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Rural And Urban North Carolina Parent-Child Feeding Behaviors

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Biographical Sketch

Kayla Brooks was born on November 7, 1988, in Daytona Beach, Florida. She received the Bachelor of Arts degree in Biology from the University of North Carolina at Chapel Hill. Currently, Kayla is a graduate student at North Carolina Agricultural and Technical State University studying Food and Nutritional Sciences. Her current research involves nutrition education and parent feeding behaviors as it relates to childhood obesity in minority, rural, and disadvantaged populations. After graduation, Kayla plans to pursue a PhD in nutrition and continue her research on childhood obesity.

Dedication

This thesis is dedicated to my parents Angela and Reginald Brooks, for their endless love and support.

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I would like to first thank my Lord and Savior, for through him all things are possible. Words cannot describe how thankful I am to my parents for all their blessings, teachings, love, and support. I am greatly indebted to my parents. This accomplishment would not have been possible without all your help and motivation. I am honored and blessed to be your daughter.

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Key Terms

Body Mass Index (BMI) – an index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in meters (kg/m^2). A BMI greater than or equal to 25 is overweight and a BMI greater than or equal to 30 is obesity (World Health Organization, 1995).

Child Feeding Questionnaire – a survey instrument developed by Birch, Fisher, Grimm-Thomas, Markey, Sawyer, & Johnson in 2001 to better understand how parents feed their children, the factors that contribute to these behaviors, and the implications of these behaviors on children's eating behaviors.

Fast food – characterized as quick, easily accessible and cheap alternatives to home-cooked meals (National Institutes of Health, 2012).

Food Frequency Questionnaire – a survey instrument that allows respondents to report their usual frequency of consumption of each food from a list for a specific period of time.

MFP – Meat, Fish, and Poultry.

Overweight and obesity – abnormal or excessive fat accumulation that may impair health (World Health Organization, 2012).

Rural population – people living in nonmetropolitan areas with fewer than 2,500 residents (Congressional Research Service, 2005).

Urban population – people living in metropolitan areas with more than 2,500 residents (Congressional Research Service, 2005).

Abstract

This pilot study was conducted to describe parental feeding factors and explore the association between these factors and region of residence. Data was collected from 60 parents of children ages 2-11 in the form of a self-administered questionnaire. Thirty participants resided in a rural community and 30 resided in an urban community in North Carolina. Of the respondents, 87% were mothers, 50% were African Americans, 25% were Caucasians, and 20% were Hispanic Americans. This study's findings indicated a significant difference in the frequency of consumption of home cooked meals ($p=0.002$). The intake of fruits ($p=0.000$), vegetables ($p=0.001$), meat, fish and poultry ($p=0.034$) was significantly higher in rural participants than urban participants (significance found at $p<0.05$). Parents from rural communities scored higher on scales of food restriction and pressure to eat than parents from urban communities. Recognizing the differences in feeding behaviors of parents may be influential in the development of future childhood obesity prevention programs that will involve parents.

CHAPTER 1

Introduction

Background and Significance

The incidence of childhood obesity among children in the United States has more than tripled in the past 30 years (Center for Disease Control and Prevention [CDC], 2012). Researchers have concluded that the problem of early childhood obesity has reached epidemic proportions (Deckelbaum & Williams, 2001; Puhl & Latner, 2007). The obesity epidemic has emerged as one of the most prevalent public health problems facing young children. According to the National Health and Nutrition Examination Survey (NHANES), it is estimated that more than 35% of 6-11 year olds in the United States (U.S.) are currently overweight or obese (BMI $\geq$ 85^{th} percentile for age and gender) (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010) and that rates of severe obesity ($\geq 99^{th}$ percentile) have tripled in the last 25 years (Skelton, Cook, Auinger, Klein, & Barlow, 2009).

Obesity is caused by an imbalance between energy intake and energy expenditure which leads to the accumulation of fat and subsequently obesity. Genetic and environmental factors are important in the development of obesity. Several genes have been identified that may be implicated in the obesity epidemic (Bouchard, 2009; Farooqi & O'Rahiily, 2007). A child with an obese parent is more likely to become obese (American Academy of Child and Adolescent Psychiatry [AACAP], 2008).

About five percent of childhood obesity cases are caused by a defect that impairs gene function, and at least five of these genes have been identified, but an individual must consume more calories than they expend which suggests a gene-environment interaction (Bouchard, 2009). A child's environment will influence their dietary and activity habits. Several studies have

found that factors such as poverty and single parent families increase the likelihood a child will become obese (Craig, 2008).

Obese children are more likely to become obese adults (AACAP, 2008) and are at a greater risk of metabolic, cardiovascular and respiratory complications. Obesity in children is associated with metabolic syndrome may affect up to 50% of overweight adolescents (Nathan & Moran, 2008). Along with physical consequences, obese children often experience psychological and social difficulties that may affect their academic performance (Dhir & Ryan, 2010).

Obesity during adolescence has economic consequences. The total healthcare cost of overweight and obesity are estimated by some as $100 billion annually; others place the cost of health care for obesity alone at $70 billion (Wellman & Friedberg, 2002). Other annual costs associated with obesity are $40 million workdays of productivity lost, $63 million doctors' office visits made, and $239 million restricted activity days and $90 million bed-bound days (Wellman & Friedberg, 2002).

Gortmaker, Must, Perrin, Sobol, & Dietz (1993) found that overweight girls reaching adulthood were less likely to be married, had lower household incomes and higher rates of poverty compared to girls who were not overweight. American society emphasizes physical appearance and often equates attractiveness with slimness. Such messages may be devastating to overweight/ obese individuals who are often faced with prejudice or discrimination in the job market, at school, and in social situations. Feelings of rejection, shame, or depression are common (Wellman & Friedberg, 2002).

The Institute of Medicine's Report, identifies the essential role that families can play in preventing childhood obesity (The Institute of Medicine, 2007). Parents play a crucial role in the perpetuation of obesity as they control availability and accessibility to foods, meal structure,

food socialization practices and physical activity levels for children. Parents are the most influential role models, policy makers, and change agents in the home and exert their influence on their children directly through specific parenting practices (Clark, Goyder, Bissell, Blank, & Peters, 2007).

Parent-child interactions in the feeding context are important in the shaping of children's food preferences and intake patterns. In particular, the child-feeding strategies parents use can influence children's food preferences whether they are healthy or unhealthy (Birch, 1999). Parenting behaviors and feeding styles have been linked to obesity-related behaviors in children (Rhee, 2008), however, society's understanding of the parent-child feeding relationship among ethnically and socio-economically diverse groups is very limited (Ventura & Birch, 2008).

When compared to their urban counterparts, children living in rural areas with limited resources and access to healthy environments experience higher rates of obesity (Jackson, Doescher, Jerant, & Hart, 2005) than their urban counterparts especially in the southern United States (Patterson, Moore, Probst, & Shinogle, 2004). Research related to the etiology of childhood obesity has provided valuable information, yet many studies either fail to focus on rural areas or do not provide detailed information on rural populations, especially rural minorities (Patterson et al., 2004). If we are to reduce the obesity burden in this country, more research is needed to examine the unique behaviors of rural, low-income minority communities that contribute to weight gain among children.

Problem Statement

Over the past decade, there have been empirical research studies conducted that address early childhood obesity (Deckelbaum & Williams, 2001; Musher-Eizenman, & Holub, 2007; Puhl & Latner, 2007). Few researchers have focused on parental perceptions of healthy eating

habits and lifestyle as it relates to their children, and even fewer have addressed this issue in rural, low-income minority communities. One study reported that children living in rural communities have higher rates of obesity than children living in urban and suburban communities (Lutfiyya, Lipsky, Wisdom-Behounek, & Inpanbutr-Martinkus, 2007). There has been limited research studies conducted that address the causes of higher obesity rates in rural children. Childhood obesity among rural youth will continue to increase unless changes are made in the ways parents that feed their children, allow their children to lead sedentary lifestyles, or cease demonstrating unhealthy eating behaviors.

Many parents are unknowingly contributing to their children's weight increase (McGarvey, Keller, Forrester, Williams, Seward, & Suttle, 2004). If parents are educated on how to address the problem, there is a greater likelihood that appropriate strategies will be taken in the home to prevent or reduce childhood obesity. Fundamental change in the home environment could be necessary to combat the problem of childhood obesity. In the case of overweight and obesity, early recognition and prevention is more desirable than treatment after diagnosis (Golan & Crow, 2004).

Purpose of the Study

The purpose of this research was to examine parental feeding behaviors that influence childhood obesity in rural and urban North Carolina households with children ranging from the ages of 2-11 years old.

The following research question was developed to guide the study: Is there a relationship between parental feeding behaviors and location of residence? Hypothesis: Parents residing in rural Columbus County, North Carolina will report different feeding behaviors for their children than parents residing in urban Durham County, North Carolina.

Significance of the Study

This research examined the influence parents have on their children(s) feeding behaviors. Research conducted throughout the United States has concluded that childhood obesity is an exponentially growing problem that needs to be addressed (Deckelbaum & Williams, 2001; Epstein, Paluch, Roemmich, & Beecher, 2007; Puhl & Latner, 2007; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). Many nutritionists, public health and childhood care professionals agree that the first and most important step in initiating familial intervention is parental recognition of the problem (Carnell, Edwards, Croker, Boniface, & Wardle, 2005). Research also indicates that obesity is easier to prevent than to treat. This study examined the feeding behaviors of rural and urban parents and provides recommendations for possible parent interventions and educational forums to reduce the incidence of childhood obesity.

Limitations

The study was conducted with the following limitations:

1. The Child Feeding Questionnaire (Birch et al., 2001) is a self-reported survey.
2. The sample was one of selection and not a random assignment.

CHAPTER 2

Literature Review

Prevalence and Consequences of Childhood Obesity

Obesity has become an epidemic quadrupling in the United States during the last 25 years among both male and female children and adolescents (Ogden, Flegal, Carroll, & Johnson, 2002). Between 1995 and 2006, the prevalence of obesity among boys aged 2-15 years increased from 11% to 17%, and in girls from 12% to 15% (CDC, 2012).

Obesity has been associated with profound negative health, psychological, and social consequences in both children and adults. The occurrence of obesity increases the risk for a number of health problems including cardiovascular disease (CVD), stroke, type 2 diabetes, certain types of cancer, and some of the leading causes of death (CDC, 2012). Childhood obesity can have a harmful effect on the body in a variety of ways. In one study, it was found that 70% of obese children had at least one CVD risk factor, and 39% had two or more (Freedman, Mei, Srinivasan, Berenson, & Dietz, 2007). Obese children have an increased risk of impaired glucose tolerance, insulin resistance and type 2 diabetes (Whitlock, Williams, Gold, Smith, & Shipman, 2005) as well as fatty liver disease, gallstones, and gastro-esophageal reflux (Han, Lawlor, & Kimm, 2010).

Obese children and adolescents have a greater risk of social and psychological problems, such as discrimination and poor self-esteem, which can continue into adulthood (Dietz, 1998; Swartz & Puhl, 2003), and are almost six times more likely than children with healthy weights to have an impaired quality of life (Schwimmer, Burwinkle, & Varni, 2003). If children are overweight, obesity in adulthood is likely to be more severe and debilitating (Freedman, Khan, Dietz, Srinivasan, & Berenson, 2001). The health risks associated with childhood obesity

continue into adulthood, and obese children are more likely to become obese adults (Biro & Wien, 2010; Serdula, Ivery, Coates, Freedman, Williamson, & Byers, 1993; Whitaker et al., 1997) with the greatest risk occurring with the heaviest children, children with obese parents, children in lower socioeconomic groups, and African American and Mexican American children (Katzmarzyk, Tremblay, Pérusse, Després, & Bouchard, 2003; Whitaker et al., 1997).

During the past 20 years, there has been a dramatic increase in obesity in the United States and rates remain high. More than one-third of U.S. adults (35.7%) are obese. Approximately 17% (12.5 million) of children and adolescents aged 2-19 years are obese. In North Carolina 27.8% of the population is obese and 36.7% are overweight (Center for Disease Control and Prevention [CDC], 2011). Among children in North Carolina between ages 10-17 years 20% were overweight and 14% were obese (North Carolina Department of Health and Human Services, 2009).

Obesity is disease that threatens to inundate health care resources by increasing the incidence of diabetes, heart disease, hypertension, and cancer (Bray, 2004). In 2005, medical costs associated with obesity were estimated at $190 billion (Cawley & Meyerhoefer, 2012). The cost of obesity associated with North Carolina youth was estimated to be approximately $16 million per year (CDC, 2011).

Contributing Factors

Childhood obesity is the product of both non-modifiable factors (i.e. genetics, gender, socioeconomic status) and modifiable factors (i.e. diet, activity) (Philippas & Lo, 2005). Dramatic increases in obesity over the past several decades suggest that reversing this trend lies in understanding and altering the modifiable risk factors associated with unhealthy weight gain in children. Changes in diet, which affect energy intake and changes in physical activity, which

affect energy expenditure and can upset energy balance and result in increased or decreased energy store (Weinsier, Hunter, Heini, Goran, & Sell, 1998). While modifications of diet, physical activity, and sedentary time are under individual control, environmental contributions to the obesity epidemic must also be considered given the potential impact on individual behavior (Hill & Peters, 1998).

American children have continued to gain weight at unprecedented rates, and the quality of their diet has continued to decline (Newby, 2007). Studies consistently report that most children are not eating the recommended amount of fruits and vegetables (Neumark-Sztainer, Story, Resnick, & Blum, 1998). The current recommendations support fruits and vegetables as foods that should be eaten most often, for most Americans, this means more than doubling the amount of fruits and vegetables they eat daily (Center for Nutrition Policy and Promotion, 2010). Nearly 80% of North Carolina adults and 85% of North Carolina high school students consumed less than the recommended five servings of fruits and vegetables each day (North Carolina Department of Health and Human Services, 2009). Consumption of sugar-sweetened beverages is increasing across all age groups (Wang, Bleich, & Gortmaker, 2008).

Overall, energy intake and portions sizes of food consumed both at home and away from home increased considerably over the past two decades (Newby, 2007). Portion sizes of snacks, soft drinks, and fast food also increased among children during this time period. In particular, snacks now contribute to more than 27% of children's daily calories (Piernas & Popkin, 2010). Today, nearly a third of the daily energy intake in the diets of U.S. children may be contributed by these low-nutrient-density foods (Kant & Graubard 2003). Low-nutrient density food reporting is also linked to a lower likelihood of meeting the standard intake of micronutrients and is associated with higher energy intakes (Ballew, Kuester, & Gillespie, 2000; Harnack, Stang, &

Story, 1999). Furthermore, according to the 2006 Child Assessment and Monitoring Program Survey, more than 33% of children under age 18 eat a fast food meal once a week and another 35% eat a fast food meal two or more times each week.

Physical inactivity and unhealthy eating habits combined are the second leading cause of preventable death in North Carolina. In terms of physical activity, only 44% of North Carolina's high school students and approximately 55% of middle school students were physically active for at least 60 minutes per day (North Carolina Department of Health and Human Services, 2009). Physical activity provides important health benefits for children including increased physical fitness, reduced body fat, favorable cardiovascular and metabolic disease risk profiles, enhanced bone health, and reduces symptoms of depression and anxiety (Physical Activity Guidelines for Americans Committee, 2008). Despite these known benefits, few children meet the current recommendation of participating in 60 minutes of physical activity per day (Troiano, Berrigan, Dodd, Mâsse, Tilert, & McDowell, 2008).

Nearly half (47%) of U.S. children exceed the recommendation of no more than two hours/day of time in sedentary behavior (Sisson, Church, Martin, Tudor-Locke, Smith, Bouchard, Earnest, Rankinen, Newton, & Katzmarzyk, 2009). The majority of children's sedentary time is spent watching television. In fact, having a television in a child's bedroom is a strong marker of increased risk of them being overweight (Dennison, Erb, & Jenkins, 2002). The problem of physical inactivity among children may be even more severe in rural areas. Rural children have higher rates of leisure-time inactivity compared to children living in large metropolitan and suburban areas (Parks, Housemann, & Brownson, 2003; Patterson et al., 2004), and often do not participate in after school sports due in part to limited opportunities and transportation barriers (Ahamed, MacDonald, Reed, Naylor, Liu-Ambrose, & McKay, 2007).

Unless they participate in a structured sport, children are likely to become more sedentary as they age (Parks, Housemann, & Brownson, 2003; Patterson et al., 2004; Physical Activity Guidelines for Americans Committee, 2008). Recent studies have shown there is a direct relationship between activity and weight status (Brown & Summerbell, 2009). Understanding the factors that influence child physical activity habits and vigorous activity in particular is important if we aim to close the gap between current physical activity behaviors and the national recommendations.

These trends are central to the development of obesity among children (French, Story, & Jeffery, 2001; St-Onge, Keller, & Heymsfield, 2003; Weinsier et al., 1998) and may be of particular relevance for children in underserved and rural communities where access to healthy food is limited (Tai-Seale & Chandler, 2003) and rates of obesity are highest (Lutfiyya et al., 2007). It is generally accepted that dietary patterns established during childhood and adolescence continue into adulthood and have implications for the development of chronic disease independent of weight status (Goran, Ball, & Cruz, 2003; Sebastian, Cleaveland, & Goldman, 2008; Skinner, Bounds, Carruth, Morris, & Ziegler, 2004).

The causes most identified with the increase in childhood obesity are inadequate physical activity, sedentary lifestyle, and poor diet (Campbell, Crawford, & Ball, 2006; Ebbeling, Pawlak, & Ludwig, 2002). Although most health care professionals have identified the primary causes of childhood obesity, the debate over identifying effective solutions is ongoing (Epstein et al., 2007). While the causes of the increasing prevalence of childhood obesity are multiple, including changing trends in energy expenditure, recent studies confirm a link between adiposity among children and their food preferences and selection (Birch, 1999). Poor eating habits are often

established during childhood (Ogden et al., 2002), and once these habits are formed they are more difficult to break through adult interventions.

Parental Influence

It is widely recognized that parents play a crucial role in the perpetuation of the childhood obesity epidemic as they control availability and accessibility of foods, meal structure, and food socialization practices. Health-related behaviors and patterns are established during childhood and adolescence and evolve within the context of the family (Birch & Davison, 2001). The increasing prevalence of obesity in pediatric populations has prompted greater interest in understanding how family context influences child weight (Ventura & Birch, 2008).

Families are the epicenter of socio-environmental influence and have a direct, mediating, and moderating role on children's health and development (Birch & Davidson, 2001). The development of child risk factors is shaped by parenting styles and family characteristics such as parents' dietary intake and activity patterns, nutritional knowledge, child feeding behaviors, and peer sibling interactions (Birch & Davidson, 2001). Eating behaviors of children and adolescents are shaped by parental feeding behaviors (Golan & Crow, 2004).

Parents are of particular importance because they often act as the nutritional gatekeepers in the home (Salinsky, 2006) and directly determine their child's physical and social environment and indirectly influence their behaviors, habits, and attitudes (Ritchie, Welk, Styne, Gerstein, & Crawford, 2005). Parents being knowledgeable of nutrition and modeling positive behaviors and attitudes towards healthy eating are also influential (Birch & Fisher, 1998; Golan & Crow, 2004). Parent eating style may influence their approach to feeding their children, which can in turn; alter children's food selection, their ability to regulate energy intake and their body fatness (Whitaker, Deeks, Baughcum, & Specker, 2000).

One study reported that children whose parents ate diets high in saturated fat also ate diets high in saturated fats themselves. Parents tend to have foods in the home they enjoy eating, and with opportunities to eat those foods young children include those foods in their diets (Golan & Crow, 2004). Children's food related knowledge, preferences, and consumption are related to parents' preferences, beliefs, and attitudes towards food (Patrick & Nicklas, 2005). Thus, parent eating behavior may be a useful indicator of obesity risk in their children (Whitaker et al., 2000).

Parent-child interactions in the feeding context are important in shaping children's preferences and intake patterns. With respect to child feeding, parenting practices are thought of as behavioral strategies that parents employ to control what, how much, or when their children eat. Thus, feeding practices include behaviors such as pressuring children to eat, using food as a reward, restricting access to select foods or food groups, modeling or use of food to pacify or control (Ventura & Birch, 2008). Parental feeding restriction is also associated with increased child eating and weight status (Faith, Scanlon, Birch, Francis, & Sherry, 2004). Another study found that mothers that received higher restriction and pressure to eat scores on a child feeding questionnaire were associated with higher adiposity in children. This study also found there was no association between monitoring and increased child adiposity (Webber, Hill, Cooke, Carnell, & Wardle, 2010).

Parents' nutritional knowledge and health concerns may influence children's eating patterns in a number of ways. Having a lack of knowledge of appropriate serving sizes may lead parents to overfeed children. Research shows that serving children larger portion sizes is associated with greater food intake (Birch & Davidson, 2001). Concern about their children's health may lead parents to purchase more healthy foods and make them more readily accessible in the home, which are both important determinants of children's preference for and intake of

such foods. Low nutritional knowledge may be associated with greater accessibility to energy dense foods, thus increasing the risk of obesity (Birch & Davidson, 2001). Greater parental nutrition knowledge is associated with lower prevalence of obesity in children (Variyam, 2001).

Recent studies have found that maternal employment is associated with an increased risk of childhood obesity (Anderson, Butcher, & Levine, 2003; Bianchi, 2000). One study found that employed women spend significantly less time cooking, eating with their children, and playing with their children, and are more likely to purchase prepared foods and are not fully offset by husbands and partners. These findings offer plausible mechanisms for the association of maternal employment with childhood obesity (Cawley & Liu, 2007).

Participants for the current study were asked to complete the Child Feeding Questionnaire (CFQ) which was developed and validated by Birch et al., (2001) to better understand how parents feed their children, the factors that contribute to these behaviors, and the implications of these behaviors on children's eating behaviors. This questionnaire was a self-reporting survey to compare parents' child-feeding responses to questions regarding responsibility, concern, restriction and pressure to eat. The original questionnaire consisted of seven subscales for the purposes of data analysis. This instrument was validated by its creators (Birch et al., 2001) for children ages 2-11 and was later validated for adolescents ages 10-19 (Kaur, Li, Nazir, Choi, Resnicow, Birch, & Ahluwalia, 2006).

The initial validation was completed with a sample of 394 mothers and fathers of children ages 2-11. After the parents completed and returned the initial instrument, the authors identified items that were confusing to the participants and/or had low variability to omit from the questionnaire. A second model with minor changes to the original instrument was tested on 148 mothers and fathers and a third model on 126 Hispanic American mothers and fathers.

The third model was confirmed as an acceptable fit by running a confirmatory factor analysis, examining the readability of the instrument, and a thorough examination of the external validity of the subscales. The instrument was validated for adolescents ages 10-19 by Kaur et al., (2006) by confirmatory factor analysis, factor scores were related to adolescent body mass index percentiles (BMI %) using structural equation modeling. The modified CFQ was completed by 260 parent/guardians (55% Black, 35% White, and 10% other).

The 31 items in the CFQ measure parental control in child feeding on seven factors: perceived responsibility, perceived parent weight, perceived child weight, concern about child weight, restriction, pressure to eat and monitoring. Four hypothesized factors related to parental perception of child and parent weight and concern about weight, which may elicit parental control in feeding. *Perceived responsibility*, three items assess parents' perceptions of their responsibility for child feeding (e.g. "When your child is at home, how often are you responsible for feeding him or her?). *Perceived parent weight*, four items assess parents' perceptions of their own weight status history. *Perceived child weight*, three items assess parents' perceptions of their child's weight status history. *Parents' concerns about child weight*, three items assess parents' concerns about the child's at risk of being overweight (e.g. "How concerned are you about your child becoming overweight?").

Three additional hypothesized factors assess parents' attitudes and behaviors regarding their use of controlling child-feeding strategies. *Monitoring*, three items assess the extent to which parents oversee their child's eating (e.g. "How much do you keep track of the high fat foods your child eats?"). *Restriction*, eight items assess the extent to which parents restrict their child's access to foods, (e.g. "I intentionally keep some foods out of my child's reach"). *Pressure*

to eat, four items assess parents' tendency to pressure their children to eat more food, typically at mealtimes (e.g. "My child should always eat all the food on his or her plate").

Parents' Perception of Children's Weight Status

Several studies conducted to analyze the consequences of parents misconceptions about their children's weight status found that the majority of parents do not view their overweight children as overweight, and this misperception was more common in parents who were less educated (Baughcum, Chamberlin, Deeks, Powers, & Whitaker, 2000; Eckstein, Mikhail, Ariza, Thompson, Millard, & Binns, 2006). Baughcum et al., (2000) found that obese mothers regarded themselves as overweight, and viewed their overweight children as healthy. Childhood obesity prevention efforts are unlikely to be successful if parents do not perceive their child as overweight. As such are unlikely to modify feeding behaviors or seek help in controlling their child's weight (Baughcum et al., 2000).

Parents do not typically consult growth charts to determine whether a child is overweight. Instead, they notice when a child becomes inactive or suffers from teasing by other children. Parents may tend to define obesity as a condition accompanied by severe physical impairment, especially compromised mobility. They may also believe that a child's size is inherited and that the child will eventually shed excess weight with age (Jain, Sherman, Chamberlin, Carter, Powers & Whitaker, 2001).

Studies conducted on parental concern about their children's weight status in other countries have shown that parents are neither concerned about nor sensitive to their children's overweight or obese status (Carnell et al., 2005; Eckstein et al., 2006; Etelson, Brand, Patrick, & Shirali, 2003; Jeffery, Voss, Metcalf, Alba, & Wilkin, 2005; Myers &Vargas, 2000). Since most parents of overweight or obese children fail to recognize that their child has a weight problem,

health care professionals should develop strategies to help parents correct these misperceptions (Etelson et al., 2003). Increasing parents' awareness of their children's weight problems is the first step in preventing obesity in children (He, 2007).

Childhood Obesity in Rural America

Of particular concern is the fact that certain groups of the U.S. population (i.e. minority and low socioeconomic status groups) are disproportionally affected by the obesity epidemic at all ages (Wang & Beydoun, 2007). It has been reported that since 1980 rural adults are more likely to be obese than their urban counterparts (Jackson, et al., 2005; Tai-Seale & Chandler, 2003). Rural Americans are currently leading the obesity epidemic in the U.S. (Lutfiyya et al., 2007).

Comparing childhood obesity rates between urban and rural areas also suggests this trend. One study found that in rural Mississippi, 23% of middle school-aged children were classified as obese (Davy, Harrell, Stewart, & King, 2004), while another study showed that one-third of rural Kentucky children were obese (Crooks, 2000). Comparatively, national studies estimate that 18.7% of U.S. school-aged children (ages 6-19 were obese in 2007-2008 (Ogden et al., 2010). A recent study also found that children living in rural areas of the U.S. were 25% more likely to be overweight or obese than their metropolitan counterparts. This was true even after controlling for other known risk factors suggesting that the rural residency is an independent childhood risk factor for being overweight or obese (Lutfiyya et al., 2007).

The North Carolina counties with the highest rates of obesity tend to be rural counties, as it often relates to socioeconomic status (CDC, 2011). The highest rates of obesity in North Carolina are found in Columbus County, 33% in adults, and 15.7% in children. In general, rural communities are at higher risk of poor health outcomes due to underlying issues of poverty and

reduced access to health care (Boehmer, Lovegreen, Haire-Joshu, & Brownson, 2006). Rural life presents specific cultural and structural challenges to maintaining a healthy weight (National Advisory Committee on Rural Health and Human Services, 2011).

Rural areas suffer from food deserts, hindering access to healthier food options. They tend to have limited community resources, inadequate physical options, fewer prevention, and treatment facilities (Tai-Seale & Chandler, 2003). This suggests that rural parents may need to play an especially important role in helping their children navigate their obesogenic environments. However, rural populations are often neglected in research and the public consciousness. The studies that do exist often do not provide detailed information on minorities. Rural residents in general and rural minorities in particular may present a higher risk profile than the general public, and obesity may have different correlates in rural than in urban areas. Program planners need accurate information on rural populations in order to define clinical and educational interventions (Patterson et al., 2004).

Home Cooked Meals and Fast Food Consumption

A trend that has paralleled the rise in obesity within the last two decades has been the decline in the frequency of children eating family dinners (Taveras, Rifas-Shiman, Berkey, Rockett, Field, Frazier, Colditz, & Gillman, 2005). Few studies examine the relationship between family dinner and the quality of children's diets. However, studies suggest that foods obtained at home have more fiber, calcium, and iron, and less total fat, saturated fat, cholesterol, and sodium than foods obtained away from home. Researchers found a positive association between frequency of family meals and intake of fruits, vegetables, grains and calcium-rich foods and a negative association with soft drink consumption (Taveras et al., 2005). The results of a study examining the effects of family dinners on obesity confirm and extend these observations by

showing beneficial effects of family dinner on the diet quality of children. Nutritionists and health educators are encouraged to identify ways to encourage families to increase the number of meals eaten together to improve the eating patterns of children (Stockmyer, 2001). Research suggests that when parents provide companionship at mealtime, establish a positive atmosphere, and model appropriate food-related behaviors, their children tend to have improved diet quality (Golan & Crow, 2004).

According to research conducted by Taveras et al., in 2005, family dinner is associated with some healthful dietary patterns. Increasing frequency of family dinner was associated with low consumption of saturated and trans fat, soda, and fried foods as well as decreased glycemic load. Family dinners can improve diet quality by containing foods that are more healthful than children or adolescents would otherwise eat (Taveras et al., 2005). Another study found that children who were exposed to the routine of eating an evening home cooked meal had a lower prevalence of obesity than children who were not exposed to this evening routine (Anderson & Whitaker, 2010).

From its origins in the 1950's, fast food consumption has grown into a dominant dietary pattern among children in the United States today (Nestle, 2002; Schlosser, 2001). Consumption of fast food by children increased a remarkable fivefold from two percent of total energy in the late 1970's to 10% of total energy in the mid-1990's (Guthrie, Lin, & Frazao, 2002). Fast food pervades virtually all segments of society including local communities, public schools, and hospitals (Cram, Nallamothu, Fendrick, & Saint, 2002; Levine, 1999; Zive, Elder, & Prochaska, 2002).

Several dietary factors inherent to fast food may cause excessive weight gain such as massive portion size, high energy density, palatability (appealing to taste preferences for fats,

sugar, and salt), high content of saturated and trans fat, high glycemic load, and low content of fiber (Ebbeling et al., 2002). However, few studies have examined the effects of fast-food consumption in children (Cusatis & Shannon, 1996; French, Story, Neumark-Sztainer, Fulkerson & Hannan, 2001; McNutt, Hu, Schreiber, Crawford, Obarzanek, & Mellin, 1997). In the absence of such data, professional nutritional agencies in the United States (Freeland-Graves & Nitzke, 2002) presently support industry claims that fast food can be part of a healthful diet (S. Anderson, 2003; Katic, 2002). Even though several studies have found that decreasing fast-food intake (Bowman, Gortmaker, Ebbeling, Pereira, & Ludwig, 2004; Guthrie et al., 2002) and increasing family meals (Burgess-Champoux, Larson, Neumark-Sztainer, Hannan, & Story, 2009; Nicklas, Morales, & Linares, 2004) are strategies to reduce calorie intake and increase fruit and vegetable intake and therefore can reduce excess weight in individuals.

CHAPTER 3

Methodology

The purpose of the research was to examine differences in parental feeding behaviors of rural and urban parents of young children. The population of the study was parents in two North Carolina counties which were Durham and Columbus with children ranging between the ages of two to 11 years old. A questionnaire was utilized to investigate the research question. Responses were collected from a modified version of the Child Feeding Questionnaire (Birch et al., 2001), a food frequency questionnaire and a demographic questionnaire.

Participants

Participants included 60 parents and/or guardians of 2-11 year old children from Columbus County and Durham County in North Carolina. The rural sample of convenience involved recruitment of participants from a local WIC satellite in Bolton, North Carolina: this site was the umbrella for many of the community's resources. The urban sample of convenience involved recruitment of participants from a Durham, North Carolina afterschool program with a daycare center. Each participant received a consent letter and the research instrument (see Appendix A).

Survey Instrumentation

Participants completed a demographic questionnaire and food frequency questionnaire and a modified version of the Child Feeding Questionnaire (CFQ). The demographic questionnaire addressed factors including: age, gender, ethnicity, employment, education, parent weight status, household composition, child age, child weight, child height, and child weight status. The food frequency questionnaire addressed the frequency at which they served meals

such as fast food, home cooked and pre-packaged to their children. The frequency at which they served fruits, vegetables, grains, MFP, dairy, and fats to their children was also assessed.

The CFQ was developed and validated by Birch et al., (2001) to better understand how parents feed their children, the factors that contribute to these behaviors, and the implications of these behaviors on children's eating behaviors. This questionnaire was a self-reporting survey to compare parents' child-feeding responses to questions regarding responsibility, concern, restriction and pressure to eat. The original questionnaire consisted of seven subscales for the purposes of data analysis. This instrument was validated for children ages 2-11 and was later validated for adolescents ages 10-19 (Kaur, Li, Nazir, Choi, Resnicow, Birch, & Ahluwalia, 2006).

This research utilized a modified version of the CFQ; several questions were selected to address the specific research questions of this study. Questions were modified to collect responses for more than one child in a household. The modified version of the CFQ consisted of 19 close-ended questions and responses were recorded on a 5-point Likert scale. For example, "Unconcerned" was coded as a one and "Very Concerned" was coded as five, for the responses to the question: "How concerned are you about your child becoming obese?" In contrast, for responses to the question: "Do you use food to reward your child?" "Always" was coded as five and "Never" was coded as one.

The scales used from the CFQ were as follows:

1. *Parental perceived responsibility* (Questions: 1, 2 & 3 – Appendix B)

   This scale consists of three items which assess the parents' perceptions of their responsibility for child feeding. Response choices were labeled as follows: 1=Never, 2=Rarely, 3=Sometimes, 4=Mostly and 5=Always.

2. *Parental concern* (Questions: 4, 5, & 6 – Appendix B)

   This scale consists of three items which assessed parents' concern for the child in relation to their weight and eating habits. Response choices were labeled as follows: 1=Unconcerned, 2=A little Concerned, 3=Concerned, 4=Fairly Concerned and 5=Very Concerned.

3. *Parental restriction* (Questions: 7, 8, 9, & 10 – Appendix B)

   This scale consists of four items which assessed the extent to which parents restrict their child's access to foods. Response choices were labeled as follows: 1=Disagree, 2=Slightly Disagree 3= Neutral, 4=Slightly Agree and 5=Agree.

4. *Pressure to eat* (Questions: 11, 12, 13, 14, 15, & 16 – Appendix B)

   This scale consists of six items which assessed parents' tendency to pressure their children to eat more food. Response choices were labeled as follows: 1=Disagree, 2=Slightly Disagree 3= Neutral, 4=Slightly Agree and 5=Agree. Question 16 was scored in reverse.

5. *Parental monitoring* (Questions: 17, 18, & 19 – Appendix B)

   This scale consists of three items which assessed the extent to which parents oversee their child's eating. Response choices were labeled as follows: 1=Never, 2=Rarely, 3=Sometimes, 4=Mostly and 5=Always.

The survey instruments used in this study (the modified questionnaire, the food frequency questionnaire, and the demographic questionnaire) were validated by a small group of Guilford County North Carolina parents with children between the ages of 2-11 who were not involved in the study (*N*=5). Their feedback was used to increase the readability and ease of responsiveness for participants to ensure the content and face validity of the survey instrument. Cronbach's

alpha was used to measure reliability of the survey instrument. The alpha coefficient for the five items is 0.729, suggesting that the items have relatively high reliability. Note that a reliability coefficient of 0.70 or higher is considered “acceptable” in most social science research situations.

Procedure

Data was collected from July 2012 to August of 2012. Participants were allowed adequate time to complete the survey, approximately 20 minutes. The researcher was available to answer any questions that participants had and to insure survey instruments were completed. Additionally, the participants provided information such as age of child(ren), perceived weight of child(ren) and frequency of consumption of various types of food.

Upon completion of the survey, participants were given an incentive ($10 Wal-Mart gift card) for their time. The research was classified as “exempt” by the Division of Research and Economic Development (DORED) (IRB# 11-0201). This project was supported by Agriculture and Food Research Initiative Competitive Grant# NC.X-252 5-11-531-1 of the USDA National Institute of Food and Agriculture.

Data Analysis

The Statistical Package for the Social Sciences (SPSS® v20) software program was used to analyze the data. Values were assigned to the response categories for the questions that had more than one response choices. Descriptive measures: mean, standard deviation, frequencies and percentage were analyzed to describe demographic, socioeconomic, parental, and family factors. Physical measures of children and parents were used for chi-square analysis to find differences in child and parent perceived and actual weight status. Descriptive and inferential statistics also describe the following parental factors: parent perceived feeding responsibility,

concern about child's weight, restrictions on the access to foods, putting pressure on the child to eat, and monitoring child's eating. Independent samples (t-tests) analysis was conducted to determine the association between individual subscales (parental factors of interest) the county of residence. Independent samples (t-tests) analysis was also conducted for every single item representing the various subscales to determine the association of that item county of residence.

CHAPTER 4

Results

Demographics

The population (convenience sample) for this study included 60 participants. The average age of participants was 34, and the majority of participants were between 20 and 34 years of age (*n*=36, 60%), and the majority of the participants were female (*n*=52, 87%). Half of all participants were African American (*n*=30, 50%), 15 were Caucasian (25%), 12 were Hispanic American (25%), and 3 were Native American (25%). Sixty-one percent of participants indicated that they were employed (*n*=37), with 50% reporting having part-time employment (*n*=30), and 12% reporting full-time employment (*n*=7). Approximately 38.3% of the participants were not employed (*n*=23) (see Table 1).

In terms of education level, 13% reported that they have completed some high school (*n*=8), 32% reported that their highest education was a high school diploma or GED (*n*=19). One-third reported that they had completed some college (*n*=20, 33%). Smaller proportions reported earning a degree, with 12% having earned at least a four-year degree (*n*=7), and 10% having earned an associate's degree or attended technical school (*n*=6).

As shown in Table 2, participants had between one and six children in the home, with the majority of participants reporting three or less children in the household, 23% of participants reporting one child in the household (*n*=14), 33% of participants reporting two children in the household (*n*=20), and 26% of participants reporting three children in the household (*n*=17). Fewer participants reported having three or more children in the home, 3% of participants reported having four children in the home (*n*=2), and 8% of participants reported five children in the home (*n*=5).

Table 1

Participant Demographics

Characteristic	Response	*n*	%
Gender	Male	8	13
	Female	52	87
Age	20-34	36	60
	34-69	24	40
Ethnicity	African American	30	50
	Caucasian	15	25
	Hispanic American	12	20
	Native American	3	5
Employment Status	Full-time	30	50
	Part-time	7	12
	Unemployed	23	38
Education Level	Some High School	8	13
	High School Diploma or GED	19	32
	Some College	20	33
	Associate's Degree or Technical College	6	10
	4-year degree or more	7	12

Participants also reported on the number of adults in the household, overall reporting between one and four adults in the home, with the majority reporting one adult in the household (*n*=29, 48%). However, 42% of participants reported having two adults in the household (*n*=25), and 8% reporting three adults in the household (*n*=5). One participant reported having four adults residing in their household. When asked about how many, 2-11 year olds were in the household, the majority of participants reported having one child between the ages of two and 11 (*n*=26, 43%). Although 30% reported having two children between the ages of two and 11 (*n*=18), 22% reported having three children between the ages of two and 11 (*n*=13) and 5% reported having four children between the ages of two and 11 (*n*=3) (see Table 2).

Table 2

Family Characteristics

Characteristics	Response	*n*	%
Total Children in the Household	One	14	23

Table 2

(cont.)

Characteristics	Response	*n*	%
Total Children in the Household	Two	20	23
	Three	17	28
	Four	2	3
	Five	5	8
	Six	2	3
Adults in the Household	One	29	48
	Two	25	42
	Three	5	8
	Four	1	2
Children Between 2 and 11	One	26	43
	Two	18	30
	Three	13	22
	Four	3	5

Adult and Child Weight Status

Participants were asked to provide information for physical measures including height, weight, and perceived weight status. For parents, the majority classified themselves as overweight (*n*=26, 47%), 41.7% classified themselves as normal (*n*=25), and 10% classified themselves as obese (*n*=6). One participant classified themselves as underweight. Based on the height and weight provided by participants, their self-evaluation of their weight status differed greatly from their actual weight status (p=0.000 using Pearson's chi-square analysis). Among participants 43% were classified as obese (*n*=26), 27% as overweight (*n*=16), and 28% as normal (*n*=17) (see Table 3). One participant was actually classified as underweight based on the reported height and weight.

Table 3

Parent Perceived and Actual Weight Status of Parents

Response	Parent's Perceived Weight Status		Parent's Actual Weight Status	
	n	*%*	*n*	*%*
Underweight	1	2	1	2

Table 3

(cont.)

Response	Parent's Perceived Weight Status		Parent's Actual Weight Status	
	n	*%*	*n*	*%*
Normal	25	42	17	28
Overweight	26	47	16	27
Obese	6	10	26	43

Based on the reported height and weight of the children provided by parent participants, their evaluation of their children's weight status was significantly different from their actual weight status (p=0.055 using Pearson's chi-square analysis). Of the children of participants 29% were classified as obese (*n*=32), 17% as overweight (*n*=19), 13% as underweight (15), and the majority (*n*=44, 40%) were classified as normal (see Table 4).

Table 4

Perceived and Actual Weight Status of Children Reported by Parents

Response	Childs's Perceived Weight Status		Childs's Actual Weight Status	
	n	*%*	*n*	*%*
Underweight	15	14	15	14
Normal	90	82	44	40
Overweight	4	4	19	17
Obese	1	1	32	30

Meal Types and Food Consumption

Parents reported the number of times per week their children ate fast food meals, home cooked meals, and pre-packaged meals (see Table 5). For fast food, 15% reported their children do not eat any fast food (*n*=9), while a majority reported feeding their children fast food one to two times per week (*n*=43, 72%), and 8% reported feeding their children fast food three to four times per week (*n*=5). For home cooked meals, parents reported feeding their children home cooked meals between one and two times per week (*n*=5, 8%), 17% reported three to four times per week (*n*=10).

Larger portions of participants indicated feeding their children home cooked meals five to six times per week (*n*=17, 29%), 25% reported feeding their children home cooked meals seven to eight times per week (*n*=15), and 20% reported feeding their children home cooked meals nine or more times per week (*n*=12). For pre-packaged meals, half reported feeding their children these meals between one and two times per week (*n*=30, 50%) and another 35% reported that their children do not eat any pre-packaged meals (*n*=21). Thirteen percent reported feeding their children pre-packaged meals three and four times per week (*n*=8).

Table 5

Meal Type Consumption per Week

Frequency	Meal Type					
	Fast Food Meals		Home Cooked Meals		Pre-Packaged Meals	
	n	%	*n*	%	*n*	%
None	9	15	0	0	21	35
1-2 times	43	72	5	8	30	50
3-4 times	5	8	10	16	8	14
5-6 times	1	2	17	28	0	0
7-8 times	1	2	15	25	0	0
9 or more times	0	0	12	20	0	0

Participants also reported on the number of fruit, vegetable, grain, meat, fish, poultry, dairy, and fat/sweet servings their children eat on a daily basis (see Table 6). In general, parents reported that their children consumed between two and three servings of these foods each day. The majority reported that their children consumed one (*n*=16, 27%) or two servings (*n*=24, 40%) of fruit each day.

Few parents reported that their children consumed three (*n*=11, 18%) or four (*n*=2, 3%) servings of fruit each day. Similarly, most of the participants reported that their children ate two servings (*n*=25, 42%) or one serving (*n*=14, 23%) of vegetables each day. Some parents reported that their child consumed three (*n*=10, 17%) or four servings (*n*=3, 5%) of vegetables a day. For

grains, the majority reported one (*n*=20, 33%) or two daily servings (*n*=20, 33%). Fewer parents indicated that their child consumed three (*n*=11, 18%) or four grains daily (*n*=2, 3%)

Table 6

Food Type Consumption per Day

Frequency	Food Type											
	Fruit		Vegetables		Grains		MFP		Dairy		Fats and Sweets	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
None	0	0	1	2	0	0	0	0	1	2	2	3
1 serving	16	27	14	23	20	33	15	25	15	25	24	40
2 servings	24	40	25	42	20	33	25	42	14	23	23	38
3 servings	11	18	10	17	11	18	14	23	15	25	7	12
4 servings	2	3	3	5	2	3	0	0	8	13	1	2
5 or more servings	6	10	6	10	6	10	5	8	6	10	2	3

Regarding meat, fish and poultry consumption, 42% of participants reported feeding their children two daily servings (*n*=25), while 25% reported one daily serving of meat, fish and poultry (*n*=15), and 23% reported three daily servings of meat, fish and poultry (*n*=14). Five participants (*n*=5, 8%) reported feeding their children five or more servings of meat, fish and poultry a day.

In terms of dairy products 25% of parents reported that their children consumed one serving (*n*=15), another 25% reported their children consumed three daily servings (*n*=15), 23% reported two servings per day of dairy (*n*=14), 13% of reported their children consumed four daily servings of dairy (*n*=8), and 10% reported their children consumed five or more servings of dairy a day (*n*=6).

One participant reported their not feeding their child dairy (2%). The majority of parents reported feeding their children one or two servings of fats and sweets per day, with 24 reporting one (40%) and 23 reporting two servings per day (38%). Seven parents reported feeding their

children three servings (12%) of fats and sweets per day, one participant indicated feeding their child four servings (2%), and two parents reported feeding their children five or more servings of fats and sweets a day (3%). The majority of all participants (*n*=44, 73%) indicated they have never received previous nutrition education or training (see Appendix B).

Child Feeding Questionnaire Responses

Participants were also asked to respond to questions from the modified Child Feeding Questionnaire (CFQ). The CFQ includes five subscales that address the aspects of parents' perception and concerns regarding child risk for obesity, and the use of control in feeding behaviors. The distribution of responses for the CFQ scores are shown in the following tables (see Tables 7-11).

Parents' perceived responsibility in feeding their child is presented in Table 7. Parents concern about their child becoming overweight is found in Table 8. Questions that address the extent to which parents restrict their child's diet are found in Table 9. The extent to which parents pressure their children to eat more, especially during meal times, is presented in Table 10, and the extent to which parents monitor their child's eating is found in Table 11.

Table 7

Distribution of Parent Perceived Responsibility for Child's Eating

Habit: Perceived Responsibility	Response									
	Never		Seldom		Half of the Time		Most of the Time		Always	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Responsible for feeding your child	0	0	2	3	3	5	4	7	52	85
Responsible for deciding your child's portion sizes	0	0	1	2	5	8	11	18	43	72
Responsible for deciding if your child eats healthy foods	0	0	1	2	6	10	8	13	45	75

Table 8

Distribution of Parent Concern

Habit: Concern	Response									
	Unconcerned		A little Concerned		Concerned		Fairly Concerned		Very Concerned	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Concern about your child eating too much	19	32	21	35	5	8	8	13	7	12
Concern your child will maintain a desirable weight	18	30	20	33	6	10	5	8	11	18
Concern about your child becoming overweight	25	42	13	22	10	17	6	10	6	10

Table 9

Distribution of Parent Restriction

Habit: Restriction	Response									
	Disagree		Slightly Disagree		Neutral		Slightly Agree		Agree	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Ensure that child doesn't eat too many sweets	1	2	4	7	12	20	8	13	35	58
Ensure that child doesn't eat too many fats	1	2	8	13	12	20	13	22	26	43
Intentionally keeping foods out of child's reach	6	10	7	12	9	15	7	12	31	52
Offering sweets as a reward for good behavior	16	27	8	13	14	23	8	13	14	23

Table 10

Distribution of Parent Pressure to Eat

Habit: Pressure to Eat	Response									
	Disagree		Slightly Disagree		Neutral		Slightly Agree		Agree	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
If not regulated my child would eat too much junk food	6	10	4	7	7	12	8	13	35	58
Child should always eat all of the food on his/her plate	11	18	4	7	16	27	11	18	18	30

Table 10

(cont.)

Habit: Pressure to Eat	Response									
	Disagree		Slightly Disagree		Neutral		Slightly Agree		Agree	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Be careful to make sure my child eats enough	8	13	3	5	11	18	12	20	26	23
If child says he/she is not hungry I force them to eat	11	18	6	10	15	25	14	23	14	23
If not regulated my child would eat much less than he/she	10	17	7	12	16	27	12	20	15	25
If I not regulated my child would eat much more than he/she should	22	37	6	10	12	20	11	18	9	15

Table 11

Distribution of Parent Monitoring

Habit: Monitoring	Response									
	Never		Rarely		Sometimes		Mostly		Always	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Keep track of sweets	1	2	1	2	8	13	18	30	32	53
Keep track of junk food	1	2	1	2	7	12	18	30	33	55
Keep track of fat	1	2	3	5	10	17	15	25	31	52

Comparisons of Rural and Urban Parents

Table 12, provides the demographic comparisons of participants by county of residence, 30 participants were residents of rural Columbus County (50%) and 30 were residents of urban Durham County (50%). In rural Columbus County 40% of the participants were African American (*n*=12), 23% were Caucasian (*n*=7), 26% were Hispanic American (*n*=8), and 10 % were Native American (*n*=3). The majority (73%) of participants indicated that they were not employed (*n*=22), while 16% reporting part-time employment (*n*=5), and 10% indicating full-time employment (*n*=5). In terms of education level, 23% reported that they have completed

some high school (*n*=7), 37% reported that their highest education was a high school diploma or GED (*n*=11). 36.7% reported that they had completed some college (*n*=11), and a small proportion reported having a degree, with 3% having earned an Associate's Degree or attended a technical college (*n*=1). No participants in rural Columbus County reported received a four-year degree (see Table 12). Urban participants were slightly older ($\bar{x}$=36.2) than the rural participants ($\bar{x}$=31.4) (see Table 13). In urban Durham County 60% of participants were African American (*n*=18), 27% were Caucasian (*n*=8), and 13% were Hispanic American (*n*=4). The majority of participants were employed (*n*=29, 97%), with 90% reporting full-time employment (*n*=27), 7% indicating part-time employment (*n*=2).

Approximately 3% of the sample was not employed (*n*=1). In terms of education level, 3% reported that they have completed some high school (*n*=1), 27% reported that their highest education was a high school diploma or GED (*n*=8), 30% reported that they had completed some college and smaller proportions reported having a degree (*n*=9), 23% having earned at least a four-year degree (*n*=7), and 17% reporting having an Associate's Degree or have attended technical college (*n*=5). One participant reported having some high school as has their highest level of education (33%) (see Table 12).

Table 12

Demographics by County

Characteristics	Response	Columbus County		Durham County	
		n	%	*n*	%
Gender	Male	3	10	5	17
	Female	27	90	25	83
Ethnicity	African American	12	40	18	60
	Caucasian	7	23	8	27
	Hispanic American	8	27	4	13

Table 12

(cont.)

Characteristics	Response	Columbus County		Durham County	
		n	%	*n*	%
Education Level	Some High School	7	23	1	3
	High School Diploma or GED	11	37	8	27
	Some College	11	37	9	30
	Associate's Degree or Technical College	1	3	5	17
	4-year degree or more	0	0	7	23
Employment Status	Full-time	3	10	27	90
	Part-time	5	17	2	7
	Unemployed	22	73	1	3

Table 13

T-test for Demographics by County

Characteristics	Columbus County		Durham County		Significance
	Mean	SD	Mean	SD	
Age	31.4	5.43	36.23	9.67	*0.037
Gender	1.90	0.31	1.83	0.38	0.133
Ethnicity	2.70	1.47	1.93	1.20	0.211
Employment Status	2.53	0.67	1.13	0.43	**0.003
Education Level	2.20	0.85	3.30	1.21	*0.024

Note. Scale: 1=Male, 2=Female; 1=African American, 2=Caucasian, 3=Hispanic American, 4=Native American; 1=Full-time, 2=Part-time, 3=Unemployed; 1=Some High School, 2=High School Diploma or GED, 3=Some College, 4=Associate's Degree or Technical College, 5=4-year degree or more; Significance levels:*p<0.05, **p<0.01, ***p<0.001.

Independent samples (t-test) analysis was used to compare demographic categories by county, as shown in Table 13. The two counties were demographically similar with the exception of age, ethnicity, employment status, (p=0.003) and education level (p=0.024). Comparisons were made using independent sample (t-test), Columbus and Durham County by family size, as seen in Table 15, rural participants reported having more children than urban participants.

In regards to weight, many rural parents classified themselves as normal (*n*=14, 47%), 43% classified themselves as overweight (*n*=13), and 7% classified themselves as obese (*n*=2).

Based on the height and weight provided by rural participants, their self-evaluation of their weight status differed greatly from their actual weight status (p=0.000). Of rural parents 47% were classified as obese (*n*=14), 23% as overweight (*n*=7), and 30% as normal (*n*=9) (see Table 16). Whereas many urban parents classified themselves as overweight (n=15, 50%), 37% classified themselves as normal (*n*=11), and 13% classified themselves as obese (*n*=4).

Table 14

Family Characteristics by County

Characteristics	Response	Columbus County		Durham County	
		n	%	*n*	%
Total Children in the Household	One	2	7	12	40
	Two	12	40	8	27
	Three	8	27	9	30
	Four	1	3	1	3
	Five	5	17	0	0
	Six	2	7	0	0
Adults in the Household	One	12	40	17	57
	Two	14	47	11	37
	Three	3	10	2	7
	Four	1	3	0	0
Children Between 2 & 11	One	11	37	15	50
	Two	8	27	10	33
	Three	9	30	4	13
	Four	2	7	1	3

Table 15

T-test for Family Characteristics by County

Characteristics	Columbus County		Durham County		Significance
	Mean	SD	Mean	SD	
Total Children	3.03	1.43	1.97	0.93	0.640
Adults	1.77	0.78	1.50	0.63	0.627
Children between ages 2 & 11	2.07	0.98	1.70	0.84	0.347

Note. Scale: 1=One, 2=Two, 3=Three, 4=Four, 5=Five, 6=Six. Significance levels:*p<0.05, **p<0.01, ***p<0.001.

Table 16

Parent Perceived and Actual Weight Status by County

Characteristics	Response	Columbus County		Durham County	
		n	%	*n*	%
Parent's Perceived Weight Status	Underweight	1	3	0	0
	Normal	14	47	11	37
	Overweight	13	43	15	50
	Obese	2	7	4	13
Parents Actual Weight Status	Underweight	0	0	0	0
	Normal	9	30	8	27
	Overweight	7	23	9	30
	Obese	14	47	13	43

Note. Scale: 1=Underweight, 2= Normal, 3=Overweight, 4=Obese.

Based on the height and weight provided by urban participants, their self-evaluation of their weight status differed greatly from their actual weight status (p=0.000). Of urban parents 43% were classified as obese (*n*=13), 30% as overweight (*n*=9), and 27% as normal (*n*=8) (see Table 16). There were no statistically significant differences found between rural and urban counties (see Table 17).

Table 17

T-test for Parent Perceived Weight and Actual Weight by County

Characteristics	Columbus County		Durham County		Significance
	Mean	SD	Mean	SD	
Perceived Weight Status	2.53	0.58	2.77	0.58	0.655
Actual Weight Status	3.167	0.88	1.97	0.93	0.865

Note. Scale: 1=Underweight, 2= Normal, 3=Overweight, 4=Obese.

With regards to weight, many rural parents classified their children as normal (*n*=43, 73%), few were classified as underweight (*n*=14, 24%), and less were classified as overweight (*n*=2, 3%). Based on the height and weight of the child provided by rural participants, and their evaluation of the child's weight status differed greatly from the child's actual weight status

(p=0.000). In rural, 42% of children were classified as normal (*n*=25), 22% as overweight (*n*=13), and 22% as obese (*n*=13) (see Table 18).

While almost all parents in urban classified their children as normal (*n*=47, 92%), based on the height and weight provided by urban participants, and their evaluation of their child's weight status differed greatly from their actual weight status (p=0.000). In Durham County 51% of children were perceived as normal (*n*=26), 23% as obese (*n*=12), and 14% as underweight (*n*=7) (see Table 18).

Table 18

Child Perceived Weight and Actual Weight Status by County

Characteristics	Response	Columbus County		Durham County	
		n	%	*n*	%
Gender	Male	29	49	23	45
	Female	30	51	28	55
Child's Perceived Weight Status	Underweight	14	24	1	2
	Normal	43	73	47	92
	Overweight	2	3	2	4
	Obese	0	0	1	2
Child's Actual Weight Status	Underweight	8	14	7	14
	Normal	25	42	26	51
	Overweight	13	22	6	12
	Obese	13	22	12	24

In the actual weight status of children participants, there were no statistical differences found between rural and urban counties, but in the perceived weight status of children urban and rural counties differed greatly (p=0.000). Parents in rural Columbus County significantly underestimated the weight status of their children in comparison to urban Durham County. Parents from Columbus county were more likely to view their child as normal where as parents from Durham county were more likely to view their child as overweight (see Table 19). Both

rural and urban parents underestimated their weight status considerably when compared to their actual weight status (significance level of 99% using Pearson's chi-square analysis).

Table 19

T-test for Child Perceived Weight and Actual Weight Reported by Parents by County

Characteristics	Columbus County		Durham County		Significance
	Mean	SD	Mean	SD	
Age	5.17	2.88	6.49	3.27	0.055
Gender	1.51	0.51	1.55	0.51	0.476
Perceived Weight Status	1.80	0.49	2.06	0.37	***0.000
Actual Weight Status	2.53	0.99	2.45	1.01	0.993

Note. Scale: 1=Underweight, 2=Normal, 3=Overweight, 4=Obese; Significance levels:*p<0.05, **p<0.01, ***p<0.001.

Urban parents reported feeding their children home cooked meals between three and four times per week *(n*=10, 33%), and about one-quarter (*n*=8, 27%) reported five to six times per week. Smaller portions of participants indicated feeding their children home cooked meals one to two times per week (*n*=3, 10%), and fewer reported feeding their children home cooked meals more than nine times per week (*n*=2, 7%) (see Table 20).

Table 20

Meal Type Consumption per Week by County

Characteristics	Response	Columbus County		Durham County	
		n	%	*n*	%
Fast Food Meals	None	7	23	2	7
	1-2 times	20	67	24	80
	3-4 times	3	7	3	10
	5-6 times	1	3	1	3
	7-8 times	0	0	0	0
	9 or more times	0	0	0	0
Home Cooked Meals	None	0	0	0	0
	1-2 times	2	7	3	10
	3-4 times	1	3	10	33
	5-6 times	9	30	8	27
	7-8 times	8	27	7	23
	9 or more times	10	33	2	7

Table 20

(cont.)

Characteristics	Response	Columbus County		Durham County	
		n	%	*n*	%
Pre-Packaged Meals	None	12	40	9	30
	1-2 times	14	47	19	57
	3-4 times	3	10	4	13
	5-6 times	0	0	0	0
	7-8 times	1	3	0	0
	9 or more times	0	0	0	0

Using the t-test for equality of means, rural parents reported providing home cooked meals more often than their urban counterparts (p=0.002) (see Table 21). For home cooked meals 33% of rural parents reported feeding their children home cooked meals more than nine times per week (*n*=10), 30% between five and six times per week (*n*=9), and about one-quarter (*n*=8, 27%) reported seven to eight times per week.

Smaller portions of participants indicated feeding their children home cooked meals one to two times per week (*n*=3, 7%), and fewer reported feeding their children home cooked meals three to four times per week (*n*=1, 3%). No participants reported not providing home cooked meals for their children. There were no significant differences between the frequency of fast food meals and pre-packaged meals urban and rural parents feed their children.

Table 21

T-test for Meal Type Consumption per Week by County

Characteristics	Columbus County		Durham County		Significance
	Mean	SD	Mean	SD	
Fast Food Meals	1.93	0.79	2.10	0.55	0.344
Home Cooked Meals	4.77	1.17	3.83	1.12	**0.002
Pre-Packaged Meals	1.80	0.89	1.83	0.65	0.869

Note. Scale: 1=None, 2=1-2 times, 3=3-4 times, 4=5-6 times, 5=7-8 times, 6=9 or more times; Significance levels:*p<0.05, **p<0.01, ***p<0.001.

Rural parents reported feeding their children fruits, vegetables, meat, fish, and poultry more often than urban parents. Rural parents reported that their children consumed two servings (*n*=10, 33%) of fruit each day, in comparison, more urban parents reported feeding their children two servings of fruit each day (*n*=15, 50%) (see Appendix A).

Rural parents reported that their children consumed one or two servings (*n*=8, 27% & *n*=40, 33%) of vegetables each day, while more urban parents reported feeding their children one and two servings (*n*=6, 20% & *n*=16, 53%). Rural parents reported that their children consumed two servings (*n*=14, 47%) or three servings (*n*=6, 20%) of meat, fish and poultry each day. Most of the urban participants reported that their children ate one (*n*=11, 37%) or two servings (*n*=11, 37%) of meat, fish and poultry each day. Using Levene's test for equality of variance, there was a significant difference between counties in these three categories: fruits, vegetables, meat, fish and poultry (p=0.000, 0.001, and 0.034 respectively) (see Table 22).

Table 22

T-test for Food Type Consumption per Day by County

Characteristics	Columbus County		Durham County		Significance
	Mean	SD	Mean	SD	
Fruits	3.50	1.48	3.07	0.79	***0.000
Vegetables	3.57	1.36	3.13	1.14	**0.001
Grains	3.27	1.36	3.13	1.14	0.238
Meats, Fish & Poultry	3.53	1.28	2.90	0.90	*0.034
Dairy	3.57	1.45	3.50	1.20	0.192
Fats, Oils, & Sweets	2.77	1.10	2.79	0.90	0.259

Note. Scale: 1=None, 2=1 Serving, 3=2 Servings, 4=3 Servings, 5=6 Servings, 6=5 or more servings; Significance levels:*p<0.05, **p<0.01, ***p<0.001.

The CFQ, using five subscales was compared by county of residence using the t-test analysis for equality of means; four questions were found to have significant differences between rural and urban groups. Parents from Columbus County reported exercising more restriction over what their child eats and pressuring their children to eat more than Durham County (Table 23).

Table 23

T-test for CFQ by County

Characteristics	Columbus County		Durham County		Significance
	Mean	SD	Mean	SD	
Restriction: Ensure that child doesn't eat too many fats	4.57	0.82	3.83	1.21	**0.008
Restriction: Intentionally keep foods out of child reach	4.40	0.82	3.43	1.25	**0.001
Restriction: Offer sweets as a reward for good behavior	4.30	1.02	3.37	1.62	0.1000
Pressure to Eat: Careful to ensure my child eats enough	4.30	1.02	3.20	1.54	**0.002
Pressure to Eat: If child says he/she is not hungry I force them to eat	3.57	1.43	2.90	1.32	0.056
Pressure to Eat: If I not regulated my child would eat more than he/she should	3.70	1.29	2.80	1.37	*0.011

Note. Scale: 1=Disagree, 2=Slightly Disagree, 3=Neutral, 4=Slightly Agree, 5=Agree; Significance levels:*p<0.05, **p<0.01, ***p<0.001.

CHAPTER 5

Conclusions

Discussion

The main objective of the study was to examine parental feeding behaviors and explore the association between these factors and region of residence. The study used data collected from 60 parents of children ages 2-11. The major findings of the study indicated a significant relationship for the parents between region of residence and frequency of home cooked meals, the consumption of fruits, vegetables, meat, fish and poultry, and two factors from the CFQ which include parental restriction and parental pressure to eat.

Previous research states that the decline in the frequency of children eating family dinner has paralleled the rise of childhood obesity in this country (Taveras et al., 2005). The research also suggests that when parents provide companionship at mealtime, establish a positive atmosphere, and model appropriate food-related behaviors, their children tend to have improved dietary quality (Golan & Crow, 2004). Taveras et al., (2005) found a positive association between frequency of family meals and intake of fruits, vegetables, grains and calcium-rich foods and a negative association with soft drink consumptions. Family dinner is often associated with some healthful dietary patterns (Taveras et al., 2005). Increasing frequency of family dinner was associated with low consumption of saturated and trans fat, soda, and fried foods as well as decreased glycemic load which is associated with increased adiposity in children and adults. Family dinners can improve diet quality by including foods that are more healthful than children or adolescents would otherwise eat.

Low-income parents consume more home cooked meals per week (Anderson & Whitaker, 2010). Based on this study, parents in rural Columbus County North Carolina

community are providing home cooked meals more frequently than parents in urban settings. This study supports the results of previous research that states parents from rural communities are providing fruits, vegetables, meat, fish and poultry more often than urban parents (Anderson & Whitaker, 2010; Taveras et al., 2005). In contrast, this finding does not account for the increased incidence of childhood obesity in rural Columbus County North Carolina but may reflect an overconsumption of food in general.

The study found that parents in rural communities reported rewarding their children with sweets for good behavior, and reporting they practice assuring their child eats enough food. These behaviors, higher restriction and pressure to eat scores were associated with increased adiposity in children (Webber et al., 2010). Another study found that parental feeding restriction is associated with increased child eating and weight status (Faith et al., 2004).

Although, rural parents reported exercising more control over what their children consume, they appear to lack the appropriate knowledge to provide their children with healthy foods. Increased restriction may be a consequence of parental concern about their children becoming overweight, rather than a cause of their children's weight gain. Pressure to eat may be a more complex response that is influenced by the desire to ensure adequate energy intake and appropriate weight gain (Webber et al., 2010).

In relation to the effects of maternal employment on childhood obesity, this research indicates many rural parents reported being unemployed, however previous research states that maternal employment is associated with decreased time with children and poor feeding behaviors (Bianchi, 2000). Based on Bianchi's research maternal employment may not account for the increased incidence of obesity in rural communities; what may be a more influential factor in child feeding is parental education level. In this study parents in the rural county reported having

significantly lower levels of education than urban parents. Furthermore, ethnic background may explain the major differences in the results of the two studies (Bianchi, 2000).

The study found that although urban parents were more likely to classify their children as overweight, while rural parents were more likely to classify their children as normal weight. Both rural and urban parents underestimated their own and their child's weight status. If parents are unable to identify their child as overweight, they will likely not change the feeding behaviors/practices or seek help in controlling their child's weight.

Several studies found that parents did not view their overweight children as overweight, and this misperception was more common in parents with less education (Baughcum et al., 2000; Eckstein et al., 2006). Childhood obesity prevention efforts are unlikely to be successful without a better understanding of how parents perceive the problem of overweight in their preschool children (Baughcum et al., 2000).

The impact of familial eating behaviors has a tremendous effect on the risk of overweight and obesity among young children (Ebbeling et al., 2002; Golan & Crow, 2004). Because of this and the current epidemic of obesity among young children, the need for parent education regarding practicing healthy feeding habits for their children is more important than ever before. The results from this study indicate that rural parents' beliefs about food correlates directly with the food they provide their children. Changing parents' beliefs may be the first step in diminishing the problem of childhood obesity among not only rural families, but also other economically and social disadvantaged groups.

Limitations

Participants were selected using a sample of convenience. The parents who participated in this research did so voluntarily. The quantitative results were based on self-reports and were

subject to biases by the participants; such as parents might have tendency to choose a desirable answer. In addition, it is questionable whether parents accurately reported their feeding habits (Wardle, Sanderson, Guthrie, Rapoport, & Plomin, 2002). Due to the small sample size (*N*=60) the results of this study are not generalizable.

Summary

Obesity is one of the most challenging public health crises being faced in the US and will continue until widespread action is taken to inform the public about early detection, prevention, and possible health complications (Stegelin, 2008). Results from previous research indicates that although some progress has been made in the prevention of early childhood obesity, but further research is required if we are to have a greater impact on the elimination childhood obesity. This study will add to the existing, although limited, research regarding parental feeding behaviors as it relates to obesity in rural and urban populations.

The problem of childhood obesity among children, particularly those living in rural communities, will continue to be a public health issue until parents of overweight and obese children take more proactive and preventative measures to promote healthy eating habits and physical activity for their children.

The objective of this study was to expand the current parental education information regarding behaviors and perceptions about early childhood obesity. It was also intended to bring clarity to the current feeding behaviors of parents living in rural and urban communities, and start a dialogue for solutions. Parents should be educated about the correlation between healthy eating habits and obesity prevention. Research indicates that parental knowledge of this correlation will most likely be passed on to their children as well. Further research in this area is needed before effective solutions can be implemented.

Recommendations

Based on the findings and conclusions of this study, the following recommendations for future research are:

- Conduct longitudinal studies on rural children who have been identified as overweight or obese in early childhood and effects of weight management programs created for rural youth.
- Provide parental education classes that address the prevention of weight problems in their children, or interventions to increase parental awareness of childhood obesity and its potential consequences especially in rural populations.
- Conduct a comparison of parental behaviors should be made for not only location of residence but could be made between groups formed by income and education level.

There are many possibilities for further research that could be initiated by the findings of the current study.

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Appendix A

Table

Food Type Consumption per Day by County

Characteristics	Response	Columbus County		Durham County	
		n	%	*n*	%
Fruit	None	0	0	0	0
	1 serving	9	30	7	23
	2 servings	10	33	15	50
	3 servings	4	13	7	23
	4 servings	1	3	1	3
	5 or more servings	6	20	0	0
Vegetables	None	0	0	1	3
	1 serving	8	27	6	20
	2 servings	10	33	16	53
	3 servings	5	17	5	17
	4 servings	1	3	2	7
	5 or more servings	6	20	0	0
Grains	None	0	0	0	0
	1 serving	11	37	10	33
	2 servings	9	30	11	37
	3 servings	5	17	6	20
	4 servings	1	3	1	3
	5 or more servings	4	13	2	7
Meat, Fish, & Poultry	None	0	0	0	0
	1 serving	5	17	11	37
	2 servings	14	47	11	37
	3 servings	6	20	8	27
	4 servings	0	0	0	0
	5 or more servings	5	17	0	0
Dairy	None	0	0	1	3
	1 serving	10	33	5	17
	2 servings	5	17	10	33
	3 servings	8	27	7	23
	4 servings	2	7	6	20
	5 or more servings	5	17	1	3
Fats, Oils, & Sweets	None	2	7	0	0
	1 serving	12	40	12	40
	2 servings	10	33	13	43
	3 servings	4	13	3	10
	4 servings	1	3	1	3
	5 or more servings	1	3	1	3

Appendix B

Dear Sir/ Madam,

I am a graduate student from North Carolina Agricultural and Technical State University working with Dr. Patricia Lynch, my academic advisor on a research study titled "Rural and Urban North Carolina Parent-Child Feeding Behaviors." This study seeks to address the relationships between parental beliefs, attitudes and practices regarding child feeding that influence childhood obesity in North Carolina families with children ranging from the ages of 2 to 11 years old.

Attached is a questionnaire that will take approximately 20 minutes to complete. You must be an adult (18 years or older) to participate. Your participation is strictly voluntary; however, your involvement is very important to the success of the study. You may decline to answer any item(s) on the questionnaire; yet completion of the study will be considered your implied informed consent. Your responses will be held in strict confidence.

You will receive a $10 Walmart Giftcard for completion of the attached survey. Please complete the survey as accurately as possible. All results will be analyzed and reported for groups not individuals. Please keep this letter in your records in case you have further questions regarding this study.

Rights as a Participant

Contact Ms Donna Eaton at the NCA&T University Research Compliance Office (336) 334-7995 or by email at rescomp@ncat.edu if you have questions about your rights as a research participant in this study.

Thank you in advance for your participation.

Sincerely yours,

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Exempted
05-21-2012

Figure. Consent Form/Letter

Appendix C

Rural and Urban North Carolina Parent-Child Feeding Behaviors Survey

The following survey is intended to assess relationships between parental beliefs, attitudes and practices regarding child feeding that influence childhood obesity in North Carolina.

Please answer questions completely and honestly.

1) What is your age: _____

2) What is your gender? Please select one:
- a. Male
- b. Female

3) What is your ethnic background? Please select one:
- a. African American
- b. Asian American
- c. Caucasian
- d. Hispanic
- e. Native American
- f. Other, please specify_____

4) Are you currently employed? Please select one:
- a. Full-time
- b. Part-time
- c. Not employed

5) What is the highest level of education that you have completed? Please select one:
- a. Some high school
- b. High school diploma or GED
- c. Some college
- d. Associates Degree or Technical School
- e. 4-year college degree or more

6) Have you ever had any type of nutrition course, training, or intervention?
- a. Yes
- b. No

7) What is your current weight status? What is your current height_____ and what is your current weight_____?
- a. Underweight
- b. Normal
- c. Overweight
- d. Obese

8) How many children do you have in your household?_____

9) How many adults do you have in your household?_____

10) How many children do you have aged between 2 and 11 years?_____

11) Please answer the following questions about your children aged between 2 and 11 years:

	Child 1	Child 2	Child 3	Child 4
Age *2 -11*				
Gender *M=Male* *F-Female*				
Weight *U=Underweight* *N=Normal* *OW=Overweight* *O=Obese*				
Height *In feet and inches*				
Weight *In pounds*				

12) Thinking about your child(ren) aged 2 to 11 years; on average how many times per week does your child eat the following?

	None	1-2 times per week	3-4 times per week	5-6 times per week	7-8 times per week	9 or more times per week
Fast Food Meals						
Home Cooked Meals						
Pre-packaged Meals (TV Dinners)						

13) Thinking of your child(ren) aged 2 to 11 years; on average how many times does your child eat the following per day?

	None	1 time per day	2 times per day	3 times per day	4 times per day	5 or more per day
Fruit						
Vegetables						
Grains						
Meat, Fish & Poultry						
Dairy						
Fats, Oils, & Sweets						

Please answer the following questions as honestly as possible with your child(ren) aged 2 to 11 in mind.

1) When your child(ren) is at home, how often are you responsible for feeding him or her?

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

2) How often are you responsible for deciding what your child(ren)s portion sizes are?

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

3) How often are you responsible for deciding if your child(ren) has eaten healthy foods?

1	2	3	4	5
Never	Seldom	Half of the time	Most of the time	Always

4) How concerned are you about your child(ren) eating too much when you are not around him or her?

1	2	3	4	5
Unconcerned	A little concerned	Concerned	Fairly concerned	Very concerned

5) How concerned are you about your child(ren) having a diet to maintain a desirable weight?

1	2	3	4	5
Unconcerned	A little concerned	Concerned	Fairly concerned	Very concerned

6) How concerned are you about your child(ren) becoming overweight?

1	2	3	4	5
Unconcerned	A little concerned	Concerned	Fairly concerned	Very concerned

7) I have to be sure that my child(ren) does not eat too many sweets (candy, ice cream, cake, or pastries).

1	2	3	4	5
Disagree	Slightly agree	Neutral	Slightly Agree	Agree

8) I have to be sure that my child(ren) does not eat too many high-fat foods (fried foods for example).

1	2	3	4	5
Disagree	Slightly agree	Neutral	Slightly Agree	Agree

9) I intentionally keep some foods out of my child(ren)s reach.

1	2	3	4	5
Disagree	Slightly agree	Neutral	Slightly Agree	Agree

10) I offer sweets (candy, ice cream, cake, pasties) to my child(ren) as a reward for good behavior.

1	2	3	4	5
Disagree	Slightly agree	Neutral	Slightly Agree	Agree

11) If I do not guide or regulate my child(ren)s eating they would eat too much junk food.

1	2	3	4	5
Disagree	Slightly agree	Neutral	Slightly Agree	Agree

12) My child(ren) should always eat all of the food on his or her plate.

1	2	3	4	5
Disagree	Slightly agree	Neutral	Slightly Agree	Agree

13) I have to be especially careful to make sure my child(ren) eats enough.

1	2	3	4	5
Disagree	Slightly agree	Neutral	Slightly Agree	Agree

14) If my child(ren) says "I'm not hungry" I try to get him or her to eat anyway.

1	2	3	4	5
Disagree	Slightly agree	Neutral	Slightly Agree	Agree

15) If I did not guide or regulate my child(ren)s eating, he or she would eat much less than he or she should.

1	2	3	4	5
Disagree	Slightly agree	Neutral	Slightly Agree	Agree

16) If I did not guide or regulate my child(ren)s eating, he or she would eat much more than he or she should.

1	2	3	4	5
Disagree	Slightly agree	Neutral	Slightly Agree	Agree

17) How much do you keep track of the sweets (candy, ice cream, cake, pies, pasties) that your child eats?

1	2	3	4	5
Never	Rarely	Sometimes	Mostly	Always

18) How much do you keep track of the junk food that your child(ren) eats?

1	2	3	4	5
Never	Rarely	Sometimes	Mostly	Always

19) How much do you keep track of the high-fat foods that your child(ren) eats?

1	2	3	4	5
Never	Rarely	Sometimes	Mostly	Always

20) Do you have any additional concerns or comments? If so, explain below:

Figure. Survey Instrument