Maternal and Family Health

Maternal and Family Health Priority Overview

Physical Activity and Nutrition in Children and Adolescents

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A Community and Public Health Publication

2012

What's Inside

What are Physical Activity and Nutrition and Why are they Important?

What are Adequate Physical Activity and Good Nutrition?

The federal guideline for physical activity for children 6-17 years old is 60 minutes or more of physical activity every day. Activity should include aerobic activity (such as running, jumping rope or playing basketball) three days a week, muscle-strengthening activity three days a week and bone strengthening activity three days a week.[1]

The federal nutrition guideline for all ages is eating a healthful diet based on the *Dietary Guidelines for Americans, 2010* and is represented by the MyPlate USDA Food Guidance System. These guidelines emphasize eating more fruits, vegetables, whole grains, fat-free or low-fat dairy products, lean meats, poultry, seafood, beans, eggs, nuts, and consuming less sodium, saturated fats, trans fats, cholesterol, added sugars and refined grains. Caloric intake should be balanced with physical activity.[2]

Why are Physical Activity and Nutrition Important?

Children who meet recommended physical activity guidelines have improved aerobic fitness and muscular strength, bone health, cardiovascular and metabolic health, favorable body composition (percentages of muscle, bone and fat), reduced symptoms of anxiety and depression, and are less likely to be overweight or obese.[1]

Studies have shown that children who participate in physical education maintained or improved grades and scores on standardized tests and had better classroom behavior.[3] Eating a healthy diet based on the *Dietary Guidelines for Americans* promotes health and reduces the risk of chronic diseases.[2] Eating a diet high in fruits and vegetables decreases the likelihood of obesity and may reduce the risk of cancer, micronutrient deficiencies and other chronic diseases such as type 2 diabetes. Fruits and vegetables also support good health by providing vitamins and minerals, fiber and other nutrients.[4]

Fast Facts about Child Physical Activity and Nutrition

- Only 30% of Wyoming children ages 6-17 are physically active every day, when all children should be physically active every day
- Federal guidelines recommend 4-5 cups of fruit and vegetables a day; only 19% of Wyoming high school students eat fruits or vegetables five or more times a day
- 22% of Wyoming high school students are overweight or obese

Physical Activity and Nutrition in Children and Adolescents: Overweight and Obesity, Life Course Effects, Costs and Contributing Factors

Overweight and Obesity

Poor nutrition and physical inactivity are important factors contributing to the epidemic of obesity and overweight in children and adults. Obesity among children 6-11 years of age and teens 12-19 years of age has increased more than threefold from 1980 to 2008.[5-7]

Life Course Effects

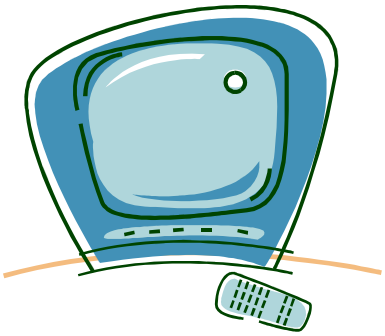
Overweight and obese children suffer a multitude of consequences. One study found 70% of obese children had at least one cardiovascular risk factor, and were more likely to have several cardiovascular risk factors than normal weight children.[8] Obesity, along with physical inactivity and increased caloric and fat intake, are risk factors for insulin resistance, glucose intolerance and type 2 diabetes.[9] Obese children are also at risk for breathing problems such as sleep apnea, asthma and exercise intolerance.[10-11] Other risks associated with obesity include joint problems and musculoskeletal discomfort.[12] Respiratory and musculoskeletal problems can limit a child's ability to exercise, exacerbating weight gain. Obesity related chronic disease can have severe consequences on development, learning abilities, behavior and emotional health.[13] Obese children have a higher likelihood of becoming overweight or obese adults, and obesity is likely to be more severe in adults who were obese as children.[14-15] If children remain obese as adults, they face even more severe consequences including heart disease, diabetes, some cancers, and death.[16] Studies have estimated that obesity contributes to at least 100,000 deaths in U.S. annually.[17-18]

Costs

Healthcare costs for obese children are about three times more than those for the average child. The direct costs of treating childhood obesity nationally is estimated at $14 billion annually, including $11 billion for children with private insurance and $3 billion for those with Medicaid.[19]

Contributing Factors

Childhood obesity is characterized by not getting enough physical activity and eating too much. The environment surrounding children can determine their physical activity and eating habits. Physical activity is encouraged when schools and child care facilities offer daily opportunities for quality physical activity. Communities with safe, appealing parks, sidewalks, and community centers also encourage physical activity. Time spent watching television or using computers, video games, and cell phones (screen time) replaces time children could spend doing physical activity. Also, screen time can lead to increased caloric intake because of snacking while watching television and being influenced by food advertisements for unhealthy, high calorie foods. Greater availability of sugary drinks and unhealthy, high calorie foods and increasing portion sizes at home and in schools also encourage greater energy intake in children. Finally, limited access to healthy, affordable foods makes choosing healthy foods over unhealthy foods more difficult.[12]



Data Sources

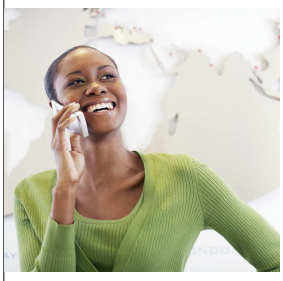
A number of surveys are used in this overview because no single survey collected information on all age groups or topics relevant to the priority. A brief description of each survey is listed below.

2001-2004 National Health and Nutrition Examination Survey (NHANES)

The NHANES program began in the 1960s and is a nationally representative survey that collects a variety of health and nutrition measurements. The survey includes an in home interview conducted in person by a trained interviewer consisting of demographic, socioeconomic, dietary and health-related questions. The other part of the survey is a physical examination consisting of medical, dental, and physiological measurements and laboratory tests performed in a mobile exam center.[20]

2007 National Survey of Children's Health (NSCH)

The NSCH is a national survey conducted in 2003-2004 and 2007-2008 that collects a range of information on children's health and well-being. Survey participants are selected by calling telephone numbers at random and conducting the survey on one child under 18 years of age per household. The interviewer conducts a telephone interview with the parent or guardian who knows the most about the child's health and health care. The survey is weighted to represent the non-institutionalized population of children ages 0-17 years of age nationally and for each state.[21]



2009-2010 Wyoming Oral Health Survey

The Wyoming Department of Health collected height, weight, gender and age from third graders from a subset of schools participating in the survey. These data were used to calculate Body Mass Index (BMI) for the participants. This subset is only a sample and is not representative of all third graders in the state. The BMI survey sampled 1,570 students from 42 schools for a participation rate of 78.03%.

Wyoming Youth Risk Behavior Survey (YRBS)

YRBS is a national school based survey that monitors health risk behaviors and prevalence of obesity and asthma among youth and young adults. It has been conducted every 2 years since 1990. The survey is conducted as a written questionnaire filled out by middle and high school students. YRBS is a representative sample conducted by the CDC and by state and local education and health agencies. Although Wyoming data are available for high school and middle school students, national data are only available for high schools.[22]

Physical Activity and Nutrition in Children and Adolescents: Healthy People 2020 and Physical Activity Data

Healthy People 2020

"*Healthy People* provides science-based, 10 year national objectives for improving the health of all Americans."[23] Healthy People 2020 established 4 overall goals for this decade:

Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death;
Achieve health equity, eliminate disparities, and improve the health of all groups;
Create social and physical environments that promote good health for all;
Promote quality of life, healthy development, and healthy behaviors across all life stages.[23]

To achieve these goals, objectives have been set for a variety of indicators that are used to measure progress. Some of these objectives also apply to the priorities set by the Maternal and Family Health Section of the Wyoming Department of Health to improve the health of Wyoming women, children and families.

Healthy People 2020 Goals for Physical Activity

HP2020 has 12 goals relating to physical activity for children that can be found at:
http://www.healthypeople.gov/2020/topicsobjectives2020/default.aspx

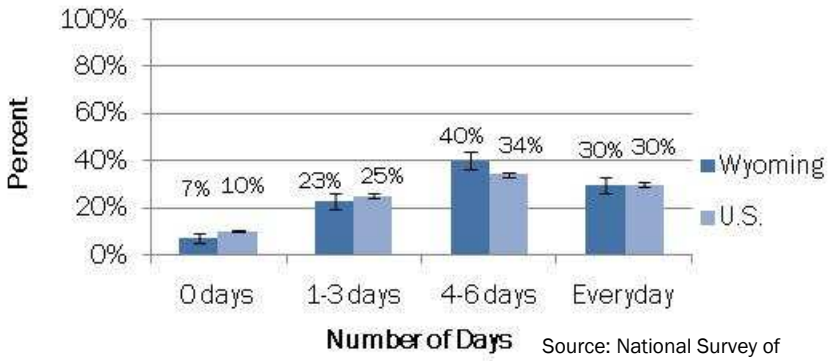
Physical Activity Data for Wyoming Children and Adolescents

The following charts show how much physical activity Wyoming children are getting and whether they have daily physical education in school. The amount of time they are spending doing sedentary activities, like watching television is also represented, as these activities take time away from physical activity.

Nationally, and in Wyoming, only 30% of children engaged in vigorous physical activity everyday.

However, the percent of children who were engaged in vigorous physical activiy 4-6 days per week in Wyoming (40%) was significantly higher than the national percentage (34%).[24]

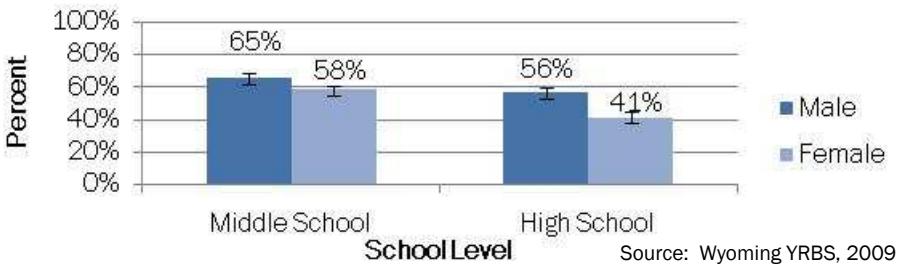
Figure 1: Number of Days During the Past Week Children Ages 6-17 Years Engaged in Vigorous Physical Activity, NSCH 2007



Source: National Survey of Children's Health, 2007

Significantly more Wyoming high school students (49%) were physically active for 60 minutes on five of the last seven days compared to the nation (37%).[25]

Figure 2: Percent of Wyoming Male and Female Students who were Physically Active for a Total of at Least 60 Minutes per Day on Five or More of the Past Seven Days by School Level, YRBS 2009

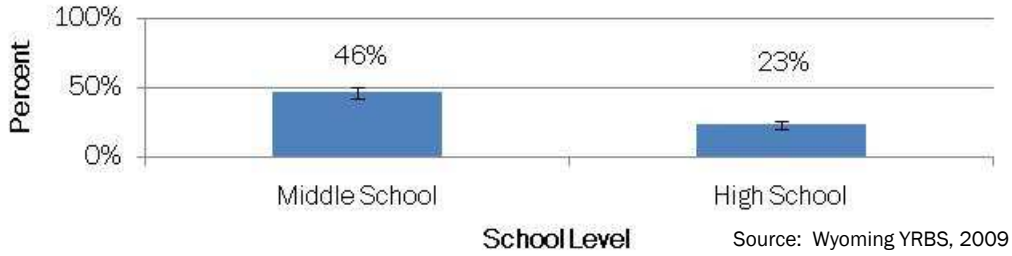


Source: Wyoming YRBS, 2009

Significantly fewer females were active than males in both high school and middle school. Compared to middle school students, significantly fewer high school students, male or female, were active.[26]

The percentage of Wyoming high school students (23%) who attended physical education (PE) classes daily was significantly lower than the national percentage (33%).[25]

Figure 3: Percent of Wyoming Students who Attended Physical Education (PE) Classes Daily in an Average Week of School by School Level, YRBS 2009



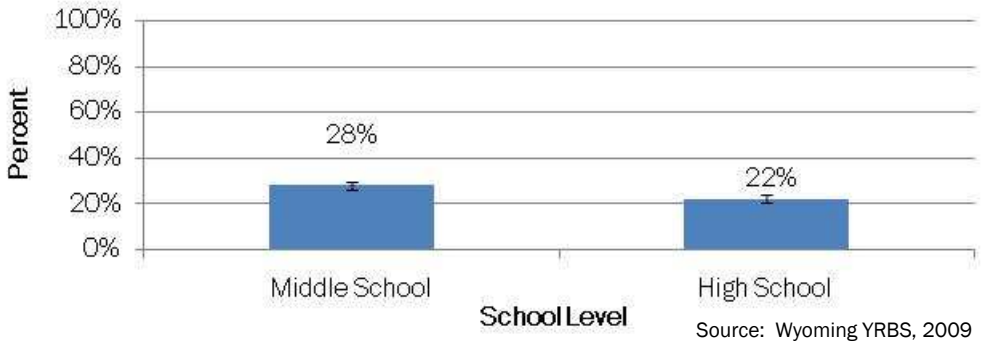
Source: Wyoming YRBS, 2009

The were no significant differences by gender, but significantly fewer high school students attended PE classes than middle school students.[26]

The percentage of Wyoming students (22%) who watched three or more hours per day of TV on an average school day was significantly lower than the national percentage (33%).[25]

There were no significant differences by gender, but significantly fewer high school students watched three or more hours of TV on an average school day than middle school students.[26]

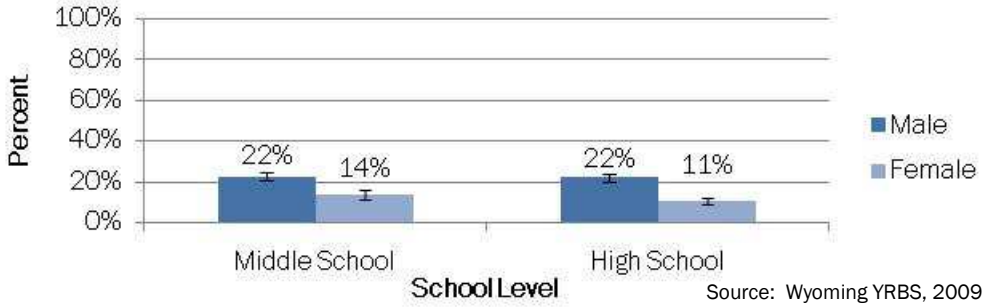
Figure 4: Percent of Wyoming Students who Watched Three or More Hours per day of TV on an Average School Day by School Level, YRBS 2009



Source: Wyoming YRBS, 2009

The percentage of Wyoming high school students (16%) who played video or computer games or used a computer for something other than school work three or more hours/day on an average school day was significantly lower than the national percentage (25%).[25]

Figure 5: Percent of Wyoming Male and Female Students who Played Video or Computer Games Three or More Hours per Day on an Average School Day by School Level, YRBS 2009



Source: Wyoming YRBS, 2009

Significantly fewer females played computer games or used a computer for something other than school work three or more hours a day than males in both middle school and high school.[26]

Physical Activity and Nutrition in Children and Adolescents: Healthy People 2020 and Dietary Guidelines for Americans 2010

Healthy People 2020 Goals for Nutrition and Weight

HP2020 has 18 goals relating to child nutrition and weight that can be found at:
http://www.healthypeople.gov/2020/topicsobjectives2020/default.aspx

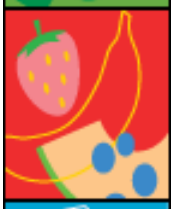
Dietary Guidelines for Americans 2010

The guidelines encompass two over-arching concepts: maintain calorie balance over time to achieve and sustain a healthy weight, and focus on consuming nutrient-dense foods.

A healthy diet limits intake from sodium, solid fats, and added sugars and emphasizes nutrient-dense foods from the food groups below. The amount of food needed from each food group depends on age, sex and level of physical activity.[2] Visit http://www.choosemyplate.gov/ for more information.

Grains
Grains include whole grains (whole-wheat flour, whole wheat bread, whole cornmeal, oatmeal, brown rice) and refined grains (white flour, white bread, degermed cornmeal, white rice). At least half of grains consumed should be whole grains. Refined grains should be limited, especially refined grain products containing solid fats, added sugars and sodium .[2]

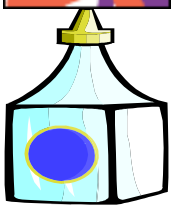
Vegetables
Any vegetable or 100% vegetable juice is part of the vegetable group. Vegetables are categorized into five subgroups according to nutrient content: dark green, orange, dry beans and peas, starchy vegetables and other vegetables. A variety of vegetables should be consumed, especially green, red and orange vegetables, and beans and peas.[2]



Fruits
Any fruit or 100% fruit juice is part of the fruit group. A variety of fruits should be consumed, especially those high in potassium such as bananas, prunes, prune juice, dried peaches, dried apricots, cantaloupe, honeydew melon and orange juice. Whole fruit should be chosen more often than 100% fruit juice to increase fiber intake.[2]

Dairy
All fluid milk and milk products that retain their calcium are part of this group; cream cheese, cream and butter are not. Choices should be low-fat and fat-free with no added sugars. Non-dairy calcium fortified foods and beverages may not provide other nutrients found in milk and dairy products. Lactose-free and lower-lactose products should be chosen for the lactose intolerant.[2]

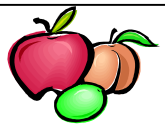
Protein
Meat, poultry, fish, dry beans or peas, eggs, nuts and seeds are part of this group. Seafood, beans, peas, nuts and seeds should be consumed more often than meat and poultry. When choosing meat or poultry, choices should be lean. Women who are pregnant or breastfeeding should eat 8 to 12 ounces of seafood per week from a variety of seafood types.[2]



Oils
Oils such as olive oil are fats that are liquid at room temperature. Solid fats such as butter are solid at room temperature. Most oils are high in monounsaturated and polyunsaturated fats and low in saturated fats, however a few plant oils such as coconut and palm kernel oil are high in saturated fats and are considered solid fats. A small amount of oil should be consumed in a healthy diet.[2]

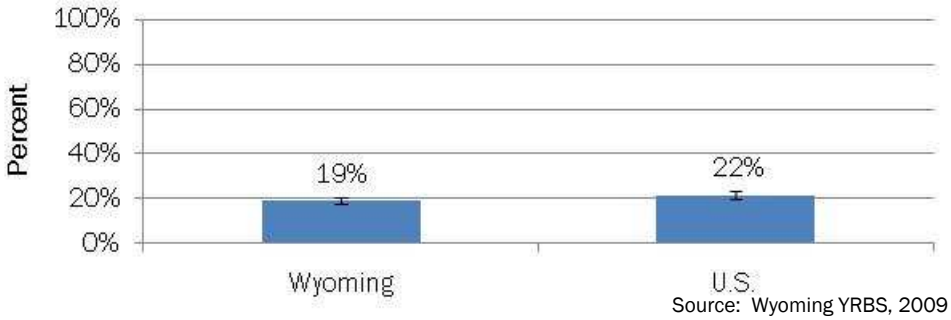
Nutrition in Wyoming Children

Few Americans meet the USDA guidelines for fruit and vegetable consumption. NHANES 2001-2004 data found that nationally, children ages 1-3 eat 0.7 cups of vegetables (excluding dried beans and peas) per day. There are no recommendations for 1 year olds, but children ages 2-3 should eat 1-1.5 cups of vegetables per day. Children ages 1-3 eat 1.5 cups of fruit per day which meets the recommendations that children ages 2-3 should 1-1.5 cups of fruit per day. Children ages 4-9 eat 0.9 cups of vegetables but should eat 1-3.5 cups of vegetables a day. Children ages 4-9 eat 1.1 cups of fruit per day which meets the reccommendtions that children ages 4-9 eat 1-2 cups of fruit per day. Nationally, children are not eating enough vegetables.[2, 27] Although there are no data for children not in high school, there are some data on fruit and vegetable consumption among Wyoming adolescents shown in the following graphs.



The percentage of Wyoming students (19%) who ate fruits and vegetables five or more times per day during the past seven days was significantly lower than the national percentage (22%).[25] There were no significant differences by gender.[26]

Figure 6: Percent of Wyoming and U.S. High School Students who ate Fruits and Vegetables Five or More Times per Day During the Past Seven Days, YRBS 2009

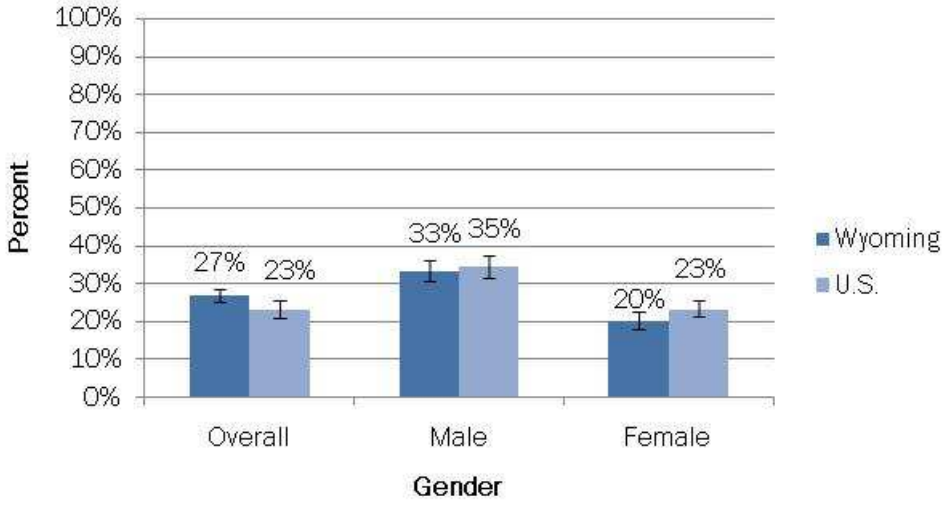


Source: Wyoming YRBS, 2009

Added sugars contribute an average of 16% of total calories in American diets. For most people, added sugars should contribute no more than 5-15% of calories for them to stay within calorie limits and still eat enough food with sufficient dietary fiber and essential vitamins. Soda and energy drinks are the biggest source of added sugars in American diets. The graph below shows intake of soda by Wyoming adolescents.[2]

The percentage of Wyoming students (27%) who drank a soda one or more times per day during the past seven days was not significantly different from the national percentage (23%).[26] Significantly fewer females than males drank soda one or more times per day in Wyoming and nationally.[26]

Figure 7: Percent of Wyoming and U.S. High School Students who Drank a Can, Bottle, or Glass of Soda or Pop One or more Times per Day During the Past Seven Days, Overall and by Gender , YRBS 2009



Source: Wyoming YRBS, 2009

Physical Activity and Nutrition in Children and Adolescents: Prevalence of Overweight and Obesity

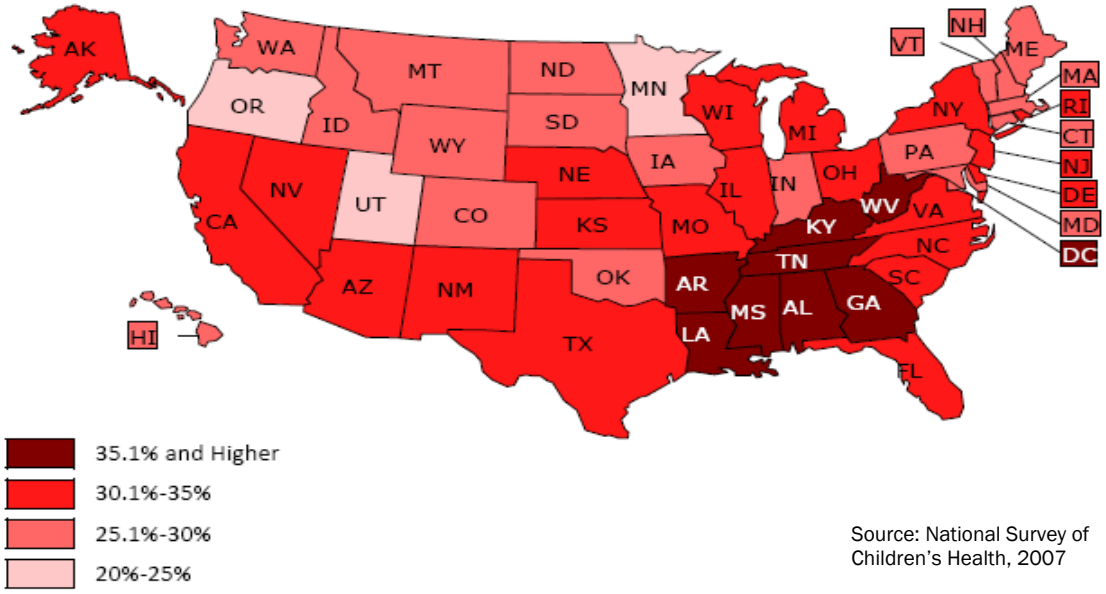
Body Mass Index

A common measure used to determine weight status is body mass index (BMI).[12] For children ages 2 through 19 years of age, BMI is determined by height, weight, age and gender.[12] BMI is divided into four categories: underweight, healthy weight, overweight, and obese. These categories are defined below.[28]

Underweight : < 5th percentile of BMI-for-age
Healthy Weight : 5th to < 85th percentile of BMI-for-age
Overweight : 85th to <95th percentile BMI-for-age
Obese : >95th percentile of BMI-for-age

The following map and charts show BMI in Wyoming and nationally.

Figure 8: :Prevalence of Overweight and Obese Children Ages 10-17 Years in the U.S., NSCH 2007

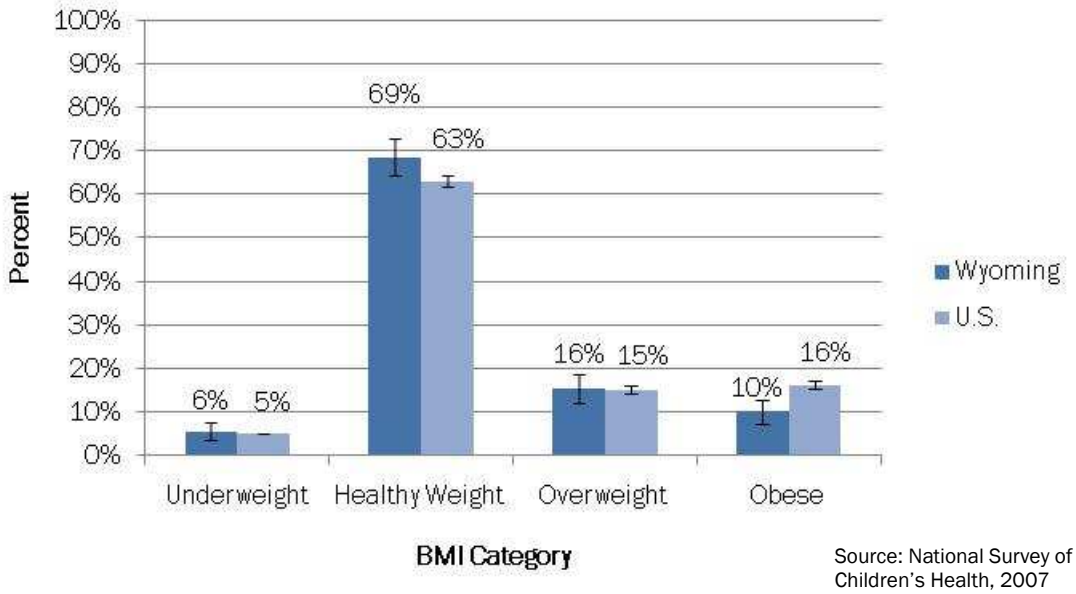


Source: National Survey of Children's Health, 2007

All states are experiencing high levels of childhood overweight and obesity. In 2007, Wyoming had the fifth smallest percentage of overweight and obese children.

The percent of Wyoming children who were overweight or obese (26%) was significantly lower than the percent (32%) of children nationally.[24]

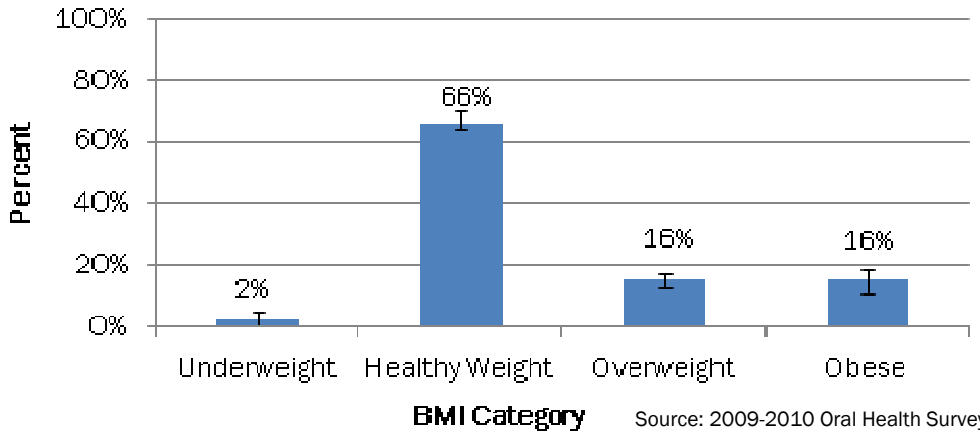
Figure 9: Percent of Wyoming Children ages 10-17 years by BMI Category, NSCH 2007



Source: National Survey of Children's Health, 2007

In 2007, 16% of Wyoming children were overweight, which was not significantly different than the national average of 15%. An estimated 10% of Wyoming children were obese, which was significantly less than the national average of 16%.[24]

Figure 11: Percent of Sampled Wyoming Third Graders by BMI Category, 2009-2010 Oral Health Survey

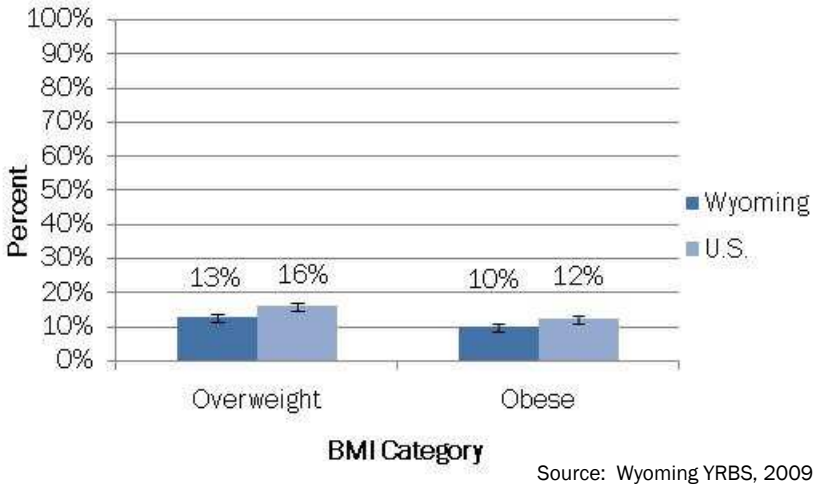


Source: 2009-2010 Oral Health Survey

Most third graders in the sub-sample from the 2009 -2010 Oral Health Survey were of a healthy weight (66%), but 16% were overweight and 16% were obese.

The total percentage of Wyoming students who were overweight (13%) was significantly lower than the national percentage (16%). The total percentage of Wyoming students that were obese (10%) was not significantly different than the national percentage (12%). The percentage of overweight and obese students did not differ significantly by gender in Wyoming.[26]

Figure 12: Percent of Wyoming and U.S. High School Students who were Overweight or Obese, YRBS 2009



Source: Wyoming YRBS, 2009

Disparities

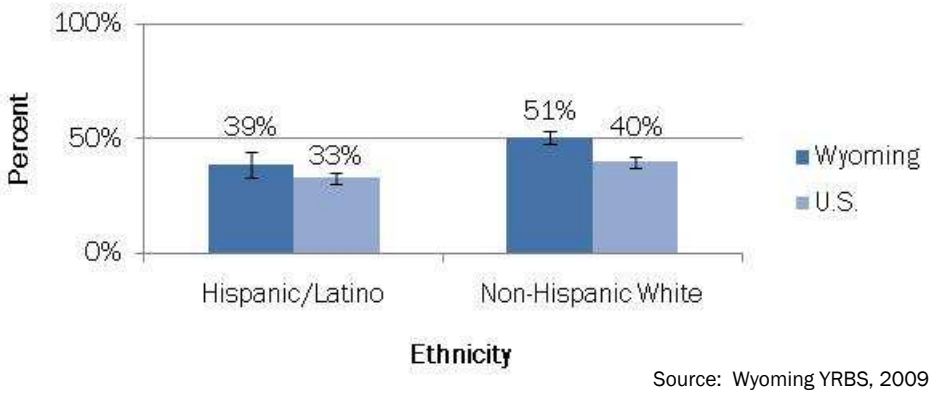
HP2020 defines a health disparity as "*a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage. Health disparities adversely affect groups of people who have systematically experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion.*"[29-30]

Although childhood obesity/overweight is a problem across population groups, the NSCH and localized data have shown a higher prevalence of overweight in children who are non-Hispanic black and Hispanic (including Mexican-American children.)[31-33] American Indian children have the highest prevalence of overweight and obesity of any racial/ethnic group.[34] Children covered by Medicaid are nearly six times more likely to be treated for a diagnosis of obesity than children covered by private insurance.[19]

NSCH 2003-2004 data showed that children below 150% of the federal poverty level were more likely to be overweight or obese, and that this relationship is strongest for Hispanic children compared to white or African American children.[35] The NSCH data also show that the proportion of overweight children decreased as family income increased.[36]

Nationally, the percentage of Hispanic/Latino students physically active for a total of at least 60 minutes per day on five or more of the last seven days (33%) was significantly lower than the percentage of non-Hispanic white students (40%). In Wyoming, the percentage of Hispanic/Latino students who were physically active was significantly lower (39%) than the percentage of non-Hispanic white students (51%).[25-26]

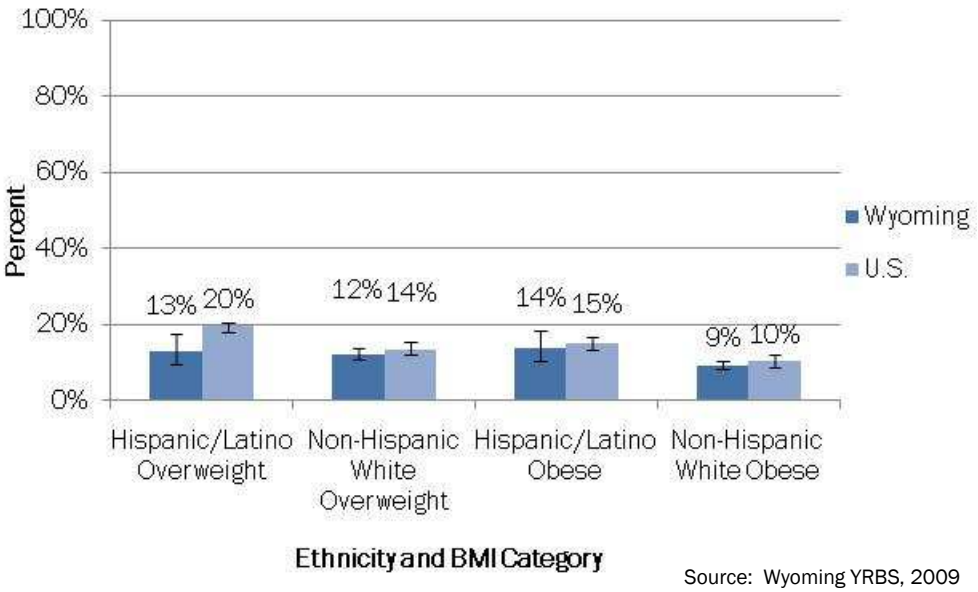
Figure 13: Percent of Wyoming and U.S. High School Students who were Physically Active for a Total of at Least 60 Minutes per Day on Five or More of the Past Seven Days by Ethnicity, YRBS 2009



Source: Wyoming YRBS, 2009

At the national level, the percentage of overweight Hispanic high school students (20%) was significantly higher than the percentage of overweight non-Hispanic white students (14%). However, in Wyoming the percentage of students who were overweight was not significantly different between non-Hispanic white (12%) and Hispanic students (13%). The percentage of obese Hispanic students (15%) was significantly higher than the percentage of obese non-Hispanic white students (10%) at the national level. However, in Wyoming the percentage of students who were obese was not significantly different between non-Hispanic white (9%) and Hispanic students (14%).[25-26]

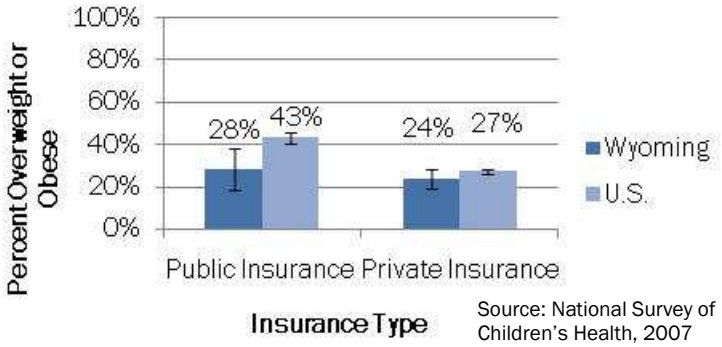
Figure 14: Percent of Wyoming High School Students who are Overweight or Obese by Race/Ethnicity, YRBS 2009



Source: Wyoming YRBS, 2009

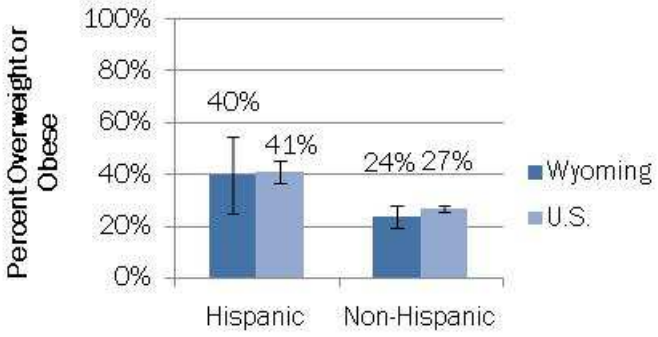
The percent of Wyoming children 10-17 years of age who were overweight or obese was 28% among children with public insurance and 24% among children with private insurance. Wyoming ranked 4th best in the nation in terms of the ratio between publicly and privately insured overweight and obese children.[24]

Figure 15: Percent of Obese or Overweight Wyoming Children ages 10-17 by Type of Insurance, NSCH 2007



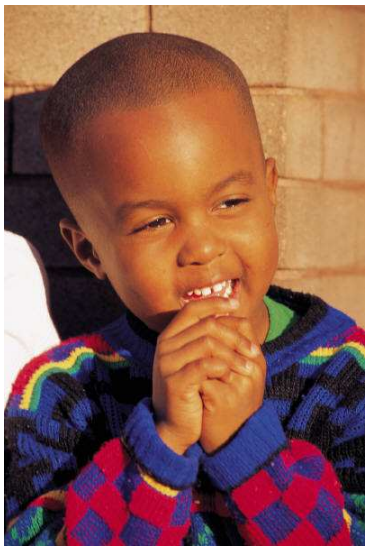
Source: National Survey of Children's Health, 2007

Figure 16: Percent of Obese or Overweight Wyoming Children Ages 10-17 by Ethnicity, NSCH 2007



Source: National Survey of Children's Health, 2007

The percent of Wyoming children 10-17 years of age who were overweight or obese was 40% among Hispanic children and 24% among non-Hispanic children. Wyoming ranked the 10th best state out of 19 in terms of the ratio between Hispanic and non-Hispanic overweight and obese children.[24]



Physical Activity and Nutrition in Children and Adolescents: Strategies to Address Children's Physical Activity and Nutrition in Wyoming

Wyoming Maternal and Family Health (MFH) selected promoting healthy nutrition and physical activity among children and adolescents as a state priority for the 2011-2015 Maternal and Child Health Needs Assessment. The needs assessment is a federally mandated requirement for Title V funding whereby organizations identify state priorities for maternal, infant, and child health improvement for the next five years.

The focus areas for this priority:

1. Support state agencies in their efforts to address physical activity and nutrition
2. Support local and community partnerships

Activities with MFH involvement surrounding this priority include:

MFH participated in the Department of Family Services Child Care Licensing Rules Revision process by reviewing and offering suggestions on physical activity and nutrition in child care settings. The Child and Adolescent Health Coordinator offered guidance and recommendations on such topics as the storage and use of expressed breast milk in child care settings and the newly mandated use of indoor and outdoor play spaces.

The MFH Child and Adolescent Health Coordinator participates on the Wyoming Comprehensive Cancer Control Program's Nutrition Workgroup. The workgroup's focus is to implement education and collaboration strategies identified in Wyoming's Cancer Plan 2011-2015 that support physical activity and nutrition efforts for Wyoming youth.

The Wyoming Department of Health (WDH) will sponsor a Chronic Disease Health Conference in 2011 with nutrition and physical activity and obesity breakout sessions. MFH is participating on the conference planning team for 2012 which will also include a Children's Health Track.

Currently, one county PHN office in Wyoming is focusing on the physical activity and nutrition of children and adolescents. The activities they will be providing include nutrition classes for after-school programs, providing a sampling of physical activities at a Wellness Day which includes Zumba, unicycle, karate, and dance.

MFH is also exploring other opportunities to collaborate with stakeholders to address childhood obesity in Wyoming. One such opportunity may be to work with the **WY Outside Initiative.** The vision of the WY Outside Initiative is to foster the mind, body, and spirit of youth and families by inspiring a long-term appreciation of the Wyoming outdoors through education, interaction, and adventure. This group includes representation from Wyoming State Parks and Cultural Resources, National Parks Services, U.S. Fish and Wildlife Service, Bureau of Land Management, Game and Fish Service, Wyoming Agriculture in the Classroom, Wyoming Tourism, and Wyoming Recreation and Parks Association.

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,..Wyoming Department of Health

Maternal and Family Health
6101 Yellowstone Rd, Ste 420
Cheyenne, WY 82002
Phone: 866-571-0944, 307-777-6921
Fax: 307-777-8687
E-mail: mfhinfo@wyo.gov

Maternal and Family Health provides leadership to ensure that all Wyoming women, children and families, including those with special health care needs, have access to prevention services and public health programs to create a strong foundation for optimal lifelong health.

Maternal and Family Health

http://health.wyo.gov

Maternal and Family Health Priorities for 2011-2015

1. Promote healthy nutrition among women of reproductive age.
   * Promote folic acid intake among Wyoming women of reproductive age.
   * Promote a healthy prepregnancy body mass index and adequate weight gain during pregnancy.
2. Promote healthy nutrition and physical activity among children and adolescents.
3. Build and strengthen services for successful transitions for children and youth with special health care needs.
4. Reduce the rate of unintentional injury among children and adolescents.
5. Design and implement initiatives that address sexual and dating violence.
6. Reduce the rate of teen births.
7. Reduce the percentage of women who smoke during pregnancy.
8. Build and strengthen capacity to collect, analyze, and report on data for children and youth with special health care needs.
9. Support behaviors and environments that encourage initiation and extend duration of breastfeeding.