dependent on motorized transport, we have abandoned city centers and moved out to the suburbs. These outer communities, while providing space, security, and many other desirable attributes, have forced many Americans to rely more heavily on automotive transport. Today, few communities have retail food outlets or other daily necessities within easy (or safe) walking distance of homes. Consequently, incidental exercise has been greatly reduced as we use our cars to travel to all but the shortest destinations.

B. Diet/Nutrition

The quality of the diet of American adolescents has declined significantly since the mid 1960's.

> Potato Chips and French Fries make up:
> >25% of veggies eaten by children
> >30% of veggies eaten by teenagers

A recent study found an increased intake of high-fat potatoes, pizza, and macaroni and cheese. At the same time, the intake of nutrients such as iron, folate and calcium were below the recommended levels for both boys and girls.[69] Several underlying reasons for this decline in nutrition have been proposed, many falling generally under the categories of food availability/knowledge and food marketing.

Food Availability / Knowledge

Very little information is available on food intake or food accessibility in Arkansas. The extent of home cooking is not known. Preliminary results of the Delta Nutrition Intervention Research Initiative suggest that many of the market outlets in the Arkansas Delta area have limited variety of foods and may be devoid of fresh produce.[70]

Beverages -- particularly **carbonated soft drinks** -- were the **most popular food item consumed outside the home**.

Each day -

- **3/4** of teenage boys drank three 12-oz. Cans
- **2/3** of teenage girls had two cans

National data, however, provides a good estimate of dietary habits among Arkansas children. According to a survey by the USDA, on any given day in 1994, nearly half of 3- to 5-year-olds consumed some food or drink provided outside the home, compared to one-third in the late 1970's. [71]

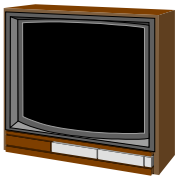
Among young children:

- **consumption of milk ↓ 16%**
- **consumption of carbonated soft drinks ↑16%**

Food Marketing

More than $2 billion is now spent annually on advertising directed at children, over 20 times the amount spent just 10 years ago.[72] This is due in large part to the increase in television viewing by children.[73] According to an article in Time Magazine, a child sees about 10,000 ads for junk food and fast food each year,

- By mid-adolescence American children have watched 15,000 hours of television-- more time than is spent with teachers, fr parents.
- The average child see between 20,000-40,000 commercials every year.



about ¼ to ½ of the total ads seen .[74]

Food marketing to children has even penetrated schools. The American School Food Service Association estimates that 13% of U.S. public schools sell fast foods. Among the chains that provide school lunches are Pizza Hut & Taco Bell (Pepsico), Arby's, and Subway. Soft drink companies engage in bidding wars for exclusive rights to place their vending machines in schools to build brand loyalty. The colorful vending machines are strategically placed in high traffic areas outside school cafeterias, or in main hallways. When Vermont Senator Patrick Leahy introduced a bill in 1994 to ban vending machines from schools, he met not only with opposition from the soft drink giants, but also school administrators who have come dependent on the revenues they generate.[75]

C. Environmental/Social

Family Modeling

> Parental obesity more than doubles the risk of adult obesity among children.

The lack of positive role modeling among family members in regards to nutrition and physical activity has been implicated in childhood obesity.[76] This could, in part, be because children with overweight parents have lower levels of physical activity and diets that are higher in fat.[77, 78] Parents are also often the primary source of nutrition information for children.[79]

A recent study has shown that children and adolescents who eat dinner at home with their family each evening have a much healthier diet, including increased fruit and vegetable intake, less fried foods and sodas.[80] Yet, the percentage of children who regularly eat family dinners has been steadily decreasing. In a 1991 survey, only 27% of children ate dinner with their families every day, by 1995 only 25% did.[81,82]

If the family dinner is disappearing, so is "family time." In a recent study conducted in New York, parents of latchkey children were interviewed about their attitudes towards having their 8 – 10 year old children in self-care during the after-school hours. Most parents did not allow their children to play outside and reported allowing the children to spend their time watching television.[83] Thus, these children have restricted physical exercise, increased exposure to food advertising, and often unrestricted access to processed snack foods – a formula for weight gain. In addition, studies conducted in Sweden have found an association between parental neglect and obesity.[84]

> Today, about one third of all school-age children, are so-called "latchkey children" who care for themselves while parents are at work.

Lack of Nutritional Knowledge

Children used to learn about healthy dietary habits from many sources, particularly family members and at school. Yet today, few children will learn how to choose a nutritious diet or how to prepare food at home. In many schools, facing a declining pool of teachers, Home Economics (now called Family and Consumer Sciences) is not offered. If offered, many students are opting out to take computer classes and other "marketable" courses.

> Arkansas Delta Survey
> 2 of top 5 health-related problems
> ✔ "unhealthy cooking habits"
> ✔ "lack of knowledge about good health habits"

Cultural/Regional Expectations of Body Image

Studies have found that black and Hispanic university students are more accepting of large body size than are white students, suggesting cultural differences in the perception of obesity.[85, 86, 87] These results are strengthened by research among high school students that identifies African Americans as having a more positive body image than whites, Asians or Hispanics, thus hinting at a different ideal among this community.[88, 89]

Pregnancy and Breastfeeding Influences on Obesity

Maternal diabetes and high pregnancy weight gain have been associated with subsequent obesity in the child.[90] Moreover, excessive maternal weight has been shown to decrease breastfeeding success.[91] This is important, because breastfeeding has recently been shown to greatly protect children from obesity later in life. A large cross-sectional study conducted in Germany found obesity rates in 6- and 7- year olds doubled among formula-fed infants, as compared to those who had been breastfed.[92] In fact, this study showed that the longer a mother breastfed her baby, the more protection against obesity she gave him.

Childhood Stress Levels

Stress has been suggested as a contributing factor for weight fluctuation and obesity.[93] Women are believed to be more susceptible to stress-induced weight gain than men.[94] There may also be a cultural or ethnic link to stress-induced weight gain. A large study examining emotion-induced eating among 9- and 10-year old girls found that African-American girls were more likely to eat in response to stress or emotion than were their Caucasion counterparts.[95]

III. Strategies for Prevention & Treatment

Childhood obesity is a relatively new epidemic. Even so, several different approaches to its prevention and treatment have been attempted, some with remarkable effectiveness. A few of the more well-known strategies are listed below.

A. Physical Activity

Promoting Health for Young People through Physical Activity and Sports [70] identifies 10 strategies to promote better health through increased participation in physical activity and sports. Several programs have been successfully implemented across the country to decrease obesity through physical activity. Most of these have attempted to increase the activity level of at-risk children, while others have focused on decreasing sedentary behaviors.

Physical Education / School Environment

Many school-based physical education programs are available which have been shown effective both in increasing student knowledge and student physical activity levels.

Table 8: Validated Programs for Obesity Prevention through Increased Physical Activity

Jump Into Action	A school based prevention program developed by researchers at Baylor College of Medicine. This program emphasizes regular exercise and education about low fat foods.[96]
Know Your Body	A school based cardiovascular risk reduction program involving health screening, behavior oriented health education curricula, and special interventions for children at risk for obesity.[97, 98]

Stanford Adolescent Heart Health Program	A classroom based cardiovascular disease risk reduction program involving increased physical activity for 10th graders.[99]
Go for Health	A 3 year school health project to promote healthy diet and exercise behaviors among elementary school students, involving curricula, physical education classes that focused on vigorous physical exercise, and lower fat school lunches.[100, 101]
Child and Adolescent Trial for Cardiovascular Health (CATCH)	A multicenter, randomized trial to test the effectiveness of a cardiovascular risk reduction program in 96 schools, located in 4 states. A major component of the CATCH program is an innovative physical education curriculum beginning in the 3rd grade, coupled with staff in service training on the curriculum and the importance of physical activity for children.[102]

After-School Physical Activity / Home Environment

A home-based approach to increased physical activity was implemented by physicians at the State University of New York. In this program, families who were encouraged to reduce their television viewing time (sedentary behavior) lost as much weight as families who were encouraged to increase their physical activity.[103]

Incidental Exercise / Community Environment

In an attempt to increase family-based physical activity, Missouri constructed community walking trails. This program was quite successful, with almost 40% of the families with access to the trails utilizing them for exercise. Women and persons in lower socioeconomic groups were more than twice as likely to have increased their amount of exercise by using the community trails.[104]

Table 9: Faith Organizations as locations for physical activity promotion programs:

The **Fitness through Churches Project**	Promoted aerobic exercise in conjunction with other health behaviors to African-American residents of Durham, North Carolina.[105]
The **Health and Religion Project (HARP)**	Rhode Island trained volunteers to provide heart healthy programs, including physical activity, in church settings.[106]

B. Diet / Nutrition

Several strategies for the reduction of obesity by encouraging healthy, nutritious diets have been proposed nationally. Preventive strategies are often implemented through school-based programs, while treatment programs have centered around pediatric clinics and other medical facilities.

Food Availability / Knowledge

The CDC recommends that children receive progressive levels of nutrition education from preschool through high school in order to promote lifelong healthful eating habits.[107] Schools are the natural place to provide this nutrition education since they can reach almost all children. They also provide modeling opportunities since more than one-half of American children eat one

of their three major daily meals in schools. Most importantly, nutrition education programs implemented in schools have been proven effective in improving the eating behaviors of students.

Access to Established Weight Loss Programs/Curricula (Treatment)

Many medical professionals have devoted years to developing programs that will effectively aid weight loss among obese children. In 1998, the Maternal and Child Health Bureau convened a committee of these experts to develop recommendations for the treatment of childhood obesity.[108] This committee recommended that interventions should:

i.) begin early since behavioral change is more difficult as individuals age,
ii.) be family-centered because children are often reliant on their families for food choices,
iii.) involve education about the diseases and conditions related to obesity,
iv.) institute permanent change, not short-term diets, and
v.) help families institute small, gradual changes in health behavior.

Several existing pediatric medical weight loss programs fit these criteria and have been proven effective. Yet children in Arkansas do not have ready access to these programs, which are often personalized, time intensive and therefore relatively expensive. Currently two significant barriers exist to the establishment of effective pediatric medical weight loss programs, namely, the lack of reimbursement procedures through Medicaid or private insurance (for the providers) and the lack of scholarships or other financial assistance (for the recipients).

Table 10: Validated Programs for Pediatric Weight Loss through Nutrition/Physical Activity

Committed to Kids	Louisiana State University Medical Centers' pediatric weight management program. It utilizes an integrated multi-disciplinary team with an emphasis on progressively higher levels of exercise combined with dietary counseling.
LESTER (Let's Eat Smart then Exercise Right)	A family based weight management program for children age 6 to11 years.
ShapeDown	University of California San Francisco's School of Medicine program using a family based model to enhance self esteem and adopt healthier habits such as moderate exercise and balanced diets.
Teens and Diets- No Weigh	A nondiet program to transfer confidence to teens around making their own decisions based on personal health, energy, and emotional needs.
Way to Go Kids!	A nutrition and fitness program with lectures, copy ready handouts and 3 sessions for parents.

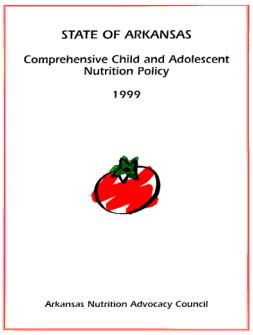
Food Marketing

Several health promoting media campaigns have been launched in the past few years, with varying levels of success. One of the more well-known is the "milk mustache" campaign which has resulted in an increase in milk consumption. The purpose of these campaigns are two-fold. First to counter the plethora of fast- and junk-food marketing that reach children every day and secondly to educate families about healthy behaviors.

Table 11: Successful Media Campaigns to Improve Public Health

"Truth"	A campaign to deter youth smoking in Florida. These youth-created ads decreased tobacco usage among teenagers by 22.8% in 24 months.

Related programs emphasizing incidental exercise have been piloted which simply remind people (with low-cost signs) to take the stairs in public settings such as the mall, library or city buildings. These have been quite effective, with some populations more than doubling their stair usage while the signs were displayed.[109, 110]



Pursuant to House Resolution 1033 passed in the 81st General Assembly of Arkansas, the Arkansas Nutrition Advocacy Council brought together nutrition experts, school personnel and volunteers, and policy makers to write the *Comprehensive Child and Adolescent Nutrition Policy* for the state. Subsequently, the 82nd General Assembly adopted the policy as a guide for the development of future legislation and policy concerning nutrition in the State of Arkansas.

C. Environment / Social

Interventions that target environmental and social root causes of obesity attempt to reduce barriers to physical activity and healthful diets while changing the popular perception of healthy behaviors.

School-based Approaches

The **National Association of State Boards of Education** (NASBE) and many state and local policymakers nationwide are convinced that good school health programs play a crucial supporting role to excellence in education. School health programs can help ensure that students are fit, healthy, and ready to learn every day. NASBE has published *Fit, Healthy, and Ready to Learn,*[111] a guide to help states, districts, and schools develop policies that would help prevent long-term chronic diseases. The policies are designed to reflect the concerns and priorities of education policymakers and administrators. The first three sections deal with physical activity, healthy eating and tobacco use and is available to the public at http://www.nasbe.org/healthyschools/nasbepubs.mgi

Family-based Approaches

The **Arkansas Department of Health** works through various programs to help families and individuals develop healthy eating and physical activity patterns. The professional staff of 40 nutritionists (registered dietitians/ licensed dietitians) and home economists work at the community level to improve the quality of life of all Arkansans by promoting health through good nutrition to prevent nutrition-related disease and premature death. For people with identified nutrition problems and by referral from physicians, WIC and other agency programs (child health, EPSDT, family planning, school-based wellness clinics), the nutritionists also provide individualized nutrition counseling.

The **Special Supplemental Nutrition Program for Women, Infants and Children (WIC)** annually provides nutrition education and nutritious foods to over 80,000 pregnant and breastfeeding women, infants and children up to five years of age.

The **Arkansas 5 A Day Program** promotes fruit and vegetable consumption. Information and materials providing nutrition education and promoting healthier eating behavior in children is distributed to schools, parents, teachers, and childcare facilities; presentations of same are also provided. A quarterly newsletter features a section on child nutrition in each edition. Public service announcements and educational videos extolling the health benefits of fruit and vegetable consumption have been produced and shown on television, aired on radio, and used as nutrition education tools at Arkansas Department of Health clinics throughout the state. 5 A Day exhibits are displayed at school events and teacher conferences; articles directed toward school food service workers are written for publication in the Department of Education's Child Nutrition newsletter; and school wellness programs have been aided and coordinated. The **Arkansas 5 A Day Coalition** is comprised of 50 individuals representing 38 different agencies, organizations, and businesses. Operating since July, 1995, the coalition has four committees, one being a School Committee in which promotional strategies are devised to increase the consumption of fruits and vegetables among children.

The **University of Arkansas Cooperative Extension Service** offers a variety of programs to help Arkansas youth and adults make responsible decisions and adopt healthy lifestyle practices. Family and Consumer Science Agents and Family Program Assistants in all 75 counties conduct educational programs such as: *Reshape Yourself* - a 15-week healthy weight program focusing on healthful eating and walking for exercise, *Right Bite* - a 3-part cooking school focusing on cutting dietary fat and sodium and increasing fruit, vegetable and fiber intake; *Exploring the Food Guide Pyramid with Professor Popcorn* - a 21-lesson nutrition and basic health curriculum for children in grades 1-9; and *Family Nutrition Programs* - multi-session programs providing intensive nutrition education to families with limited-resources. Since 1996, 1,112 Arkansans have completed the *Reshape Yourself* program, walked 66,364 miles and lost a total of 11,112 pounds. Of those who checked blood pressure and cholesterol before and after the program, 72% reported improved blood pressure and 76% reported improved blood cholesterol levels

Cultural/Regional Expectations

The **Delta Nutrition Intervention Research Initiative (Delta NIRI)** involves six institutions of higher education, including the University of Arkansas at Pine Bluff and the University of Arkansas for Medical Sciences. The purpose of the Delta NIRI is to "examine the health benefits to be achieved through nutrition intervention" within the Lower Mississippi Delta regions of Arkansas, Mississippi, and Louisiana. This project will gather information about food availability, food preference and barriers to healthy eating within the 42 Arkansas Delta counties.[112]

Pregnancy and Breastfeeding Influences on Obesity

Breastfeeding has many positive implications for health including protection of the infant from obesity later in life. The Arkansas Department of Health has implemented a collaborative intervention to promote breastfeeding. Major efforts started in 1990, funded by a grant from the Maternal and Child Health Bureau, and are currently supported by the state's Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) nutrition program. The components of the program are 1) enhanced breastfeeding education, 2) breast pump loans, 3) professional education programs, 4) peer counseling, and 5) community coalitions. Surveillance data found an increase in breastfeeding initiation from approximately 3.0% in 1990 to over 12.0% in August of 2000 among WIC participants.

A. Scope

Overweight and obesity among adults has recently skyrocketed, with one study finding that 63% of men and 55% of women in these categories. This same study found increasing prevalence of coronary heart disease, type 2 diabetes mellitus, hypertension, dyslipidemia, gall bladder disease, respiratory disease, arthritis and some types of cancer with increasing severity of overweight and obesity.[113]

How common is Adult Obesity?

In the U.S. from 1960-1994, overweight affected roughly 39 % of men and 25 % of women.[114] Between 1960 and 1991, the incidence of obesity rose from 24% to 33%.[115] In the most recent survey, the incidence of obesity rose another 6% between 1991 and 1998.[1] This is particularly disturbing, since the last 20 years have been characterized by an increased awareness of fitness, and the food industry and media has hyped fitness, healthy lifestyles, and low-fat foods.

In the five year period, 1995-1999, Arkansas has seen it's obesity rates rise from 31% to 38%. This increase is seen in both genders and across all races/ethnicities and age groups. Greater than 40% of obesity is seen in the black population and in the age categories from 35-64. *See Figures 10, 11 and 12.*

Figure 10. Prevalence of Obesity in Arkansas Adults by Ethnicity, 1995-1999

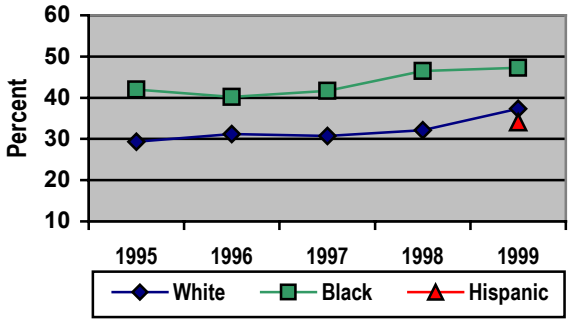


Figure 11. Prevalence of Obesity in Arkansas by Gender, 1995-1999

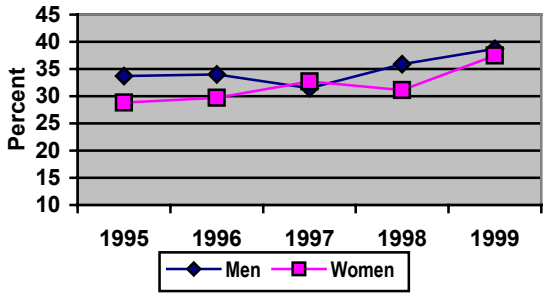
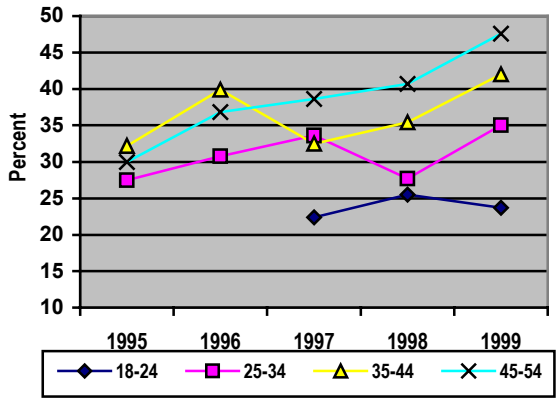


Figure 12. Prevalence of Obesity by Age in Arkansas Adults, 1995-1999



B. Impact

What is Obesity's relationship to other diseases?

In addition to classifying obesity according to the BMI, it is important to consider the health consequences. Obesity leads to numerous medical problems, which are listed in *Table 12*

Almost 80% of obese adults have diabetes, high blood pressure, coronary artery disease, gallbladder disease, high blood cholesterol levels, or osteoarthritis.[116] This increase in medical problems leads to an increase in mortality. Overall mortality related to obesity increases rapidly as the BMI approaches 30, and people with a BMI of 32 have a two-fold increased incidence of mortality. With even greater weight, the risk increases exponentially. Fortunately, these problems usually improve with weight loss: in particular diabetes, high blood pressure, and hyperlipidemia. [117,118]

Table 12. Medical Problems Associated With Obesity

Diabetes
High Blood Pressure
Hyperlipidemia
Coronary heart disease
Stroke
Sleep Apnea
Arthritis
Gallstones
Cancer: uterine, colon, breast, prostate
Gout

II. ROOT CAUSES

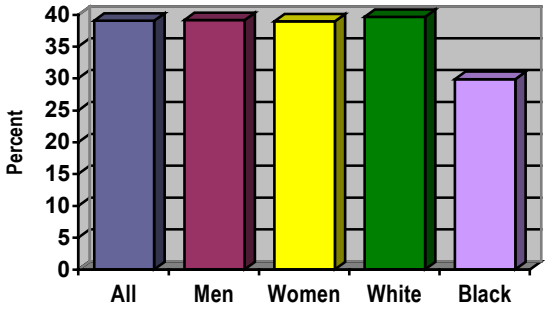
Among the barriers to the adoption of a lifestyle that involves good nutrition and physical activity are the following:

A. Physical Activity

Physical Activity Environment

Many people are worried that their neighborhood is not safe and they lack access to parks, sidewalks, recreational facilities, health clubs, ball fields, and other appropriate facilities. A study released by CDC states that physical inactivity increases as perceived neighborhood safety declines. This report suggests that public health action is needed to provide safe alternatives for physical activity in neighborhoods. These alternatives could include better access to safe places for engaging in physical activity and community support.[119] Obesity is particularly a problem in lower socioeconomic groups. Low income Americans particularly worry about the safety of their neighborhoods for undertaking outdoor activity. In a recent survey by Shape-Up America, organized by C. Everett Koop, 15% of higher income respondents expressed concern over their neighborhood, whereas 31% of lower income Americans said this was a major problem and a major barrier to physical activity. Women in particular are concerned about this. While people in all parts of the country are physically inactive, more are inactive in rural areas (populations under 2500).[120] This would indicate that Arkansas is at particular risk for being sedentary. Based on the 1990 Census Data, of the 490 communities in Arkansas, 402 have populations < 3000. *See Figure 13* for physical activity levels in Arkansas adults.

Figure 13. Prevalence of Regular Physical Activity in Arkansas Adults, 1996



Lifestyle

Many people report that physical activity is a barrier for them because of childcare issues. Through education, parents can learn that physical activity is just as important for their children as it is for themselves.

Many people report that in the two income family, there is simply no time available to undergo physical activity. This problem is coupled with the problems of neighborhoods and of childcare described above. A time-crunched lifestyle, whether real or perceived, also contributes to the consumption of convenience foods and fast foods, which are usually high in fat and total calories.

B. Diet/Nutrition

Food Availability / Knowledge

Many people in low income brackets cite the cost of purchasing healthy foods, such as the perception of the high cost of fruits and vegetables, as a reason they do not eat them. In reality, pound for pound, fruits and vegetables are less expensive than chips and sweets. *Figure 14* shows the percent of adults in Arkansas who eat the recommended 5 or more servings of fruits and vegetables each day. In contrast, the food and restaurant industry is quick to produce very inexpensive food that is very high in calories. "Cheap food" that is high in calories is a major problem that contributes to the development of obesity and the maintenance of the obese state. Restaurants have clearly taken note that gargantuan portion sizes attract customers. The individual sized soft drink of the 1950's was 6.5 ounces, but today the "Double Gulp" is 64 ounces and nearly 800 calories. These very large restaurant portion sizes are way out of line with the "healthy" servings defined by the Food Guide Pyramid. The tip of the Food Guide Pyramid is the fat, sugar and alcohol. Americans consume almost twice the amount of calories from fat, sugar and alcohol than is recommended.[121] *See Table 13*. These high fat and sugar items are often the snack choice.

Figure 14. Prevalence of Adults in Arkansas Eating 5 or More Servings of Fruits and Vegetables Each Day, 1998

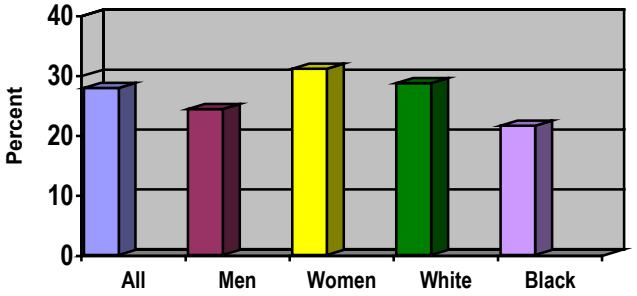


Table 13. American Diet Compared to the Food Guide Pyramid

Pyramid Section	Average American Diet	Recommendation
Tip	41% of Calories	~ 25% of Calories
Dairy	1.5 servings	2-3 servings
Meat	4.7 ounces	5-7 servings
Vegetable	3.3 servings	3-5 servings
Fruit	1.5 servings	2-4 servings
Grains	6.7 servings	6-11 servings

Adults Top 8 Snack Choices

#4 – Fruit
#8 – Vegetables

Food Marketing

The food and restaurant industry know what foods appeal to Arkansans, and their advertising forces are doing their job of convincing people that they want this food. Fast food corporations often specifically target children, and lower income and minority groups in this country and readily promote inexpensive high calorie foods.

C. Environmental/Social

Family Modeling

Both adults and children spend more and more time watching television and working/playing on a computer as opposed to spending hours outdoors. This lack of physical activity, coupled with the forces of advertising, combine to entertain us in a manner that promotes food consumption, and discourages physical activity.

Medical Reimbursement

In Arkansas, "free standing" nutrition counseling and medications for obesity treatment are not covered by some insurance companies. Hence, the medical bills of a person with diabetes will be covered if he receives medications for the diabetes. However, prevention and treatment aimed at weight loss for the person with diabetes, possibly eliminating the need for medications, will usually not be covered.

> Obesity is the ticking bomb in the healthcare system. It has been ignored and neglected as a health issue, and if this trend continues, it is likely that obesity will frustrate all efforts at healthcare cost containment in the next century.
>
> *American Obesity Association*

III. Strategies for Prevention & Treatment

The promotion of a healthy lifestyle must be the cornerstone of any plan to improve the health of Arkansans. In spite of the enormous effort that is put into educating the public about the value of physical activity, low-fat foods, and other healthy lifestyle habits, many people continue to be confused. There are institutions, corporations, and government agencies which have developed effective methods (Best Practices) for educating and motivating employees. The corporate environment is particularly suited for such actions. In addition, many large institutions are self-insured, and the cost of health insurance is becoming prohibitive. Overall, the direct costs of obesity and physical inactivity account for approximately 9.4% of the national health care expenditures. A HP 2010 goal is to increase the proportion of people who are routinely screened for obesity risk factors and counseled on weight management strategies by managed care organizations, healthcare organizations and clinicians. Another HP 2010 goal is to increase the proportion of people who follow sensible guidelines for increased physical activity that enhances weight loss or prevents weight gain. The development of a national, comprehensive plan to prevent and treat the obesity epidemic has been proposed. The approach should develop appropriate interventions to promote improved nutrition and increased physical activity and to identify effective educational, behavioral, and environmental approaches to control and prevent obesity. Such intervention programs should be implemented by health departments and communities throughout the United States.[122]

> Essential Components
> for the prevention & treatment of obesity
>
> **Increased:**
> - physical activity
> - nutritional awareness
> - nutritional education
>
> and
>
> **Overall Healthy Environment**

A. Physical Activity

The decrease in physical activity of most Arkansans is an important contribution to the increase in obesity. Among the numerous barriers to the development of physical activity programs include available funding and resources as well as environmental barriers.

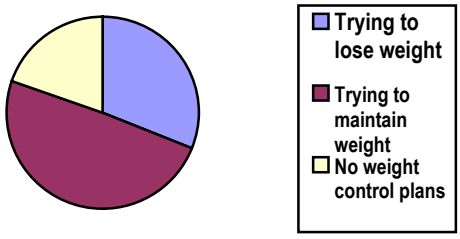
Because Arkansas is a rural state, many do not have access to safe, user friendly places to engage in physical activity. The Great Strides Grant, currently being proposed by the Arkansas Governor's Council on Fitness, the Arkansas Department of Parks and Tourism, and the Arkansas Recreation and Parks Association, would allow small Arkansas communities the opportunity to apply for grants that would be specifically tied to the construction of walking parks. A walking park is a cross between a high school track and hiking trail. High school tracks sometimes intimidate because of the sport factor and cost hundreds of thousands of dollars to build while hiking trails tend to be out of range for many citizens and sometimes are too rugged for others, especially seniors and special populations. The concept of the walking park is based on having an outdoor central location within the community that incorporates natural foliage with a winding ten feet wide, half mile to mile asphalt walking path. Since our smallest communities are the ones that usually do not have access to fitness facilities or non-vehicle/safe walking areas and are generally the most unhealthy, these communities could be targeted first. There are numerous studies that show if you provide citizens with these types of areas, they will use them. One advantage to these walking parks is that they can be used by all ages regardless of fitness level or economic background. The cost of building a walking park is approximately $20-25,000.00. The Arkansas Governor's Council on Fitness would partner with the Parks division of the Arkansas Department of Parks & Tourism & the Arkansas Recreation & Parks Association in the execution and management of the program. The community would be responsible for securing the location for the park as well as its development. The Governor's Council on Fitness, Arkansas Department of Parks & Tourism and the Arkansas Recreation & Parks Association will provide technical expertise and will assist in the promotion of the walking park within that community.

What Arkansans choose for exercise:

- **walking** 52% - Overwhelming Favorite!
- running 5.6%
- cycling 3.5%
- swimming 1.3%

B. Diet/Nutrition

Figure 15: Weight control plans, Arkansas Adults, 1998



Most Arkansans are either trying to lose weight or keep from gaining it. *See Figure 15*. What is interesting to note is that 28% do not plan to eat less calories or fat and 49% do not plan to use physical activity or exercise. What are they doing? Sometimes medical professionals and the media contribute to the public's confusion of proper nutrition and physical activity by overly hyping "breakthroughs" and "new treatments" which give an unbalanced message. The simple concept that ounce for ounce, fat contains more than twice as many calories as protein or carbohydrate is often lost on the average person who doesn't understand the difference between a slice of toast and a jelly donut for breakfast. Recent promotions of high protein - low carbohydrate diets have also served to confuse the public. The promotion of one diet over another often leaves the impression that

certain foods (eg. bacon, grapefruit) have magical properties to suppress appetite and dissolve fat. Therefore, improvements in nutrition education are important and efforts need to be expanded.

The latest edition of the Dietary Guidelines for Americans, the cornerstone of our nation's nutrition policy, moved the healthy weight guideline to the forefront and for the first time includes a separate guideline on physical activity.[123] Media campaigns have been able to improve people's eating habits.

Table 14: Successful Media Campaigns to Improve Public Health Nutrition

"1% or Less"	A campaign to encourage low-fat dairy choices among West Virginians. This program increased low-fat milk consumption from 29% of overall milk sales to 46% of milk sales – a level that was sustained through a 6-month follow-up survey.[124]
"5 A Day for Better Health"	A campaign promoting fruit and vegetable consumption. This program is a partnership between health and industry. In it's first 8 years, it has more than quadrupled the awareness of the public of the need to eat 5 or more servings of fruits and vegetables each day and 71% are trying to eat more.

C. Environmental/Social

Healthy living should be considered part of an overall healthy environment. It is important to instill in the public a desire to be and stay healthy. "Since 1980, there have been over 50 studies of comprehensive worksite health promotion and disease prevention programs. Every study has indicated positive health outcomes. Of the more than 30 which have been analyzed for cost outcomes, only one proved to be not cost effective.", Kenneth R. Pelletier PhD, MD, Director, Stanford Corporate Health Program.

In Arkansas, several businesses have initiated wellness programs for their employees; i.e. Acxiom, Conway Regional Health System, Wal-Mart (Walton Wellness Center), Maybelline, Little Rock Airforce Base, Baptist Health and 3M.

D. Pharmacology/Surgery

At present, there are three drugs indicated for the treatment of obesity. See Appendix. Medications should be considered helpful adjuncts to diet and exercise for people whose health risk from obesity clearly outweigh the potential side effects of the medications. However, all of these drugs are expensive, have side effects, and on average only induce a weight loss of about 10-15 pounds. Therefore, in the foreseeable future the solution for the problem of obesity will not likely be solved by a pharmacological approach.

> In time, better, safer, and more effective obesity medications will be available. But currently there is still no "magic cure" for obesity. The best and safest way to lose fat and keep it off is through commitment to a life long process of proper diet and regular exercise.
>
> *medicinenet.com*

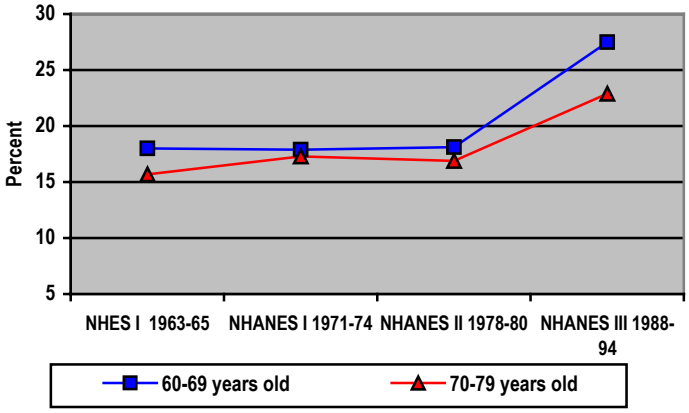
Several surgical procedures are used for morbidly obese patients. These procedures involve either a stomach stapling, or gastric bypass. These procedures carry considerable risk, both in the immediate perioperative period, as well as a risk of long-term complications and nutritional side effects. Surgery is extremely expensive. Therefore, although surgery may be indicated in select subjects with morbid obesity, it is not a solution for the majority of Arkansans.

I. Scope & Impact

A. Scope

The most common nutritional disorder in older persons is obesity.[125] Advancing age is associated with a remarkable number of changes in body composition. The body redistributes fat from just under the skin to deeper parts of the body. Women are more likely to store it in the lower body, hips and thighs, men in the abdominal area. Without exercise, estimated muscle mass declines 22% for women and 23% for men between the ages of 30 and 70.[126] Loss in muscle mass accounts for the age-associated decreases in resting metabolic rate, muscle strength, and activity levels, which, in turn is the cause of the decreased energy requirements of older adults. It appears that declining caloric needs are not matched by a appropriate decline in caloric intake, thereby contributing to an increased body fat content independent of body composition alterations.

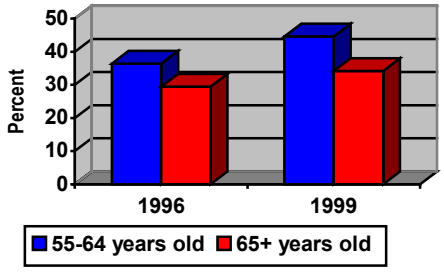
Figure 15. Increase in Older Adult Obesity in the U.S.



The same nutrition and health surveys, NHES, and NHANES I, II, and III, as described in the Childhood section show the increasing percentages of obesity in older adults. See *Figure 15*. The NHANES I and II data for adults stops with age 74. The age categories increased with NHANES III and included an 80+ age group who had 12.6% obesity. Among the population of those over age 60 years, 25% of the men and 30% of the women age 60-69 years met the criteria for obesity; 20% of the men and 25% of the women age 70-79 years meet this criteria; and 8% of men and 15% of women 80 years or older were obese.

The BRFSS data for older adults in Arkansas, from 1996 to 1999, also shows a continuing rise. See *Figure 16*.

Figure 16. Obesity in Older Adults in Arkansas 1996-99



Why is Geriatric Obesity different from Adult Obesity?

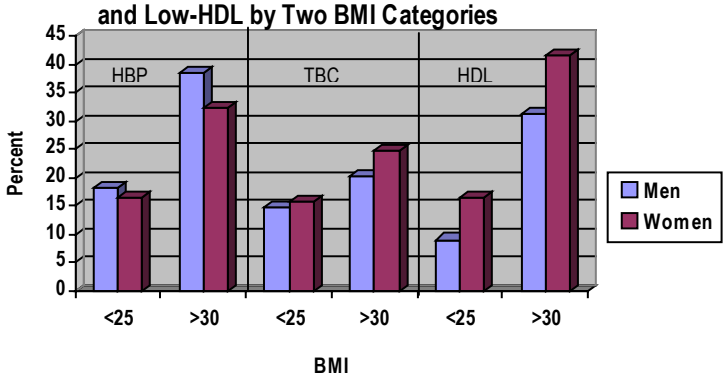
The effects of obesity on chronic diseases and disability in elderly people have been well described. The strongest predictor of late-life mobility related disability appears to be body fatness.[127, 128, 129] It appears that the elderly have the most difficult time of any age group in reducing body fat stores. This is related to many factors, including lowered energy requirements and lower rates of physical activity. In Arkansas in 1996, only 31% of adults aged 65+ reported regular physical activity. To achieve weight reduction, older persons may have to lower their caloric intake to a level where they may compromise their overall nutritional status. Changing eating and activity patterns are particularly challenging for older adults. Voluntary weight loss in

overweight postmenopausal women results in a modest decrease in total bone mineral density, which may contribute to a more rapid onset of osteoporotic changes.[130] The burden of chronic disease, impaired hearing and vision, and functional dependency are potential obstacles to change.[131] Because of these additional problems, obesity in older adults is different from middle-aged obese people. Quality of life issues, functional independence, and mortality are all adversely impacted by obesity in later life.

B. Impact

Increased body fatness along with increased abdominal obesity are thought to be associated with the increased incidence of Type 2 diabetes, hypertension, heart disease and osteoarthritis.[129] The annual direct costs of caring for older individuals with Type 2 diabetes, coronary heart disease, hypertension, and gall bladder disease is estimated at $22.62 billion, approximately four times the costs for an equivalent population of lean adults.[129,132,133]

Figure 17. NHANES III Age-adjusted Prevalence of High Blood Pressure (HBP), High Total Blood Cholesterol (TBC), and Low-HDL by Two BMI Categories



Obesity was reported to be an independent risk factor for heart disease in the Framingham Heart Study. High amounts of abdominal fat have been thought to be associated with disturbance in glucose and lipid metabolism leading to an increase susceptibility for cardiovascular disease.[131] Excess body fat has been observed to be directly related to the risk factors for CHD such as hypertension, hyperlipidemia, glucose intolerance and diabetes" [131] *Figure 17* is data from NHANES III showing the increased prevalence of blood pressure (HBP) and cholesterol (TBC) and lower HDL "good cholesterol" as body fat increases. Heavier weight in middle and old age was positively associated with coronary vascular disease and its risk factors, particularly for women. Heavier weight at age 50 was associated with prevalent CVD, particularly for women. Heavier weight was associated with a poorer cardiovascular risk-factor profile. For those who were heavy in this study, 79% had either high blood pressure, diabetes or had a ratio of total HDL cholesterol $\geq$ 4.5, contrasted with 57% of thinner persons.[138] Greater weight variability is associated with a greater risk of death, however, unintentional weight loss is associated with sicker individuals.[134]

Diabetes mellitus in older adults has multiple untoward consequences including falls that result in injury, cognitive decline and vascular dementia, congestive heart failure, incontinence, susceptibility to tuberculosis, and an increased incidence in pressure ulcers.[135]

II. ROOT CAUSES

This subsection within the Childhood and Adult Sections explains the same individual and environmental factors that impact the rise of obesity in older adults.

Chronic diseases and disability were once thought inseparable from old age. This view is changing rapidly as one disease after another joins the ranks of those that can be prevented or at least controlled, often through changes in lifestyle.[126] For older adults, the strategies for prevention and treatment of obesity should include accessible, progressive, affordable activities and lifestyle modifications that are easily incorporated into day to day living. Physical activity programs should include fun activities like swimming, walking, and other low impact, low stress activities. Strength training programs may serve as a valuable adjunct to aerobic activity, but the objective should be on weight management.

A. Physical Activity

Regularly performed aerobic exercise has been demonstrated to increase life expectancy by decreasing the risk of many chronic diseases. The Centers for Disease Control and Prevention and the American College of Sports Medicine recommend that "every American accumulate at least 30 minutes of exercise on most, and preferably all, days". [136] This recommendation is based on evidence of a substantial decrease in all-cause mortality resulting from a moderate amount of increased physical activity.[137, 138] Regular exercise performed by older individuals has been demonstrated to result in a broad range of positive adaptations that fall into 5 major areas of importance *(see Table 15)*.

Table 15. Positive Adaptations From Exercise by Older People

Cardiovascular
Strength Training and its effects on muscle and bone mass
Postural Stability and prevention of falls
Psychological function
Exercise for the very old and frail

Strength training can result in substantial improvements in muscle size and strength in elderly men[139] and women,[140, 141] and can also result in increased resting metabolic rate[142] and levels of physical activity. [131] In addition, strength training has also been demonstrated to improve balance and gait speed in very old and frail nursing home residents,[143] increase protein retention,[144] improve bone health and decrease many of the risk factors for an osteoporotic fracture.[137] Exercise programs for elderly people have been shown to be both effective and safe.[145]

Endurance Exercise

Community-based exercise programs for men and women over the age of 50 are growing in popularity.

Table 16: Validated Program for Obesity Prevention through Increased Physical Activity

Keep Moving – Fitness After Fifty	A Massachusetts community-based walking program for men and women over the age of 50 years. Between 7,500 and 8,000 men and women (average age of 67 ± 5 years old) registered and participated. Walking "clubs" were located throughout the state in nursing homes, retirement communities, hospitals, and Councils on Aging.

Strength Training

While endurance exercise has been the more traditional means of increasing cardiovascular fitness, strength training is currently recommended by the American College of Sports Medicine

and the Surgeon General's Report on Physical Activity and Older Adults as an important component of an overall fitness program. This is particularly important in older adults where loss of muscle mass and weakness are prominent deficits. Stronger muscles help reduce the risk of falling and improve the ability to perform the routine tasks of daily life.

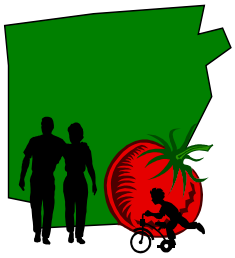
In addition to its effect on increasing muscle mass and function, strength training can also have an important effect on energy balance of older men and women.[133] Men and women participating in a strength training programs of the upper and lower body muscles required approximately 15% more calories to maintain body weight after 12 weeks of training when compared to their pre-training calorie needs. Because strength training can preserve or even increase muscle mass during weight loss, this type of exercise for those older men and women who must lose weight may be of genuine benefit.

B. Diet/Nutrition

Dietary modification is a key component to the prevention and treatment of obesity in elderly adults. Information on sound nutrition practices, cooking demonstrations, recipe modification to make favorite foods lower in fat and salt, as well as reducing the number of servings from a recipe, may be effective to help elderly people better manage their own weight. Strategies to assure food security among elderly adults, as well as assuring access to a variety of foods may go a long way to improving the nutrient density of their diets.

Nutrition education materials that address topics such as lowering dietary fat, decreasing dietary sodium intake, increasing intake of fiber, fluid, calcium, vitamin D, and vitamin A, and changes in needs with age and chronic disease/disability would contribute to a more knowledgeable population of elderly people.

Another strategy that can be easily incorporated into community based programs is to use nutritional screening materials that address evaluation of dental problems, BMI, eating habits, changes in taste, smell, and vision in advanced age, polypharmacy, and cultural differences in food preferences. Screening should also include a review of the Instrumental Activities of Daily Living which address an individual's ability to do food shopping and preparation, among other skills for independent living.



I. ECONOMICS

- Create a statewide, funded, Obesity Council whose purpose is to reduce the prevalence and health-related costs of obesity in Arkansas
- Develop incentives with private industry, such as retail businesses and restaurants, to promote healthy lifestyles
- Provide incentives for businesses with worksite wellness programs to promote healthy weight
- Partner with health insurance companies to:
  - educate their members on obesity
  - document cost savings for treatment of obesity to justify/support reimbursement to health care providers
- Offer incentives to state employees to participate in effective wellness and weight management programs

II. CHILDHOOD

- Develop legislation with appropriate funding to support assessment, planning, evaluation and monitoring, as well as, programmatic activities which address the development and implementation of a comprehensive program to:
  - Raise public awareness of the issue of childhood obesity and it's health consequences
  - Educate all stakeholders about the benefits of, and ways to incorporate good nutrition and physical activity
  - Incorporate action steps from the *State of Arkansas Comprehensive Child and Adolescent Nutrition Policy - 1999*
  - Provide access to appropriate and effective prevention programs, medical evaluations and interventions (including medical nutrition therapy) for childhood obesity and work toward adequate reimbursement to health care providers via health insurance providers
  - Partner with produce growers, vendors and manufacturers to develop a plan to enhance the availability of fruits and vegetables in areas of the state which currently have limited access to full-service grocers
  - Promote lifelong healthful eating habits via progressive levels of nutrition education from preschool through high school
  - Address the importance of daily physical activity:
    - Increase appropriate staff and resources within the Arkansas Department of Education dedicated to monitoring, evaluating and promoting physical education in every school district in Arkansas;
    - Increase standards and guidelines for mandatory physical education in all grades;
    - Require all schools K-12 to have a certified physical education instructor;
    - Establish a plan for each school to promote lifelong physical activity for students.
    - Develop a plan with schools to enhance the opportunities for school-based physical activity, including physical education, after-school programs and sports.

- Work with communities to enhance the opportunities for physical activity including walking trails or tracks, stairs in public buildings, and safe neighborhood playgrounds
- Involve local communities, important constituencies, and youth members in the development of plans and policies to achieve the program listed above

III. ADULT

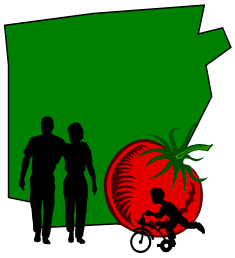
- Develop legislation with appropriate funding to support assessment, planning, evaluation and monitoring, as well as, programmatic activities which address the development and implementation of a comprehensive program to:
  - Raise public awareness of the issue of obesity and it's health consequences
  - Educate all stakeholders about the benefits of, and ways to incorporate good nutrition and physical activity
  - Provide access to appropriate and effective prevention programs, medical evaluations and interventions (including medical nutrition therapy) for obesity and work toward adequate reimbursement to health care providers via health insurance providers
  - Offer incentives (i.e. tax incentives) to identified businesses and corporations that invest in Worksite Health Promotion (disease prevention and health promotion)
  - Develop appropriate benefits to state agencies and departments that invest in Worksite Health Promotion (disease prevention and health promotion)
  - Partner with the food and restaurant and physical activities industries in the development of positive lifestyle intervention messages and products/services
  - Address the importance of daily physical activity:
    - Coordinate with the Great Strides Grant to make neighborhoods safer, more accessible to walking, bicycling, and other activities
    - Improve the physical activity facilities and public accessibility to neighborhood schools and community facilities for all ages
  - Increase appropriate staff and financial resources within the Arkansas Department of Health dedicated to monitoring, promoting, improving and evaluating nutrition practices and physical activity at home, school, the worksite and in the community

IV. GERIATRIC

- Develop legislation with appropriate funding to support assessment, planning, evaluation and monitoring, as well as, programmatic activities which address the development and implementation of a comprehensive program to:
  - Initiate a public education campaign to promote diet, physical activity, and other health behavior modifications aimed at the older adult population
  - Explore use of peer counselors for nutrition and physical activity programs for older adults

- Use Centers on Aging, county health units, senior centers, as loci for health promotion programs for older Arkansans that are locally accessible
- Raise public awareness of the issue of obesity and it's health consequences
- Educate all stakeholders about the benefits of, and ways to incorporate good nutrition and physical activity
- Provide access to appropriate and effective prevention programs, medical evaluations and interventions (including medical nutrition therapy) for obesity and work toward adequate reimbursement to health care providers via health insurance providers
- Address the importance of daily physical activity:
  - Improve the physical activity facilities and public accessibility to neighborhood schools and community facilities for all ages
  - Utilize public and private physical activity arenas i.e., YMCA's, YWCA's, Boys and Girls Clubs, school facilities, churches and other community facilities
- Partner with private industry in the creation of a pilot community-based nutrition and physical activity program for seniors
- Develop educational programs for physicians and other primary care health professionals that emphasize prevention and treatment of overweight and obesity in older adults.

APPENDIX



BMI is determined by either of two calculations: weight in kilograms divided by height in meters squared or weight in pounds divided by height in inches squared times 703.

The table below has already done the math and metric conversions. To use the table, find the appropriate height in the left-hand column. Move across the row to the given weight. The number at the top of the column is the BMI for that height and weight.

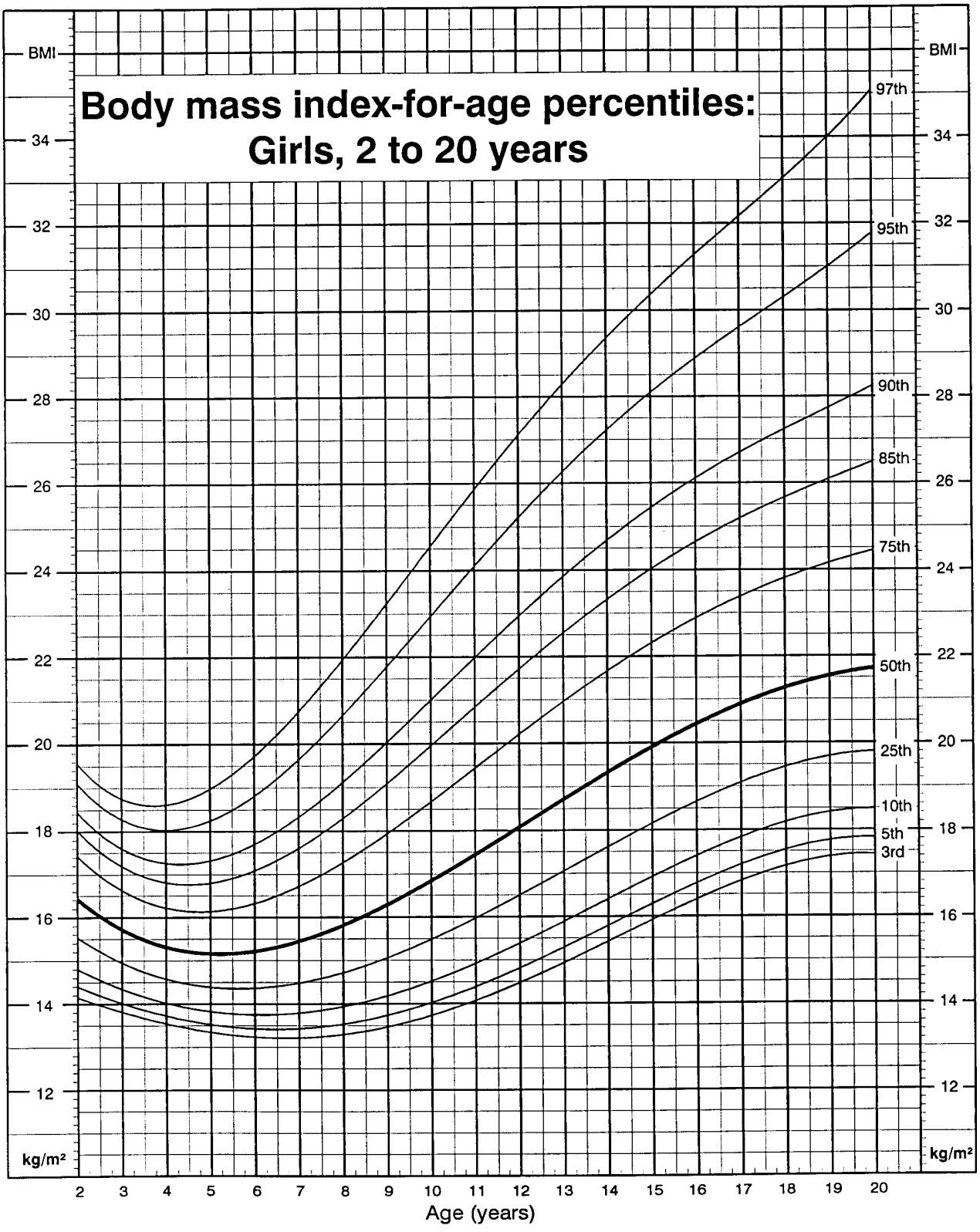
Body Mass Index (BMI) Chart – Adults

BMI	19	20	21	22	23	24	25	26	27	28	29	30	35	40
Height (in.)	Weight (lb.)													
58	91	96	100	105	110	115	119	124	129	134	138	143	167	191
59	94	99	104	109	114	119	124	128	133	138	143	148	173	198
60	97	102	107	112	118	123	128	133	138	143	148	153	179	204
61	100	106	111	116	122	127	132	137	143	148	153	158	185	211
62	104	109	115	120	126	131	136	142	147	153	158	164	191	218
63	107	113	118	124	130	135	141	146	152	158	163	169	197	225
64	110	116	122	128	134	140	145	151	157	163	169	174	204	232
65	114	120	126	132	138	144	150	156	162	168	174	180	210	240
66	118	124	130	136	142	148	155	161	167	173	179	186	216	247
67	121	127	134	140	146	153	159	166	172	178	185	191	223	255
68	125	131	138	144	151	158	164	171	177	184	190	197	230	262
69	128	135	142	149	155	162	169	176	182	189	196	203	236	270
70	132	139	146	153	160	167	174	181	188	195	202	207	243	278
71	136	143	150	157	165	172	179	186	193	200	208	215	250	286
72	140	147	154	162	169	177	184	191	199	206	213	221	258	294
73	144	151	159	166	174	182	189	197	204	212	219	227	265	302
74	148	155	163	171	179	186	194	202	210	218	225	233	272	311
75	152	160	168	176	184	192	200	208	216	224	232	240	279	319
76	156	164	172	180	189	197	205	213	221	230	238	246	287	328

Body Mass Index (BMI) Chart – Children & Adolescents

To use the following charts, the BMI must first be calculated as noted for adults or found on the appropriate tables which are located at http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-tables.pdf This value is then plotted on the BMI–for-age chart to determine if the child is within a normal growth pattern, obese/overweight, at risk for becoming overweight, or underweight.

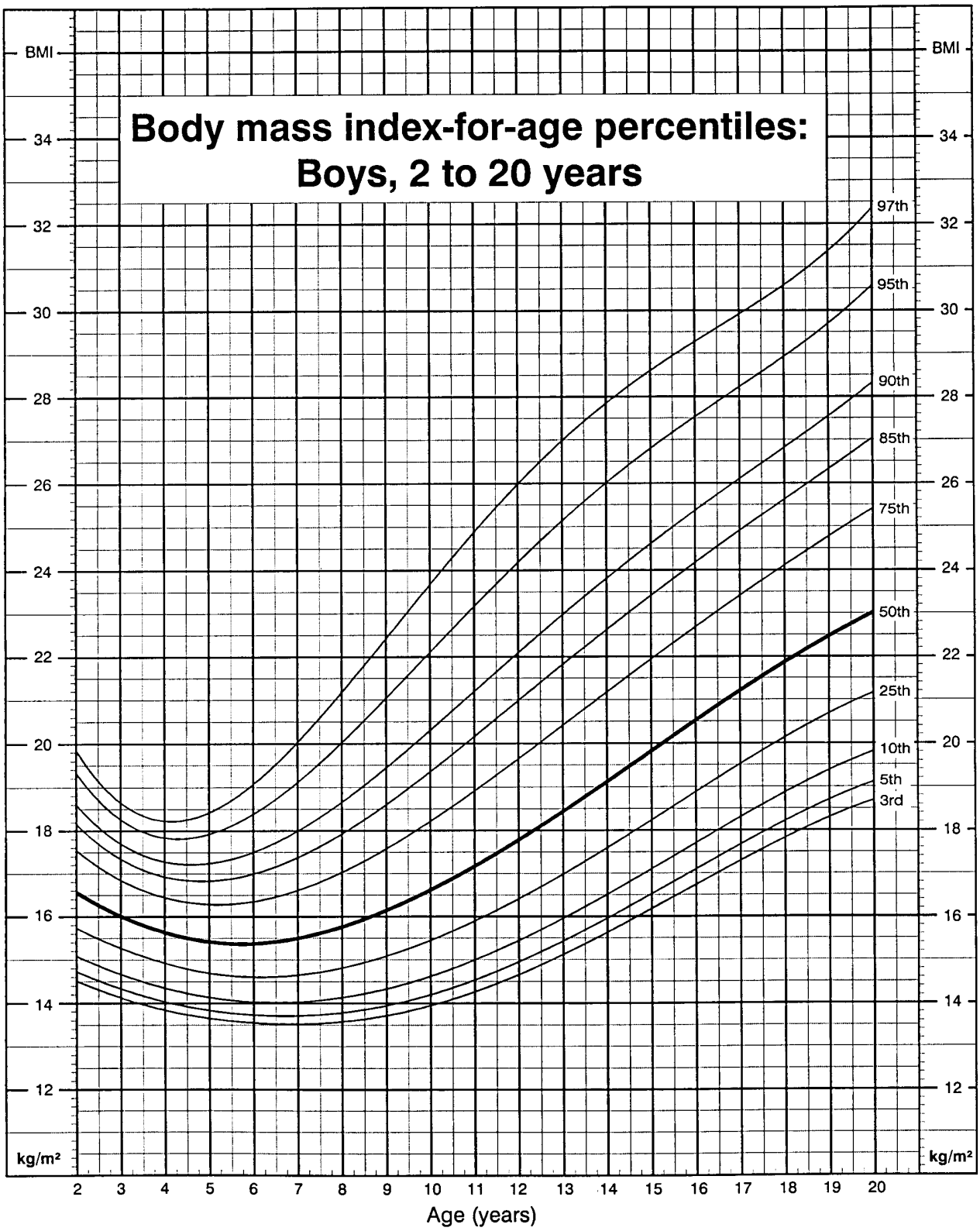
CDC Growth Charts: United States



SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

CDC Growth Charts: United States



SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

CDC
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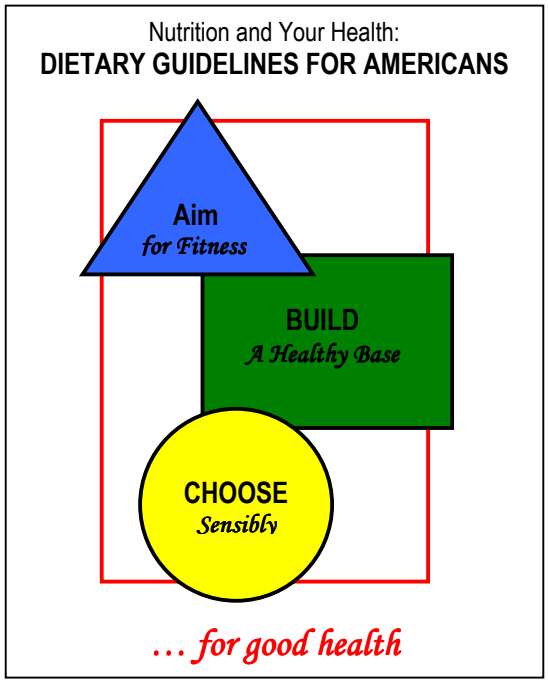
Dietary Guidelines for Americans



The document is available at
http://www.usda.gov/cnpp/DietGd.pdf

Drugs used for Obesity Treatment: Action and Side Effects

Drug	Action	Side Effects
Phentermine **ADIPEX-P** **OBENIX** **OBY-TRIM**	Phentermine decreases appetite by possibly changing brain levels of serotonin. Phentermine is a nervous system stimulator like the amphetamines, causing stimulation, elevation of blood pressure, and faster heart rates.	Side effects include diarrhea, dry mouth, constipation, an unpleasant taste, hives, impotence, palpitations, high blood pressure, and fast heart rates. Central nervous system side effects include overstimulation, insomnia, restlessness, tremor, and dizziness. Phentermine should not be taken by patients with glaucoma, hyperthyroidism, or a history of drug abuse or psychotic illnesses or high blood pressure that is not well controlled.[146]
Sibutramine **MERIDIA**	Sibutramine is a medication that assists with weight-loss by altering neurotransmitters within the brain. These regulate feelings of hunger and fullness (satiety). People taking sibutramine may achieve a 5-10% reduction from their baseline weight.	In general, sibutramine is well-tolerated. The most common side effects have been constipation, inability to sleep, headache, and dry mouth. Other side effects include abdominal pain, acne, rash, chest pain, anxiety, joint pain, back pain, excitation, depression, sweating, dizziness, drowsiness, changes in taste, irregular or painful menstrual periods, flu-like syndrome, increased cough, muscle pain, nausea, vomiting, neck pain, nervousness, palpitations, tingling of the extremities, sore throat, and sinus congestion.
Orlistat **XENICAL**	Orlistat is a drug that promotes loss of weight by preventing the digestion and absorption of dietary fat. The unabsorbed fat is excreted in the stool.	The most common side effects of orlistat are related to the gastrointestinal tract, specifically, oily spotting on underwear, flatulence, urgent bowel movements, fatty or oily stools, increased number of bowel movements, abdominal pain or discomfort, and inability to hold back stool (incontinence).

Fact Sheet Childhood Obesity

Definitions

- Overweight, BMI ≥ 85th percentile and <95th percentile by age and sex.
- Obesity, BMI ≥ 95th percentile by age and sex.

Prevalence

- There is an epidemic of childhood obesity in the United States.
- The prevalence of obesity among children and adolescents has more than doubled between 1980 and 1994.
- Obesity is a chronic disease and is the most prevalent nutritional disease of children and adolescents.
- According to 1999 PEDNSS, 8.0 % of **Arkansas** children 0-5 years, had a weight to height ratio above the 95th percentile and were considered overweight (norm is 50th percentile), up from 7.7 % in 1998. This represents in **Arkansas** a 10.1 % rate for Hispanic children, 8.5 % (up from 8.3 %) for African American children and 7.4 % (up from 7.1 %) for White children. Preliminary figures for first quarter 2000 indicates an overall **Arkansas** rate of overweight children at 8.6 %. The national 1999 rate is now 11 percent, up from 10.4 % in 1997 and 10.7 % in 1998.
- According to the 1999 Youth Risk Behavior Survey, 15.2 % of **Arkansas** students in 9-12th grades are overweight vs. national average of 16 %. The number of obese **Arkansas** students is 10.9 % vs. a national average of 9.9 %.

Role of Childhood Obesity in Adult Obesity

- Obesity tends to "track" throughout life, meaning that its presence at any age will increase the risk of persistence at subsequent ages.
- Targeting obesity in childhood can impact and prevent adult obesity.

Link of Obesity to Environmental Factors

- The increase in obesity over the past few decades reflects environmental rather than genetic factors.
- The reasons for the obesity epidemic have not yet been sorted out, but poor dietary habits, increased consumption of calorie-dense foods, and fewer opportunities for physical activity contribute to the problem

- Obesity is greater among children and adolescents who frequently watch TV.
- 55.8 % of **Arkansas** high school students watch up to 2 hours of TV per day. YRBS, 1999
- Most of the meals eaten in the United States today are prepared outside the home and are often eaten on the go. The second most popular place for Americans to eat breakfast is in their car.
- Behavioral factors (physical activity and diet) are modifiable and logical targets for intervention.
- 1999 YRBS, 63.1 % of **Arkansas** high school students participated in vigorous physical activity (activities that caused sweating and hard breathing for ≥ 20 minutes on ≥ 3 of the 7 days preceding the survey). 39.8 % of **Arkansas** high school students are enrolled in a PE class.
- 18.8 % of **Arkansas** high school students ate 5 or more servings of fruits and vegetables per day, YRBS 1999.
- On average, 75 % of teen boys drink 3 (12-oz.) cans of soda per day and 2/3 of teen girls drink two cans per day.

Consequences of Childhood Obesity

- Sixty percent of children and teens with a BMI for age above the 95th percentile have at least one risk factor and 20% have 2 or more risk factors for cardiovascular disease, such as hyperlipidemia, elevated blood pressure, or increased insulin levels.
- The major sources of health complication in obese children include sleep apnea, Type 2 diabetes and orthopedic complications.
- The most serious and prevalent long-term consequences include mental health problems such as depression, lower self-esteem and discrimination by peers, family, and teachers.

Prevention and Management of Childhood Obesity

- The risk of becoming obese is greatest among children who have 2 obese parents.
- Overweight and obesity are easier and less costly to prevent than to treat. Adopting healthy dietary and physical activity habits early in life is most effective.
- Prevention is the treatment of choice for obesity among children.

Fact Sheet → Adult Obesity

Definitions - Dietary Guidelines for Americans, 2000

- Upper boundary of healthy weight, BMI* = 25.
- Overweight, BMI = 25-30.
- Obesity, BMI $\geq$30.

Prevalence

- One in two American adults, is overweight, an increase of more than 25% over the past three decades.
- 58 million American adults, 32 million women and 26 million men are overweight.
- Approximately 50% of African American and Mexican American women are overweight.
- 55% of **Arkansas** adults are overweight. BRFSS, 1998

63%	of men
46.8%	of women
54%	of whites
65.3%	of blacks
43.1%	of Hispanics

Health complications Associated with Obesity

- Overweight and obesity are known risk factors for diabetes, heart disease, high blood pressure, gallbladder disease, arthritis, breathing problems, and some forms of cancer.
- Almost 80 % of obese adults have diabetes, high blood cholesterol levels, high blood pressure, coronary artery disease, gallbladder disease, or osteoarthritis, and almost 40 % have 2 or more co-morbidities.
- Obesity accounts for approximately 300,000 deaths annually in the United States, second only to tobacco.
- The costs of diseases associated with obesity have been estimated at almost $100 billion per year, or approximately 8 % of the national health care budget.

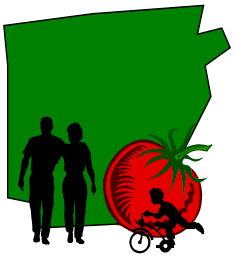
- 33.4% of **Arkansas** adults are at risk for health problems related to being overweight.
- 84.6% of **Arkansas** adults are at risk for health problems related to lack of exercise (regular and sustained physical activity).
- 72.1% of **Arkansas** adults reported eating fewer than five servings of fruits and vegetables per day. BRFSS, 1998

Prevention and Management of Obesity

- Modest weight loss (5-10 % of body weight) is associated with health benefits, including improvement in blood pressure, good cholesterol (HDL), blood sugar and the need for medication.
- Achieving and maintaining appropriate weight requires good dietary patterns and adequate physical activity.
- Physical activity need not be strenuous to be beneficial; men and women of all ages benefit from moderate physical activity, such as 30 minutes of brisk walking five or more times a week.
- Increased physical activity offers an important strategy for weight control.
- The goals of obesity prevention and control are twofold: prevention of weight gain for the entire population and weight loss for those who are overweight.

*Body Mass Index (BMI)-weight in pounds divided by height in inches squared X 703

Obesity Task Force Members



Sponsors:

Senator Bill Walker

Representative Tracy Steele

Obesity Task Force Chair:

Carole Garner, MPH, RD, LD
Nutrition Services
Arkansas Department of Health

Task Force Committees:

Childhood Obesity

CHAIR - Debra H. Fiser, MD
Department of Pediatrics
Arkansas Children's Hospital

Mary Cay Crow, MS, RD, LD
Nutrition Services
Arkansas Department of Health

Darrell Nesmith, MD, MPH
Dept. of Adolescent Medicine
Arkansas Children's Hospital

Wanda Shockey, MS, RD, LD
Child Nutrition
Arkansas Department of Education

Kent Taylor
Cromwell Architects Engineers

Marilou Brodie, MS, RD, LD
Nutrition Services
Arkansas Department of Health

Ronald F. (Arlo) Kahn, MD
Dept Family & Community Medicine
University of Arkansas for Medical Sciences

David Rath, MA, RD, LD
Nutrition Services
Arkansas Department of Health

Margo Swanson, RN
Arkansas School Nurses Association

Gary Wheeler, MD
Dept. of Allergy and Immunology
Arkansas Children's Hospital

Adult Obesity

CHAIR - Philip A. Kern, MD
Medical Research Service
LRVAMC and UAMS

Joseph Bates, MD
Arkansas Department of Health

Bryan Kellar
Outdoor Recreation Grants Program
Arkansas Department of Parks and Tourism

Becky Adams, MPH, RD, LD
Arkansas Diabetes Control Program
Arkansas Department of Health

Alissa Beach
Governor's Council on Fitness
Arkansas Department of Health

Cecil Malone
AARP Area Office

Greg Potts
Health Statistics
Arkansas Department of Health

Rosemary Rodibaugh, PhD, RD, LD
Arkansas Nutrition Advocacy Council

Ray Scott

Gerri Spires
American Heart Association, Arkansas Chapter

James Wohlleb
AHEC Program
University of Arkansas for Medical Sciences

Blake Woodson
Health Statistics
Arkansas Department of Health

Geriatric Obesity

CHAIR - William Evans, PhD
Nutrition, Metabolism & Exercise Laboratory
VA Medical Center

David Bourne, MD
Preventive Health Services
Arkansas Department of Health

Johnnie Cathey, MS, RD, LD
Aging and Adult Services
Arkansas Department of Human Services

Ronni Chernoff, PhD, RD, LD, FADA
Arkansas Geriatric Education Center
John L. McClellan Memorial VAMC

Jerry Jones, PD
Pharmacy Services Drug Control
Arkansas Department of Health

Tommy Piggee
Chronic Disease/Disability Prevention
Arkansas Department of Health

At-Large Task Force Members

Nancy Archer, RN
Arkansas Foundation for Medical Care

Cindy Crone, RN, ANP
Arkansas Nurses Association

Darrell Dotson
War Memorial Fitness Center

Barbara Hager
Health Education
Arkansas Department of Health

Reza Hakkak, PhD
Dietetics and Nutrition
University of Arkansas for Medical Sciences

Susan Handford, MS, RD, LD
WIC
Arkansas Department of Health

Tal Holmes, MPH, PhD
Arkansas Department of Health

Donna Israel, PD
Arkansas Pharmacists Association

Judith McGhee, MD
Division of Medical Services
Arkansas Department of Human Services

Christine Patterson,MSW
Minority Health
Arkansas Department of Health

Andi Ridgway, MS, RD, LD
Arkansas Diabetes Control Program
Arkansas Department of Health

Additional Invited Participants

Bart Bargolie, MD
Arkansas Cancer Research Center
University of Arkansas for Medical Sciences

Nancy Baxter
American Diabetes Association, Arkansas Chapter

Russell G. Brasher, PhD
Arkansas Foundation for Medical Care

Sandy Campbell, RN
Arkansas School Nurses Association

Jimmy Coats
Arkansas Activities Association

Carla Coleman
Arkansas Academy of Family Physicians

Richard Davies
Arkansas Department of Parks and Tourism

Bryan Day
Little Rock Parks and Recreation

John T. Douglas, PD
Arkansas State Board of Pharmacy

Ray Hanley
Division of Medical Services
Arkansas Department of Human Services

Ken Lamastus
Arkansas Medical Society

Lynda Lehing, RN
Chronic Disease/Disability Prevention
Arkansas Department of Health

Montine McNulty
Arkansas Hospitality Association

Richard D. Smith, PhD
Arkansas Center for Health Improvement

Mark Swanson, MD
University Affiliated Program of Arkansas

I. Dodd Wilson, MD
College of Medicine
University of Arkansas for Medical Sciences

State of Arkansas
82nd General Assembly
Regular Session, 1999 SCR 8

By: Senator B. Walker
By: Representative T. Steele

SENATE CONCURRENT RESOLUTION

"TO PLACE EDUCATING THE PUBLIC ABOUT THE PREVENTION AND TREATMENT OF OBESITY AS A NATIONAL PRIORITY, AND TO RECOMMEND OBESITY TREATMENT COVERAGE IN STATE MEDICAID PROGRAMS, AND TO SUPPORT INCREASED FUNDING AND AVAILABILITY OF SCHOOL AND COMMUNITY-BASED PHYSICAL ACTIVITY AND NUTRITIONAL PROGRAMS, AND TO DIRECT A STUDY OF THE EFFECT OF OBESITY IN BOTH ADULTS AND CHILDREN ON COSTLY HEALTH COMPLICATIONS SUCH AS DIABETES, HYPERTENSION, HEART DISEASE, AND STROKE, AND HEALTH COMPLICATIONS IN CHILDREN, AND TO MAKE RECOMMENDATIONS FOR IMPROVEMENT IN AWARENESS OF THE PROBLEM OF OBESITY AND SUGGESTED TREATMENT MODALITIES, AND TO REPORT THE FINDINGS OF SUCH STUDY AND ECOMMENDATIONS TO THE LEGISLATURE PRIOR TO THE CONVENING OF THE 2001 REGULAR SESSION."

Subtitle

"CONCERNING THE HEALTH EFFECTS OF OBESITY."

WHEREAS, 1996 Behavioral Risk Factor Surveillance Data from the federal Center for Disease Control and Prevention indicates the percent of state populations who are overweight to range from 22.32% to 34.52%; and

WHEREAS, the prevalence of obesity in the adult population has grown a shocking thirty-four percent (34%) during the past ten (10) years; and

WHEREAS, a causal relationship exists between obesity and a number of serious disorders, including hypertension, dyslipidemia, cardiovascular disease, diabetes (Type 2), gall bladder disease, respiratory dysfunction, gout, and osteoarthritis; and

WHEREAS, the National Institute of Diabetes and Digestive and Kidney Diseases provided information which indicates that nearly eighty percent (80%) of patients with diabetes mellitus are obese and the incidence of symptomatic gallstones soars as a person's body mass index increases beyond a certain level; and

WHEREAS, the information also reveals that nearly seventy percent (70%) of diagnosed cases of cardiovascular disease are related to obesity, and obesity more than doubles a person's chances of developing high blood pressure, and almost half of breast cancer cases are diagnosed among obese women, and forty-two percent (42%) of colon cancer cases are among obese individuals; and

WHEREAS, obesity ranks second only to smoking as a preventable cause of death and results in some three hundred thousand (300,000) deaths annually; and

WHEREAS, a 1997 study by Kaiser Permanente indicated that the total direct cost of obesity related diseases in the United States in 1990 was $45.8 billion dollars; and

WHEREAS, the Kaiser study concluded that there is a significant potential for a reduction in health care expenditures through obesity prevention efforts; and

WHEREAS, there is an urgent need for state health care groups and medical societies to place obesity at the top of their state's health care agenda; and

WHEREAS, many physicians do not treat obesity because they mistakenly believe there is no treatment for it; and

WHEREAS, the National Institutes of Health, the American Society for Bariatric Surgery, and the American Obesity Association recommend that patients who are morbidly obese receive responsible affordable medical treatment for their obesity; and

WHEREAS, the diagnosis of morbid obesity should be a clinical decision made by a physician based on proper medical protocols; and

WHEREAS, the recent breakthroughs in drug therapy can treat obesity successfully and the New England Journal of Medicine recently emphasized the legitimate use of pharmacotherapy as a component of treatment of medically significant obesity; and

WHEREAS, there is also great concern regarding what effect obesity in children may have on overall health in children, health care costs for children, and treatment modalities to address the problems of obesity in children; and

WHEREAS, a study by the Arkansas Department of Heatlh is critical to raise the awareness of the public and private sectors that obesity is a disease of epidemic proportions that is treatable and that proper treatment will reduce health care costs and improve the quality of life for a large number of our citizens.

NOW THEREFORE,
BE IT RESOLVED BY THE SENATE OF THE EIGHTY-SECOND GENERAL ASSEMBLY OF THE STATE OF ARKANSAS, THE HOUSE OF REPRESENTATIVES CONCURRING THEREIN:

THAT the Arkansas General Assembly recommends that educating the public about the prevention and treatment of obesity should be a national priority, and that federal and state Medicaid programs must ensure the availability of obesity-related treatment for people of all ages with low incomes, and that increased funding and availability of school and community-based physical activity and nutrition programs should occur.

BE IT FURTHER RESOLVED:
THAT the Arkansas General Assembly requests the Arkansas Department of Health to study the effect of obesity in both adults and children on costly health complications such as diabetes, hypertension, heart disease, and stroke, and health complications in children, and make recommendations for improvement in awareness of the problem of obesity and suggested treatment modality, and to report the findings of such study and such recommendations to the Public Health, Welfare and Labor Committee of both the Senate and the House.

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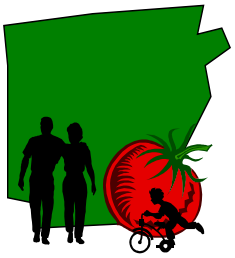

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