CULTURAL PERCEPTIONS OF A HEALTHY DIET AND HEALTHY WEIGHT AMONG RURAL APPALACHIAN YOUTH

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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ABSTRACT

Youth in rural Appalachia are at a disproportionately greater risk for obesity and related health complications than the general population. Inadequate physical activity and poor dietary habits are two primary causes of obesity in West Virginia adolescents. To design and implement regional nutrition interventions combating overweight, adolescent perceptions of a healthy diet and healthy weight needed to be identified in rural Appalachia. Adolescents were recruited in four West Virginia schools from ninth grade health and physical education classes. Sixteen rural Appalachian adolescents, ranging in age from 14-18 years participated in the study. Focus group interviews were conducted with West Virginia adolescents and their caregivers. Grounded theory was used to develop questions addressing specific domains of interest. Verbatim transcripts were analyzed to assess cultural perceptions of a healthy diet and healthy weight.

Participants defined healthy diets through statements relating to federal and professional dietary recommendations, including an increased intake of vegetables and fruits while consuming diets low in fat. Specific foods were commonly described to be either healthy or unhealthy. Vegetables and fruits were cited most often as healthy foods, while snack foods, soda, chips, and pizza were not considered to be part of a healthy diet. Portion control and eating three meals daily were also discussed as
healthy diet components. Knowledge was often attributed to teachings in health classes, through the media, and from family members with chronic diseases. However, knowledge of and adherence to popular fad diets contradicted some of these perceptions, and a number of students reported never considering whether or not foods were healthy prior to consumption.

Additionally, many teens had unrealistic and unhealthy perceptions of weight. Female participants were more concerned with weight than males, but both expressed a social stigma associated with overweight. Many perceptions of healthy weight and appropriate body size were shaped by the media and entertainment industry. Additionally, some participants admitted to performing unsafe practices to reduce body mass, such as very low calorie diets or fasting. Identifying perceptions will provide valuable formative data to develop targeted nutrition education and health promotion programming.
DEDICATION

To Mike:
Life’s journey is sweeter because of my traveling companion.
And to Mallie and Evan, our precious gifts:
You can achieve anything; believe it, and follow your dreams.
ACKNOWLEDGMENTS

I have been profoundly affected by this experience. When it began, I could not have imagined the impact it would have on my life or the chaos it would cause. It has been a long road, and so many have offered support, encouragement, and expertise. I am grateful to all of you, but some warrant special mention.

Foremost, I am thankful to those students throughout West Virginia who were willing to share their stories, experiences, and insights. Without you, the study would not have been possible.

To my co-advisor, Dr. Chris Taylor, words cannot adequately express my appreciation. You took me under your wing, and navigated me expertly through the research process. Thank you for your constant encouragement and for understanding my need to balance professional and family commitments. You are an asset to our profession, and someone I am honored to call friend. I look forward to working with you in the years to come.

To my other co-advisor, Dr. Robert Lawson, I offer my gratitude. You were willing to work with me under somewhat unconventional circumstances. Thank you for taking a chance on me; I hope you were not disappointed.

I am also grateful to Drs. Kay Wolf and Richard Crespo. Your collaboration on this project from its inception to completion was remarkable. Additionally, I would like
to thank Paula Fields for her tireless commitment. I certainly could not have done it without all of you!

Several exceptional educators have touched my life throughout the years; they taught me to push myself, think creatively, write well, and pursue my dreams. You may not be aware of it, but you assisted me in reaching this milestone. Thank you to Dr. Sue Linnenkohl, John Miller, Delma McComis, and Bette Fisher.

I am blessed to be surrounded by extraordinary family and friends, and to each of you, I am grateful. Few are so lucky to have such a strong support system. Chris and Anna Beth, thank you for welcoming me in your home during my many visits to Columbus; you certainly made the travel less painful. My dear friends Mary Kathryn and Vanessa also deserve recognition for regularly lending sympathetic ears, even when they did not have the time or energy.

Finally, I am most indebted to my family. So many of you altered your lives to assist me in pursuing this dream; I would not have achieved it without you. Coming from a family of educators, I was taught early the importance of formal learning and a sense of respect for those who dedicate their lives to it. I have learned from all of you who taught before me, and I hope that I can inspire my students as you have me.

To my parents and grandmother, I cannot begin to thank you for your help and encouragement throughout the years. So much of who and what I am can be attributed to you. Most recently, you have kept my children, traveled to Columbus, and done anything else I have needed, often before I even asked. Also, my in-laws, Larry and Sally, have helped so much; a special thanks to them as well.
My beautiful children, Mallie and Evan, do not yet realize what they have given up to support Mommy’s educational endeavors. For the playtime lost, the nights I was not there to tuck you in, and the extra hours in childcare, I apologize. I promise to make it up to you!

Lastly and most importantly, I owe my heartfelt gratitude to my husband, who has sacrificed more than anyone during my pursuit of this degree. Mike, you are my strongest advocate and dearest friend. Thank you for enduring and embracing the craziness that has consumed my life over the past several years. This accomplishment would not have been possible without your constant love and encouragement. You are a rare jewel; it is a privilege to share my life with you!
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FIELD OF STUDY

Major Field: Education
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CHAPTER 1
INTRODUCTION

Background of the Problem

Overweight and obesity among children and adolescents has become a problem of great concern, as rates have doubled in the United States (US) during the past 20 years (Hedley et al., 2004). According to data from the 2003 – 2004 National Health and Nutrition Examination Survey (NHANES), 19.9% of children ages 6 – 11 and 18.3% of adolescents were overweight (>95th body mass index [BMI]-for-age percentile) (Ogden et al., 2006). These levels are 3-fold higher than the goal of 5% of US children established by Healthy People 2010 (Department of Health and Human Services [DHHS], 2000). Likewise, another concern is the number of children and adolescents at risk for overweight (BMI-for-age percentile 85 - < 95th), with an additional 16.6% of children and 18.5% of adolescents with a BMI-for-age percentile that indicated at risk for overweight. The trends are a concern because various problems are associated with childhood and adolescent overweight, such as psychological problems (Mullen & Shield, 2004) and increased risk for overweight as an adult (Dietz, 2002; Fowler-Brown & Kahwati, 2004; Lytle, 2002) and developing several chronic diseases (Edmunds, Waters, & Elliott, 2001).

Obesity is a multi-factorial disorder with the etiology explained by multiple environmental, cultural, social, behavioral, and genetic factors (Centers for Disease Control and Prevention [CDC], 2004, November 11; Mullen & Shield, 2004; Racette,
Deusinger, & Deusinger, 2003; Weight-control Information Network [WIN], 2001). One important modifiable risk factor influencing overweight is dietary habits, as evidence clearly supports that less-than-optimal dietary patterns are a principal contributor to the obesity epidemic (Mahan & Escott-Stump, 2004; Mullen & Shield, 2004; Racette et al., 2003; World Health Organization [WHO], 1998). National dietary recommendations for healthy children are outlined in the *Dietary Guidelines for Americans* and *MyPyramid*, which suggest a diet: 1) high in a variety of fruits, vegetables, and whole grains; 2) low in saturated fat, cholesterol, and trans fat and moderate in total fat; and 3) limited in sugar and salt (DHHS & United States Department of Agriculture [USDA], 2005). Research has indicated that the majority of Americans, especially children and adolescents, do not meet one or more of these recommendations (Basiotis, Carlson, Gerrior, Juan, & Lino, 2002; DHHS, 2000; Kranz, Siega-Riz, & Herring, 2004; Striegel-Moore et al., 2006; Van Horn, Obarzanek, Friedman, Gernoher, & Barton, 2005; Wilson et al., 2005).

**Significance of the Problem**

Few studies have examined childhood overweight and perceptions of a healthy diet and weight in rural, Appalachian regions, where overall rates of obesity have been consistently high and continue to grow (Davey, Harrell, Stewart, & King, 2004; Demerath et al., 2003). One study of adults showed that those residing in rural areas were more overweight and less likely to exercise than their urban counterparts (Bowden, Shaul, & Bennett, 2004); however, such data are lacking for children and adolescents. In West Virginia (WV), a statewide survey found a high proportion of overweight teens (19%), with more overweight males (25%) than females (15%).
Additional evidence supports that WV youth fall short of meeting the recommendations for a healthy diet and adequate physical activity, which are fundamental to reducing the incidence of obesity (Mahan & Escott-Stump, 2004; Racette et al., 2003; WHO, 1998). Generally, they are relatively inactive (CDC, 2004c) and consume diets high in fat and saturated fat (Krummel, Farmer, & Semmens, 2004) and low in fruits, vegetables, and dairy (CDC, 2004c). Krummel et al. (2004) surveyed adolescents across WV, and reported that students consumed diets high in fat and saturated fat; 55 – 60% did not meet the suggestions for total fat intake and less than half consumed a diet low in saturated fat (Krummel et al., 2004). Fruit and vegetable intake among adolescents was also low, with males consuming an average of 3.25 servings per day and females 2.54 servings daily (Krummel et al., 2004).

Physical inactivity was also high among WV youth. The 2003 Youth Risk Behavior Survey (YRBS) indicated that only 27% participated in moderate physical activity for greater than 30 minutes at least five days per week; 8% did not participate in any physical activity regularly (CDC, 2004c). Seventy one percent did not attend physical education class daily (CDC, 2004c) and 27% reported watching television or playing video games more than two hours per day (Krummel et al., 2004). Overall, these physical activity and diet patterns “are consistent with an increased risk for obesity” and likely contribute to its elevated incidence in West Virginia’s adolescents (Kelley, Krummel, Gonzales, Neal, & Fitch, 2004, p. 224).
Objectives

The purpose of this study was to gain a better understanding of the perceptions of healthy diet and weight among rural Appalachian adolescents in order to develop contextually-appropriate obesity prevention initiatives.

The objectives of the study were as follows:

1. Identify perceptions of healthy eating among Appalachian adolescents.
2. Identify barriers to and promoters of consuming a healthy diet.
3. Describe healthy weight as perceived by Appalachian adolescents.
4. Compare and contrast perceptions, attitudes, and descriptions provided by Appalachian adolescents.

Research Approach

Semi-structured focus groups interviews were conducted over a four month period in four West Virginia schools to identify the cultural perceptions of a healthy diet and weight among rural Appalachian adolescents. Grounded theory and suggestions from Kruger and Casey (2000) guided development of the questioning guide, which included questions related to: 1) descriptions of healthy diet and weight; 2) identifying sources of food and healthy diet and weight information; 3) barriers to achieving a healthy diet; 4) perceived diet quality of participants and peers; and 5) perceptions regarding magnitude of overweight in Appalachian schools. Corbin and Strauss (1990) and Miles and Huberman (1994) provided the foundation for analysis of the transcripts, and open, axial, and selective coding were utilized examine relationships among the data.
Definitions

**Adult Obesity** - Characterized by a BMI of 30 (National Institutes of Health [NIH], National Heart, Lung, & and Blood Institute [NHLBI], 1998)

**Adult Overweight** – Characterized by a BMI of 25 – 29.9 (NIH, NHLBI, 1998)

**Appalachian Region** - A mountainous region extending more than 1,000 miles and encompassing 13 states from New York to Mississippi (Center for Appalachian Studies and Services [CASS], 2005; MacAvoy & Lippman, 2001)

**Body Mass Index** – A measure of overweight and obesity, which is computed weight in kilograms divided by height in meters squared ($kg/m^2$) (American Public Health Association [APHA], 2004; Gropper, Smith, & Groff, 2005)

**Fruit Drinks** – A fruit drink that is not comprised of 100% fruit juice

**Fruit Juice** – A fruit drink that is comprised of 100% fruit juice

**Obesity** - A disproportionate or excess amount of adipose tissue or body fat (National Center for Chronic Disease Prevention and Health Promotion [NCCDPHP], 2004; WIN, 2001)

**Youth At-Risk for Overweight** - BMI-for-age-and-gender from the 85th to less than the 95th percentile when plotted on CDC growth charts (Barlow & Dietz, 1998; CDC, 2004, November 29, DHHS, 2001; Mullen & Shield, 2004)

**Youth Overweight** - BMI-for-age-and-gender greater than or equal to the 95th percentile when plotted on CDC growth charts (Barlow & Dietz, 1998; CDC, 2004, November 29, DHHS, 2001; Mullen & Shield, 2004)
**Abbreviations**

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<td>ADA</td>
<td>American Dietetic Association</td>
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<td>AECF</td>
<td>Annie E. Casey Foundation</td>
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<td>AFHK</td>
<td>Action for Healthy Kids</td>
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<td>AHA</td>
<td>American Heart Association</td>
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<td>AOA</td>
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<td>BMI</td>
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<td>BRFSS</td>
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<td>CARDIAC</td>
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<td>CASS</td>
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<td>CNPP</td>
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<td>Department of Health and Human Services</td>
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<td>Healthy Eating Index</td>
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<td>IOM</td>
<td>Institute of Medicine</td>
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<td>LOS</td>
<td>Length of Stay</td>
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<td>NASPE</td>
<td>National Association for Sport and Physical Education</td>
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NCCDPHP - National Center for Chronic Disease Prevention and Health Promotion
NCHS - National Center for Health Statistics
NHANES - National Health and Nutrition Examination Survey
NHLBI - National Heart, Lung, & and Blood Institute
NIH - National Institutes of Health
NRA - National Restaurant Association
NRHA - National Rural Health Association
PAHO - Pan American Health Organization
US - United States
USDA - United States Department of Agriculture
WHO - World Health Organization
WIN - Weight-control Information Network
WV - West Virginia
YRBS - Youth Risk Behavior Survey
CHAPTER 2
REVIEW OF LITERATURE

In recent years, the crisis of obesity has risen to the magnitude of an epidemic (Mullen & Shield, 2004; World Health Organization [WHO], 2004). Worldwide, there are an estimated one billion overweight adults, with at least 300 million of those categorized as obese (WHO, 2004). The problem has intensified nationally, with approximately 65% of American adults being classified as either overweight or obese (National Center for Health Statistics [NCHS], 2004). The dilemma is no less daunting in children. Data from the 2003 - 2004 National Health and Nutrition Examination Survey (NHANES) indicated that 18% of children and adolescents (age 2 – 19) were overweight in the United States, which represented a significant increase since the 1999 - 2000 NHANES was administered (Ogden et al. 2006). The dramatic escalation in the incidence of overweight and obesity across racial, ethnic, and socioeconomic groups raises serious health and economic concerns, which must be addressed (Holm et al. 2001; Mullen & Shield, 2004). The pages that follow explore the topic of obesity throughout the lifespan, with an

Figure 2.1: Rates of overweight in US children

Source: Ogden et al. 2006
emphasis placed on Appalachian children and adolescents. The review begins by examining the clinical definitions of “overweight” and “obesity” as well as the etiology of the disease. Next, problems associated with obesity are addressed, along with the specific roles played by diet and physical activity in decreasing prevalence of the condition. Concluding the review is a summary of literature related to perceptions of healthy diet and weight.

**Adult Overweight and Obesity**

*Definitions of Overweight and Obesity*

Though often used interchangeably, the terms “obese” and “overweight” are characterized differently but rather ambiguously (Mullen & Shield, 2004). Obesity is defined as a disproportionate or excess amount of adipose tissue or body fat (National Center for Chronic Disease Prevention and Health Promotion [NCCDPHP], 2004; Weight-control Information Network [WIN], 2001), while overweight also refers to excess body fat, only to a lesser degree (Mullen & Shield, 2004). Many techniques have been utilized to measure body composition, such as waist circumference, waist-to-hip ratio, skin fold thickness, and bioelectrical impedance, to name a few (Gropper et al., 2005; NCCDPHP, 2004, November 11); however, body mass index (BMI) is the current standard of measure for determining overweight and obesity (Mahan & Escott-Stump, 2004; National Institutes of Health [NIH], National Heart, Lung, & and Blood Institute [NHLBI], 1998; United States Department of Health and Human Services [DHHS], 2001). The correct calculation of BMI requires only two elements to assess the appropriate weight for a particular height: “accurate measures of an individual’s weight and height” (DHHS, 2001, p. 4; Gropper et al., 2005). The height and weight measures are entered into the following equation to generate a person’s BMI: weight in kilograms divided by height in meters squared (kg/m$^2$) (American Public Health Association [APHA], 2004; Gropper et al., 2005). BMI values can be used to compare values to that
of the general population (NCCDPHP, 2004, November 12) Use of BMI for assessment of overweight and obesity is endorsed by the world’s major health organizations, such as the Centers for Disease Control and Prevention (CDC), WHO, and U. S. Office of the Surgeon General (DHHS, 2001; NCCDPHP, 2004, November 12; WHO, 2004). The CDC proclaims BMI as “one of the best methods for population assessment of overweight and obesity” (NCCDPHP, 2004, November 12, ¶ 1). Their claim is based on the fact that it is inexpensive and easy to use, both for health professionals and the general public.

<table>
<thead>
<tr>
<th>BMI values</th>
<th>Classification</th>
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<tbody>
<tr>
<td>&lt;18.5 kg/m²</td>
<td>Underweight</td>
</tr>
<tr>
<td>18.5-24.9 kg/m²</td>
<td>Normal weight</td>
</tr>
<tr>
<td>25-29.9 kg/m²</td>
<td>Overweight</td>
</tr>
<tr>
<td>≥30 kg/m²</td>
<td>Obesity</td>
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</table>

Table 2.1: Classification table for adulthood obesity as indicated by body mass index

According to NIH guidelines (Table 2.1), BMI of 18.5 – 24.9 constitutes a normal weight in adults. A BMI of 25 – 29.9 is categorized as overweight in adults and 30 or greater is considered obese (NIH, NHLBI, 2004; NIH, NHLBI, 1998). Persons with a BMI of 25 or above are considered to be at a higher risk for developing weight-related medical problems (DHHS & USDA, 2005). However, those with BMI greater than or equal to 30 are at highest risk for morbidity and mortality related to overweight/obesity (US Preventative Services Task Force, 2004).

**Etiology**

No simple explanation exists regarding the etiology of obesity. Scientifically, obesity is defined as “a consequence of an energy imbalance where energy intake has exceeded energy expenditure over a considerable period” (WHO, 1998, p. 107). While this appears straightforward, the causes of “energy imbalance” are multifactorial and
complex, with environmental, cultural, social, behavioral, and genetic factors all contributing to the problem (CDC, 2004, November 11; Mullen & Shield, 2004; Racette et al, 2003; WIN, 2001).

Recently, attention has been given to the role of heredity in the obesity epidemic (Froguel & Boutin, 2001; Mahan & Escott-Stump, 2004; Racette et al., 2003; Tataranni, 2003). Research has indicated that genetic factors do, in fact, play a role in the incidence of obesity and that “genetic risk factors tend to be familial” (CDC, 2004, November 11, ¶ 5; Froguel & Boutin, 2001). While a greater understanding of genetic predisposition for overweight is helpful and pertinent, genetic constitutions of populations do not quickly evolve (Mullen & Shield, 2004). Therefore, the recent dramatic rise in rates of obesity could likely be attributed to other causes, such as behavioral and environmental factors (WHO, 1998).

Two examples of modifiable behavioral factors influencing obesity are patterns of physical activity and dietary intake. Significant evidence supports that a lack of physical activity and less-than-optimal dietary habits are the principal contributors to the obesity epidemic (Mahan & Escott-Stump, 2004; Mullen & Shield, 2004; Racette et al., 2003; WHO, 1998), and in the US, people are eating more and exercising less (DHHS, 2000; Putnam, Allshouse, & Kantor, 2002). This study is primarily focused on the perceptions of a healthy diet; however, because we are also interested in the perceptions of a healthy weight, this warrants understanding the role of physical activity as well.

Physical activity.

According to the American College of Sports Medicine (ACSM), adults should engage in moderate physical activity for at least 30 minutes on most days of the week (Schnirring, 2003). Moderate activity is any that provides an increase in breathing and heart rate; it could include activities such as brisk walking, dancing, swimming, or biking (NCCDPHP, 2006, June 3). The Dietary Guidelines for Americans (DHHS & USDA,
2005) concurred with ACSM recommendations. Additionally, these guidelines asserted that daily exercise is preferable and an increase in the intensity and/or duration of exercise will provide greater health benefits.

Despite these recommendations, Americans continue to fall short of physical activity goals. In 1997, 40% of adults did not engage in any type of leisure time physical activity and a mere 15% exercised for at least 30 minutes on most days (DHHS, 2000). Data from the 2005 Behavioral Risk Factor Surveillance survey (BRFSS), a national telephone surveillance survey, estimated that over half (50.9%) of Americans do not participate in regular physical activity, which was defined as at least 30 minutes of moderate physical activity five or more days per week or vigorous physical activity for at least 20 minutes three or more days per week (NCCDPHP, 2006, June 2).

A plethora of explanations exist regarding Americans’ relative inactivity. Among those commonly cited are: “lack of time, lack of access to convenient facilities, and lack of safe environments in which to be active” (DHHS, 2000, Physical Activity Section, ¶ 8). Additionally, developed societies tend to utilize automobiles as a primary source of transportation and engage sedentary forms of entertainment, such as television viewing and computer use (Galvez, Frieden, & Landrigan, 2003). All of these factors contribute to the decreased amounts of physical activity, which, in turn, contributes to the problem of obesity.

*Dietary intakes.*

As previously stated, dietary patterns are a primary contributor to the obesity crisis. National guidelines regarding diet consumption exist for healthy children and adults and are outlined in the *Dietary Guidelines for Americans* (DHHS & USDA, 2005); however, research has indicated that the majority of Americans do not meet these recommendations (Basiotis, Carlson, Gerrior, Juan, & Lino, 2002).
The Dietary Guidelines for Americans provided suggestions for consuming a healthy diet. Generally, they recommend a diet that is: 1) high in a variety of fruits, vegetables, and whole grains; 2) low in saturated fat, cholesterol, and trans fat and moderate in total fat; and 3) limited in sugar, salt, and alcoholic beverages (DHHS & USDA, 2005). To support the Dietary Guidelines for Americans, the Food Guide Pyramid (FGP) and the recently updated MyPyramid are food guidance plans that utilize the guidelines, and the appropriate number of servings and portion sizes for all food groups are addressed (Center for Nutrition Policy and Promotion [CNPP], 1996; CNPP, 2005). Despite these efforts, Putnam et al. (2002) proposed that the typical American diet resembles an hour glass, rather than a pyramid. They suggested that consumption of fats, oils, sweets, and refined carbohydrates has increased, while intake of fruits, vegetables, and low-fat dairy products has decreased. This is consistent with the findings of the USDA’s CNPP, which reported that only 24%, 28%, 17%, and 30% of those surveyed met the dietary recommendations for grains, vegetables, fruits, and milk, respectively, in 1999 - 2000 (Basiotis et al., 2002).

The Healthy Eating Index (HEI) was designed by CNPP to “assess and monitor the dietary status of Americans” (Basiotis et al., 2002, Abstract). Essentially, HEI measures ten components of diet quality (grains, vegetables, fruits, milk, meat, total fat, saturated fat, cholesterol, sodium, and variety) and scores each component on a scale of 1 – 10; all component scores are summed to achieve an overall composite score. The CNPP determined that a composite score over 80 was indicative of a good diet, 51 – 80 was a diet in need of improvement, and less than 51 was a poor diet.

Data from NHANES 1999 – 2000 indicated that 74% of Americans have a diet that needs improvement, and 16% have poor diet quality according to their HEI composite scores (Basiotis, Carlson, Gerrior, Juan, & Lino, 2004). Those at highest risk for having
poor diet quality were persons with limited education (high school diploma or less) and income (Basiotis et al., 2004). Overall, research indicated that Americans’ diets have not improved in recent years (Basiotis et al., 2002).

Prevalence and Significance

With one billion overweight adults worldwide (WHO, 2004) and 129.6 million overweight American adults (WIN, 2004), “the prevalence of obesity is greater than it has ever been”, and the number of individuals impacted is expected to increase (Racette et al., 2003, p. 277). The US has seen a dramatic rise in incidence of obesity during the past fifteen years. In 1994, only four states had obesity rates of 15 – 19%, and no states had rates at or above 20% (CDC, 2006, June 2). In 2004, however, the prevalence of obesity skyrocketed. Seven states had rates between 15 – 19%, and 42 states reported obesity rates at or above 20% (CDC, 2006, June 2). The NIH referred to obesity as a “health hazard” that significantly impacts the physical and psychological health of the nation as well as the economy (WIN, 2001).

Health Consequences of Obesity

Overweight and obesity have been found to be “major contributors to many preventable causes of death”, and higher body mass indexes are linked to higher rates of death (DHHS, 2000, Overweight and Obesity Section, ¶ 1). Persons with a BMI of 30 or above have a “50 – 100% increased risk for premature death from all causes” in comparison to individuals with a BMI within normal range (DHHS, 2001, p. 8; Mahan & Escott-Stump, 2004). In the United States (US), 200,000 - 400,000 deaths occur annually that are attributed to obesity (Bassett & Perl, 2004; DHHS, 2001; Mokdad, Marks, Stroup, & Gerberding, 2005).

Obesity is a risk factor for 4 of the top 10 leading causes of death in American adults; among these are coronary heart disease, stroke, type 2 diabetes, and cancer (APHA, 2004). Risks for developing other illnesses or medical conditions, such as
gallbladder disease, osteoarthritis, sleep apnea, hyperlipidemia, hypertension, complications of pregnancy, menstrual irregularities, and urinary incontinence are also increased in overweight persons (DHHS, 2000; WIN, 2001; WIN, 2004). The threat of developing these complications and conditions and their severity escalates markedly as weight increases (Mahan & Escott-Stump, 2004). In addition to physical complications, overweight and obese individuals often suffer from psychological disorders, social stigmatization, and discrimination (DHHS, 2000). Overweight persons have higher rates of depression and diminished self-esteem (Galvez, Frieden, & Landrigan, 2003). They are also more likely to face prejudice or be discriminated against in social and business situations (WIN, 2001).

Economic Consequences of Obesity

Obesity’s impact on the health of the nation is exorbitant and its influence on the national economy is no less daunting. The Office of the Surgeon General stated that “overweight and obesity have substantial economic consequences for the US health care system” (DHHS, 2000, p. 9). This is evidenced by the estimated total costs of obesity in 2000, which were estimated at $117 billion (APHA, 2004; DHHS, 2000; Dietz, 2002). Of this, $61 billion were associated with direct costs, such as preventative, diagnostic, and treatment services; $56 billion were related to indirect costs, such as lost wages, which is comparable to the economic burden of cigarette smoking (DHHS, 2000; WIN, 2004). Data also indicated that 39.3 million days of work were lost annually due to complications of obesity; furthermore, 62.7 million physician office visits were attributed to obesity in 1994 (DHHS, 2003; WIN, 2004). These statistics provide clear evidence of the economic burden of obesity on the nation; however, individuals are financially impacted by obesity as well. Reduction of weight among Americans would decrease out
of pocket and insurance expenses. The CDC postulated that a nominal weight loss (10%) could reduce the lifetime medical costs of an overweight person by $2,200 - $5,300 (APHA, 2004).

*Childhood and Adolescent Overweight*

Overweight among children and adolescents contributes to the adult obesity epidemic and is a serious health concern (Mullen & Shield, 2004). The following segments of the review will address the definition, causes, prevalence, and significance of pediatric overweight. Special attention will be given to the problem among rural, Appalachian youth, specifically those residing in West Virginia.

*Definition*

As with the adult population, the terms “overweight” and “obese” are often used interchangeably in literature regarding children and adolescents. While such is common practice, experts suggested that “overweight” holds fewer negative connotations and should be used for these age groups, especially in treatment settings (Mullen & Shield, 2004). In fact, a classification of “obese” does not exist for children and adolescents (CDC, 2004, November 29).

In March of 1997, the Maternal and Child Health Bureau of the DHHS assembled a group of experts to achieve consensus on the evaluation and treatment of pediatric obesity (Barlow & Dietz, 1998). The group concurred that BMI, defined as weight in kilograms divided by height in meters squared (kg/m\(^2\)), was appropriate for use in screening children (at least two years of age) and adolescents for overweight (APHA, 2003; APHA, 2004; Gropper et al., 2005). However, BMI in these age groups must be considered with respect to age and gender, as body fatness changes with growth and differs among girls and boys (CDC, 2004, November 29). For these reasons, the adult
guidelines, which state that a BMI of 25 – 25.9 is categorized as overweight and 30 or greater is considered obese, are not appropriate for children and adolescents (CDC, 2006, June 3).

Because of this, in 2000, the CDC developed 16 growth charts, including BMI-for-age growth charts for boys and girls ages 2 – 20, that should be utilized by practitioners when screening for overweight (NCHS, 2004, Appendix A); one example is included as Figure 2.2. When utilizing these growth charts, practitioners plot age on the horizontal axis and BMI on the vertical, drawing a single point where the two meet; “the curved lines on the growth chart show selected percentiles that indicate the rank of the child’s measurement (CDC, 2006, June 4, p. 4).” Those with a BMI-for-age-and-gender from the 85th to less than the 95th percentile are considered “at risk of overweight”, and children or adolescents with a BMI-for-age-and-gender greater than or equal to the 95th percentile are deemed “overweight” (Barlow & Dietz, 1998; CDC, 2004, November 29, DHHS, 2001; Mullen & Shield, 2004).

Figure 2.2: CDC BMI-for-Age growth chart for boys 2-20 years

Etiology

The causes of obesity among children and adolescents are multifaceted. Similar to the adult population, overweight in children exists due to a number of genetic, environmental, social, and cultural issues. Among these are previously identified factors,
such as heredity, lack of physical activity, and inadequate diet consumption, as well as prenatal factors, increased soft drink consumption and television viewing, and hormonal defects, to name a few (Mullen & Shield, 2004).

Genetic, Hormonal, and Prenatal Factors

Heredity’s role in obesity has been formerly discussed, and evidence clearly suggested that “genes can and do influence an individual’s predisposition to gain weight” (CDC, 2004, November 11; Lederman, Akabas, & Moore, 2004; National Institute for Health Care Management Foundation, 2003, p. 5). On rare occasions, mutations in single genes or hormonal defects contribute to instance of childhood obesity; most often, however, predisposition for obesity seems to be caused by a complex interaction among at least 250 obesity-related genes (Ebbeling, Pawlak, & Ludwig, 2002; Mullen & Shield, 2004).

Research has also indicated that prenatal overnutrition or undernutrition may impact the likelihood of obesity in childhood and throughout life. With regard to overnutrition, it has been hypothesized that maternal obesity in early pregnancy increases transfer of nutrients across the placenta (Mullen & Shield, 2004), stimulating permanent changes in energy metabolism and appetite (Ebbeling et al., 2002). Observational studies reinforced this hypothesis, showing a direct relationship between maternal obesity, birth weight, and obesity in later life (Whitaker & Dietz, 1998). One study by Whitaker (2004) concluded that maternal obesity increased the risk of overweight more than two-fold among low-income children, 2 – 4 years of age. Alternatively, undernutrition during pregnancy may also contribute to obesity by provoking lasting physiological changes, as was evidenced in the Dutch famine studies (Dietz & Gortmaker, 2001; Ebbeling et al., 2002; Mullen & Shield, 2004; Ravelli, Stein, & Susser, 1976).
**Diet Consumption**

According to *Healthy People 2010* (DHHS 2000), American children and adolescents are not meeting the government’s current recommendations for a healthy diet, and as a result, the rate of overweight continues to rise (Mullen & Shield, 2004). Several factors have been attributed to the quality of diet consumption among these groups; such factors include increased consumption of sugar-sweetened soft drinks (Grimm, Harnack, and Story, 2004; Mullen & Shield, 2004), a rise in fast food intake and size of portion servings (Ebbeling et al., 2002; McConahy, Smicklas-Wright, Mitchell, & Picciano, 2004; Mullen & Shield, 2004), and parental or caregiver influence (Bruss, Morris, & Dannison, 2003; Hart, Bishop, & Truby, 2002; Stang, Rehorst, & Golicic, 2004). The following paragraphs will examine diet recommendations for children and adolescents, patterns of consumption among these groups, and previously cited factors impacting quality of diet consumption.

**Dietary recommendations.**

Every five years, the US government updates a set of federal recommendations for dietary intakes as *The Dietary Guidelines for Americans* (DHHS & USDA, 2005). The latest guidelines from 2005 and supporting *MyPyramid* were discussed elsewhere but are also appropriate for healthy children and adolescents. Included in these guidelines are recommendations specific to children and adolescents, such as: 1) consume three or more servings of whole grains daily, 2) drink three cups of fat-free or low-fat milk daily (two cups for children 2 – 8 years old), and 3) maintain a total fat intake of 25 – 35% of total calories (30 – 35% for children 2 – 3 years old), with the majority of fats being from polyunsaturated and monounsaturated sources (DHHS & USDA, 2005).

In 1992, the FGP, the original meal plan consistent with the *Dietary Guidelines for Americans*, was introduced to the American public. The first adaptation for children was released in 1999 (USDA, 1999). A revised *MyPyramid for Kids* targeting children 6 – 11
years of age was launched in 2005, with the release of MyPyramid. The adapted version was more graphically appealing to children and emphasized choosing a variety of foods from all groups as well as physical activity to promote a healthy body weight (USDA, 2005).

*Patterns of consumption.*

Over the past 20 years, food consumption patterns of children and adolescents have changed (American Dietetic Association [ADA], 2004; Nielsen, Siega-Riz, & Popkin, 2002). Generally, these age groups are consuming more energy (Nielsen et al., 2002), while intakes of beverages, fruit juices, and cheese have also increased (Nicklas et al., 2004). Additionally, children and adolescents are consuming less milk and inadequate amounts of fruits and vegetables (Neumark-Sztainer, Story, Hannan, & Croll, 2002; Nicklas et al., 2004). Similarly, a greater reliance on the contribution of snacking to dietary intakes has been prevalent (Nielsen et al., 2002).

Analysis of the USDA’s 1989 – 1991 Continuing Surveys of Food Intakes by Individuals (CSFII) demonstrated that children and adolescents did not meet the national recommendations for daily food consumption (Munoz, Krebs-Smith, Ballard-Barbash, & Cleveland, 1997). Only 1% of those sampled met the recommendations for all FGP groups, and 16% of children and adolescents did not meet recommendations for any food group (Munoz et al., 1997). More recent studies, such as the Bulgalusa Heart Study (Nicklas et al. 2004) and those utilizing the HEI (Basiotis et al., 2002), concur with these findings and provide additional evidence that the diet quality of this age group has not improved over time.

According to the HEI from 1999-2000 NHANES data, children ages 2 – 3 in the sample had the highest composite HEI score and best overall diet quality; however, the average score for this group was 75.7, which was still rated as “needs improvement” (Basiotis et al., 2002). In the older age groups, HEI scores were lower. For example,
children aged 4 – 10 years had an average overall score of approximately 66 and those 11 – 18 years old ranged from 59.3 – 61.7 (Basiotis et al., 2002). Another study estimated that only 31.5% of adolescent females and 28.8% of males were consuming five or more servings of fruits or vegetables daily and less than 50% met the daily recommendations for grain consumption (Neumark-Sztainer, Story, et al., 2002).

From the statistics presented, it is clear that the diet quality of children and adolescents in the US is not consistent with national recommendations. The following sections will address the major areas of concern related to diet quality in US children, which include how increased consumption of soft drinks and fast and snack foods, as well as larger portion sizes, contribute to diminished diet quality and the problem of childhood overweight.

*Increased consumption of soft drinks.*

The consumption of sugar-sweetened carbonated beverages, such as sodas and fruit drinks, among children and adolescents has increased in recent years (French, Lin, & Guthrie, 2003; Grimm et al., 2004). From 1989 to 1996, children’s soft drink intake increased by 41% (French et al., 2003), and it is estimated that teenagers’ soda consumption is double their intake of nutrient dense milk (AFHK, 2003a). Literature indicated that 56 – 85% of school aged children consumed a minimum of one soft drink daily and at least 20% of them consumed four or more servings on a daily basis (Gleason & Suitor, 2001).

These statistics are troubling as excessive intakes of these beverages have been linked to overweight (Ludwig, Peterson, & Gortmaker, 2001; Mullen & Shield, 2004). On average, a 12 oz. can of soda contains 150 kcal and the equivalent of 10 teaspoons of sugar. Typical serving sizes regularly exceed this amount. Since energy consumed in liquid form regularly adds to, as opposed to displaces, other dietary intake, it is possible
for children and adolescents to drink an excess of 150 – 600 kcal daily (1 – 4, 12 oz. servings) (American Academy of Pediatrics [AAP], 2004). This excess intake could result in up to one pound a week of weight gain.

Children who are overweight generally consume a greater number of soft drinks than those at a desirable weight, and the risk for becoming overweight increases dramatically as daily soda intake rises (French et al., 2003; Ludwig et al., 2001). Researchers have indicated that each 12 oz. can of sugar sweetened soft drink consumed daily is associated with a .18 increase in a child’s BMI (AAP, 2004), presenting a 60% greater risk of being overweight (French et al., 2003).

Schools often have these products readily available to students, which contributes further to the problem of excess soft drink consumption. Kann, Grunbaum, McKenna, and Galuska (2005) surveyed secondary school principals in 27 states and found that the overwhelming majority allowed purchases of these items from vending machines and/or school stores. Of those schools permitting purchases, 78.9 – 99.5% sold soft drinks, sports drinks, and fruit drinks (not 100% juice). In a similar study, 61.5% of high school students reported purchasing soft drinks from school vending machines at least one day per week (Neumark-Sztainer, French, Hannan, Story, & Fulkerson, 2005).

*Increased consumption of fast and snack foods and portion sizes.*

Two other factors believed to contribute to childhood overweight are the increase in number of meals and snacks consumed away from home and the concept of “super-sizing” in the US (Mullen & Shield, 2004). The National Restaurant Association (NRA) (2005) forecasted that restaurant industry sales are expected to reach a record high $511 billion in 2006, which represents a five percent increase over 2005 sales. Additionally, they predicted that American consumers would spend nearly 50% of food dollars on food eaten away from home in 2006 (NRA, 2005), with many of those consumers including children and adolescents.
Fast food consumption among these age groups has increased dramatically in recent years and evolved into a “dominant dietary pattern” for American children and adolescents (Bowman, Gortmaker, Ebbeling, Pereira, & Ludwig, 2004, p. 112). It is estimated that fast food intake contributes to 20%, 25%, and 33% of total energy intake for children ages 3 – 5, ages 6 – 11, and ages 12 – 19 respectively (Mullen & Shield, 2004). These statistics are disconcerting as foods consumed away from home are often energy dense, high in fat (total, saturated, and trans fat) and sodium, low in fiber, and served in portions much greater than those recommended by the FGP (Bowman et al., 2004; Ebbeling et al., 2002; Mullen & Shield, 2004).

One study indicated that 42% of children sampled reported fast food use and 75% of adolescents ate fast food in the week prior to the survey (Paeratakul, Ferdinand, Champagne, Ryan, & Bray, 2003). Children who ate fast food consumed 187 kcal per day more than those who did not (Bowman et al., 2004) and had significantly higher intakes of fat, saturated fat, sodium, carbonated soft drinks than their non-fast food consuming counterparts (Paeratakul et al., 2003). Fast food consumers also had lower intakes of vitamins A and C, milk, fruits, and vegetables (Paeratakul et al., 2003). Mullen and Shield (2004, p. 30) cautioned that “no cause-and-effect data on fast food and overweight/obesity in children” exist; however, one study in adults found that those who frequented a fast food establishment two or greater times per week increased their risk of becoming obese by 86% over a 15 year period (Bowman et al., 2004). Given the information provided, it is reasonable to assume a relationship between overweight in children and adolescents and fast food consumption exists.

Schools are another important venue for food consumption away from home, as America’s youth spend a significant portion of time in educational environments. Most schools (87.6%) offer nutritious lunches to students, which are compatible with the Dietary Guidelines for Americans (ADA, 2006). However, 98% of senior high schools
surveyed also made readily available less nutritious options through school vending machines, stores, and/or snack bars (ADA, 2004). In a recent report to Congress, the USDA stated that choosing these options may lead to “overconsumption of food energy, dietary fat, saturated fat, added sugars, and sodium and underconsumption of calcium, fiber, fruits and vegetables, and whole grains (ADA, 2006, p. 124)”.

One study, which surveyed school principals in 27 states, found that approximately 65% of schools had candy and 75% had high-fat, salty snacks available for purchase in vending machines and school stores (Kann et al., 2005). Probart, McDonnell, Hartman, Weirich, and Bailey-Davis (2006) surveyed foodservice directors in Pennsylvania high schools and found that 94% of schools had vending machines that were accessible to students, with an average of 5.9 machines per school. In these machines, 70% of the most offered choices were not rated as healthy by a panel of nutritionists (Probart et al., 2005).

These findings provide a clear indication that foods in direct competition with school lunches, which meet US dietary guidelines, are readily available to students (Probart et al., 2005). Schools should be encouraged to promote healthier eating practices (Neumark-Sztainer et al., 2005), and ought to consider adoption of policies that limit the sale of less nutritious items in vending machines and school stores.

*Parental or caregiver influence on diet consumption.*

The influence of the primary caregiver (parent or otherwise) may also contribute to the incidence of overweight in children and adolescents in a number of ways (Ebbeling et al., 2002; Hodges, 2003; Stang et al., 2004). Generally, parents control kinds and amounts of foods available for consumption at mealtimes and snacks, which undoubtedly influences dietary intake; such parental control is highest in young children, but continues throughout adolescence (Stang et al., 2004). Research supports that parental control over food intake impacts the weight status of children (Stang et al., 2004).
Caregivers also act as primary role models for the development and sustaining of healthy eating behaviors and patterns in children (Hodges, 2003). When healthy eating behaviors were not modeled in the home or parents had personal issues with weight and eating, there was an increased risk of elevated body fatness among their children (Stang et al., 2004). In contrast, when households emphasized family meal time and parents acted as positive role models, the diet quality of children improved (Ebbeling et al., 2002).

**Physical Inactivity**

Physical activity is an essential component of reaching and/or maintaining a healthy weight (APHA, 2003; Patrick, Spear, Holt, & Sofka, 2001), as it increases the amount of calories utilized (DHHS & USDA, 2005). Research indicated that many children and adolescents do not meet current physical activity recommendations (CDC, 2004a). In fact, Mullen and Shield (2004, p. 24) suggested that “the current generation of children are the most sedentary in American history.”

Presently, the most widely accepted physical activity recommendations suggest that children and adolescents engage in moderate, age specific physical activity for at least 60 minutes on most days, preferably daily (DHHS & USDA, 2005; Pan American Health Organization [PAHO], 2002). Other organizations, such as the American Heart Association (AHA), suggest that only 30 minutes of “enjoyable, moderate-intensity” physical activity every day is appropriate to reduce risks for cardiovascular disease and obesity in children (AHA, 2004). They (AHA, 2004) also advocate 30 minutes of vigorous physical activity 3 – 4 days per week in addition to the previous recommendation.

Approximately 23.0% of 9 – 13 year olds do not engage in any free-time physical activity (CDC, 2003), and nearly half of young people do not participate in vigorous physical activity regularly (Action for Healthy Kids [AFHK], 2003b; Janssen et al., 2002).
Additionally, the most recent Youth Risk Behavior Surveillance determined that 33.4% of high school students were not involved in adequate physical activity, vigorous or otherwise (CDC, 2004a). These data are alarming as decreased duration of physical activity is linked to higher BMI among these age groups (Davison & Birch, 2001b).

Regardless of duration, US children and adolescents are not partaking in sufficient physical activity. Equally disturbing is the fact that participation in physical activity decreases with age through adolescence (Mullen & Shield, 2004). In light of the information provided, one specific question must be raised; what factors influence the reduction in physical activity among these age groups? It appears that these factors are varied and considerable in number. Some have been previously discussed with regard to adults and are applicable to children as well. Among these are: lack of safe exercise environments (Dietz, 2002), transportation by vehicle instead of foot (Mullen & Shield, 2004), and engagement in sedentary entertainment activities (Dietz & Gortmaker, 2001; Ebbeling et al., 2002). One particular sedentary activity that has received considerable attention is television viewing among children and adolescents.

**Television viewing.**

There is a clear link between increased television viewing time and obesity (Dietz & Gortmaker, 2001; Ludwig & Gortmaker, 2004; Marshall, Biddle, Gorely, Cameron, & Murdey, 2004; Proctor et al., 2003). Studies have confirmed a relationship between television viewing and BMI finding that as viewing time increases, BMI likewise increases (Berkey et al., 2000; Hancox & Poulton, 2006). One examination of this phenomenon found that children who watched ≥ 3 hours of television daily had higher BMIs than those who viewed < 1.75 hours daily (Proctor et al., 2003). These results substantiated the notion that excessive television viewing puts children at increased risk for becoming overweight (Proctor et al., 2003).
Watching television is associated with excess caloric consumption and encourages intake of fast, high fat, and sugar sweetened foods as well soft drinks through advertising (Davidson & Birch, 2001; Ebbeling et al., 2002; Ludwig & Gortmaker, 2004; Mullin & Shield, 2004). Children watch an estimated 20,000 - 40,000 television commercials annually, and the overwhelming majority promote fast foods and snack foods as well as those with a high sugar content (Boynton-Jarrett, Thomas, Peterson, Wiecha, Sobol, & Gortmaker, 2003; Ritchie, Welk, Styne, Gerstein, & Crawford, 2005).

Research has shown that “children consume a substantial proportion of their daily energy while watching television” (Matheson, Killen, Wang, Varady, & Robinson, 2004, p. 1092), and often, the foods consumed during viewing are not nutrient dense. Grimm et al. (2004) found that children who watched television ≥ 3.5 hours per day were more likely to regularly consume soft drinks than their counterparts. Additionally, adolescent fruit and vegetable consumption was negatively impacted by television viewing in a study by Boynton-Jarrett et al. (2003), which concluded that adolescents may be replacing fruits and vegetables in their diets with less nutritive, highly advertised foods.

Television viewing increases the risk of overweight by “displacing” time that may have been spent engaging in vigorous physical activities (Ebbeling et al., 2002, p. 475). Little energy is expended during television viewing. In fact, it has been found to be one of the most sedentary activities when compared to others such as doing school work or art projects and playing video games (Mullen & Shield, 2004). To discourage television viewing in excess and promote physical activity, the AAP (2001) recommends that children’s total media time be limited to 1 – 2 hours of quality programming daily for children over two years of age; watching television was not considered appropriate for infants and toddlers under two. This report also suggested that parents encourage alternative forms of entertainment for children, such as participation in athletics, creative play, and reading (AAP, 2001). Despite recommendations, it is estimated that the
average American child watches between 2.5 – 3.0 hours of television daily (AAP, 2001; Ludwig & Gortmaker, 2004; Mullen & Shield, 2004). These analyses did not account for the amount of time spent watching videos or playing video games (Mullen & Shield, 2004); if all media were combined, it is estimated that viewing time would increase to nearly seven hours daily (AAP, 2001).

Physical education and recess in schools.

Children and adolescents spend a significant portion of their time at school and school physical education courses provide safe, structured, and supervised environments for students to engage in physical activity (Dietz, 2002). Studies have repeatedly shown that physically-active children perform better academically (AFHK, 2003b; Dietz, 2002; National Association for Sport and Physical Education [NASPE], 2002; Shephard, 1997). Despite existing evidence, school systems throughout the country are reducing physical education requirements (Carroll, 2004; Institute of Medicine [IOM], 2004); common reasons cited for the reductions included budgeting constraints and a need for increased instructional time in order to meet academic accountability standards (Allegrante, 2004; Story, Kaphingst, & French, 2006).

From 1991 to 1999, the percentage of students taking part in daily physical education classes declined from 42% to 29% (AFHK, 2003b). Additionally, the School Health Policies and Programs Study 2000 revealed that only “8.0% of elementary schools, 6.4% of middle schools, and 5.8% of high schools provide daily physical education or its equivalent for the entire school year for students in all grades in the school” (CDC, 2001, p.1; CDC, 2004b). These numbers are astonishingly low, especially for high school students. Another study indicated that 44.3% of high school students were not enrolled in a physical education class at all (Gerberding & Marks, 2004).

Even though physical education is proven to enhance academic performance and assist students in gaining “the knowledge, attitudes, and skills they need to engage in
lifelong physical activity” (CDC, 2004b, p.844), no federal mandates exist with regard to physical or health education in public schools (Plaza, 2004). Most states, however, require physical education be provided in their school systems, but content and format are not standardized statewide (AFHK, 2003b).

Healthy People 2010 (DHHS, 2000) includes three objectives specifically targeting physical education in schools, which include: 1) increase the proportion of the Nation’s public and private schools that require daily physical education for all students, 2) increase the proportion of adolescents who participate in daily school physical education, and 3) increase the proportion of adolescents who spend at least 50% of school physical education class time being physically active. The CDC (1997) and IOM (2004, p.2) recommended “a minimum of 30 minutes of moderate to vigorous activity during the school day” that focuses on health related fitness activities rather than athletic abilities.

Another vital, often overlooked, component of the school day for elementary students is recess or unstructured activity time. To gain additional classroom instruction minutes, schools throughout the country are reducing time allocated to recess (NASPE, 2004). The NASPE recommends supervised, daily recess for children in grades pre-kindergarten through five or six (NASPE, 2001). Dr. Dolly Lambdin, then NASPE President, summarized the situation eloquently in the following statement:

“Parents need to know that the elimination of recess and physical education may be detrimental to their children’s overall health and learning. With soaring obesity rates and increased interest in sedentary activities, a six-hour or longer school day is too long for children to go without breaks and without opportunities for substantive physical activity (NASPE, 2004, p. 1).”

It is clear that structured physical education classes and recess are important to the health and well-being of children and adolescents. They offer an opportunity for students to engage in physical activity during school time and contribute to achieving the 60
minutes per day activity recommendations. A greater emphasis on physical activity in schools has potential to positively influence the obesity problem among these age groups in the United States.

Prevalence of Childhood and Adolescent Overweight

The rate of overweight and obesity among children and adolescents has doubled in the past two decades (APHA, 2003), and “the United States is in the midst of an overweight/obesity crisis that is affecting…the nation’s youth” (Mullen & Shield, 2004, p. 9). In 2003 - 2004, 19.9% of children ages 6 – 11 and 18.3% of adolescents were overweight (Ogden et al., 2006). These estimates represent significant increases from 1988 – 1994 findings, where approximately 11% of children and adolescents were overweight (NCHS, 2006).

Another prominent concern is the number of children and adolescents at risk for overweight, those with a BMI-for-age-and-gender from the 85th to 95th percentile (Mullen & Shield, 2004). In addition to those previously documented as overweight, it is estimated that an additional 16.6% of children and 18.5% of adolescents are at risk for overweight (Ogden et al., 2006). These statistics provide a startling picture of the prevalence of overweight among American children; they also force researchers to explore the significance of childhood obesity and what may be done to combat the problem.

Significance of Overweight in Childhood and Adolescence

Many problems are associated with obesity in children and adolescents, such as increased risk for several chronic diseases (Edmunds, Waters, & Elliott, 2001) and obesity in adulthood (Fowler-Brown & Kahwati, 2004). There are also psychological concerns regarding obesity and its impact on the mental health and wellbeing of overweight children and adolescents (Mullen & Shield, 2004). Additionally, overweight
in children and adolescents has had an impact on the economy and will continue to do so if the problem is not addressed (Wang & Dietz, 2002). The paragraphs that follow will explore the significance of each issue described previously.

Risk factor for obesity and chronic disease in adulthood.

Ebbeling et al. (2002, p. 473) stated that “childhood obesity is a multisystem disease with potentially devastating consequences,” and those consequences cannot be ignored. One such consequence of childhood and adolescent overweight is the increased probability of obesity in adulthood (AFHK, 2003a; APHA, 2004; Fowler-Brown & Kahwati, 2004). The risk is greater among obese adolescents but is present in both age categories (DHHS, 2001). Overweight youth with at least one obese parent have an approximately 80% chance of remaining overweight or becoming obese in adulthood (AFHK, 2003a; American Obesity Association [AOA], 2002; APHA, 2004). Clearly, risks for developing serious physical medical problems are heightened due to obesity at an early age, which provides additional incentive to improve the problem worldwide.

In addition to increasing the risk of obesity in adulthood, children and adolescents who are overweight are at increased risk for developing type 2 diabetes, hypertension, hyperlipidemia, sleep apnea, and asthma (Davison & Birch, 2001b; Lytle, 2002; Mullen & Shield, 2004). They are also at increased risk for development of cardiovascular disease, arthritis, and some forms of cancer (Dietz, 2002).

In recent years, there has been a dramatic rise in the incidence of type 2 diabetes among children and adolescents. Formerly, it was believed that type 1 diabetes was the only form prevalent in these age groups (Libman & Arslanian, 2003). Current evidence, however, suggests otherwise, and childhood obesity is believed to be a primary contributor (Ebbeling et al., 2002; Mullen & Shield, 2004). Approximately 80 – 95% of children with type 2 diabetes are overweight (American Diabetes Association, 2005; Lytle, 2002).
In 1990, type 2 diabetes in children and adolescents accounted for only 4% of total diagnoses of diabetes among these age groups (Mullen & Shield, 2004). Recent data suggested that the percentage now ranges from 8 – 45, depending age and region of residence (American Diabetes Association, 2005). Type 2 diabetes is most prevalent in those 10 – 19 years of age (Mullen & Shield, 2004) but has been documented as early as 4 years old (American Diabetes Association, 2005).

Another concern regarding obese children and adolescents is the risk of developing cardiovascular disease and related conditions, such as hypertension and hyperlipidemia (AHA, 2003; Dietz, 2002; Mullen & Shield, 2004). Overweight children have higher blood pressures than normal weight children and that systolic pressure increased as BMI increased (AHA, 2003). A direct, significant relationship between weight and abnormal lipid levels, such as elevated cholesterol, triglycerides, and low-density lipoproteins, has also been demonstrated (Rocchini, 1999), and it was estimated that approximately 90% of children with increased triglycerides were overweight (Mullen & Shield, 2004). Also alarming is the fact that children and adolescents who present with these complications greatly increase their risk for cardiovascular disease in adulthood (Freedman, Dietz, Srinivasan, & Berenson, 1999).

_Psychological concerns._

In addition to increased risk for a plethora of chronic conditions, overweight children and adolescents are often plagued with psychological issues, such as depression, distorted body image, and low self-esteem (Davidson & Birch, 2001; Ebbeling et al., 2002; Lytle, 2002). These problems can be caused or exacerbated by discrimination, teasing, and/or criticism from peers (Lytle, 2002), adult role models, such as educators (Jalongo, 1999), and even parents (Davison & Birch, 2002a). Mullen and Shield (2004, p. 40) reported that “few problems in childhood may have as significant an impact on childhood emotional development as obesity.”
A diminished self-concept has been noted in overweight females as early as age five and was found to be negatively impacted by parental concern and criticism regarding weight (Davison & Birch, 2001a). In several studies, children ranked obese children as those least-desired as friends and described them as “more likely to be lazy, lying, cheating, sloppy, dirty, ugly, and stupid” (Mullen & Shield, 2004 p. 40). Even educators, who have been trained to avoid discrimination in the classroom, have inappropriately discriminated against overweight students and referred to them as “fat” (Jalongo, 1999).

Economic impact.


To paint a clearer picture of the economic impact of childhood obesity, Wang and Dietz (2002) studied a nationally representative sample of youth hospital discharges. They examined health care costs and lengths of stay (LOS) among youth with either a primary or secondary diagnosis of obesity and found LOS to be approximately three days longer in children with primary obesity diagnoses. The authors also cautioned that obesity is often a non-reimbursable diagnosis; therefore, costs and LOS may be underrepresented due to physicians not reporting a diagnosis for which they will not receive reimbursement.

Overweight in Rural United States and Appalachia

Few studies were located that examined the relationship between youth obesity and area of residence. This is particularly true in rural, Appalachian regions, where rates of obesity have been consistently high and continue to grow (Davey, Harrell, Stewart, &
King, 2004; Demerath et al., 2003). Adults residing in rural areas were found to be more overweight and less likely to exercise than their urban counterparts (Bowden, Shaul, & Bennett, 2004); however, such data were not located for children and adolescents.

**Rural Appalachian Culture**

The Appalachian region extends more than 1,000 miles and encompasses 13 states from New York to Mississippi (CASS, 2005; MacAvoy & Lippman, 2001). This region is predominately rural, and persons residing in these areas maintain values, practices, and social norms very different from those living in more urbanized locations (Denham, Meyer, Toborg, & Mande, 2004; MacAvoy & Lippman, 2001). These issues, coupled with others including inadequate transportation, poverty, lack of access to medical care, and lack of health insurance, (National Rural Health Association [NRHA], 2003) impact the health and prevention of diseases, such as obesity, among rural Appalachian youth (Denham et al., 2004).

**Overweight among West Virginia’s Youth**

West Virginia is the only state completely situated in the Appalachian region (CASS, 2005) and is predominately rural. The majority of its residents are white (93%), and many of its children live in poverty (24%) (Annie E. Casey Foundation [AECF], 2006). The median family income for families with children in 2004 was $39,700, which was $11,100 less than the national average (AECF, 2005). Generally, West Virginians are not healthy. According to the United Health Foundation (2005), West Virginia is 41st least healthy state overall and ranks among the bottom four in prevalence of obesity (48th), cancer deaths (49th), and cardiovascular deaths (46th).

**Prevalence and significance of overweight.**

Data on the prevalence of overweight among West Virginia’s youth are limited and varied; however, recent national statistics indicated that 13.7% of West Virginia’s high school students were overweight, which is slightly higher than the national average.
A statewide survey revealed a higher proportion of overweight teens (19%), with more overweight males (25%) than females (15%); in the same analysis, an additional 16% were classified as at-risk for overweight (Krummel et al., 2004). The Coronary Artery Risk Detection in Appalachian Communities (CARDIAC) study examined elementary students in WV for cardiac risk factors and found that approximately 45% of participants were overweight or obese (Demerath et al. 2003).

Dietary intake and physical activity.

As previously discussed, adequate diet and physical activity are fundamental to reducing the incidence of obesity (Mahan & Escott-Stump, 2004; Racette et al., 2003; WHO, 1998). However, evidence supports that West Virginia youth fall short of meeting the recommendations in both areas; they are relatively inactive (CDC, 2004c) and consume diets high in fat and saturated fat (Krummel et al., 2004) and low in fruits, vegetables, and dairy (CDC, 2004c).

Among CARDIAC participants, 68% consumed a diet high in fat and 80% consumed greater than 10% of total kcal as saturated fat (Kelley et al., 2004). Additionally, approximately 60% of these children did not meet the calcium requirements and the average total energy intake exceeded the recommendations. Adolescents, likewise, reported diets high in fat and saturated fat; 55 – 60% did not meet the suggestions for total fat intake and less than half consumed a diet low in saturated fat (Krummel et al., 2004). Fruit and vegetable intake among adolescents was also low, with males consuming an average of 3.25 servings per day and females 2.54 servings daily (Krummel et al., 2004).

Physical inactivity was also high among WV youth. The 2003 Youth Risk Behavior Survey (YRBS) indicated that only 27% participated in moderate physical activity for greater than 30 minutes at least five days per week; 8% did not participate in any physical activity regularly (CDC, 2004c). Seventy one percent did not attend
physical education class daily (CDC, 2004c) and 27% reported watching television or playing video games more than two hours per day (Krummel et al., 2004). Overall, these physical activity and diet patterns “are consistent with an increased risk for obesity” and likely contribute to its elevated incidence in West Virginia’s children, adolescents, and adults (Kelley et al., 2004, p. 224).

Perceptions of healthy diet and weight

The preceding pages discussed the realities and causes of overweight across the lifespan, with an emphasis on children and adolescents, and illustrated that obesity is an issue that warrants further investigation. Evidence clearly suggests that consumption of an unhealthy diet and lack of activity are principal contributors to the obesity epidemic (Mahan & Escott-Stump, 2004; Mullen & Shield, 2004; Racette et al., 2003; WHO, 1998). However, there is little in the literature examining adolescents’ perceptions of a healthy diet and what they believe constitutes a healthy weight. Information such as this is important when designing interventions to combat obesity.

Perceptions of healthy diet

Adult perceptions of healthy diet.

In adults, the majority of research focused on diet practices and behaviors of normal weight and overweight individuals; the studies only peripherally examined healthy diet perceptions. More often, they discussed barriers of consuming a healthy diet. In interviews with Iranian, Bosnian, and Cuban refugees, Barnes and Almasy (2005) found that most perceived a healthy diet as one that included more fruits and vegetables, was lower in fat and salt, and had smaller portion sizes. Many stated that their diets were unhealthy because they consumed too many sweet and high fat foods or calories. Refugees reported that the high cost and low quality of fresh produce in the US and time constraints were barriers to eating healthy.
Similar results were discussed in other investigations. Margetts, Martinez, Holm, and Kearney (1997) completed interview assisted questionnaires with over 14,000 Europeans. The sample generally defined low fat eating and increasing fruit and vegetable consumption as part of a healthy diet. Eikenberry and Smith (2004) also found fruits and vegetables were most often associated with a healthy diet among low-income individuals in Minnesota. Additional definitions of a wholesome diet highlighted in both studies included eating “fresh and natural” foods, consuming a balanced diet, and eating less fat and sugar. These people were motivated to eat healthy for health purposes, to feel better and live longer, to prevent disease, and to lose or maintain weight (Eikenberry & Smith, 2004); often their diet and food choices were influenced by media advertising, family, tastes, convenience, and price (Margetts et al., 1997).

Other adult studies addressed dieting practices of individuals and discovered that those trying to lose or maintain weight regularly reported eating low fat and/or fat free foods, consuming sugar free drinks and foods, and counting calories (Malinauskas, Raedeke, Aeby, Smith, & Dallas, 2006). Additionally, some respondents were at risk for eating disorders (Terry, Lane, & Warren, 1999), citing skipping meals, laxative use, and vomiting after eating as practices employed to achieve weight loss (Malinauskas et al., 2006).

Children and adolescent perceptions of healthy diet.

Substantially more information was available from children and adolescents, and many of the results paralleled those found in adults. Again, fruits and vegetables were regularly cited when defining a healthy diet among children and adolescents (Edwards & Hartwell, 2002; Giskes, Patterson, Turrell, & Newman, 2005; Monge-Rojas, Garita, Sanchez, & Munoz, 2005; Roberts, Maxwell, Bagnall, & Bilton, 2001). Other definitions of a healthy diet were not skipping meals, eating fresh and low fat foods, and reducing intake of fast foods and those with high sugar contents (Giskes et al., 2005). Specific
foods and food groups were identified as unhealthy; these included: high fat and fast foods, snacks, sodas, and chocolate and sweets (Edwards & Hartwell, 2002; Monge-Rojas et al., 2005). Additionally, Hart et al. (2002) found that children of lower socioeconomic status were less likely to correctly classify foods as healthy or unhealthy than their more affluent counterparts.

Children and adolescents reported that food choices were influenced by their parents and home environments, media and advertising, and their schools (Dixey, Sahota, Atwal, & Turner, 2001; Hesketh, Waters, Salmon, & Williams, 2005; Monge-Rojas et al., 2005). In addition, preference for high fat foods, limited availability of healthy foods (especially in schools), parents and other family members, price, taste, and peers were seen as barriers to consuming a healthy diet in these age groups (Giskes et al., 2005; Hart, Herriot, Bishop, & Truby, 2003; Monge-Rojas et al., 2005; Wang et al., 2006). In focus groups with 9 – 11 year olds, Dixey et al. (2001) discovered that children were aware of some consequences associated with eating an unhealthy diet and/or being overweight. These children identified cardiovascular disease, high blood pressure, and cancer as long term effects. They also discussed more immediate consequences, such as bullying at school and inability to “get a boyfriend” (p. 75).

As with adult studies, several in adolescents revealed participation in unsafe dieting practices and behaviors to control weight. Among these were skipping meals, vomiting after meals, and taking laxatives and diet pills (Crow, Eisenberg, Story, & Neumark-Sztainer, 2006; Felts, Parrillo, Chenier, & Dunn, 1996; Forman-Hoffman, 2004; Kilpatrick, Ohannessian, & Bartholomew, 1999; Valois, Zullig, Huebner, & Drane, 2003; Zullig, Ubbes, Pyle, & Valois, 2006). Even more alarming were the findings of Story et al. (2001) and Neumark-Sztainer, Patterson, et al. (2002). Story et al. (2001) examined American Indian elementary children and found that approximately half of those identified as overweight reported fasting or severely restricting intake in order to reduce
body weight. Neumark-Sztainer, Patterson, et al. (2002) studied adolescents with type 1 diabetes and found that several practiced very unhealthy behaviors in an effort to control weight. Behaviors included vomiting, laxative and diet pill use, skipping and reducing amount of insulin injections.

*Perceptions of healthy weight*

Nearly all of the literature surrounding weight perceptions investigated subjects’ assessments of their own weights. In several instances, perceptions were compared to reality through BMI weight measurement classifications, which were previously defined. Results were consistent from children to adults, with many inaccurately estimating weight status.

Cottrell et al. (2005) surveyed parents of WV kindergarteners to determine if perceptions of their children’s weights were accurate. BMI percentile measurements determined that approximately 33% were either overweight or at risk for overweight, and parents perceptions differed greatly from this statistic. In fact, 47.6% of children who were overweight were “equally likely to be perceived by their parents as being at the appropriate weight (p. 600)”.

Adolescents and adults also regularly underestimated their weight status. A study of adolescents in London, England found that many overweight teenagers, especially males, did not regularly recognize that they were “too heavy” (Viner et al., 2006, p.5). According to Viner et al. (2006) only half of obese boys in the sample and one-sixth of overweight ones accurately assessed their weight status. A similar investigation in the US discovered that 25% of adolescent participants classified as at risk for overweight or overweight perceived themselves to be underweight (Brener, Eaton, Lowry, & McManus, 2004).

Among adults, a study by Powell and Amsbary (2004) reported a discrepancy between those who were overweight and those who perceived themselves to be
overweight. Fifty-eight percent of participants were overweight according to BMI calculations; however, only 49% believed they were overweight according to self-reported data. Steenhuis, Bos, and Mayer (2006) found that 79% of respondents accurately reported body weight. While this represents an overwhelming majority, many still underestimated and overestimated their body weight, 14% and 7% respectively. Women who reported heavy media influences were more likely to overestimate weight.

Results of two other surveys found that respondents overestimated body weights. Mehio-Sibai et al. (2003) examined weight issues among adolescents in Beirut and determined that more indicated they were overweight than were classified as such according to BMI percentages. Additionally, in another study of adult patients with diabetes, 63% of participants with a normal BMI perceived themselves as overweight (McTigue et al., 2006).

Zimmerman, Hess, and Hurrell (2000) and Zullig et al. (2006) did not compare actual to reported weights; however, both determined that considerable numbers of children and adolescents perceived themselves as overweight. In both studies, negative self-perceptions led to dieting and/or attempting to lose weight.

No studies were located that dealt with weight perceptions more generally, addressing them at population, rather than individual, levels. People did not speak to perceptions of weight status in their various areas of residence and did not discuss their thoughts or feelings regarding the impact of the obesity epidemic.

Conclusion

Obesity is a problem of great magnitude with multiple causes and complications in both children and adults. The problem is especially prevalent in the Appalachian region of WV among all age groups. Children and adolescents in the state do not consume a diet
consistent with the *Dietary Guidelines for Americans* and are, generally, physically inactive. Relatively little data were available with regard to perceptions of healthy diet and weight, which would be beneficial when designing obesity interventions.
CHAPTER 3
MATERIALS AND METHODS

Overall Plan and Design

To investigate cultural perceptions of a healthy diet and healthy weight among rural Appalachian adolescents, focus group interviews were conducted in four West Virginia (WV) schools over a four-month period. A convenience sample was recruited from ninth grade health and physical education classes at the respective schools. Focus groups were held in the evening at the schools. Prior to conducting the group interviews, informed consent and assent was obtained, and a brief demographic survey was completed by participants.

The focus groups were audio-recorded, transcribed verbatim, and imported in Ethnograph for coding and analysis. Grounded theory guided analysis of the transcripts. The research protocol was approved by the Institutional Review Boards of The Ohio State University and Marshall University (Appendix B). The objectives of the study were as follows:

1. Identify perceptions of healthy eating among Appalachian adolescents.
2. Identify barriers to and promoters of consuming a healthy diet.
3. Describe healthy weight as perceived by Appalachian adolescents.
4. Compare and contrast perceptions, attitudes, and descriptions provided by Appalachian adolescents.
Theoretic Approach and Rationale

Various and sometimes conflicting characterizations of qualitative inquiry proliferate the literature. The confusion is compounded because qualitative research is an “umbrella-like” expression referring to many different modes of inquiry and research techniques that cut across numerous disciplines (Denzin & Lincoln, 2000). Noted researchers often espouse different views about conducting qualitative studies. For example, Patton (2002) and Huberman and Miles (2002) promoted a methods-based approach to qualitative research concentrating on utilization of meticulous collection and analysis procedures for data over paradigm allegiance. Others (Denzin & Lincoln, 2000; Grbich, 1999) supported a more paradigmatic approach, advocating specific worldviews to guide the research design and interpretation of the data.

Differing perspectives aside, qualitative research has become a significant mode of inquiry in the social and human sciences (Marshall & Rossman, 1999), yet it remains misunderstood by many. Creswell (1994, p. 1-2) provided a simplistic, yet informative definition for the term stating that a qualitative study is “…an inquiry process of understanding a social or human problem based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting.” From this concise explanation, it is evident that the issue of overweight among Appalachian adolescents was best explored through qualitative as opposed to quantitative inquiry.

Espistemology and Theoretical Perspective

Symbolic interactionism is, primarily, the theoretical perspective that informs grounded theory, and the two are often closely linked (Charmaz, 2000, p. 513; Corbin
and Strauss, 1990). George Herbert Mead and his student, Herbert Blumer, are credited with framing the perspective, which asks the fundamental question, “what common set of symbols and understandings has emerged to give meaning to people’s interactions?” (Crotty, 1998; Patton, 2002, p. 112).

Blumer (1969, p. 2) cited three primary interactionist assumptions and described them as essential to symbolic interactionism. These assumptions continue to define interactionism (Crotty, 1998; Patton, 2002); they are:

1. “that human beings act toward things on the basis of the meaning that these things have for them”,
2. “that the meaning of such things is derived from, and arises out of, the social interaction that one has with one’s fellows”, and
3. “that these meanings are handled in, and modified through, an interpretive process used by the person in dealing with the things he encounters”.

The premise of symbolic interaction is closely related to constructionism, the epistemology frequently referenced by qualitative investigators (Crotty, 1998, p. 9). Crotty (1998, p. 42) defined constructionism as “…the view that all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context.” Therefore, constructionist researchers assume that humans construct multiple realities and study these realities and their effect on the lives of those constructing them and those with whom they come in contact (Patton, 2002).
At this point, it is appropriate to discuss Fish’s observation that it is entirely possible to make sense of the same reality or truth in a number of ways. He used an example of how understanding of the same phenomenon changes from one location or culture to another bringing to light the concept of “social” constructionism (Crotty, 1998, p. 45-48). Social constructionism implies that the construction of meanings and truths is not completely individual but also influenced by the cultures in which we live. This notion of culture affecting meaning is a primary assumption of social constructionism. The interpretivist perspective of symbolic interactionism and the epistemological suppositions consistent with constructionism guided the grounded theory research study.

*Grounded Theory Methodology*

*Overview.*

Grounded theory is one of the most well known and employed methodologies in qualitative research (Cutcliffe, 2005). It follows prescribed, inductive procedures for data collection and analysis in an attempt to build “theoretical frameworks” to explain the data (Patton, 2002; Qualitative Handbook, 2000, p. 509). Creswell (1998, p. 56) described the object of grounded theory as discovery of “an abstract analytical schema of a phenomenon, that relates to a particular situation…where individuals interact, take actions, or engage in a process in response to a phenomenon.” Data analysis techniques utilized in grounded theory are its unique hallmark and will be investigated in a subsequent segment of the document.

*Historical background.*

Grounded theory was first introduced in 1967 by two sociologists, Barney G. Glaser and Anselm L. Strauss, in their now seminal work entitled *The Discovery of*
Grounded Theory (Cutcliffe, 2005; Glaser and Strauss, 1967; Strauss and Corbin, 1998). The book was, essentially, a detailed account of their “research strategies” on a joint project about dying (Charmaz, 2000, p. 511). It outlined the grounded theory method, whereby, qualitative or quantitative researchers could “generate theory by constantly comparing data, discovering what concepts and hypotheses are relevant for an area, and verificationally building on that theory by returning to field… (Duchscher and Morgan, 2004, p. 606; Glaser and Strauss, 1967).”

Over the years, grounded theory evolved. After working with it for a number of years, Glaser and Strauss developed different perceptions of grounded theory research, and have publicly disagreed about their approaches (Creswell, 1998). While there are certainly varied opinions regarding the specific aspects of grounded theory research, its spirit has remained unchanged. It aspires to construct theory “grounded in data collected from participants on the basis of the complexities of their lived experiences in social context (Fassinger, 2005, p. 157)”.

Use in related research.

Since its inception, grounded theory has been utilized in a range of disciplines as a research methodology (Creswell, 1998; Cutcliffe, 2005). Investigators in various health professions have employed grounded theory on numerous occasions in order to generate theory in the fields (Ahye, Devine & Odoms-Young, 2006; Cutcliffe, 2005; Orthopaedic Nursing, 2004; Owen, 2004). Recently, food and nutrition researchers have applied grounded theory to examine intergenerational family roles and food management strategies (Ahye et al., 2006), identities in food choice (Bisogni, Connors, Devine, &
Sobal, 2002), beliefs concerning diet practices during pregnancy and lactation (Ahlqvist and Wirfalt, 2000), and food acquisition practices of limited-resource individuals (Kempson, Deenan, Sadani, Rdlen, & Rosato, 2002), to name a few.

On several occasions, data were collected through focus group interviews in nutrition-related grounded theory studies (Kempson et al., 2002; Owen, 2004). In one example, researchers used group interviews to investigate food sustainment practices of those with limited incomes (Kempson, Keenan, Sadani, & Adler, 2003). Results were compared to findings from a similar study involving nutrition educators of limited-resource individuals in an effort to “advance theory” in this area (Kempson et al., 2002; Kempson et al., 2003, p. 180). Another grounded theory inquiry used focus groups to ascertain weight management activities and strategies of health care providers (Owen, 2004). All of these inquiries have used grounded theory and/or focus groups to successfully answer their research question(s) and substantiate their uses in the rural, Appalachian adolescent study.

Data Collection Procedures

Instrument Development

Demographic information survey.

Prior to participation in the focus groups, the participants were asked to complete a confidential demographic survey (Appendix C). The survey gathered information on various demographics of interest, including but not limited to age, gender, and level of education. Detailed information regarding the survey is included below.

The survey was developed by two Registered Dietitians, both of whom have experience working with rural Appalachian populations. One has completed research in
the region previously and is familiar with the culture and values of these communities (Hall, 1997). The survey was designed to gather demographic information as well as data regarding exercise patterns, food intake, and sources of nutrition information. When possible and appropriate, questions from national health and nutrition monitoring surveys were used. Additional questions were collected from previous research (Taylor, Keim, Sparrer, Van Delinder, & Parker, 2004).

The three-page survey consisted of 14 questions, with early inquiries focused on age, gender, ethnicity, and GPA. One item asked about qualification for free or discounted meals, as a proxy for income information. Students were also asked to describe their weight, report weight in pounds and height in feet/inches, and identify sources of nutrition information. Remaining questions solicited information on frequency of exercise, participation in family food choices, eating out, and consuming cafeteria school lunches.

*Focus group interviews.*

Overweight in Appalachian adolescents is a great concern; however, little research has been conducted on the subject previously. This may be due, in part, to the complex relationship that exists between obesity and cultural perceptions of diet and weight. It is for these reasons that focus group interviews were chosen as an appropriate data collection method for this study.

Morgan (1998a, p. 12) discussed the appropriateness of focus groups for “exploration and discovery”, especially for topics that are not well understood. The groups are designed to elicit rich descriptions of participants’ feelings and perceptions
and are often useful when conducting preliminary research (Krueger and Casey, 2000). All of these statements are true of this study and solidified the decision to use focus groups.

Typically, focus groups are designed to last from one – two hours, and exceeding two hours is not recommended (Morgan, 1998b). During the proposed time, a moderator should expect to ask no more than 12 questions. Krueger and Casey (2000) proposed five types of questions for all focus group research: opening questions, introductory questions, transition questions, key questions, and ending questions. In addition, they defined each type of question and provided general developmental guidelines.

Their model was consulted during question development and tentative focus group questions are outlined as Appendix D in their entirety. It should be noted that other pertinent questions emerged during the interview process, and the moderator had experience and expertise to facilitate these as well.

Central focus group questions concentrated exclusively on healthy eating and weight. Participants were asked to describe a healthy diet as well as discuss barriers to consuming such a diet. They were also questioned about perceptions of the diet quality of their peers and asked to identify strategies to improve diet quality. Other questions were directed specifically toward weight related issues. In these, students were asked to describe a healthy weight and discuss their assessment of the magnitude of overweight in their schools and fears associated with the problem.
Participants

As previously discussed, the study was designed to gain an understanding of Appalachian adolescents’ perceptions of healthy eating and weight. Ninth grade students were chosen for participation in hopes that they would benefit from future nutrition programming targeting rural, Appalachian adolescents in the school systems.

Inclusion criteria.

Research participants consisted of students in ninth grade health and physical education classes from four West Virginia middle and high schools. Schools were recruited from those having a previous relationship with Marshall University and an interest in adolescent obesity. Letters of cooperation are included in Appendix E. Students enrolled in health or physical education classes at the time of recruitment were eligible to participate in the investigation. Focus groups were conducted with the school children and caregivers; therefore, additional inclusion criteria were imposed. Students were required to have at least one parent or caregiver willing to complete the survey and attend the focus group interview to participate. Additionally, transportation for the events was not provided; participants were required to secure their own.

Recruitment.

Because health and/or physical education classes are required courses in the ninth-grade curriculum, these classes were used to provide a description of the project and recruit for participation. First, permission to recruit and conduct research on school premises was secured from school administrators, then teachers were individually contacted to establish convenient dates to enter their respective classrooms. On these predetermined dates, the investigator visited classes at each participating school to
introduce the research. Approximately 15 to 20 minutes were spent discussing the research and responding to questions. Students were supplied with written information for their parent/caregiver (Appendix F) and a contact information form for interested participants (Appendix G).

Students, along with their parents/caregivers, wishing to voluntarily take part in the study were requested to return the contact information form to the school one week after the recruitment visit. In two instances, there were insufficient numbers of students who returned the form. Therefore, additional written information sheets and contact forms were provided to the classes, and students were given an additional week to express interest. All students who articulated interest in the study by returning the contact information form were invited to participate. Collectively, 40 students were extended an invitation, with individual schools having anywhere from 5 – 13 interested parties. The ideal number for focus groups varies according to the literature, but experts propose that group sizes of 6 – 10 participants work best (Morgan 1998b).

Four focus groups were scheduled, one at each school. Specific dates and times for each group were arranged through key informants and took into consideration special school events and regular after-school activities. Because parents/caregivers were involved in a facet of the research explored elsewhere, it was necessary to schedule the focus group events in the evenings. This was to accommodate parents working typical daytime hours.

Focus Group Procedures

Prospective participants were initially notified through letters (Appendix H) mailed to the home addresses provided on the interest forms. The letter contained
specific information on the research and scheduled focus group interviews as well as informed consent/assent materials. The notification letter was also e-mailed to participants who included an active email address on the contact information form.

Two to three days prior to the group interviews, telephone reminders were placed to each potential participant. Attempts were made to reach each participant by telephone. Every effort was made to reach them directly; however, if unable to make contact after subsequent attempts, messages were left with other family members or on voice mail. On a few occasions, phone numbers were incorrect or no longer in service; those persons did not receive a telephone reminder.

*Informed consent/assent.*

Informed consent and assent (Appendix I) documents were included in a mailing to all participants. Parents were asked to sign a consent form indicating their willingness to participate and also to grant permission for their minor child to participate in the study. Students were required to complete an assent form.

Information provided to participants thoroughly described the research intent and contained contact information for any questions. By providing study information and consent forms by mail, potential participants had the opportunity to thoughtfully decide if they wished to participate in the study. Participants were asked to return all signed forms prior to the focus group interview.

Time was made available before each focus group to further explain the research and answer any questions participants had. Participants were asked to bring their consent/assent forms with them to the group; however, additional copies of all forms
were available on site for those who needed them. Upon completion of the information sharing period, appropriate signatures from all participants and the research team were obtained, prior to initiating research.

In addition to obtaining consent and assent, participants were also asked to complete personal information forms prior to the focus groups. The forms requested personal information, such as names and addresses, and were utilized to ensure that students and caregivers would receive the $20 and $50 incentive, respectively, for attending the meeting. These forms were maintained separately from other study documents and used only for Marshall University accounting purposes.

Focus group facilitation.

Classrooms and libraries at the schools were utilized for the group discussions and provided a familiar environment for students. Desks or chairs were arranged in a circle to facilitate discussion. Food and beverages were served prior to the group and acted as a means to familiarize participants with moderators and other group members, thus increasing comfortability.

An assistant moderator was available for all focus groups to assist in data collection, and all interviews were audiotaped to reduce the risk of recorder bias. A second audiotaping device was used for all groups in the event of a malfunction of the primary audio equipment. Participants were made aware of the presence of the assistant and audio recording devices prior to beginning the interviews. The same moderator led all groups. She had previous experience conducting focus groups and attempted to
stimulate conversation and probe for more detailed information. The moderator was certain to elicit feedback from all participants and regulated the input from particularly verbose members.

Data Management and Analysis Procedures

Demographic Survey

Prior to focus group interviews, the investigator provided each participant with a copy of the demographic survey as well as an appropriate writing utensil. She also provided information on the survey and its intended uses as well as detailed directions for completion. Participants were then asked to complete the survey, with ample time allotted to do so. If anyone required assistance, the researcher was readily available. Upon completion of the surveys, they were collected by the investigator and stored in a secure location. Surveys were coded and data were input in SPSS. Data were analyzed to determine descriptive statistics regarding those participating in the research.

Focus Group Interviews

Audio cassette tapes from each focus group were labeled with date and school information and secured after the groups. Tabs were also broken out of cassettes to protect the recordings. Subsequently, tapes were transcribed verbatim by a transcriptionist into Microsoft Word. Written accounts were kept on file in case of audio malfunction and utilized to ensure accurate transcription. The documents transcribed from the audiotapes were checked against the written log for accuracy by the investigators. The transcribed word processor files were converted to an Ethnograph (version 5.04, Qualis Research Associates, Denver, CO) editor file for coding and analysis.
Grounded theory, as described by Corbin and Strauss (1990), guided analysis of the transcripts. Open coding was the strategy utilized early in the analysis, which included a critical analysis of the transcripts to “form initial categories of information about the phenomenon” (Creswell, 1998, p. 57). Parent or primary codes were assigned to dominant themes, and two researchers who reviewed the transcripts achieved agreement on the codebook. These themes were modified as additional information was received and consensus was reached on new, emerging content. Additionally, text segments from parent code words were reviewed for subsequent themes.

Corbin and Strauss (1990) recommended that grounded theorists constantly compare data during the research process. To achieve this, data and themes were systematically reviewed throughout progression of the focus groups. When new concepts emerged that required further exploration, additional questions were incorporated into later focus groups.

Next, axial coding was utilized to refine and create categories as well as examine the relationships between categories and their respective subcategories. Selective coding was the final stage of analysis. It assessed relationships between the various concepts and categories and created meaningful constructs, which thoroughly described the phenomenon under investigation.

*Thematic analysis.*

Thematic analysis was one method utilized to identify recurring themes in the data. After perusing the data multiple times, code words were developed as key concepts and were identified in Ethnograph. A code book, which contained a description for each code word, was established to ensure consistency throughout the analysis (Appendix J).
Concepts, which were represented as text segments in Ethnograph, served as the unit of analysis for the study. These text segments varied in length from one or two words to several paragraphs. They were coded then sorted by code word to assist analysis. As analysis progressed, memo narratives were written to assist researchers with organizing and better understanding the data (Appendix K).

**Content analysis.**

In addition to thematic analysis, content analysis was employed to summarize themes from the focus groups. After transcript review and analysis, as described previously, summative quotations were used to represent the themes expressed by focus group participants. This analysis provided verbatim examples from the interviews to enhance and further illustrate results of the thematic analysis.

**Inter-rater reliability.**

Two researchers analyzed each transcript to establish inter-rater reliability. Reliability was computed as the number of agreements between the coders divided by the sum of the number of agreements and number of disagreements. Acceptable levels of variability were set at 85.0%.
CHAPTER 4
CULTURAL PERCEPTIONS OF HEALTHY WEIGHT IN
RURAL APPALACHIAN YOUTH

Abstract
Youth in rural Appalachia are at a disproportionately greater risk for obesity and related health complications. Inadequate physical activity and poor dietary habits are two primary causes of obesity that have been noted in West Virginia adolescents. To design and implement statewide and regional nutrition interventions combating overweight, adolescent perceptions of a healthy weight needed to be identified in rural Appalachia. Focus group interviews were conducted throughout the state and found that many teens had unrealistic and unhealthy perceptions of weight. Female participants were more concerned with weight than males, but both expressed a social stigma associated with overweight. Many perceptions of healthy weight and appropriate body size were shaped by the media and entertainment industry. Additionally, some participants admitted to performing unsafe practices to reduce body mass, such as very low calorie diets or fasting. These data will provide valuable information for the development of obesity prevention programs in rural Appalachia.
CULTURAL PERCEPTIONS OF HEALTHY WEIGHT IN 
RURAL APPALACHIAN YOUTH

Introduction

The rates of overweight and obesity among U.S. children and adolescents have doubled in the past two decades (Hedley et al., 2004). Data from the 2003-2004 National Health and Nutrition Examination Survey (NHANES) indicated that 19.9% of children (6-11 years) and 18.3% of adolescents (12-18 years) were overweight (>95th BMI-for-age percentile) (Ogden et al., 2006). These estimates represent significant increases from NHANES III (1988 -1994) estimates, where approximately 11% of children and adolescents were overweight (Hedley et al., 2004; NCHS, 2006). Also of concern is the number of children and adolescents at risk for overweight (85 - < 95th BMI-for-age percentile), as it was estimated that an additional 16.6% of children and 18.5% of adolescents are at risk for becoming overweight. These rates are a public health concern as many problems are associated with childhood overweight, such as an impact on mental health and wellbeing (Mullen & Shield, 2004), increased risk for obesity in adulthood (Dietz, 2002; Fowler-Brown & Kahwati, 2004; Lytle, 2002) and increased likelihood of developing several chronic diseases later in life (Edmunds, Waters, & Elliott, 2001).

Despite this rise in rate of overweight, there is little research that has examined adolescents’ perceptions of a healthy weight. Nearly all of the literature surrounding weight perceptions investigated the accuracy of subjects’ assessments of their own weights. In several instances, perceptions were compared to reality through BMI weight measurement classifications, where adolescents and adults regularly underestimated their weight status. A study of adolescents in London, England found that many overweight
teenagers, especially males, did not regularly recognize that they were “too heavy” (Viner et al., 2006, p.5). Similarly, only half of overweight boys in the sample and one-sixth of those at-risk for overweight accurately assessed their weight status. Furthermore, approximately 25% of US adolescents classified as at risk for overweight or overweight perceived themselves to be underweight (Brener, Eaton, Lowry, & McManus, 2004). Additionally, youth perceptions of individual weight have been identified and compared to actual weight. Data are lacking that specifically assess the definition of overweight, especially within a cultural context.

Few studies have examined childhood overweight and perceptions of a healthy weight in rural, Appalachian regions, where overall rates of obesity have been consistently high and continue to grow (Davey, Harrell, Stewart, & King, 2004; Demerath et al., 2003). One study of adults showed that those residing in rural areas were more overweight and less likely to exercise than their urban counterparts (Bowden, Shaul, & Bennett, 2004); however, such data are lacking for children and adolescents. In West Virginia, a statewide survey reported a high proportion of overweight teens (19%), with more overweight males (25%) than females (15%), and an additional 16% were classified as at-risk for overweight (Krummel, Farmer, & Semmens, 2004). Considering the high rate of overweight in WV children, the purpose of this study was to ascertain the cultural perceptions of weight among rural, Appalachian adolescents. A greater understanding of weight perceptions among rural, Appalachian youth is vital to the success of obesity prevention and intervention programs in these populations.
Methods

Participants.

To investigate the cultural perceptions of a healthy diet and healthy weight among rural Appalachians, focus group interviews were conducted in four West Virginia schools over a four-month period. Students enrolled in ninth grade health and physical education classes and their primary care givers were recruited to participate in separate, but simultaneous, group interviews, and students were paid $20 for participating in the study. Only data related to the adolescent focus groups and perceptions of healthy weight will be addressed herein. The research protocol was approved by the Institutional Review Boards of The Ohio State University and Marshall University.

Focus group procedures.

Grounded theory and recommendations by Kruger and Casey (2000) guided development of the questioning route to obtain information relevant to the research questions; the focus group questions are included in Table 4.1. Several questions were directed toward weight related issues, as students were asked to describe a healthy weight and discuss their assessment of the magnitude of overweight in their schools and fears associated with the problem.

Students and caregivers expressing interest in participating in the focus groups returned forms to the schools and were sent letters mailed to their home addresses confirming participation. The mailings contained specific information on the research and the schedule for focus group interviews as well as informed consent/assent materials. Identical information was also e-mailed to participants that provided an email address. Dates and times for focus groups were arranged through key informants and
administrators from each school, taking into consideration school events and activities. Two to three days prior to the group interviews, telephone reminders were placed to each potential participant with date, time and place of the focus groups.

Classrooms and libraries were utilized for the group discussions to provide a familiar environment for students. Desks or chairs were arranged in a circle to facilitate discussion. Food and beverages were served prior to the group and acted as a means to familiarize participants with moderators and other group members, thus increasing comfortability. Time was made available before focus groups to further explain the research and answer questions. Additionally, appropriate consent and assent forms were signed and collected and a brief demographic survey was completed by participants prior to initiating the focus group interviews.

A registered dietitian with previous experience conducting focus groups moderated all groups. An assistant moderator was available for all focus groups to assist in data collection, and all interviews were audiotaped to reduce the risk of recorder bias. Participants were made aware of the presence of the assistant and audio recording devices prior to beginning the interviews.

Data management and analysis procedures.

Audio tapes from each focus group were labeled and secured after the groups. Subsequently, tapes were transcribed verbatim by a transcriptionist, and the recorder’s notes were kept on file in case of audio malfunction and utilized to ensure accurate transcription. The transcribed word processor files were converted to an Ethnograph (version 5.04, Qualis Research Associates, Denver, CO) editor file for coding and analysis.
Grounded theory, as described by Corbin and Strauss (1990), guided analysis of the transcripts. Open coding was utilized to develop parent or primary codes that were assigned to dominant themes. Because two researchers reviewed the transcripts, agreement on the code book was achieved during the analytic process. These themes were modified as additional information was received and consensus was reached on new, emerging content.

Next, axial coding was utilized to refine and create categories, as well as examine the relationships between categories and their respective subcategories. Selective coding was the final stage of analysis, which assessed the relationships between the various concepts and categories. Corbin and Strauss (1990) recommended that grounded theorists constantly compare data during the research process. To achieve this, data and themes were systematically reviewed throughout progression of the focus groups. When new concepts emerged that required further exploration, additional questions were incorporated into later focus groups.

Concepts, which were represented as text segments in Ethnograph, served as the unit of analysis for the study. These text segments varied in length from one or two words to several paragraphs. They were coded then sorted by code word to assist analysis. As analysis progressed, memo narratives were written to assist researchers with organizing and better understanding the data.

To compliment the thematic analysis, content analysis was employed to summarize themes from the focus groups. After transcript review and analysis, summative quotations were used to represent the themes expressed by focus group participants. This analysis provided verbatim examples from the interviews to enhance
and further illustrate results of the thematic analysis. Two researchers analyzed each
transcript to establish inter-rater reliability. Reliability was computed as the number of
agreements between the coders divided by the sum of the number of agreements and
number of disagreements. Acceptable levels of variability were set at 85.0%.

Results

Sixteen students returned the demographic survey and ranged in age from 14 – 18
years. Seven participants were male, all were Caucasian, and three-quarters reported
living on limited incomes. These students were strong academically, with most reporting
high grade point averages. The majority reported that they exercised daily and rarely
dined out, and 31% described themselves as “overweight”.

During open coding of the transcripts, eleven distinctive code words were
developed (Table 4.2). Text segments associated with each code word were reviewed
and analyzed to establish sub themes, and relationships between code words or major
themes were explored. Only results from the analysis for code words relating to weight
perceptions are presented in this study.

Definition of healthy weight.

In most instances, healthy weight was defined by physical appearance and how
adolescents were perceived by others. Students expressed that there was an appropriate
size and shape, which was indicative of being a healthy weight. These perceptions were
influenced by several external influences, such as media and peers. Females were more
often concerned about physical appearance and indicated experiencing pressure to look a
certain way. One group member said, “It’s everything to a girl.” Another stated,
“If you are always concerned about what people think about you, then you end up eating less and trying to look like people you think you’re supposed to look like. Then, you end up weighing less than you are supposed to weigh. Then you end up being underweight.”

Healthy weight was also defined as a number on the scales that should be proportionate to one’s height. This number was defined by expert opinions, such as those conveyed by their healthcare providers or other accepted standards, such as body mass index.

Certain lifestyle behaviors were considered to be important in maintaining a healthy weight while others were considered to lead to becoming an unhealthy weight. For example, those who exercised regularly did not have to worry about the other factors related to body weight. Students also felt that those who participated in extracurricular activities had healthier weights; they also believed that people who have poor dietary habits, such as eating “junk food” and snacks, and those that overate had unhealthy weights. Other students felt that weight was determined by physiological responses not under their control. Students believed that genetics plays an important role in determination of healthy weight. They felt that lifestyle behaviors did not contribute to a healthy weight in many instances; weight is dependent on genetic constitution.

Additionally, fear motivated one group member’s definition of healthy weight. She expressed enormous psychological stress associated with other’s perceptions of her weight. These emotions were also related to appearance and self-esteem. Finally, it is interesting to note that some participants were unable to define a healthy weight or discuss the components they believe comprised it.
Weight loss and maintenance practices.

The most common practice used to avoid obesity or lose weight was restrictive dietary practices. Several students admitted to severely restricting food intake or “not eating at all” during attempts to lose weight. This was specifically mentioned by a male participant who was a member of the wrestling team; he talked of not eating to achieve a lower weight class, which was common and often encouraged. Disordered eating practices, such as anorexia and bulimia, were also mentioned as means to avoid becoming overweight. One participant said, “Some people throw their stuff up. Yes, I know they do.”

Participants discussed episodes when they and their friends eat healthy for a certain amount of time to lose weight before returning to their regular habits and patterns of consumption. Some felt that healthy weight can be maintained by eating foods considered to be less healthy foods, such as candy and fast foods, in moderation and carefully watching portion sizes.

Many members from the groups discussed the importance of exercise to avoid weight gain as well as means to lose weight. There were specific mentions of participating in extracurricular activities as well as running or jumping rope to lose weight. One student said, “I don’t know, I think that everybody should have to participate in extracurricular activities to be average weight.” Lastly, more than one student discussed how kids in the schools take over-the-counter medications and/or supplements to control weight. Often, these were purchased by the parents.
Perceived consequences of obesity.

The majority of students were concerned with negative stereotypes that surround overweight persons. Overweight teenagers were ridiculed by their peers and made to feel inadequate or less important. One participant summarized it as:

“Because the pressure that the kids put on you. I mean the people you live with and go to school around. It’s like everybody making fun of people and talking bad about them. It’s just people don’t like to live like that. I know people in this school who quit, and half of them it’s from people messing with them. I mean people pick on you and they talk about you and they don’t treat you right because you don’t look like what they call perfect.”

Various psychological consequences of overweight were expressed by students, especially among female participants. Issues of guilt and diminished self-esteem were prevalent. Also, a lessened feeling of belonging among peers and family was a perceived consequence of obesity.

Many students also discussed the long-term physical consequences of obesity. Chronic diseases, such as diabetes, high blood pressure, cardiovascular disease, and hypercholesterolemia, were mentioned. Generally, the students were familiar with many of these diseases because of the impact they have had on family members. Additionally, obesity was thought to limit physical functionality and made people less productive.

Perceived prevalence of obesity.

Participants in the focus groups had various perceptions regarding the extent of the obesity problem, which ranged across the entire spectrum. Several students believed obesity was a serious problem, especially among their peers. One student remarked,
“About half of them are overweight. Like the ones who aren’t overweight eat like pigs and don’t gain any weight.” Some adolescents were not overly concerned with the issue of overweight among their peers and felt that the rate of obesity was “average for any school;” however, they recognized that a problem might exist, but they have become desensitized over time due to the common nature of overweight among their peers. Someone stated, “I mean we go to school with these people. We see them everyday. You just get used to it after a while.”

Finally, several students expressed no concern with the obesity problem among their peers. In one instance, the respondent stated that though several male peers in their school were overweight, these young men “don’t worry about it.” Another did not think that overweight was a problem at all.

Healthy weight discussions.

Gender differences existed between male and female students with regard to weight discussions. Female participants indicated that discussions on weight were common among their peers. There were several references made about being “fat” or “fatness,” which were illustrated through comments such as, “Well, I have countless friends who sit around saying ‘Oh, I’m fat; I need to lose weight’ and stuff like that.” Another girl stated, “99% of the conversations that they have are about being overweight or being fat. At the time, they are not.” Males, on the other hand, indicated that “guys just don’t talk about” weight. They were more interested in talking about “what they watched on television” last night.

Some members expressed that weight is personal issue, and overweight people may be offended when issues related to diet and weight are discussed in their presence.
For that reason, these students refrained from doing so in an attempt to not offend them or hurt their feelings; conversely, students reported that their peers made fun of, ridiculed, and tormented students with weight-related issues. They do not discuss weight directly, they talk badly about overweight people and “mess with them.” One participant articulated,

“It’s like everybody making fun of people and talking bad about them. It’s just that people don’t like to live like that…I mean, people pick on you and they talk about you, and they don’t treat you right…because you don’t look like what they call perfect.”

Finally, there was some discussion about the consequences of being overweight among peers in reference to the long-term effects of excess weight, with specific mention of “what’s going to happen to you later in life.”

Sources of weight information and influences on weight.

Family members, especially mothers were cited as the most frequent source of information on weight. Additionally, some participants believed if you played a sport, coaches were a source of information on healthy weight; wrestling coaches were mentioned specifically. Health professionals (medical doctors and registered dietitians) were also identified as sources of weight information; however, students were just as likely to rely on information received from peers, the Internet, and the media.

Perceptions of obesity, healthy weight, and beauty were shaped by what students watch on television or read in magazines. Participants described having bad feelings about their weight after seeing “really thin” girls in magazines. One of the male participants jokingly made reference to “looking at naked chicks” when the discussion
turned to the way magazines portray thin or skinny as the gold standard. The media also influenced students to take diet pills by presenting them so attractively through promises of profound results.

Discussion

Data regarding the causes, implications, and perceptions of obesity in the Appalachian region are limited, despite disproportionate rates of obesity that continue to rise (Davey, et al., 2004; Demerath et al., 2003). The Appalachian region is predominately rural, and persons residing in these areas maintain values, practices, and social norms somewhat different from those living in more urbanized locations (Denham, Meyer, Toborg, & Mande, 2004; MacAvoy & Lippman, 2001). Additional issues, such as inadequate transportation, poverty, lack of access to medical care, and lack of health insurance, (National Rural Health Association [NRHA], 2003) directly impact the health and nutritional status of individuals in this region, thus leaving this population particularly vulnerable to obesity and other chronic diseases (Denham et al., 2004).

West Virginia is the only state completely situated in the Appalachian region, and generally, the state’s residents are not healthy. According to the United Health Foundation (2005), West Virginia is the 41st least healthy state in the U.S. and ranks among the bottom four in prevalence of obesity (48th), cancer deaths (49th), and cardiovascular disease deaths (46th). Many of its children live in poverty (24%) (Annie E. Casey Foundation [AECF], 2006), and overweight is prevalent, especially among the young. Cottrell et al. (2005) reported that approximately 33% of West Virginia kindergarteners in their study were either overweight or at risk for overweight. Similarly, another survey of West Virginia adolescents revealed a high proportion (35%) were
overweight or at risk for overweight (Krummel, et al., 2004). Clearly, obesity is a pervasive problem among Appalachians, especially in children and adolescents; therefore, development of obesity prevention and intervention programs is vital. To expand such programs, it is important to first understand cultural perceptions of weight among this group.

Adolescent perceptions of a healthy weight were rooted in physical appearance and external sources influenced personal weight status determination. Females were especially concerned about others’ perceptions of their weight, often discussing weight and weight control practices with friends. These girls also admitted to being influenced by media and advertisements that portray very thin models. Research has reported that adolescent girls expressed body weight dissatisfaction when exposed to “idealized” female media images (Durkin and Paxton, 2002), and girls were regularly influenced to become thinner by the media and peers (Tiggemann, Gardier, & Slater, 2000). Similarly, Steenhuis et al. (2006) found that adult women who reported strong media influences were more likely overestimate personal body weight. In our study, Appalachian adolescent males, on the other hand, were less likely to be influenced by peers and did not report that the media influenced weight related perceptions or behaviors. These findings are consistent with those of McCabe and Ricciardelli (2003), who also found that peers had some influence on body image and weight control strategies but the media did not.

The students in our study also identified certain lifestyle behaviors that they believed were linked to healthy or unhealthy weights. Physical activity is an essential component of reaching and/or maintaining a healthy weight (APHA, 2003; Patrick,
Spear, Holt, & Sofka, 2001), and focus group members regularly associated exercise with a greater ability to maintain a healthy weight. Conversely, people with poor dietary habits, such as consuming excess “junk food” and snacks, and those who overate had unhealthy weights, which is consistent with dietary intake literature (Mahan & Escott-Stump, 2004; Mullen & Shield, 2004; Racette et al., 2003; WHO, 1998). Even though excess energy intake was associated with unhealthy weights, participants continued to consume “unhealthy” and “junk foods”, as availability of healthy, nutrient-dense foods was limited, at times, in the home and school environments.

Adolescents attempting to lose or maintain weight sometimes subscribed to unsafe eating behaviors and practices. The most common practice used to avoid obesity or lose weight in the Appalachian adolescent sample was restrictive dietary practices. Both male and female participants admitted to severely restricting food intake or “not eating at all” during attempts to lose weight. These findings are consistent with other studies that reported dieting and fasting as methods of weight control. One survey of high school students reported that 40.6% had dieted and 12.6% fasted during a 30 day period (Forman-Hoffman, 2004). Additionally, Zullig, Ubbes, Pyle, and Valois, (2006) surveyed South Carolina adolescents and reported that approximately 15% of females in their study fasted to lose weight. Disordered eating practices, such as anorexia and bulimia, and use of over-the-counter medications and supplements were also mentioned as means to avoid becoming overweight. In other investigations, female adolescents reported the highest use of diet pills for weight control; however, males also admitted use
Another study of US high school students reported that 7.6% used diet pills alone to control weight; when coupled with fasting, the percentage increased to 14.5% (Forman-Hoffman, 2004).

Often, overweight adolescents took part in weight control behaviors, similar to those listed above, because of ridicule received from peers. Such ridicule led to diminished self-esteem and a lack of belonging in social groups and was identified as a primary consequence of obesity in the study. A similar study surveyed a diverse group of adolescents and determined that those who had experienced “weight-teasing” regularly reported lower self-esteem and body image (Eisenberg, Neumark-Sztainer, Haines, & Wall, 2006). Participants also identified other, more long-term consequences of obesity, such as diabetes, high blood pressure, cardiovascular disease, and hypercholesterolemia. They expressed familiarity with these diseases because family members have suffered from them. Given the increased rates of chronic disease and the resultant attitudes towards these diseases in West Virginia and the Appalachian region, such findings were expected (Tessaro, Smith, & Rye, 2005).

Finally, focus group participants had varied perceptions regarding the extent of the obesity problem. While a few did not recognize the problem as significant, most felt the rate of obesity was of serious concern, especially among teenagers. Additionally, they recognized that their perceptions of weight might be skewed, because they are regularly surrounded by overweight persons. These findings are similar to those of Cottrell et al. (2005), who found that 47.6% of parents with overweight children perceived the children as having appropriate weights. Other studies confirmed that people often underestimate their body weights, failing to place themselves in appropriate
weight categories (Powell & Amsbary, 2004; Steenhuis, et al., 2006). Brener, Eaton, Lowry, and McManus (2004) reported that > 20% of high school students in their study who were overweight or at risk for overweight perceived themselves to be underweight.

The investigation provided a wealth of information on weight perceptions in Appalachia. While information on individual perceptions of weight is not prevalent in the literature, it appears that Appalachian adolescents maintain attitudes, perceptions, and behaviors similar to those of their counterparts in other geographic regions. Appalachian adolescents, however, reported issues with accessibility to and availability of health promoting foods and healthy weight information, which were not located elsewhere. The study yielded useful weight perception data; however, several limitations exist. Focus group participants were part of a non-representative, convenience sample; therefore, results cannot be generalized, which is usual in qualitative research. Additionally, no participants from one of the schools arrived for the focus groups. One student stayed after school to attend the group, but her parent was concerned about availability of transportation funds and was unable to attend. Finally, results are limited due to the nature of qualitative research, which relies on researchers as the instruments; however, both primary investigators were raised in the Appalachian region and coded data independently with high levels of agreement.

Conclusion and Implications

The results of the study indicate that Appalachian adolescents engage in unsafe weight control behaviors and have distorted perceptions of healthy weight, as they both underestimated and overestimated the magnitude of overweight and provided inaccurate information related to healthy weight. Based on these perceptions, adolescents are at
varied levels of readiness for action and multiple educational opportunities exist for obesity prevention initiatives in school-based health centers and the home and school environments. Information gleaned from the focus groups will be useful in developing obesity prevention initiatives targeting Appalachian adolescents. Given the disproportionately high rates of obesity in the region, culturally appropriate prevention strategies may have a significant impact on the obesity problem. Results of the study should be shared with school-based primary care providers, school administrators, parents, and adolescents, and key stakeholders need to be assembled to ascertain the best approaches combat obesity in the region.
1. Please tell us your name and your very favorite food.
   
   *(Food is important to all of us and impacts our life daily. Today, we want to find out what you think about healthy eating and weight.)*

2. What is the first thing you think about when you hear the words “healthy diet”?

3. What does “healthy weight” mean to you?
   
   *(Probes: Do you think of a number, size, or body shape? If so, what is it?)*

4. Do you think that most kids in your school eat healthy?
   
   *(Probes: Why or why not? Is healthy eating a consideration?)*

5. Do you think overweight and fear of overweight are problems among teenagers in your school?
   
   *(Probes: Why is/isn’t it a problem? What kind of fears do they have?)*

6. Share with me what you believe is a “healthy diet”.

7. Do things get in the way of eating healthy in teenagers your age? If so, can you list and describe some of those things for me?
   
   *(Probe: Why or why not? Examples of barriers may include eating out, not available in cafeteria, parents purchase foods, media promotes “unhealthy” food choices, etc.)*

8. What would make it easier for kids your age to eat a healthy diet?

9. Describe to me what you believe is a “healthy weight”.

10. What have you learned about healthy eating and weight in school, from your parents, and from your friends?

11. Is there anything else that you would like to tell us about healthy eating or weight that you weren’t able to share earlier?

Table 4.1: Questioning route used during adolescent focus groups
Term Definition

**DEF DIET**  
Description of the perceptions of what practices or foods comprise a healthy diet.

**FOOD HAB**  
Current food intake practices of the adolescents and their peers.

**SOURCES**  
Sources of food available to children/adolescents.

**BAR FOOD**  
Barriers to eating a healthy diet, which includes what spurs poor intake habits.

**DEF WT**  
Description of what was a healthy weight and what determined it.

**OB PRACT**  
Practices used to avoid obesity or lose weight.

**OB CON**  
Discussions regarding perceived consequences of obesity.

**OB RATE**  
Description of students’ perceptions about the extent of the obesity problem.

**DISCUSS**  
Issues discussed with peers about healthy diet/healthy weight.

**MEDIA**  
Description of the students’ responsiveness to food advertising.

**INFO**  
Sources of information about healthy eating and healthy weight.

Table 4.2: Code words and definitions developed for analysis of focus groups transcripts
CHAPTER 5
CULTURAL PERCEPTIONS OF HEALTHY DIET IN
RURAL APPALACHIAN YOUTH

Abstract

Objective.

Obesity and chronic disease are major public health concerns in rural Appalachia. Previous research has pinpointed poor dietary intake habits and low physical activity levels as contributing to the current state of health in the Ohio Valley region. The purpose of this research was to obtain Appalachian adolescents’ perceptions of a healthy diet.

Participants.

Adolescents were recruited in four West Virginia schools from ninth grade health and physical education classes. Sixteen rural Appalachian adolescents, ranging in age from 14-18 years participated in the study.

Methods.

Focus group interviews were conducted with West Virginia adolescents and their caregivers. Grounded theory was used to develop questions addressing specific domains of interest. Verbatim transcripts from the adolescent focus groups were analyzed to assess cultural perceptions of a healthy diet.
Results. Commonly, participants defined healthy diet through statements relating to federal and professional dietary recommendations, including an increased intake of vegetables and fruits while consuming diets low in fat. Specific foods were commonly described to be either healthy or unhealthy. Vegetables and fruits were cited most often as healthy foods, while snack foods, soda, chips, and pizza were not considered to be part of a healthy diet. Portion control and eating three meals daily were also discussed as healthy diet components. This knowledge was often attributed to teachings in school health classes, through the media, and from family members with chronic diseases. However, knowledge and adherence to popular fad diets contradicted some of these perceptions, and a number of students reported never considering whether or not foods were healthy prior to consumption.

Conclusions.

Few investigations have addressed perceptions of a healthy diet among rural Appalachian adolescents, and identifying perceptions will provide valuable formative data to develop targeted nutrition education and health promotion programming.
CULTURAL PERCEPTIONS OF HEALTHY DIET IN RURAL APPALACHIAN YOUTH

Introduction

Overweight and obesity among children and adolescents has become a problem of great concern, as rates have doubled in the US during the past 20 years (Hedley et al., 2004). According to data from the 2003 – 2004 National Health and Nutrition Examination Survey (NHANES), 19.9% of children ages 6 – 11 and 18.3% of adolescents were overweight (>95\textsuperscript{th} BMI-for-age percentile) (Ogden et al., 2006). These levels are 3-fold higher than the goal of 5% of US children established by Healthy People 2010 (DHHS, 2000). Likewise, another concern is the number of children and adolescents at risk for overweight (BMI-for-age percentile 85 - < 95\textsuperscript{th}), with an additional 16.6% of children and 18.5% of adolescents with a BMI-for-age percentile that indicated at risk for overweight. The trends are a concern because various problems are associated with childhood and adolescent overweight, such as psychological problems (Mullen & Shield, 2004) and increased risk for overweight as an adult (Dietz, 2002; Fowler-Brown & Kahwati, 2004; Lytle, 2002) and developing several chronic diseases (Edmunds, Waters, & Elliott, 2001).

Obesity is a multi-factorial disorder with the etiology explained by multiple environmental, cultural, social, behavioral, and genetic factors (CDC, 2004, November 11; Mullen & Shield, 2004; Racette, Deusinger, & Deusinger, 2003; WIN, 2001). One important modifiable risk factor influencing overweight is dietary habits, as evidence clearly supports that less-than-optimal dietary patterns are a principal contributor to the obesity epidemic (Mahan & Escott-Stump, 2004; Mullen & Shield, 2004; Racette et al.,
National dietary recommendations for healthy children are outlined in the *Dietary Guidelines for Americans and MyPyramid*, which suggest a diet: 1) high in a variety of fruits, vegetables, and whole grains; 2) low in saturated fat, cholesterol, and trans fat and moderate in total fat; and 3) limited in sugar and salt (DHHS & USDA, 2005). Research has indicated that the majority of Americans, especially children and adolescents, do not meet one or more of these recommendations (Basiotis, Carlson, Gerrior, Juan, & Lino, 2002; DHHS, 2000; Kranz, Siega-Riz, & Herring, 2004; Striegel-Moore et al., 2006; Van Horn, Obarzanek, Friedman, Gernhofer, & Barton, 2005; Wilson et al., 2005). Several issues have been attributed to the quality of diet consumption among youth, such as increased consumption of sugar-sweetened soft drinks (Grimm et al., 2004; Mullen & Shield, 2004), a rise in fast food intakes and size of portion servings (Ebbeling et al., 2002; McConahy, Smicklas-Wright, Mitchell, & Picciano, 2004; Mullen & Shield, 2004), and parental or caregiver influence (Bruss, Morris, & Dannison, 2003; Hart, Bishop, & Truby, 2002; Stang, Rehorst, & Golicic, 2004).

In West Virginia, there is a high rate of adolescent obesity, with 35% of teens reported as either overweight or at risk for overweight (Krummel et al., 2004). Additionally, these adolescents reported diets high in fat and saturated fat; 55 – 60% did not meet the recommendations for total fat intake and less than half (33% of males and 49% of females) consumed a diet low in saturated fat. Total vegetable and fruit intakes were also low, with males and females consuming an average of 3.25 and 2.54 servings per day, respectively (Krummel et al., 2004).

Eating habits clearly influence weight; therefore, it is important to examine perceptions of a healthy diet, to understand the underlying reasons that ultimately dictate
food consumption behaviors. While multiple studies have examined this phenomenon
among youth (Dixey, Sahota, Atwal, & Turner, 2001; Edwards & Hartwell, 2002; Giskes,
Patterson, Turrell, & Newman, 2005; Hart et al., 2002; Hesketh, Waters, Salmon, &
Williams, 2005; Monge-Rojas, Garita, Sanchez, & Munoz, 2005; Roberts, Maxwell,
Bagnall, & Bilton, 2001), little literature is available on diet perceptions of rural
Appalachian adolescents. Because persons residing in predominately rural areas often
maintain values, practices, and social norms different from those living in more urbanized
locations (Denham, Meyer, Toborg, & Mande, 2004; MacAvoy & Lippman, 2001), it is
imperative to explore their perceptions to develop appropriated, targeted obesity
prevention programs. The purpose of this study was to identify the cultural perceptions
of a healthy diet in rural Appalachian youth.

Methods

Participants.

Focus groups were conducted in four West Virginia schools to identify the
cultural perceptions of a healthy diet and weight among rural Appalachian adolescents.
Separate, simultaneous focus groups were held with students enrolled in ninth grade
health and physical education classes and their primary caregivers. The focus groups
were conducted over a four month period, and students and caregivers were compensated
$20 and $50, respectively, for participation. Only data related to healthy diet perceptions
of the adolescents will be addressed in this article. The research protocol was approved
by the Institutional Review Boards of The Ohio State University and Marshall
University.
Focus group procedures.

Grounded theory and suggestions from Kruger and Casey (2000) guided question development to address the specific research questions; the semi-structured focus group questioning guide is included as Table 5.1. Several questions were directed toward diet related issues, as students were asked to describe a healthy diet, barriers to achieving a healthy diet, sources of food and healthy diet information, and the perceived diet quality of themselves and peers.

Student and caregiver pairs interested in participation returned forms to the school and were mailed a letter inviting them to participate in the study. The mailings contained detailed information about the research project, specific information about the focus groups, and participant consent/student assent materials. The same information was also e-mailed to all potential participants that provided a current email address. School administrators and other key officials assisted the research team in choosing dates and times for the focus groups, taking into consideration school events and extracurricular activities. A few days before each focus group interview, telephone reminders were placed to each student/caregiver pair, which provided information on the day, time, and location of the event.

When the participants arrived, the researchers further explained the purpose of the research and answered questions from the participants. Additionally, appropriate consent and assent forms were completed, as well as a brief demographic survey prior to initiating the focus group interviews. Refreshments were served prior to each group in order to provide a relaxed environment and put participants at ease. The focus group interviews were conducted in classrooms and libraries, with desks or chairs arranged in a
circle to enhance face-to-face interaction. A registered dietitian with previous focus group experience moderated all of the adolescent focus groups. An assistant moderator was available to record student insights both on paper and audiotape. Prior to each interview, participants were made aware of the audio recording devices and presence of the assistant moderator.

Data management and analysis procedures.

Immediately following each focus group, the audio tapes were labeled and tabs were removed to prevent recording over the contents. A hired transcriptionist provided verbatim, verified transcripts. The assistant moderator’s notes were utilized to ensure accurate transcription. The transcribed files were imported into an Ethnograph (version 5.04, Qualis Research Associates, Denver, CO) editor file for coding and analysis.

Corbin and Strauss (1990) and Miles and Huberman (1994) guided analysis of the transcripts. Initially, open coding was used to develop parent codes assigned to represent the dominant themes. The transcripts were reviewed by two researchers, and agreement on the parent codes, definitions, and related text segments was achieved during the analytic process. The dominant themes were modified as additional data were collected and consensus was reached. Next, axial coding was used to refine parent categories and examine relationships between them and their respective subcategories. The final stage of analysis, called selective coding, addressed the relationships between all the primary concepts and subcategories. Because Corbin and Strauss (1990) recommended a constant comparison of data throughout the research process, data, categories, and subcategories were systematically reviewed throughout the focus group process. As new concepts were revealed, focus group questions were amended to further explore the emerging content.
Concepts were the unit of analysis in the study and were represented as text segments in Ethnograph. Some text segments were very brief, only a few words, and others were quite lengthy. Each segment was coded then sorted to assist in the analysis process. Throughout analysis, memo narratives were written to organize and further explore the data. In addition to thematic analysis, content analysis was used to summarize focus group themes, which were expressed by participants. Some verbatim examples were also included to emphasize and enhance the summarized themes. Interrater reliability was established for each transcript by computing the number of agreements between the two coders divided by the sum of the number of agreements and number of disagreements. Acceptable levels of variability were set at 85.0%.

Results

Sixteen adolescents, ranging in age from 14-18 years, completed the demographic survey. All respondents were Caucasian and males and females were nearly equally represented. The students reported high grade point averages, and three-fourths reported living on limited incomes, as evidenced by qualification for free or discounted meals at school. Most reported exercising every day and rarely dined out, while 31% described themselves as “overweight.”

Eleven unique code words were developed during coding of the transcripts (Table 5.2). Text segments related to each code word were reviewed and analyzed to establish sub themes, and relationships among code words or major themes were explored. Only results relating to the perceptions of a healthy diet are presented in this study.
**Definition of healthy diet.**

Adolescents believed that there were specific dietary patterns that constituted a healthy diet, but what these patterns consisted of varied among participants. Regular intakes of vegetables and fruits, consuming a “low” or “no fat” diet, adequate fiber intake, and eating meat were all considered patterns indicative of a healthy diet. Others labeled foods as either “good” or “bad.” The goal for health was eat all “good” foods and avoid the “bad”. Examples of “bad” foods identified were junk foods, sodas, cookies, fast foods, and candy bars.

Additionally, the constitution of a healthy diet was dependent on the environment in which one was raised. Heritage, culture, area of residence, and family preferences influenced what one considered as healthy. Finally, students stated that particular practices were associated with a healthy diet. These practices were identified as following the federal nutrition guidelines expressed in *MyPyramid*, consuming an appropriate number of calories, and eating smaller portions. One student admitted, however, that he was “clueless” about what comprised a healthy diet.

**Adolescent food intake practices.**

Participants indicated their current food intake practices and those of their peers were unhealthy. While they felt most adolescents did not eat healthy, they provided few examples of specific “unhealthy” foods consumed. One person discussed a specific unhealthy example and stated, “I’ve got a friend who drinks a huge amount, like a 12 pack a day [of pop]. All he drinks is pop, and he doesn’t get any water.” Food choices were primarily influenced by availability. Students often chose less healthy items because they were readily available. This was often seen when they chose snack foods,
such as candy bars, soda, and chips, as a meal, from vending machines during lunch due
to the low desirability of cafeteria food. However, participants stated that even if an
environment offered both healthy and less healthy choices, they were inclined to choose
the less healthy ones.

Food intake practices were driven by taste preferences, often without
consideration of health. One student discussed how adolescents are somewhat defiant in
their food choices. They understand which foods are healthy and the importance of
consuming a healthy diet, but they choose not to do so. Also, they feel there are no
immediate health consequences to consuming an unhealthy diet. One immediate
consequence of consuming an unhealthy diet of concern to female participants, however,
was the perceived direct impact on body weight. These thoughts were operationalized
when several students admitted that they, and their friends, purposefully targeted
“healthy” foods for short periods of time when dieting or trying to lose weight.

Lastly, food consumption patterns were influenced by family. In some instances,
family rules dictated eating and food choices. In others, family members influenced food
choices because they were in charge of purchasing and preparation; while some
participants indicated a desire for healthy foods at home, this was not always the case.

Food sources.

Overwhelmingly, the sources of food that students recognized and discussed were
outside the home environment. A primary source of food available was in the school
cafeterias. The students’ perceptions of this food source varied, but were generally
negative. There was discussion about the lack of choices, and male participants did not
feel that portion sizes were large enough. One participant stated, “Sometimes the school
lunches aren’t healthy. Half the time, it’s the only good meal people get. So they eat it, but it’s not that healthy.” Use of vending machines was also prevalent at the schools during lunch, where they competed with the cafeteria as a food source. Students admitted to eating from the machines regularly, because they did not find school lunches palatable. One student stated, “I eat out of them all the time.” Another said that “the snack machines are raided every lunch.”

Restaurants were another source often mentioned. Participants thought it was more difficult to eat healthy when dining out, but continued to patronize these establishments regularly. Only a few times did students express the home as a dominant source of food. In these instances, parents had a major influence on foods available, because, on most occasions, they grocery shopped and prepared meals. Some students felt that the home was a source for healthy food, but others did not.

*Barriers to consuming a healthy diet.*

The cafeteria was cited as a major source of food for participants; however, many discussed a lack of availability of healthy foods in the school cafeteria. Even when healthy foods were available, students did not find them palatable. Also, some felt that there was a stigma attached to choosing healthy foods in the lunch line as opposed to a la carte items, such as pizza, or snack foods from the vending machines. The vending machines, previously mentioned, competed with the school lunch program.

Preference, convenience, and lack of discipline were other barriers identified by participants. Generally, students did not have a strong preference for nutritious foods. They referred to foods as “healthy” or “low-fat” in a negative way. Adolescents chose foods because of their convenience, even when they knew these foods were not nutrient-
dense. Several examples of convenient food choices were cited as fast food, junk foods, snack foods, and TV dinners. The students were capable of identifying healthy foods; however, they did not feel they had the discipline or self-control to choose these items over less healthy options. Conversely, availability was a major barrier to consuming healthy foods. Participants stated that they would eat “better” if healthy foods were more readily available to them. Some found it difficult to choose healthy options at meals because less nutritious foods were abundant in every environment, including the homes. When describing his home environment, one student stated, “Like, at my house, we’ve got all junk food, almost 80 boxes of pop tarts. All junk food.”

Sources of diet information.

Family members, especially mothers, were cited as the most frequent source of information on healthy eating. The school environment also played an important role in providing information on a healthy diet, where these topics were most often discussed in health classes and sometimes in physical education. This information focused primarily on classes of nutrients, the food pyramid, and metabolism, but they felt the information conveyed was too elementary. They expressed desire for a deeper understanding of healthy eating and weight. Additionally, participants believed if you played a sport, coaches were a source of information on healthy eating and weight. Medical doctors and registered dietitians were identified as health professionals who are a source of information, but only by a few participants.

Students were just as likely to rely on information that they get from their peers, the Internet, and the media. One student stated, “Me and my mom do because we get on the Internet and look at basic healthy stuff.” Many participants took cues about eating
from media sources, especially television commercials. They were encouraged to eat certain foods they termed “unhealthy” because of commercials. In addition, the media influenced them to take diet pills by presenting them so attractively. Conversely, several participants stated that they were not influenced to make certain purchasing or consumption decisions because of advertising. One participant stated, “You might think it looks good, but that’s not going to make you run right out and get it.”

Discussion

In a previous study, West Virginia adolescents had a high proportion of overweight and reported dietary consumption patterns inconsistent with the Dietary Guidelines for Americans (Krummel et al., 2004). Since eating patterns undoubtedly influence weight and overall health (Mahan & Escott-Stump, 2004; Mullen & Shield, 2004; Racette et al., 2003; WHO, 1998), it was important to examine perceptions of a healthy diet among West Virginia adolescents. Information gained about healthy diet perceptions will assist in understanding the underlying motivators that dictate food consumption behaviors. Other studies have examined such perceptions (Dixey, Sahota, Atwal, & Turner, 2001; Edwards & Hartwell, 2002; Giskes, Patterson, Turrell, & Newman, 2005; Hart et al., 2002; Hesketh, Waters, Salmon, & Williams, 2005; Monge-Rojas, Garita, Sanchez, & Munoz, 2005; Roberts, Maxwell, Bagnall, & Bilton, 2001), but little data is available on diet perceptions of rural Appalachian adolescents.

When asked to define a healthy diet, focus group participants believed that specific dietary patterns comprised a healthy diet. They often associated more vegetable, fruit, and fiber consumption and consuming a low fat diet as components of a healthy diet. These findings were consistent with other studies in children and adults, which
regularly mentioned similar dietary patterns as healthy (Barnes & Almasy, 2005; Edwards & Hartwell, 2002; Eikenberry & Smith, 2004; Giskes, Patterson, Turrell, & Newman, 2005; Margetts et al., 1997; Monge-Rojas, Garita, Sanchez, & Munoz, 2005; Roberts, Mazwell, Bagnall, & Bilton, 2001). Adults frequently cited low fat diets and those that included more fruits and vegetables as healthy (Barnes & Almasy, 2005; Eikenberry & Smith, 2004; Margetts et al., 1997). Likewise, children and adolescents most frequently described a healthy diet as one that included adequate vegetables and fruits (Edwards & Hartwell, 2002; Giskes et al., 2005; Monge-Rojas et al., 2005; Roberts et al., 2001) and low in fat (Giskes et al., 2005). Edwards and Hartwell (2002) and Monge-Rojas et al. (2005) discussed how youth identified specific foods and food groups as unhealthy; these included high fat and fast foods, snacks, sodas, and chocolate and sweets. Students in our study also labeled foods as either “good” or “bad”. Examples of “bad” foods identified by Appalachian adolescents in our study were junk foods, sodas, cookies, fast foods, and candy bars, which they reported consuming regularly.

Knowledge regarding a healthy diet was gained from parents and other family members, health teachers, peers, and the media. Two similar studies found parents to be the most likely source of information (Edwards & Hartwell, 2002; O’Dea & Caputi, 2001), which was sometimes incorrect (O’Dea & Caputi, 2001).

Generally, participants in our study described their food intake practices as unhealthy. While food choices were primarily influenced by availability, taste preferences were also a primary consideration. Additionally, peers and family members had a direct impact on food choices of the adolescents. Other qualitative studies of children and adolescents cited similar results. Monge-Rojas et al. (2005) reported that
Costa Rican adolescents’ dietary intake practices were influenced by availability, peers, family members, and the home environment. Media advertisements were also discussed as having an influence on consumption behaviors in our study and others (Dixey et al., 2001; Hesketh et al., 2005; Wang et al., 2006). It is important to identify and understand the influential factors for targeted nutrition education interventions.

When exploring sources of food and their influence on food consumption patterns, students regularly recognized and discussed sources outside the home environment. Schools were identified as primary sources of food and were discussed at length during the focus groups; both cafeterias and vending machines were classified as sources of food in the schools. Often, students reported eating the lunch meal from vending machines, because they were dissatisfied with cafeteria offerings. A study of urban children and adolescents reported comparable results, with participants skipping cafeteria meals to purchase high-fat snack foods (Wang et al., 2006). Additionally, Appalachian adolescents in our study believed that cafeteria menu items were unhealthy and that portion sizes were too small. Dixey et al. (2001) discussed similar negative perceptions of school cafeterias in their research. Observably, a major barrier to consuming a healthy diet was the perceived lack of availability in the schools. Students also cited preference, convenience, and lack of discipline as other barriers to consuming a healthy diet. A study of parents revealed that they believed their children’s preferences were a primary barrier to healthy eating as well (Hart, Herriot, Bishop, & Truby, 2003).

This study of Appalachian adolescents provided important data on perceptions of healthy eating, current diet practices, sources of diet information, and barriers to consuming a healthy diet. While many similarities exist between adolescents in
Appalachia and other regions, they are still somewhat unique. They cited unavailability of healthy foods in the homes, when dining out, and in the schools as barriers to consuming a healthy diet; this was not regularly the case in other literature. Some of this may be due, in part, to geographic isolation and warrants further investigation. Overall, the research provided a wealth of information but had several limitations. For example, one school recruited for the study had no participants. A single student arrived for the focus group, but the parent did not due to limited resources for transportation. Since consent could not be obtained, the focus groups were cancelled. These issues have impacts on the findings but also speak to the challenges inherent in working with the Appalachian population. As is usual in qualitative research, the results cannot be generalized, as participants were part of a convenient, non-representative sample. Finally, reliance on the researchers as instruments is also a limitation of qualitative findings; however, both primary investigators are familiar with Appalachia, were raised in the region, and coded data independently with high levels of agreement.

Conclusion and Implications

Results of the study indicated that adolescents residing in Appalachia do not perceive their diets as healthy. While they could correctly identify patterns of healthy diet consumption, they chose to consume diets inconsistent with these patterns. At times, information on healthy diets was provided by unreliable sources, and the students regularly expressed dissatisfaction with food offerings in the schools. Given this information, it is evident that multiple opportunities exist for nutrition intervention in the homes, schools, and in school-based health centers. Availability of healthy foods in schools should be addressed in these interventions, as students most often cited this as a
barrier for eating a healthy diet. Consuming a diet consistent with the *Dietary Guidelines for Americans* is fundamental to reducing the rates of overweight in children and adolescents.

In Appalachia, where rates of adolescent overweight are disproportionately high, culturally appropriate interventions targeting healthy eating and overweight could have a significant impact. Since few investigations have addressed perceptions of a healthy diet among rural Appalachian adolescents, identifying these perceptions will provide valuable formative data to develop targeted nutrition education and health promotion programming. Parents, adolescents, school administrators, and school-based primary care providers should be made aware of these findings and should be assembled to discuss best approaches to combat obesity in the region.
Please tell us your name and your very favorite food.

(Food is important to all of us and impacts our life daily. Today, we want to find out what you think about healthy eating and weight.)

2. What is the first thing you think about when you hear the words “healthy diet”?

3. What does “healthy weight” mean to you?

(Probes: Do you think of a number, size, or body shape? If so, what is it?)

4. Do you think that most kids in your school eat healthy?

(Probes: Why or why not? Is healthy eating a consideration?)

5. Do you think overweight and fear of overweight are problems among teenagers in your school?

(Probes: Why is/isn’t it a problem? What kind of fears do they have?)

6. Share with me what you believe is a “healthy diet”.

7. Do things get in the way of eating healthy in teenagers your age? If so, can you list and describe some of those things for me?

(Probe: Why or why not? Examples of barriers may include eating out, not available in cafeteria, parents purchase foods, media promotes “unhealthy” food choices, etc.)

8. What would make it easier for kids your age to eat a healthy diet?

9. Describe to me what you believe is a “healthy weight”.

10. What have you learned about healthy eating and weight in school, from your parents, and from your friends?

11. Is there anything else that you would like to tell us about healthy eating or weight that you weren’t able to share earlier?

Table 5.1: Questioning route used during adolescent focus groups
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
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<td>Sources of information about healthy eating and healthy weight.</td>
</tr>
</tbody>
</table>

Table 5.2: Code words and definitions developed for analysis of focus groups transcripts
CHAPTER 6

CONCLUSIONS AND IMPLICATIONS

Conclusions

Overweight and obesity among children and adolescents have become problems of great concern, as rates have doubled in the US during the last two decades (Hedley et al., 2004). In rural Appalachia, the incidence of obesity has been consistently high and continues to grow (Davey, Harrell, Stewart, & King, 2004; Demerath et al., 2003). These increases are serious as various problems are associated with childhood and adolescent overweight, such as psychological problems (Mullen & Shield, 2004) and increased risk for overweight as an adult (Dietz, 2002; Fowler-Brown & Kahwati, 2004; Lytle, 2002) and developing several chronic diseases (Edmunds, Waters, & Elliott, 2001).

Obesity is a multi-factorial disorder with the etiology explained by multiple environmental, cultural, social, behavioral, and genetic factors (CDC, 2004, November 11; Mullen & Shield, 2004; Racette, Deusinger, & Deusinger, 2003; WIN, 2001). A significant modifiable risk factor influencing overweight is dietary habits, as evidence clearly supports that less-than-optimal dietary patterns are a principal contributor to the obesity epidemic (Mahan & Escott-Stump, 2004; Mullen & Shield, 2004; Racette et al., 2003; WHO, 1998). Because dietary intake impacts weight, it is vital to understand
adolescents’ perceptions of healthy diet and weight. Gaining this information is fundamental for identification of diet and weight misconceptions, cultural perceptions of healthy diet and weight, and areas for further investigation and programming.

Currently, little information is available regarding the perceptions of a healthy diet and a healthy weight, especially among Appalachian adolescents. This research attempted to fill a void in the literature and provide a foundation for continued research and programming in these areas. In an effort to answer these research questions, several more were raised, which should be explored in greater depth through later investigations.

Results of this study indicated that many of the students understood concepts related to and the components of a healthy diet; however, knowledge did not have an impact on behavior as most of the students perceived their diets to be unhealthy. Often, they cited specific barriers that prevented healthy diet consumption. One common barrier was the perceived limited availability of healthy foods in the schools. Students admitted to relying heavily on school vending machines, which offered less-healthy food options, instead of consuming school lunches. Participants perceived cafeteria meals to be of substandard quality and felt that portion sizes were too small. Such perceptions detoured them from regularly choosing this alternative.

Because schools in the study participate in the National School Lunch Program (NSLP), they are required to provide students with well-balanced, healthy lunches daily to receive federal reimbursement for meals served in the school cafeterias (USDA, 2005). As part of the NSLP, schools must serve five meal components daily, which come from the meat, milk, vegetable and fruit, and grain groups. Specific serving size requirements have been established for each food group, and schools must provide one-third of the
Recommended Dietary Allowances for calories, protein, calcium, iron, and vitamins A and C on a daily basis (USDA 2000). Federal guidelines do not dictate specific foods for service or methods of preparation; such decisions are made at district or school levels (USDA, 2000). The flexibility afforded to schools provides an excellent opportunity for incorporation of high quality nutritious foods in school lunches that are appetizing to students. Further investigation into the availability, quality, and preferences of healthy foods in rural, Appalachian schools should be considered.

Another requirement of schools participating in the NSLP is the establishment of school wellness policies and councils. This mandate was part of the Child Nutrition and Women, Infants and Children (WIC) Reauthorization Act in an attempt to promote nutrition education and physical activity and decrease rates of obesity among US school children (House Education & the Workforce Committee, 2004). Schools must be in compliance with the directive beginning with the 2006 – 2007 academic year, which provides increased occasions to engage in school-based nutrition programming. Adolescents spend a great deal of time in the school environment, and school cafeterias and classrooms provide a plethora of opportunities for engagement in learning about healthy diets and weight. School administrators, educators, students, and other stakeholders should work together with a nutrition expert to identify areas for health promotion and improvements in cafeteria selections. Students cited schools as a primary source of nutrition and health information; therefore, educators should be provided the most up to date information in these areas. This could be provided via district or regional training of teachers, administrators, and foodservice personnel.
Adolescents in the study also cited limited availability of healthy foods when dining out and in the homes as other barriers to consuming a healthy diet. Students in the sample did not dine out regularly; this was due, in part, to geographic isolation. Many of the areas where the focus groups were held only had a few fast food chain restaurants available, which typically served less nutritious meals. Therefore, it was perceived to be difficult to eat healthy when dining out. Since availability of choices for dining out is not likely to change, students in Appalachia should be educated on making healthy choices in fast food and other dining establishments.

Students often cited limited access to healthy foods in the home as an additional barrier to consuming a healthy diet. The importance of parental or caregiver nutrition knowledge, their consideration of healthy foods in meal planning, and sources of nutrition-related information for parents or caregivers have a potentially important impact on child health. Barnes and Almasy (2005) found that most adults perceived a healthy diet as one that included more fruits and vegetables, was lower in fat and salt, and had smaller portion sizes. Additionally, many stated that their diets were unhealthy because they consumed too many sweet and high fat foods or calories. These findings indicate a need for further investigation of data concurrently collected on caregiver perceptions and their relationship to those of the students as well as comprehensive nutrition programs and obesity initiatives, which educate entire family units in Appalachia.

Clearly, most participants in the study had an acceptable understanding of a healthy diet and perceived many barriers to consuming one; however, this was not the case when focus group discussion turned to achieving or maintaining a healthy weight. Generally, students provided inaccurate information regarding a healthy weight and
regularly underestimated and overestimated the magnitude of overweight among their peers. Students discussed that little attention was given to healthy weight in school curricula and expressed a desire for more education on the topic. Such information provides a clear indication that weight issues must be addressed, especially in areas where rates of obesity are disproportionately high. Additionally, participants did not mention specific barriers to achieving a healthy weight, such as limited availability of safe areas for physical activity, which would be expected in rural areas. One study of rural senior citizens cited safety as a barrier to being physically active outdoors (Aronson & Oman, 2004). It is unknown whether or not the students perceived barriers to achieving a healthy weight, as the investigation did not specifically target these barriers. Most often, participants discussed physical activity in the context of participation in school-based sports.

Another disturbing finding of the healthy weight data was that many Appalachian adolescents, especially but not exclusively females, had distorted perceptions of healthy weight and engaged regularly in unsafe weight control behaviors. The purpose of this study was not to examine disordered eating practices; however, these arose in all of the focus group discussions. Given the structure of the group interviews and sensitivity of the issue, the prevalence and specific practices were not explored as fully as they might have been. However, the information obtained provides a clear justification for future exploration of disordered eating practices among rural, Appalachian adolescents. Such findings personify the importance of grounded theory study, which allows the data to emerge or speak for itself.
Based on these findings of adolescents’ healthy diet and weight perceptions, an integral portion of the perceptions of a healthy weight were contingent upon healthy dietary behaviors. Students believed that particular foods or nutrients contributed to a healthy weight while others were counter-productive. Foods considered to contribute to a healthy diet were also linked to those contributing to a healthy weight. These perceptions were strongly tied to food availability issues, with implications for consumption of a healthy diet and attainment of a healthy weight. Further, the findings suggest that Appalachian adolescents are at varied levels of readiness for action and multiple educational opportunities exist for obesity prevention initiatives in the region, which should be explored and initiated in the near future. The current study identified many interesting and perplexing perceptions and areas for future research. Further investigation of this population would be beneficial to develop a theoretical model describing perceptions of healthy diet and weight. The researchers had hoped to determine such theories as part of this investigation, but the breadth and depth of the group interviews were not sufficient to do so. Additional focus groups discussing similar perceptions would assist in development of theoretical models.

Clinical/Practical Implications

The data provided a wealth of information on diet and weight perceptions of Appalachian adolescents; however, other questions were raised during the focus groups that were not fully explored. Prior to designing and implementing interventions, it would be beneficial to gather additional information addressing specific types of physical activity engaged in by Appalachian adolescents, what specific types of foods they have
access to and consume, more detailed information about weight control practices, and their perception of the role of the family in consuming a healthy diet and achieving or maintaining a healthy weight.

The current research determined that rural Appalachian adolescents received some appropriate and accurate information from schools and other sources. Future interventions should support the knowledge they have gained and address misconceptions that arose. Students repeatedly discussed dissatisfaction with cafeteria selections and easy access to vending machines during the school day. In the future, it will be important to work with school administrators to address foodservice operations as well as school policies regarding the accessibility of the vending machines and the availability of healthy snack foods in schools.

School-based health centers serve as a healthcare depot within the current environments, and offer an excellent opportunity for programming and intervention. Students in our study cited reliance on healthcare professionals for the diagnosis of obesity. They would benefit from education regarding self-awareness of overweight and mechanisms of action to seek treatment. Health care providers need to be made aware of the findings and should be educated on addressing healthy weight and diet misconceptions within this population.

Finally, so little is known about the perceptions of children and adolescents in Appalachia that it is important to continue investigations in this area to gain a deeper understanding of their perceptions of health, specifically diet and weight. In many ways, these adolescents resembled others throughout the US; however, limited access to healthy
foods in the home and school environments and geographical isolation were particularly relevant for this population. Such information must be considered in future work and interventions.
REFERENCES


National Association for Sport and Physical Education (2001, July). *Recess in elementary schools: a position paper from the National Association for Sport and Physical Education.* National Association for Sport and Physical Education.


Tiggemann, M., Gardiner, M., & Slater, A. (2000). "I would rather be size 10 than have straight A's": a focus group study of adolescent girls' wish to be thinner. *Journal of Adolescence, 23*, 645 - 659.


APPENDIX A

BMI-for-Age Growth Charts
APPENDIX B

Institutional Review Board Approvals
BEHAVIORAL/SOCIAL SCIENCES
INSTITUTIONAL REVIEW BOARD
RESEARCH INVOLVING HUMAN SUBJECTS
THE OHIO STATE UNIVERSITY

ACTION OF THE REVIEW BOARD

Research Protocol:
2005B0273 PERCEPTIONS OF HEALTHY DIETS AMONG APPALACHIAN ADOLESCENTS AND THEIR PRIMARY CAREGIVERS, Christopher A. Taylor, Robert F. Lawson, Kay N. Wolf, Kelli J. Williams, Medical Dietetics.

presented for review by the Behavioral/Social Sciences Institutional Review Board to ensure the proper protection of rights and welfare of the individuals involved with consideration of the methods used to obtain informed consent and the justification of risks in terms of potential benefits to be gained.

The protocol was APPROVED by EXPEDITED REVIEW.

NOTE: The study has been approved for the participation of children according to 45 CFR 46.404. Participation in the study (participation in focus groups, completing questionnaires) does not place the subjects at greater than minimal risk and adequate provisions are in place for soliciting the assent of the children and the permission of their parents or guardians as required by 45 CFR 46, section 408. The IRB determined that the permission of one parent is sufficient.

Approval for proposed research includes all materials submitted by the investigator unless otherwise noted.

It is the responsibility of the principal investigator to retain a copy of each signed consent form for at least three (3) years beyond the termination of the subject’s participation in the proposed activity. Should the principal investigator leave the University, signed consent forms are to be transferred to the Behavioral and Social Sciences Institutional Review Board for the required retention period. This application has been approved for a period of not more than one year. You are reminded that you must promptly report any problems to the Review Board, and that no procedural changes may be made without prior review and approval. You are also reminded that the identity of the research participants must be kept confidential.

Date: September 16, 2005 Signed: 
Chairperson

hs-025h Behavioral approval letter (08.04)

124
Office of Research Integrity
Institutional Review Board

Friday, August 12, 2005

Kelli J. Williams
Department of Dietetics
One John Marshall Dr.
Marshall University
Huntington, WV 25755

RE: IRB Study # 6034 At: Marshall IRB 2

Dear Ms. Williams:

Protocol Title:
Perceptions of Healthy Diets Among Appalachian Adolescents and Their Primary Caregivers

Expiration Date: 8/11/2006
Our Internal #: 1661
Type of Change: (Other) Expedited Approval
Expedited?: Y
Date of Change: 8/12/2005
Date Received: 8/12/2005
On Meeting Date: 8/17/2005

Description: In accordance with 45CFR46.110, the above listed study was granted expedited approval today for a period of 12 months. Written permission must be obtained from the school prior to starting the study. A progress report of the study will be due prior to the anniversary date of August 11, 2006 or upon completion and/or closure of the study if prior to the anniversary date.

Respectfully yours,

Stephen D. Cooper, Ph.D.
Marshall University IRB#2 Chairperson
APPENDIX C

Demographic Surveys
Parent/Caregiver Information Survey

The following is a short survey to gather some information about you. Your responses will be kept confidential, and no one will know how you answered.

Using a pen or pencil, please place an “X” next to the answer that best describes you for each question. You should only have one answer marked per box. If more than one answer is possible, it will be noted.

Thank you for your assistance, and please ask for help if you have any questions.

1. What is your current age?
   __________ years old (please fill in blank)

2. What is your gender?
   _____ A. Male
   _____ B. Female

3. How would you describe your ethnicity?
   _____ A. White
   _____ B. Black or African American
   _____ C. Hispanic or Latino
   _____ D. Asian American
   _____ E. Hawaiian or Pacific Islander
   _____ F. American Indian or Alaskan Native
   _____ G. Other/______________________ (please fill in blank)

4. What is the highest level of education you completed?
   _____ A. Some high school or less
   _____ B. High school graduation or GED
   _____ C. Some college or some technical school
   _____ D. College Degree (Bachelor’s)
   _____ E. Master’s or Doctoral Degree
   _____ F. Don’t Know

5. What is your current work status?
   _____ A. Employed Full Time
   _____ B. Employed Part Time
   _____ C. Not Employed
   _____ D. Don’t Know
   _____ E. Other/______________________ (please fill in blank)
6. Which category best represents your total earned household income (gross) over the past year?
   ____ A. Less than $10,000
   ____ B. $10,000 to $14,999
   ____ C. $15,000 to $19,999
   ____ D. $20,000 to $24,999
   ____ E. $25,000 to $29,999
   ____ F. $30,000 to $34,999
   ____ G. $35,000 to $39,999
   ____ H. $40,000 to $44,999
   ____ I. $45,000 to $49,999
   ____ J. $50,000 or greater

7. Has the doctor ever told you that you have any of the following conditions? Please mark all that apply.
   ____ A. Diabetes
   ____ B. High blood Pressure
   ____ C. Heart disease
   ____ D. High cholesterol
   ____ E. Other/__________________ (please fill in blank)

8. How would you describe your weight?
   ____ A. Very underweight
   ____ B. Slightly underweight
   ____ C. Appropriate weight
   ____ D. Slightly overweight
   ____ E. Very overweight

9. Which of the following are you trying to do about your weight?
   ____ A. Lose weight
   ____ B. Gain weight
   ____ C. Maintain current weight
   ____ D. Not trying to do anything about my weight

10. How much do you weigh? (please fill in the blank)
    __________________ pounds

11. How tall are you? (please fill in the blanks)
    __________________ feet  __________________ inches

12. How often do you participate in physical activity (exercise) vigorously enough to work up a sweat? Activity or exercise may include things such as playing sports, walking or running, swimming, etc.
    ____ A. Every Day
    ____ B. 5 – 6 times a week
    ____ C. 2 – 4 times a week
    ____ D. Once a week
    ____ E. 1 – 3 times a month
    ____ F. Rarely or never
13. How often do you eat out at a restaurant?

_____ A. Every Day
_____ B. 5 – 6 times a week
_____ C. 2 – 4 times a week
_____ D. Once a week
_____ E. 1 – 3 times a month
_____ F. Rarely or never

This concludes the survey. Thank you for your participation!
Student Information Survey

The following is a short survey to gather some information about you. Your responses will be kept confidential, and no one will know how you answered.

Using a pen or pencil, please place an “X” next to the answer that best describes you for each question. You should only have one answer marked per box. If more than one answer is possible, it will be noted.

Thank you for your assistance, and please ask for help if you have any questions.

1. What is your current age?
   _____ A. 13 years old
   _____ B. 14 years old
   _____ C. 15 years old
   _____ D. Other/________ years old (please fill in number)

2. What is your gender?
   _____ A. Male
   _____ B. Female

3. How would you describe your ethnicity?
   _____ A. White
   _____ B. Black or African American
   _____ C. Hispanic or Latino
   _____ D. Asian American
   _____ E. Hawaiian or Pacific Islander
   _____ F. American Indian or Alaskan Native
   _____ G. Other/______________________ (please fill in blank)

4. What is the highest level of education that your mother completed?
   _____ A. Some high school or less
   _____ B. High school graduation or GED
   _____ C. Some college or some technical school
   _____ D. College Degree (Bachelor’s)
   _____ E. Master’s or Doctoral Degree
   _____ F. Don’t Know

5. What is the highest level of education that your father completed?
   _____ A. Some high school or less
   _____ B. High school graduation or GED
   _____ C. Some college or some technical school
   _____ D. College Degree (Bachelor’s)
   _____ E. Master’s or Doctoral Degree
   _____ F. Don’t Know

6. Do you and your family qualify for free or discounted meals at school or any other public assistance?
   _____ A. Yes
   _____ B. No
   _____ C. Don’t Know
7. What is your mother’s current work status?
   _____ A. Employed Full Time
   _____ B. Employed Part Time
   _____ C. Not Employed
   _____ D. Don’t Know
   _____ E. Other/______________________ (please fill in blank)

8. What is your father’s current work status?
   _____ A. Employed Full Time
   _____ B. Employed Part Time
   _____ C. Not Employed
   _____ D. Don’t Know
   _____ E. Other/______________________ (please fill in blank)

9. What is your grade point average in school?
   _____ A. Less than or equal to 1.5
   _____ B. 1.6 to 2.5
   _____ C. 2.6 to 3.0
   _____ D. 3.1 to 3.5
   _____ E. Greater than 3.5
   _____ F. Don’t Know

10. How would you describe your weight?
    _____ A. Very underweight
    _____ B. Slightly underweight
    _____ C. Appropriate weight
    _____ D. Slightly overweight
    _____ E. Very overweight

11. Which of the following are you trying to do about your weight?
    _____ A. Lose weight
    _____ B. Gain weight
    _____ C. Maintain current weight
    _____ D. Not trying to do anything about my weight

12. How much do you weigh? (please fill in the blank)
    __________________ pounds

13. How tall are you? (please fill in the blanks)
    __________________ feet  _______________ inches

14. How often do you participate in physical activity (exercise) vigorously enough to work up a sweat? Activity or exercise may include things such as playing sports, walking or running, swimming, etc.
    _____ A. Every Day
    _____ B. 5 – 6 times a week
    _____ C. 2 – 4 times a week
    _____ D. Once a week
    _____ E. 1 – 3 times a month
    _____ F. Rarely or never
15. How often do you participate in making food choices for your family? This may include shopping for groceries by yourself or with a parent, choosing foods to prepare for meals, etc.

_____ A. Most of the time
_____ B. Some of the time
_____ C. Not very often
_____ D. Never

16. How often do you eat out at a restaurant?

_____ A. Every Day
_____ B. 5 – 6 times a week
_____ C. 2 – 4 times a week
_____ D. Once a week
_____ E. 1 – 3 times a month
_____ F. Rarely or never

This concludes the survey. Thank you for your participation!
Appendix D

Focus Group Questioning Guides
Focus Group Discussion Guide for Parent/Caregiver

Opening Question:

1. Please tell us your name and your very favorite food.
   *(Food is important to all of us and impacts our life daily. Today, we want to find out what you think about healthy eating and weight.)*

Introductory Questions:

2. What is the first thing you think about when you hear the words “healthy diet”?
3. What does “healthy weight” mean to you?
   *(Probes: Do you think of a number, size, or body shape? If so, what is it?)*
4. What do you think it means to your child?

Transition Questions:

5. Do you think that most people in our area eat healthy?
   *(Probes: Why or why not? Is healthy eating a consideration?)*
6. Do you think overweight and fear of overweight are problems among your peers?
   *(Probes: Why is/isn’t it a problem? What kind of fears do they have?)*

Key Questions:

7. Share with me what you believe is a “healthy diet”.
8. Sometimes, do you find there are barriers to consuming a healthy diet? If so, can you list and describe some of those for me?
   *(Probe: Why or why not? Examples of barriers may include not enough time to cook, healthy choices not available, don’t know how to cook healthy, etc.)*
9. What would make it easier for you and your family to eat a healthy diet?
10. Describe to me what you believe is a “healthy weight”.
11. Where do you get information on healthy eating and weight?

Ending Question:

12. Is there anything else that you would like to tell us about healthy eating or weight that you weren’t able to share earlier?
Focus Group Discussion Guide for Adolescents

Opening Question:

1. Please tell us your name and your very favorite food.
   *(Food is important to all of us and impacts our life daily. Today, we want to find out what you think about healthy eating and weight.)*

Introductory Questions:

2. What is the first thing you think about when you hear the words “healthy diet”?
3. What does “healthy weight” mean to you?
   *(Probes: Do you think of a number, size, or body shape? If so, what is it?)*

Transition Questions:

4. Do you think that most kids in your school eat healthy?
   *(Probes: Why or why not? Is healthy eating a consideration?)*
5. Do you think overweight and fear of overweight are problems among teenagers in your school?
   *(Probes: Why is/isn’t it a problem? What kind of fears do they have?)*

Key Questions:

6. Share with me what you believe is a “healthy diet”.
7. Do things get in the way of eating healthy in teenagers your age? If so, can you list and describe some of those things for me?
   *(Probe: Why or why not? Examples of barriers may include eating out, not available in cafeteria, parents purchase foods, media promotes “unhealthy” food choices, etc.)*
8. What would make it easier for kids your age to eat a healthy diet?
9. Describe to me what you believe is a “healthy weight”.
10. What have you learned about healthy eating and weight in school, from your parents, and from your friends?

Ending Question:

11. Is there anything else that you would like to tell us about healthy eating or weight that you weren’t able to share earlier?
APPENDIX E

Letters of Cooperation
October 10, 2005

The Calhoun County Middle / High School is interested and willing to participate in the Ohio State University-Marshall University collaborative research project to address childhood obesity in West Virginia school children. We provide permission to recruit parent and child pairs from the school through the 9th grade health classes and to conduct the focus groups on site.

Sincerely,

Karen Kirby
Assistant Principal
Calhoun County Middle / High School
November 16, 2005

Guyan Valley County High School is willing to participate in the Ohio State University-Marshall University collaborative research project to address childhood obesity in West Virginia school children. We provide permission to recruit parent and child pairs from the school and to conduct the focus groups on site.

Please accept this letter as an effort to show our support in such a worthwhile project.

Sincerely,

[Signature]

Mr. Frank Barnett
Principal, Guyan Valley High School
September 29, 2005

Please accept this letter as permission for Richwood Junior High School to participate in the Ohio State University-Marshall University collaborative research project. This project is designed to address the problem of childhood obesity in West Virginia school children.

The RJHS will assist by accommodating representative(s) from MU/OSU to visit our ninth grade health class(es) on a predetermined date, discuss the project design, and solicit participation from students and their parents. Once that is complete, we will provide space at the RJHS for the focus group interview process with parents and students.

Please accept this letter as an effort to show our support in such a needed project.

Sincerely,

Mr. Mark Skaggs
Principal, RJHS
September 28, 2005

The Summersville Junior High School is interested and willing to participate in the Ohio State University-Marshall University collaborative research project to address childhood obesity in West Virginia school children. As understood a representative(s) from the University will visit our ninth grade health class(es) on a predetermined date, discuss the research, and solicit participation. Once that has been complete, we will provide space at the SJHS for the focus group interview process.

Appalachia adolescent obesity is definitely a growing problem. Please accept this letter as an effort to show our support in such a worthwhile project. This letter also serves as permission to recruit parent and child pairs from the SJHS and to conduct the focus groups on site.

Sincerely,

[Signature]

Mr. Fred Amick
Principal, SJHS
APPENDIX F

Recruitment Letter
Perceptions of Healthy Diet among Appalachian Adolescents and their Primary Caregivers

What is it?
It is a research study looking at the perceptions of Appalachian adolescents and their parents toward health, obesity, and consuming a healthy diet.

Who is conducting it?
- The study is being conducted in a joint effort by investigators at Marshall University and The Ohio State University, with expertise in nutrition, education, research, and public health.
- Kelli J. Williams, a faculty member in the Department of Dietetics at Marshall University, is completing the research in order to fulfill graduation requirements for a Doctor of Philosophy degree at The Ohio State University.
- Funding for the research is being provided by The Department of Family and Community Health in the Marshall University School of Medicine.

Why is it important?
- Adolescent obesity has reached epidemic magnitude throughout the country.
- In West Virginia, overweight among youth is a minimally researched problem of great concern.
- Studies have indicated that West Virginia adolescents consume a diet inconsistent with national guidelines.
- In order for successful nutrition programs to be designed for West Virginia adolescents, it is vitally important to learn how a healthy diet is perceived.

Who can participate?
- All students enrolled in a ninth grade health class will be given equal opportunity to participate in the study, along with their parent or primary caregiver. While all students are eligible for participation, only 12 student/parent pairs will be selected for participation in the study.
- Research participants will be chosen at random from those student/parent pairs expressing interest.
- Student/parent pairs selected for participation will contacted directly.

What will be asked of participants?
- All participants (students and parents/caregivers) will be asked to take part in a focus group interview process and to complete a questionnaire.
- Focus groups will be held for each parent and student group separately but simultaneously during an evening or Saturday event at the school.
- The focus group interview and brief survey is expected to last no more than 3 hours.

How will it benefit students, parents, and schools?
- Information gained will be utilized to design appropriate nutrition interventions throughout the state and region.
- It is anticipated that the results will be helpful for designing programs to combat the adolescent obesity in West Virginia. Such programs would provide a physical and economic benefit the entire state, its schools, and its residents.

How can I take part?
- If you are interested in learning more about the project and/or taking part in the study, please contact Kelli J. Williams, study coordinator, at 304.696.4336 or williamsk@marshall.edu.
APPENDIX G

Contact Form
Dear Parent/Caregiver:

Today at school, your child was introduced to a research study being conducted through Marshall University and The Ohio State University. As part of this research, we hope to gather information on both you and your child’s perceptions of consuming a healthy diet. If you agree to participate, only a few hours of your time will be invested, but the results could be instrumental in addressing overweight throughout the state and region.

Attached, you will find a one-page summary of the research project, which provides general background information on the study. Essentially, we would like for you and your child to share your opinions on a healthy diet and obesity as part of a group discussion with your peers. This is called a focus group interview, and it will be scheduled on an evening or Saturday at the school.

If you and your child are interested in participating, I ask that you please complete the form below. Your child should return the form to his/her school by add date. Someone conducting the research study will collect them on this date. It should be noted that not everyone interested in the study will be chosen to participate. Participants will be chosen at random, and you will be contacted directly should you be selected to take part in the research.

If you have specific questions which are not addressed in this correspondence, I will be happy to discuss the project with you directly. Contact information is provided on the research summary. Again, thank you for your time and consideration.

Sincerely,

Kelli J. Williams, MA, RD, LD
Assistant Professor of Dietetics, Marshall University
PhD Candidate, The Ohio State University

If you are interested in participation, please complete information below and return to school by add date.

Student Name: ____________________________________________

Caregiver Name: ____________________________________________

School: ____________________________________________

Address: ____________________________________________

Phone: ____________________________________________

Email: ____________________________________________
APPENDIX H

Letter of Notification of Acceptance to Participate in Research
Dear Insert Name:

Thank you for taking the time recently to review information on our research study and also for expressing an interest in participation. We are excited to inform you that you and your child have been randomly selected to take part in the project. The focus group interviews for your child’s school will be held on insert date, time, and place. We sincerely hope that you will make every effort to attend. Refreshments will be served, and it should only take, at most, a few hours of your time. Additionally, all student participants will receive $20.00 and parents will receive $50.00 as compensation for the generous donation of your time. It should be noted that compensation is not contingent on completion of the focus groups or questionnaires. All who attend will receive the incentive.

Enclosed you will find three consent forms. One is consenting to your participation in the study. The others regard permission for your child to participate. The student assent form addresses your child’s willingness to participate in the study. The caregiver consent form must be signed by you providing parental permission for your child to participate, as your child is considered a minor.

These consent forms provide detailed information on the study methods, purposes, benefits, and risks. I ask that you review them closely and remember that participation is strictly voluntary. If, after reading, you wish to participate, you will need to bring the signed consent forms with you to the focus group interview. Prior to the interview, an information session will be conducted to answer any of your questions regarding consent and/or the research. You may wish to sign after this meeting. Either way, signed consent forms must be on file prior to focus group participation.

Should you have any questions, please feel free to contact me at 304.696.4336 or williamsk@marshall.edu. I look forward to meeting you and working with you in the weeks to come.

Sincerely,

Kelli J. Williams

Kelli J. Williams, MA, RD, LD
Assistant Professor of Dietetics, Marshall University

PhD Candidate, The Ohio State University
APPENDIX I

Informed Consent
CONSENT TO PARTICIPATE IN RESEARCH

FOR PARENT/CAREGIVER

- **This is a consent form for research participation.** It contains important information about the study and what to expect if you decide to participate. Please consider the information carefully. Feel free to discuss the study with your friends and family and to ask questions before making your decision whether or not to participate.

- **Your participation is voluntary.** You may refuse to participate in this study. If you decide to take part in the study, you may leave the study at any time. No matter what decision you make, there will be no penalty to you or your child. Your decision will not affect current or future relationships with Marshall University or The Ohio State University.

- **You will be provided with any new information that develops during the study that may affect your decision whether or not to continue to participate.** If you decide to participate, you will be asked to sign this form and will receive a copy of the signed form. You are being asked to consider participating in this study for the reasons explained below.

1. **Why is this study being done?**

Obesity and healthy eating among rural, Appalachian youth are problems of great concern, especially in West Virginia; however, little research has been conducted in these areas. In order to design appropriate nutrition education programs for Appalachian adolescents, it is important to investigate their perceptions of and attitude toward healthy eating and obesity. Because parents and caregivers continue to influence food choices through adolescence, it is equally important that their perceptions be explored.

2. **How many people will take part in this study?**

The study targets ninth grade students in five West Virginia middle/high schools. All students participating in a health class in one of these schools will be eligible for inclusion. In order to participate, the student and one parent or primary caregiver must consent to take part in the research. Twelve student/parent pairs will be randomly selected from each school, with a maximum total of 120 total participants (60 students and 60 parents/caregivers).
3. What will happen if I take part in this study?

If you decide to take part in the study, you will be asked to come to the school for an evening or Saturday interview. Students and parents will be interviewed simultaneously in separate groups. These interviews, known as focus groups, will be conducted by trained moderators and will last approximately two hours. During this time, you will be asked to share your opinions about healthy eating.

Additionally, all participants will be asked to complete a brief survey prior to the focus group. The demographic survey is designed to gather information such as age, gender, education completed, and other things of that nature. The information will be used to describe the participant groups, but your responses will remain confidential.

4. How long will I be in the study?

It is anticipated that your participation in the study will be limited to the time designated for the focus group interview/demographic survey (approximately 2 ½ hours). However, it may be necessary to contact you at a later time to follow-up on focus group responses for clarification purposes. If additional contact is necessary, it will require minimal time and could be completed by phone. Therefore, total participation time should not exceed four hours.

5. Can I stop being in the study?

You may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled. Your decision will not affect your current or future relationship with Marshall University or The Ohio State University.

6. What risks, side effects or discomforts can I expect from being in the study?

There are no anticipated risks to taking part in the study. You will be placed in a non-threatening group setting where you will be asked to share your opinions with your peers and a group moderator. If you are uncomfortable with discussions of health, obesity, or food behaviors, you will be able to withdraw from the focus group interview without penalty.

7. What benefits can I expect from being in the study?

The results obtained from the focus groups will be utilized to design and implement nutrition education programs targeting rural, Appalachian adolescents. Your input will be invaluable in making future nutrition education programs in West Virginia a success.
Student participants should also be able to benefit directly from these programs, once implemented, during the remainder of their public school education.

Additionally, all parents/caregivers will receive $50.00 for their assistance in the research effort. It should be noted that the incentive pay is not contingent on the completion of the focus groups and/or questionnaires. It will be awarded to all participants.

8. What other choices do I have if I do not take part in the study?

You may choose not to participate without penalty or loss of benefits to which you are otherwise entitled.

9. Will my study-related information be kept private?

Every effort will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by certain groups, such as Marshall University or The Ohio State University Institutional Review Boards or Offices of Responsible Research Practices and Research Integrity.

10. What are the costs of taking part in this study?

Transportation costs are the only ones you will incur by taking part in the study. Each student/caregiver pair will be expected to provide their own transportation to the school for the focus group interviews. However, free refreshments will be provided for all in attendance.

11. Will I be paid for taking part in this study?

You will receive monetary compensation for taking part in the study. All participants will receive $50.00 for participation in this vital study.

12. What are my rights if I take part in this study?

If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

You will be provided with any new information that develops during the course of the research that may affect your decision whether or not to continue participation in the study. You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled.
Institutional Review Boards responsible for human subject research at Marshall University and The Ohio State University have reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

13. Who can answer my questions about the study?

For questions, concerns, or complaints about the study you may contact Kelli J. Williams, in the Department of Dietetics at Marshall University. She may be reached by phone at 304.696.4336 or via email at williamsk@marshall.edu. Additionally, you may contact Dr. Chris Taylor, the study’s primary investigator, at 614.688.7972 or ctaylor@amp.osu.edu.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at The Ohio State University at 1.800.678.6251 or Dr. Stephen Cooper, Chairman of the Marshall University IRB#2 at 304.696.7320.

14. Signing the consent form

**Participant**

I have read (or someone has read to me) this document and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this consent form. I will be given a copy of this signed document.

_________________________________  _____________________________
Printed Name of Subject  Signature of Subject

_________________________________  AM/PM
Date and Time
Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A signed copy of this consent form has been given to the participant or his/her representative.

Printed Name of Person Obtaining Consent  Signature of Person Obtaining Consent

________________________________________  AM/PM

Date and Time

Witness(es) - *May be left blank if not required by the IRB*

Printed Name of Witness  Signature of Witness

________________________________________  AM/PM

Date and Time

Printed Name of Witness  Signature of Witness

________________________________________  AM/PM

Date and Time
CONSENT FOR CHILD TO PARTICIPATE IN RESEARCH

• This is a consent form for research participation. It contains important information about the study and what to expect if your child decides to participate. Please review the information carefully. Feel free to discuss the study with your friends and family and to ask questions before making a decision to participate.

• Participation is voluntary. Your child does not have to be in the study. No one will be upset if he/she does not want to participate. They can say yes now and change their mind later. His/her decision will not affect current or future relationships with Marshall University or The Ohio State University.

• Your child will be provided with any new information that develops during the study that may affect your decision whether or not to continue to participate. If your child decides to participate, you will be asked to sign this form and will receive a copy of the signed form. Your child is being asked to consider participating in this study for the reasons explained below.

1. Why is this study being done?

   Obesity and healthy eating among rural, Appalachian youth is a problem, especially in West Virginia; however, not much research has been conducted in these areas. In order to develop nutrition education programs for Appalachian students, it is important to look at their attitude toward healthy eating and obesity.

2. How many people will take part in this study?

   The study targets ninth grade students in five West Virginia middle/ high schools. All students participating in a health class in one of these schools can potentially be included. In order to participate, the student and one parent must consent to take part in the research. Twelve student/parent pairs will be randomly selected from each school, with a maximum total of 120 total participants (60 students and 60 parents/caregivers).

3. What will happen if I take part in this study?

   If your child decides to take part in the study, he/she will be asked to come to the school for an evening or Saturday interview. Students and parents will be interviewed at the same time in separate groups. These interviews, known as focus groups, will be conducted by trained moderators and will last approximately two hours. During this time, your child will be asked to share your opinions about healthy eating. Additionally, all participants will be asked to complete a brief survey prior to the focus group. The demographic survey is designed to gather information such as age, gender, education completed, and other things of that nature. The information will be used to describe the participant groups, but your child’s responses will remain confidential.
4. **How long will I be in the study?**

   It is believed that your child’s participation will be limited to the time allowed for the focus group interview/ demographic survey (approximately 2 ½ hours). However, it might be necessary to contact him or her at a later time to follow-up on focus group responses. If additional contact is necessary, it will require minimal time and could be completed by phone. Therefore, total participation time should not be more than four hours.

5. **Can I stop being in the study?**

   Your child may leave the study at any time. No one will be upset if he/she decides to quit participating, and there will be no penalty to you. His/her decision will not affect your current or future relationship with Marshall University or The Ohio State University.

6. **What risks, side effects or discomforts can I expect from being in the study?**

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   Additionally, all student participants will receive $20.00 for their assistance in the research effort. It should be noted that the monetary incentive is not contingent on completion of the focus group and/or questionnaire. It will be awarded to all participants.

8. **What other choices do I have if I do not take part in the study?**

   Your child may choose not to participate without penalty or loss of benefits to which you are otherwise entitled.

9. **Will my study-related information be kept private?**

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**Parent/Caregiver**

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_________________________________  AM/PM

Date and Time

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_________________________________  AM/PM

Date and Time
ASSENT TO PARTICIPATE
IN RESEARCH FOR STUDENT

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I am not giving up any legal rights by signing this consent form. I will be given a copy of this signed document.

__________________________________________________________  __________________________________________
Printed Name of Subject     Signature of Subject

__________________________________________________________  AM/PM
Date and Time

**Investigator/Research Staff**

I have explained the research to the participant and his/her representative before requesting the signature(s) above. There are no blanks in this document. A signed copy of this consent form has been given to the participant or his/her representative.

__________________________________________________________  __________________________________________
Printed Name of Person Obtaining Consent     Signature of Person Obtaining Consent

__________________________________________________________  AM/PM
Date and Time
APPENDIX J

Qualitative Analysis Codebook
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEF DIET</td>
<td>Description of the perceptions of what practices or foods comprise a healthy diet.</td>
</tr>
<tr>
<td>FOOD HAB</td>
<td>Current food intake practices of the adolescents and their peers.</td>
</tr>
<tr>
<td>SOURCES</td>
<td>Sources of food available to children/adolescents.</td>
</tr>
<tr>
<td>BAR FOOD</td>
<td>Barriers to eating a healthy diet, which includes what spurns poor intake habits.</td>
</tr>
<tr>
<td>DEF WT</td>
<td>Description of what was a healthy weight and what determined it.</td>
</tr>
<tr>
<td>OB PRACT</td>
<td>Practices used to avoid obesity or lose weight.</td>
</tr>
<tr>
<td>OB CON</td>
<td>Discussions regarding perceived consequences of obesity.</td>
</tr>
<tr>
<td>OB RATE</td>
<td>Description of students’ perceptions about the extent of the obesity problem.</td>
</tr>
<tr>
<td>DISCUSS</td>
<td>Issues discussed with peers about healthy diet/healthy weight.</td>
</tr>
<tr>
<td>MEDIA</td>
<td>Description of the students’ responsiveness to food advertising.</td>
</tr>
<tr>
<td>INFO</td>
<td>Sources of information about healthy eating and healthy weight.</td>
</tr>
</tbody>
</table>
APPENDIX K

Transcript Memo Narratives
**Transcript Memos for Code Words**

**Focus Groups**

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>DEF DIET</td>
<td>Description of perception of what comprises a healthy diet.</td>
</tr>
</tbody>
</table>

**Subcategories:**

*Includes dietary patterns (21), labeling (21), practices (12), unknown (1), environment (2) |

**Dietary Patterns  21**

Overwhelmingly, the students thought that there were certain dietary patterns that one should prescribe to if he/she wanted to consume a healthy diet. There was much discussion that increasing vegetable and fruit consumption was consistent with a healthy diet. Low fat diets were discussed as healthy, and one student even said that you should eat “no fats”. A diet high in fiber and one that included meats was also considered healthy.

**Labeling  21**

Many of the participants labeled food as either “good” or “bad”. The goal for health was to eat the “good” foods and avoid the “bad” ones. Foods that were described as “bad” were junk foods, sweets, greasy foods, sodas, gum, pizza, cookies, Twinkies, cake, fast foods, candy bars, Salads and grilled foods were considered “good”. There was some discussion that anything that is healthy does not taste good.

**Practices  12**

Specific practices or behaviors were associated with consuming a healthy diet. Following the federal guidelines as expressed in “My Pyramid” was consistent with consuming a healthy diet; this was mentioned on several occasions. Additionally, not skipping meals was identified as healthy as was consuming smaller portions. Consuming the appropriate number of calories was considered healthy.

> I think that you always have to have 3 meals to be healthy and get fruit and stuff in there. (Calhoun 390 – 392)

> I think that you should cut back on your portions like by half…(Calhoun 396 – 397)

> Just looking at portion sizes small might have more calories than the larger choice. (Summer 504 – 506)
One participant stated that he was “clueless” about what compromised a healthy diet.

Environment

A healthy diet is sometimes dependent on the environment in which one was raised. Heritage, culture, familiarity, area of residence, and family preferences have a very strong influence on what one might consider as healthy.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>FOOD HAB</td>
<td>Current food intake practices of the adolescents and their peers.</td>
</tr>
</tbody>
</table>

**Subcategories:**

*Includes unhealthy (7), consideration (3), availability (9), preference (4), family (4), dieting (2), scheduling (1), lunch (4)*

**Unhealthy** 7

There was much discussion about the unhealthy food choices of members of the groups and their peers. They feel that most adolescents don’t eat healthy. The references to “unhealthy” eating practices were mostly general, without mention of specific foods. In one instance, they talked about how little fruit was consumed and in another, one participant spoke of a friend who drinks a great deal of soft drinks.

> Not really; most of them don’t really eat healthy. (Summer2 411 – 412)

> I’ve got a friend who drinks a huge amount like a 12 pack a day. All he drinks is pop, and he doesn’t get any water. (Guyan 637 – 640)

**Consideration** 3

There was no consideration of the nutrition value of the food or health. They made food choices based on what they thought tasted good. One person discussed how adolescents were somewhat defiant in their food choices; they thought that there were no immediate consequences to consuming an unhealthy diet.

> I don’t think they think if something is healthy or not before you put it in your mouth. (Calhoun 178 – 180)

**Availability** 9

Food choices are influenced by availability. People choose less healthy food items because they are readily available. According to participants, this is a primary reason why they choose foods like candy bars, pop, and chips from vending machines during lunch. Also, it should be noted that if an environment offers both healthy and less healthy choices, participants are inclined to choose the less healthy ones.

**Preference** 4

Food choices are driven by taste preferences. Students will eat food that they perceive tastes good, even if it is unhealthy.

> Sometimes it’s not that convenient. They choose taste over healthy food. (Summer2 218 – 219)
Family

Food consumption patterns are influenced by family. In some instances, family rules dictate eating and food choices. In others, family members influence food choices because they are in charge of purchasing and preparation; sometimes these things are healthy and sometimes not.

   Eat vegetables. They always make me eat my salad before anything else.  
   (Calhoun 1027 – 1028)

Dieting

On a couple of occasions, the students mentioned that they, and their friends, would purposefully eat “healthy” foods sometimes. However, this was only for short amounts of time when they were dieting or trying to lose weight.

   I think some of them since a lot of teenagers aren’t happy with their weights or whatever. I do think they try to think about it. Try to work it out but then after about a week of eating healthy and exercise then they just go back to their normal lifestyles. (Summer 166 – 173)

Scheduling

It was interesting to see that one participant ate whatever food was available and fit best into his busy lifestyle.

Lunch

This is really about the foods that compose lunch. Often times, the students described what most would refer to as snacking as the lunch meal. They discussed that lunch consisted of candy bars and pop, which were available from vending machines.
Term | Definition
--- | ---
SOURCES | Sources of food available to children/adolescents.

Subcategories:

Includes vend (6), cafeteria (5), eat out (6), home (2)

Vend  
Vending machines were identified as a major source of food available to participants and their peers. Use of them was most prevalent in the schools during lunch, where they competed with the cafeteria as a food source. A variety of foods were available through vending, and the students identified, lemon water, Propel, pop tarts, chips, cookies, and soda.

The first thing they get is something sweet or something salty. They don’t look at health or things like that – I don’t either. (Calhoun 165 – 168)

I eat out of them all the time. (Calhoun 549)

No, the snack machines are raided every lunch. (Summer2 49 – 50)

Cafeteria  5
The cafeteria provided a major source of food at the various schools. However, the students’ perceptions of the food source were varied, but generally negative. Some felt that they were not given enough food at lunchtime; these were male participants. There was discussion about the lack of choices, especially healthy ones and the quality of those choices that were available.

Yeah, I know it feels like you’re being rationed or something. (Calhoun 527 – 528)

I think that more people would eat at school if other foods were available. The choices here are not that good. (Calhoun 499 – 501)

Sometimes, the school lunches aren’t healthy. Half the time, it’s the only good meal people get. So they eat it anyway. (Summer2 206 – 209)

Eat Out  6
Another source often mentioned was restaurants, both fast food and sit down. Depending on where you choose to eat, there may or may not be healthy food available. Participants found it harder to eat healthy when dining out, Subway restaurant was mentioned as an
exception. At one school, a local fast food type restaurant delivered food to the school at lunch. The students described it as very popular, and it was in direct competition with the school lunch program.

**Home**

Home was a source of food available to the participants. Parents have a major influence on foods available to them, because, on most occasions, they grocery shop and prepare meals. Some students felt that the home was a source for healthy food but others did not. One student stated that they only meals that the whole family liked were generally not healthy, but the mother cooked them anyway, because everyone was satisfied with the offerings.
**Term Definition**

BAR FOOD  
Barriers to eating a healthy diet, which includes what spurns poor intake habits.

**Subcategories:**

*Includes competition (5), discipline (4), cafeteria (7), home environment (6), availability (5), preference (7), convenience (6),*

**Competition  5**

Participants understand what food is healthy, although competitive foods or venues dissuade them from consuming it. Vending machines located in the schools were often cited as a reason for not choosing nutrient dense foods for lunch. Students indicated that they, instead, would eat candy bars, chips, pop, and other items available through vending.

> Like, I’d like to say that serving healthy food here but that would make them go straight to the snack machine anyway.  (Summer 766 – 769)

> You’re eating a piece of broccoli or some healthy food, and you turn around and see candy right behind you.  (Summer 539 – 541)

**Discipline  4**

Students know what is most healthy; however, they cited that they often don’t have the discipline or self-control to choose those options.

> Sometimes I go woohoo its chocolate, and I have a whole bunch of it. Then, I get to where I don’t want it ever again. The next day there I go again.  (Calhoun 1257 – 1261)

> I come home from practice and I’m like really hungry and pig out on everything I can get my hands on if it’s something that’s healthy or not so healthy.  (Calhoun 451 – 455)

**Cafeteria  7**

The school cafeteria was cited as a major barrier to eating a healthy diet. Participants stated that there weren’t many healthy choices available in the cafeteria. If they were available, they didn’t see them as palatable. Also, some felt that there was a stigma attached with choosing healthy foods in the lunch line as opposed to a la carte items, such as pizza.

> Sometimes, the school lunches aren’t healthy. Half the time, it’s the only good meal people get. So, they eat it, but it’s not that healthy.  (Summer2 206 – 209)
Home Environment  6

Food readily available in the home environment was not always healthy or nutritious. Participants consumed whatever was available to them when they were home.

Like, at my house, we’ve got all junk food, almost 80 boxes of pop tarts. All junk food. (Calhoun 684 – 686)

Availability  5

Some participants stated that they would eat “better” if healthy foods, like fruits, were readily available to them. Others found it difficult to choose healthy options at meals because less nutritious foods were abundant.

People go to McDonald’s and places like that and eat fries and stuff that’s not healthy. (Guyan 342 – 344)

If kids had more of a choice of maybe some stuff that they could eat. Because when you’re at home and parents cook dinner, you don’t get a choice if it’s healthy or not. You just basically have to eat it or don’t eat at all, and that’s how it is at school too. (Calhoun 912 – 919)

Preference  7

There was discussion that the students did not have a strong preference for nutritious foods. They referred to foods as “healthy” or “low-fat” in a negative way. A few participants stated that they preferred some nutritious or healthy foods.

Convenience  6

Sometimes, foods were chosen because they were most convenient. Some examples cited were “unhealthy” foods at restaurants, fast food, tv dinners, and junk foods. Fast foods, especially are promoted in the media. Snacks from vending machines were consumed because of their convenience.
Term | Definition
--- | ---
DEF WT | Description of what was a healthy weight and what determined it.

**Subcategories:**

*Includes unsure (2), appearance (10), number (7), expert (2), emotion (3), metabolism (5), peer (7), body composition (1), lifestyle behaviors (9)*

**Unsure**

2
Participants were unable to define a healthy weight or discuss the components they believed comprised a healthy weight.

**Appearance**

10
In most instances, healthy weight is defined by physical appearance and how adolescents are perceived by others. Appropriate size and shape that indicated a healthy weight are determined by a number of external influences, such as media and peers. A great deal of concern was expressed regarding other’s opinions of weight. Females are most concerned about physical appearance; however, males expressed concern on some occasions. Participants referred to people as appearing either “skinny” or “fat”.

> It’s everything to a girl. (Summer – 274)

> Well, I’d just like to point out that on TV we see a lot of stereotypes like you should look like this person and they will show really, really skinny. Like on MTV, for instance, all you see are really, really skinny people, and its portraying that you should look like that. (Summer2 – 450 – 456)

**Number**

7
Healthy weight is defined as a number on the scales that should be proportionate to your height. Too much attention is paid to pounds and numbers with relationship to defining weight; however, several expressed a number that is specific to an individual when asked to provide a definition of healthy weight.

**Expert**

2
Experts determine what personifies a healthy weight, and the expert is generally a physician or a standard, such as body mass index.

> I normally go by what the doctor says. (Calhoun – 953)

**Emotion**

3
Fear motivates one person’s definition of healthy weight. She expressed enormous psychological stress associated with people’s perceptions of her weight. These emotions were also related to appearance and self-esteem.
Metabolism

In some instances, weight is determined by physiological responses and not under the control of the respondents. Additionally, it is acceptable to be overweight when you were pregnant. Students also believe that genetics plays an important role in determination of healthy weight. Lifestyle behaviors do not contribute to a healthy weight in many instances; it is dependent on genetic constitution.

Peer

Peers have a tremendous influence on determination of a healthy weight. Students feel that others dictated whether or not they have achieved a healthy weight. They are extremely concerned about how others view their weight.

If you are always concerned about what people think about you then you end up eating less and trying to look like people you think you’re supposed to look like. Then you end up weighing less than you are supposed to weigh. Then you end up being underweight. Then people say oh my gosh you are too skinny. (Calhoun 850 – 858)

Body Composition

Healthy weight is determined by body composition; however, this was not elaborated on during the discussion.

Lifestyle Behaviors

Certain lifestyle behaviors are consistent with a healthy weight while others are inconsistent. For example, those who exercise, especially run, do not have to worry about weight. Participants in extracurricular activities have healthier weights. Those who gorge on junk food and snacks are viewed as less healthy. In one instance, the adolescent felt that lifestyle did not impact healthy weight.

...you know if you run more, you won't have to worry about gaining too much weight, be able to do more stuff and won't be as tired. (Calhoun 1007 – 1010)

People who have poor diet behaviors and consume an exorbitant amount of food have an unhealthy weight.
Term | Definition
---|---
OB PRACT | Practices used to avoid obesity or lose weight.

**Subcategories:**

*Includes dieting (3), restriction (8), exercise (4), moderation (2), medication (1)*

**Dieting**

3

Participants discussed how they and their friends would eat healthy only for a certain amount of time to lose weight, and then they would return to their regular habits and patterns of consumption.

**Restriction**

8

Students admitted to severely restricting food intake or “not eating at all” during attempts to lose weight. This was specifically mentioned by a male participant who wrestled; he said not eating to go down a weight class was encouraged and very common. There was also mention of disordered eating practices, such as anorexia and bulimia, in order to avoid becoming obese.

> Some people don’t eat to drop a couple of weight classes. (Guyan 719 – 720)

> Some people throw their stuff up. Yes, I know they do. (Guyan 543 – 547)

**Exercise**

4

Exercise and activity were discussed as ways to avoid weight gain and to lose weight. There was specific mention of participating in extracurricular activities as well as running or jumping rope to lose weight.

> You know if you run more, you won’t have to worry about gaining too much weight, be able to do more stuff and won’t be as tired. (Calhoun 1007 – 1010)

> I don’t know, I think that everybody should have to participate in extracurricular activities to be average weight. (Calhoun 1186 – 1188)

**Moderation**

2

A healthy weight can be maintained as long as you partake of less healthy foods in moderation and carefully watch portion sizes.

**Medication**

1

One participant describes that students in her school took over-the-counter weight loss medications to control weight. Another stated that this was, in fact, the case, and that the parents purchase them for their children.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>OB CON</td>
<td>Discussions regarding perceived consequences of obesity.</td>
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**Subcategories:**

*Includes physical (7), psychological (4), stereotype (8)*

**Physical** 7  
Many students discussed the long-term physical complications of obesity or what happens to the body because of excess weight. Chronic diseases such as diabetes, high blood pressure, cardiovascular disease, and hypercholesterolemia were mentioned. Generally, they were familiar with these diseases because a family member was impacted by one or more of them.

Additionally, obesity limits functionality and makes people less productive.

*If you are overweight you keep getting tired.* (Calhoun 967 – 968)

**Psychological** 4  
Various psychological consequences of overweight were expressed by the students, especially among female participants. One expressed a great fear of gaining weight, stating “I just don’t want to be fat (Calhoun 321).” Issues of guilt and diminished self-esteem were other psychological consequences of obesity. A lack of a feeling of belonging among peers and family was another consequence stated by a participant.

*“…like even though it might be in the genes and it might not be their fault that they are overweight they still blame themselves for it.” (Summer 350 – 353)*

**Stereotype** 8  
The majority of students were concerned with a negative stereotype that surrounds overweight persons. In addition to the stereotype, overweight teenagers are ridiculed by their peers and made to feel inadequate or less important.

*Because the pressure the kids put on you. I mean, the people you live with and go to school around. It's like everybody making fun of people and talking bad about them. It's just people don't like to live like that. I know people in this school who quit, and half of them its from people messing with them. I mean people pick on you and they talk about you and they don't treat you right because you don't look like what they call perfect.* (Summer 228 – 240)
<table>
<thead>
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<th>Term</th>
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<tr>
<td>OB RATE</td>
<td>Description of students’ perceptions about the extent of the obesity problem.</td>
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</table>

**Subcategories:**

*Includes problem (10), average (2), no concern (4)*

**Problem**

10

Many participants believed that obesity or overweight was a problem, especially among their peers. Only one participant quantified the extent of the problem, and stated that “about half” of the people in the school were overweight.

> About half of them are overweight. Like the ones who aren't overweight eat like pigs and don't gain any weight. (Summer 110 – 112)

**Average**

2

Two adolescents were not overly concerned with the issue of overweight among their peers and felt that the rate of obesity was “average for any school”. Both reported that there were a number of overweight as well as underweight students. However, the students recognized that a problem might exist, but they have become desensitized over time.

> I mean we go to school with these people. We see them everyday. You just get used to it after a while. (Summer 407 – 410)

**No Concern**

4

Several students expressed no concern with the obesity problem among their peers. In one instance, the respondent stated that male peers in the school were overweight, but that they “don’t worry about it”. Another did not think that that overweight was a problem at all.

> I don't even think about it. (Calhoun 238)
Term   Definition
DISCUSS  Issues discussed with peers about healthy diet/healthy weight.

Subcategories:

*Includes restraint (1), influence (2), torment (2), consequences (1), nutrition (1), no discuss (2), weight (3)*

**Restraint  1**
Weight is personal, and overweight people may be offended if you discuss issues related to diet/weight in front of them. Therefore, food, diet and weight are not discussed in front of some people for fear of offending or hurting their feelings.

**Influence  2**
Peers will share information on what they think you should be doing with regard to diet and exercise. They may also attempt to influence others beliefs on issues related to healthy diet and weight.

> I wrestle. If you are gonna wrestle a certain weight class, you have to be under that weight. So, all the other guys will encourage you to eat like lesser stuff or not at all sometimes. (Calhoun – 1071 – 1076)

**Torment  2**
This refers to students who make fun of, ridicule, and torment those persons with weight related issues. They don’t discuss weight with them, per se, they simply talk about them and “mess with them”.

> It’s like everybody making fun of people and talking bad about this It’s just that people don’t like to live like that…I mean, people pick on you and they talk about you, and they don’t treat you right…because you don’t look like what they call perfect. (Summer 230 – 240)

**Consequences  1**
There is discussion about the consequences of being overweight among peers. The reference was made to long-term effects of excess weight, with specific mention of “what’s going to happen to you later in life.”

**Nutrition  1**
There are discussions among peers about eating healthy or “nutritious eating”.

177
No Discuss

On two occasions, there was mention that discussions did not turn to healthy eating or weight. The participants were more interested in talking about “what they watched on television” last night. One of the male students said that “guys” just don’t talk about nutritious eating or weight.

Weight

The female participants indicated discussions on weight were prevalent among their peers. There were several references to being “fat” or “fatness”.

Well, I have countless friends who sit around saying “Oh I’m fat; I need to lose weight” and stuff like that. (Summer2 147 – 149)

99% of the conversations that they have are about being overweight or being fat. At the time, they are not. (Summer2 156 – 158)

All my friends want to lose weight. We hear it everyday. I’m going on a diet. (Guyan 739 – 742)
Term | Definition
---|---
MEDIA | Description of the students’ responsiveness to food advertising.

Subcategories:

*Includes cues (5), media weight (5), no influence (4)*

**Cues**

5

Many participants took cues about eating and what to eat from media sources, especially television commercials. They were encouraged to eat certain foods they termed “unhealthy” because of commercials. There was also discussion about being influenced to take diet pills because the manufacturers make them seem so appealing in the media.

**Media Weight**

5

Obesity, healthy weight, and beauty are determined by the things that students watch on television or read in magazines. Participants described having bad feelings about their weight after seeing “really thin” girls in magazines. One of the male participants made reference to “looking at naked chicks” when the discussion turned to magazines portraying thin or skinny as the gold standard.

**No Influence**

4

While all were aware of food advertising in print and television, they did not feel that they were influenced to make certain purchasing or consumption decisions because of it.

You might think that it looks good, but that’s not going to make you run right out and get it. (Summer 753 – 755)
INFO Sources of information about healthy eating and healthy weight.

Subcategories:

Includes self (1), health professionals (4), family (15), school (13), coaches (2), media (5), peers (2), no information (1), Internet (1)

Self

1

One respondent revealed that he/she received information from others with regard to healthy weight but only relied on him/herself to make determinations.

Health Professionals

4

Medical doctors were discussed as a source of information. Some stated that their doctors discussed weight and diet during appointments, while one said that there was information on these topic in the waiting room of her physician’s office. Also, registered dietitians were identified as a source of information by one respondent.

Family

15

Family members were cited as a frequent source of information on healthy eating and weight. Most often, immediate family members were mentioned, such as parents, sisters, and grandparents. Mothers were the central theme in this category. Nearly everyone who talked about their family referred to receiving information from their mother. On the contrary, some participants said that their parents provided no information and didn’t care “as long as they ate.”

School

13

Students said that they received most of their information on a healthy diet from health classes and some from physical education classes. One stated that there is no information given in schools on healthy weight, only diet. Students reported that they have received information on classes of nutrients, the food pyramid, and metabolism. There was discussion that most of the information provided in the schools is too elementary and expressed a desire to learn more about healthy eating and weight.

It’s always basically just the basics. They should get the kids involved in more of it. (Summer 1072 – 1074)

Coaches

2

Participants believed that if you played a sport, coaches were a source of information on healthy eating and weight. Wrestling coaches were mentioned specifically as informants regarding weight.
Media  5

Print and television media were discussed as sources of information on healthy weight and diet.

Peers  2

Participants discussed friends as sources of information, and one respondent felt she was a source of nutrition/health information to her friends.

   My friends learn things from me…sometimes were talk about nutritious eating, but not all the time. (Summer 1080 – 1085)

No Information  1

One student stated that he/she did not ever receive information regarding healthy diet or weight “nowhere”.

Internet  1

The Internet was a source of information on eating healthy for one student and her mother.

   Me and my mom do because we get on the Internet and look at basic healthy stuff (Guyan – 694 – 696)