2015

The Effects of Barriers Toward Fighting Childhood Obesity Within Head Start

Vanessa Chaney
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral dissertation by

Vanessa Chaney

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Ji Shen, Committee Chairperson, Public Health Faculty
Dr. Cheryl Cullen, Committee Member, Public Health Faculty
Dr. Gudeta Fufaa, University Reviewer, Public Health Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2015

Abstract

The Effects of Barriers Toward Fighting Childhood Obesity Within Head Start

by

Vanessa Chaney

MBA, University of Phoenix, 2005

BA, University of North Carolina at Charlotte, 2002

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

February 2015

Abstract

Childhood obesity is associated with significant morbidity and mortality and poses a health care burden. Child care facilities serve at the forefront in fighting childhood obesity among preschoolers. Since 2009, a significant shift has occurred in studying child care settings among children aged 3–5 in North Carolina and South Carolina in response to the rising rates of obesity in this population. Some of the hypothesized determinants of childhood obesity among preschoolers in North Carolina and South Carolina are outdoor activity, staff behavior, center's size and location. The purpose of this study was to investigate if significant relationships exist between childhood obesity and each one of these variables. This study was conducted within the framework of social cognitive theory within the contexts of the process of self-efficacy for realizing goals. A quantitative correlational design was used, while data were collected through Survey Monkey administering a closed end survey. Multiple linear regression was used to examine the associations between childhood obesity and center size, location, outdoor activity and staff behavior. The Power analysis determined total of 110 participants (N=100) who worked in North and South Carolina Head Start facilities of preschool children aged 3–5. The multiple regression indicated significant contributions of the center size ($\beta = .32$, $p = .001$), the location ($\beta = -.28$, $p = .002$), the outdoor activity ($\beta = -.25$, $p = .005$), and staff behavior ($\beta = .27$, $p = .008$). Therefore, the overall null hypotheses were rejected. This study may help to effect positive social change through identifying the important barriers to minimizing the risk of obesity among preschool children, which in turn would help to inform policy for developing and implementing strategies to reduce risks of preschoolers' obesity.

The Effects of Barriers Toward Fighting Childhood Obesity Within Head Start

by

Vanessa Chaney

MBA, University of Phoenix, 2005

BA, University of North Carolina at Charlotte, 2002

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

February 2015

Acknowledgement

I give eternal thanks to God the Father in heaven who continues to open doors for me. It is through these blessings that I have been able to complete this educational journey. I pray as I have been blessed abundantly, that I may be a blessing to others with the knowledge I have acquired through education. While this journey was a long one, I was fortunate to have wonderful people helping me along the way. I thank my committee chairperson Dr. Ji Shen and committee member Dr. Cheryl Cullen. It is through their dedication that I navigated successfully in completing my dissertation. Through the mentoring efforts of Tom Granoff, I was able to understand how to make data useful. I would also like to thank Toni Williams for editing my dissertation, while offering encouraging tips on how to write more concisely. Lastly, I would like to thank my family for all of their love and support over the many years as I completed my doctoral degree. My greatest regret is that my grandmother, Mrs. Edna L. Bright did not live to see my accomplishment.

Table of Contents

List of Tables

Chapter 1: Introduction

Introduction

Head Start is a federal program aimed at enhancing the lives of children from birth through age 5 who live in low-income households. Early Head Start programs focus on children from birth to age 3. Preschool programs focus on children 3 through 5 years of age. The long-term goal of the program is to prepare each child for elementary school through targeted initiatives from an emotional, social, and cognitive perspective (Head Start, 2013). With Head Start facilities serving over 27 million children, Head Start has a proven record in providing early education to children in the United States (U.S. Department of Health and Human Services, Administration for Children and Families, 2011). The state of North Carolina has over 18,000 children in attendance in regional Head Start facilities (U.S. Department of Health and Human Services, Administration for Children and Families, 2011). Additionally, the South Carolina State Head Start Census shows over 13,000 children enrolled in South Carolina's Head Start programs (South Carolina State Head Start Association, 2013). Data showing health and family dynamics are required annually, as mandated by the federal government. This information can play an integral role in fighting childhood obesity if researchers appropriate more time and funds toward preschoolers.

The study involved examining the states of North and South Carolina collectively to show where each state ranks within prevalence for childhood obesity. The term *Carolinas* referred to both states in unison. North Carolina ranks 13th in childhood obesity rates in the United States (DeNoon, 2012). According to the North Carolina

Department of Health and Human Services (NCDHHS; 2011), the percentages are dire: children aged 10–17 have a 32% rate of obesity and children aged 2–4 show a 31% rate of obesity (NCDHHS, 2011). The latter are children who participate in the Supplemental Nutrition Program for Women, Infants, and Children (WIC) in North Carolina. Ancillary information further shows that 19% of children aged 1–17 drink more than three sugary drinks daily, children under the age of 10 watch two hours of television daily, and high school students watch a minimum of three hours of television daily, in addition to computer-related activities not of a school nature and noneducational video games (Eat Smart, Move More NC, 2011; NCDHHS, 2011). As children's age increases, so does the burden of teaching them to stay healthy and physically active (Eat Smart, Move More NC, 2011; NCDHHS, 2011).

The state of South Carolina shows that 33.3% of childhood obesity rates are among children who have private health insurance. The prevalence of childhood obesity among African American children is 48.1%. This ethnic health disparity shows almost one out of every two African American child is obese in the state of South Carolina (Childhood Obesity Action Network, 2013). More than 28% of children under the age of 5 are overweight or obese (Pediatric Nutrition Surveillance System [PedNSS], 2009). Surveillance used to rank Hispanic children in this age category show 37.3% being overweight or obese. Hispanic children supersede African American children under the age of 5 in being overweight or obese. Some of the highest burdens of obesity are among children who live in low socioeconomic conditions, who live in rural areas, and who have mental or physical disabilities (South Carolina Department of Health and Environmental

Control, 2013). The state of South Carolina ranks eighth in adult and childhood obesity rates within the United States (DeNoon, 2012).

According to the PedNSS (2011), data showed childhood obesity rates increased among children up to age 4 from 1998 to 2003 by as much as 14%. Researchers of the NHANES (2011) posted data suggesting a strong stabilization among prevalence of obesity from ages 2 to 19. No clear data show pediatric obesity cases stabilizing. According to NHANES, the sample sizes were too small to make clear determinations on childhood obesity. Data extracted for children under the age of 4 were from the PedNSS and came from federally funded programs such as WIC. The states of North Carolina and South Carolina transmit data from both WIC and non-WIC programs, but not all children are preschool age or from low economic conditions. The strongest and most reliable data for preschool-aged children come from the Centers for Disease Control and Prevention (CDC; 2009a).

According to Maher, Li, Carter, and Johnson (2008), childhood obesity can escalate or decrease depending on the type of child care a preschooler receives. Maher et al. compared different types of child care, the rate of participation, and the ways these parameters can affect whether a preschooler will become obese by kindergarten. The study included secondary public data sets as provided by Early Childhood Longitudinal Study–Kindergarten Cohort (ECLS–K) along with surveys to each participating parent. Final samples yielded 15,691 data sets of children entering kindergarten. Results indicated 12% of the children were obese or above the 95th percentile during the first year of kindergarten. Children not in child care showed a lower rate of obesity or a high

probability of not achieving obesity, while the children in various nonparental care settings had a higher chance of being obese when compared to other forms of child care. In a comparison of ethnic groups, Caucasian children had the lowest rate of obesity, and Latino children had the highest rates of obesity. Non-Hispanic children participating in the Head Start program showed a higher rate of obesity as well. Child care settings have an effect on childhood obesity; however, Maher et al. admitted to a lack of causation factors from the data. Maher et al. showed that research for the age group 3–7 is pivotal because adiposity rebound occurs, after which body mass index (BMI) reaches its lowest and slowest point. In a longitudinal descriptive study, Maher et al. showed that adiposity rebound (Ogden & Flegal, 2010; Polhamus, Dalenius, Thompson, Scanlon, & Borland, 2002; Whitaker, Pepe, Wright, Seidel, & Dietz, 1998) is a clear predictor of increased body fat among preschoolers and is a predictor of adult obesity. Lastly, as parents choose a myriad of child care settings, including Head Start, there is no consistency in physical activity or on food preparation. Largely due to some care settings that are not licensed facilities, caregivers such as grandparents may provide less physical activity than a child's parents would and within Head Start may offer different food servings. If a child is at risk of not receiving proper meals at home, a common teacher action could be to relax the rules on serving size and provide that child larger servings than suggested by nutritional standards (Maher et al., 2008). The aforementioned perceptions and cultural barriers are preventable issues in the effort to reduce childhood obesity. Attitudinal shifts must occur to fight this disease successfully (Klein & Dietz, 2010).

Current gaps in research and in the literature indicate a lack of consensus among researchers, educational systems, and the federal government on how best to prevent childhood obesity. Recent years' data project current perceptions as they relate to barriers within the disease. Head Start does not have national programs integrating daily physical and nutritional components to fight childhood obesity due to many constrictions such as money, time, and parental perceptions that educational programs preclude health standards. The most important gap is the availability of studies on preschoolers aged 3–5 about whom research is lacking (Lakshman, Elks, & Ong, 2012). The limitations of results from studying preschoolers in Head Start are limited as well. This study was necessary to provide current data on the effects of preschool obesity within the Head Start organization. More data were necessary to determine if the effects of preschool obesity had decreased, increased, or not changed at all.

Background

Child care facilities such as Head Start serve at the forefront in fighting obesity among preschoolers in North Carolina and South Carolina. Only within the past 7 years has a paradigm shift occurred in studying child care settings, which include Head Start, and more specifically preschoolers (Ammerman et al., 2007). Childhood obesity is a national epidemic (Hughes, Gooze, Finkelstein, & Whitaker, 2010). Over 27 million children throughout the United States have had the benefit of achieving educational success through Head Start, despite having a poverty-stricken background. According to Olshansky et al. (2005), the complexities of American life since the 1960s have brought about mammoth change in childhood obesity. Children in the early 21st century may

have shorter life spans than their grandparents and parents due to childhood obesity (Olshansky et al., 2005).

Problem Statement

The current research problem was that the emerging disease of childhood obesity has increased in prevalence throughout the United States. Within the Carolinas, the high prevalence rates of obesity among preschoolers continue to rise. Childhood obesity is a disease and needs critical attention; however, movements to sustain national programs across Head Start facilities have been lackluster. As a result, leaders of Head Start facilities across the United States have a wide range of latitude in how best to approach their childhood obesity program. Staffers need more education in how to choose the right programs that show continual success among the preschoolers such as Food Friends, founded in 1999. Unfortunately, Head Start programs do not promote promising programs such as these on a national level. The leaders of many Head Start facilities such as in the Carolinas have not heard of these programs or have opted to administer obesity prevention programs at their discretion. With so many other barriers, such as physical activity and outdoor activity, a general lack of modeling techniques from staffers at Head Start, and programs needed to educate parents and preschool staff alike, childhood obesity continues into adolescence.

It is discouraging that communication about fighting obesity is not better among researchers and leaders of Head Start facilities. Hughes et al.'s (2010) Study of Healthy Activity and Eating Practices and Environments (SHAPES) brought an increased awareness concerning specific barriers that were a running theme across most Head Start

facilities. The limited research among preschoolers does not show definitive, predictive results. This lack of continuity within the research community prevents leaders of national programs such as Head Start from developing stronger platforms to fight this disease outside of what the Child and Adult Food Care Program requires from the organization.

Studies such as SHAPES (Hughes et al., 2010) have been a relevant force in exposing the barriers that prevent prevalence rates from increasing. The problem of obesity exists, and prevalence rates have increased over the years. However, not until the national SHAPES survey did research show specific barriers among preschoolers in child care settings (Hughes et al., 2010).

Studies that assessed the associations between outdoor activities and childhood obesity, staff behaviors related to healthy eating among preschoolers, and rates of childhood obesity among preschool children in the Carolinas are limited. This study involved determining if the barriers still existed, if their effect had decreased, or if the problem of childhood obesity within the Carolinas had acquired newer barriers since the SHAPES study (Hughes et al., 2010).

Purpose of Study

The goal of this research study was to examine if barriers against decreasing childhood obesity among preschoolers aged 3–5 still existed in Head Start facilities in the Carolinas. This study involved comparing data from the 2010 SHAPES study (Hughes et al., 2010) to current barriers preventing childhood obesity from decreasing among preschoolers. I also compared the findings from the national SHAPES study (Hughes et

al., 2010) to the data in the current study to determine if the previous barriers still exist within the Carolinas.

A review of the regional approach of the SHAPES study (Hughes et al., 2010) revealed there are running themes throughout the United States in combating childhood obesity within child care settings. In this study, I included these themes to determine if the Carolinas are making progress in prevention methods within Head Start and other child care settings. Most child care facilities are state governed, and there is no uniformity on childhood obesity policies (Kaphingst & Story, 2009). Food and physical activity environments seem to be the largest components in fighting this disease (CDC, 2012c); however, in many urban communities, the environments are inadequate due to location, transportation issues, or just unsafe neighborhoods. Children need places to burn caloric intake when not in school. The food environment is a problem because in many communities, nutritious food is unavailable or not readily accessible (CDC, 2010).

Various researchers have shown no long-term progress in fighting childhood obesity in the preschool years. Studies on school-aged children have indicated a shift toward adult obesity (Whitaker, Wright, Pepe, Seidel, & Dietz, 1997) if prevention methods are not successful. However, researchers have not explored children in their preschool years enough or designed studies to benefit this population (Anderson & Whitaker, 2011; Bluford, Sherry, & Scanlon, 2007; Hesketh & Campbell, 2012; Story, Kaphingst, & French, 2006; Summerbell et al., 2005). Lastly, the descriptive correlational design involved comparing the barriers to outdoor activities and staff behaviors as they pertain to healthy eating to the center's characteristics using survey

research methodology. The research design showed the correlation between barriers of outdoor activities and staff behaviors as they pertained to healthy eating.

Research Questions and Hypotheses

Research Questions

RQ1: Are outdoor activities related to childhood obesity within the ages of 3–5?

RQ2: Are staff behaviors related to healthy eating among preschoolers aged 3–5?

RQ3: Is the rate of childhood obesity related to the center's characteristics?

The BMI is a tool to determine the rate of obesity, overweight, underweight, and normal weight in children. The formula is weight (pounds) / [height (in.)]^2 × 703. According to the analysts at the CDC (2013), "When using English measurements, ounces (oz) and fractions must be changed to decimal values. Then, calculate BMI by dividing weight in pounds (lbs) by height in inches (in) squared and multiplying by a conversion factor of 703" (para. 1). Healthy weight is the fifth through the 85th percentile; overweight is higher than the 85th but less than the 95th percentile. Obesity is equal to or greater than the 95th percentile.

The descriptive and correlational design was suitable for the selected research questions to determine how each correlates to one another singularly and simultaneously. In reviewing the data retrieved postsurvey, I compared current childhood obesity barriers in the Carolinas and childhood obesity barriers through the national SHAPES study (Hughes et al., 2010). This was a partial replication of the SHAPES study using portions of the original questionnaire and gathering responses from centers in the Carolinas only. The intent was to determine how the Carolinas samples compare to the national sample.

The null hypothesis and hypotheses are as follows:

$H1_0$: Outdoor activities are not related to childhood obesity.

$H1_a$: Outdoor activities are related to childhood obesity.

$H2_0$: Staff behaviors are not related to healthy eating among preschoolers aged 3–5.

$H2_a$: Staff behaviors are related to healthy eating among preschoolers aged 3–5.

$H3_0$: The rate of childhood obesity is not related to a center's characteristics.

$H3_a$: The rate of childhood obesity is related to a center's characteristics.

In determining the sample size, the calculation included two multiple regression models. In the first research question, the aggregated percentage of children who are obese within Head Start facilities was the dependent variable. In the second research question, aggregated healthy eating was the dependent variable. In the last research question, the dependent variable was aggregated barriers to preventing childhood obesity. This power analysis included three independent variables. The G*Power 3.1 software (Faul, Erdfelder, Buchner, & Lang, 2009) helped to determine sample size within the multiple regression models chosen for this study. In using a medium effect size ($f^2 = .15$) and an alpha level of $p = .05$, the needed sample size to achieve sufficient power (.80), the sample size needed was 109 participants.

The dependent variables were percentage of obese children, healthy eating, and barriers preventing childhood obesity within Head Start facilities in the Carolinas. The independent variables were outdoor activities, staff behavior, and characteristics within Head Start facilities. Alpha level was $p = .05$. Data retrieved included a standard

summary such as means, standard deviations, frequencies, and percentages. In using this method, bivariate comparisons adhered to Pearson product–moment correlations and *t* tests for independent means or one-way analysis of variance (ANOVA) tests. The use of multiple regression helped to test the hypotheses (Tabachnick & Fidell, 2001).

Theoretical and Conceptual Framework

Bandura (1986) contended that self-efficacy, a derivative of the social cognitive theory, is key in changing behaviors. This study involved studying preschoolers aged 3–5 using this theory, along with the conceptual framework of modeling within a child care setting. Parents play a pivotal role in engaging their children in healthful living standards, including physical activity, but research showing self-efficacy as it pertains to modeling within facility settings was lacking (Erinosho et al., 2012).

Erinosho et al. (2012) studied 50 child care facilities in North Carolina using a cross-sectional evaluation. Facilities had written and posted food and nutritional practices pertaining to staff eating practices among the preschoolers. Eighty percent of staff followed stated food and nutritional guidelines and modeled eating nutritionally among the children. Twenty percent did not follow modeling and opted to eat unhealthy foods. Role modeling from staff at facilities can reinforce healthy eating standards to the children (American Dietetic Association, 2005; Bandura, 1997; Hendy & Raudenbush, 2000; National Cancer Institute, 2005).

Children are more willing to try new foods if modeling is readily active from staff serving the foods. Teachers serve a pivotal role in encouraging healthy eating standards with the children by modeling those same foods served at mealtime (Erinosho et al.,

2012). Teachers are guiding preschoolers to have positive attitudes in healthy eating (Ogden, Karim, Choudry, & Brown, 2007). Self-efficacy and modeling helped to answer the research questions and to understand through those answers from preschoolers how best to change continual barriers in childhood obesity within Head Start facilities.

Nature of Study

This quantitative study included a descriptive correlational design. The survey research methodology helped to compare the barriers to outdoor activities and staff behaviors as they pertain to healthy eating and the center's characteristics. The descriptive correlational design was suitable for determining how each correlates to one another singularly and simultaneously. The intent was to determine how the samples from the Carolinas compared to the national SHAPES study sample (Hughes et al., 2010).

Key independent variables were outdoor activities, staff behavior, and characteristics within Head Start facilities. Key dependent variables were percentage of children who are obese within Head Start facilities, healthy eating, and childhood obesity.

The target population was 71 grantee Carolina Head Start locations. Participants involved in the study were employees of Head Start. Each director, assistant director, lead teacher, and nutrition specialist had the opportunity to complete the survey questionnaire.

The study involved using portions of the SHAPES study instrument (Hughes et al., 2010) to collect data. Participants had a time frame within which to complete the survey; I extracted data results from the Survey Monkey online instrument and used them within the SPSS software system. Final determination showed the responses from

participants and how they compared to the stated barriers of the national SHAPES study (Hughes et al., 2010).

Definition of Terms

Adiposity rebound: After a child reaches the age of 1 year, BMI typically declines drastically until preschool age. The rebound of BMI occurs between the ages of 4 to 6 and continues through adulthood (CDC, 2012e).

Body mass index (BMI): Body mass index calculates a child's height and weight through adolescence. The BMI is a reliable tool to indicate health problems such as obesity (CDC, 2012a).

Obese: Obese refers to a BMI that shows at or above the 95th percentile measuring children of the same sex and age (CDC, 2012d).

Assumptions

There was a professional belief that all attending participants would answer the questionnaire truthfully based on their professional experience employed at Head Start locations in the Carolinas. I assumed the following was true within this study:

- All data collection would take place as defined in the study.
- Head Start staff personnel would be employees at each participating location.
- Perceptions of continual childhood obesity barriers within Head Start are ongoing.
- Potential participants would be willing and able to take the survey upon signing an electronic notice of informed consent.

Scope and Delimitations

A delimitation was excluding children from Early Head Start due to their age being inappropriate for the study (children under 3 years of age). Data extrapolated were representative of only Head Start facilities in the Carolinas. Preschoolers from other child care settings in the Carolinas did not participate. Lastly, Early Head Start employees did not participate, as they service age groups younger than required for this study. Also excluded from the study were administrators and other ancillary staff working for Head Start such as administrative assistants, cooks, nonlead teachers, and general assistants.

Theoretical and conceptual frameworks were not in unison among researchers as the literature suggests in relationship to studying childhood obesity among preschoolers. Most studies did not display a conceptual framework in the final study results, or the results were not in agreement with other studies. I considered the ecological model but found that self-efficacy coupled with modeling under the social cognitive theory was a logical choice because the focus was on Head Start staff and children. The study did not include families and parents.

Limitations

This regional study involved examining the continual barriers within Head Start as they pertain to childhood obesity. Data extrapolated and repurposed to draw further conclusions and hypotheses for future research were a starting point to build upon another regional study within the United States. The focus of the research was on staffers within the environment of Head Start and the children enrolled at the facilities, which was not generalizable to all preschoolers in child care settings in the Carolinas. Lastly,

because staffers offered their perceptions, there was no evidential way of knowing if those aspects were in place at the time of the study. An assumption was that the continued perceptions still existed. This knowledge from the national SHAPES study (Hughes et al., 2010) drove this regional research.

Significance

Understanding continuing barriers to fighting childhood obesity provides a narrative of information prior to studying best prevention methods or best treatments for the emerging disease. The advancement of knowledge in this study revealed that although performance standards are in place to train staffers on childhood obesity, no significant reductions had occurred in Head Start facilities. Before future policy and regulations can govern on a national level, leaders in each state should be knowledgeable of existing barriers in fighting childhood obesity in child care settings such as Head Start.

Social change can occur if researchers can unify their research strategies. Efforts across the United States must focus on reducing new prevalence data annually. This change would reflect a society on the mend toward healthier living standards, along with reducing potential health maladies among young children.

Childhood obesity does not affect children in a singular path, and there is no one path to prevent the disease. Careful research should include a focus on regional studies that pertain to a given state and extrapolate data based on specific trends in regional communities. Training, money, supportive feeding environments, marketing strategies, socioeconomic status, and physical activity or playtime affect childhood obesity. With these data and information, I determined if the same barriers applied to the Carolinas, as

the state of North Carolina has a rank of 15th in the nation for childhood obesity. The literature supports many of the aforementioned categories and the review of literature will help improve understanding of perceived outcomes in the study.

Summary

North Carolina shows 31% of children between the ages of two and four as being obese (NCDHHS, 2011), and South Carolina shows 33% of children are obese (Childhood Action Network, 2013). North Carolina ranks 13th (DeNoon, 2012) in the nation, and South Carolina ranks 8th for childhood obesity (DeNoon, 2012). Because of such high numbers among children under the age of 5, preschool-age children attending Head Start, which serves over 27 million children throughout the United States (Head Start, 2013), were the primary focus of this research. I compared data from the SHAPES study (Hughes et al., 2010) to newly acquired data in this study. The goal for the regional study was to determine if previous barriers fighting childhood obesity among preschoolers still existed within Head Start facilities.

In conclusion, researchers have found varying prevalence rates of childhood obesity in a range of studies. Obesity is a medical problem that occurs as a result of a confluence of barriers aimed to prevent childhood obesity. The next chapter includes a review of literature on the determinants of childhood obesity and barriers to preventing childhood obesity with a particular emphasis on preschool children.

Chapter 2: Literature Review

The purpose of this review is to evaluate the barriers in treating childhood obesity within child care settings, specifically the Head Start program in the Carolinas. To accomplish this task, I conducted a review of relevant research that pertains to childhood obesity, evaluated the studies to identify gaps in the literature, and explored barriers of childhood obesity within a child care setting. The focus of this review is on barriers related to outdoor activities, staff behaviors, and a center's characteristics. Past studies have included many theoretical frameworks; however, the one chosen for this study was self-efficacy under the social cognitive theory. The conceptual framework used was modeling (Ammerman et al., 2007; Hendy & Raudenbush, 2000; Hughes et al., 2007).

Databases used for this research via the Walden University library were CINAHL Plus, CINAHL & Medline Simultaneous Search, ProQuest, Walden Dissertations Database, and Nursing and Health Databases. The systematic review included peer-reviewed journal articles published within the past 5 years. Germinal articles were suitable for examining background information and exceeded the maximum publication date of 5 years. Key word functions for this research were *childhood obesity, pediatric obesity, obese preschoolers, child care settings, social cognitive theory,* and *modeling*.

Research such as the 2010 SHAPES study (Hughes et al., 2010) that extrapolates a confluence of events referred to as barriers continues to plague states such as the Carolinas in the search for a successful gateway to manage childhood obesity. Increasing numbers of parents need full-time child care (Academy of Nutrition and Dietetics, 2011). As a result, a clearer understanding is necessary of why barriers exist and

recommendations to fight this disease. Within day-care facilities are directors, nutrition workers, and general staff who spend more waking hours Monday through Friday with a given child than his or her parents or legal caregivers (Academy of Nutrition and Dietetics, 2011; Hughes et al., 2010).

As a result, it is vital that nurses, directors, and staff take an advocacy role in helping the children within child care settings to learn correct eating habits and teaching the children to accept physical activity as a daily part of life (Berkowitz & Borchard, 2009; Academy of Nutrition and Dietetics, 2011; McWilliams et al., 2009) while implementing state and federal laws as outlined by the presiding governing bodies over licensed facilities in the Carolinas (Hughes et al., 2010). Staff in these settings should guide preschoolers to a healthier way of living before attending elementary school. The earlier, the better is a general phrase accepted among researchers and physicians to fight childhood obesity (Academy of Nutrition and Dietetics, 2011; Hughes et al., 2010).

Few researchers have shown successful strategies in preventing childhood obesity (Anderson & Whitaker, 2011; Bluford et al., 2007; Hesketh & Campbell, 2012; Story et al., 2006; Summerbell et al., 2005). As a result, the goal of this study was to determine if continuing barriers to reducing childhood obesity still exist within Head Start facilities in the Carolinas. Researchers have developed a few theories regarding why childhood obesity is increasing in the United States (Powers, Chamberlain, Schaick, Sherman, & Whitaker, 2012). However, researchers of empirical studies are not in agreement with prevention methods focused solely at this population or with how best to engage school,

health providers, parents, and preschoolers' daily environments consisting of school, home, and food (French & Sherwood, 2011).

According to Hesketh and Campbell (2012), fighting childhood obesity should not be an "understated" (para. 29) project, but should proceed with medical urgency. Further evidence has indicated that while researchers are conducting studies among preschoolers, the long-range goals to future research and prevention techniques are unidentifiable. Money is an important factor in continuing steady research for greater obesity prevention among preschoolers. Adequate funding could become a barrier if future studies among 0 to 5 year-olds show no advancements in preventing childhood obesity. Teaching healthy weight management and lifestyles to children when they are most impressionable and eager to learn new things is an agreed upon goal (Hesketh & Campbell, 2012).

Evidence-based programs are available through child care settings such as Head Start in the United States. However, there is no continuity in prevention approaches within this federal program throughout the United States. Careful integration in prevention programs within Head Start, along with other child care settings, needs to be a priority because children spend the majority of their day in this place.

The social implications of childhood include mental and physical health, along with future risk challenges of childhood obesity morphing into adult obesity (Whitaker et al., 1997). Medical implications show an increase in health maladies among children such as hypertension, various liver diseases, Type 2 diabetes, and atherosclerosis (Daniels et al., 2005; Din-Dzietham, Liu, Bielo, Shamsa, 2007; Lorch & Sharkey, 2007). New

prevalence cases of preschool obesity have tripled during this period. As a result, researchers are no longer placing prevention focus on adolescent to adult obesity cases, but have begun to focus on preschoolers (Ogden et al., 2006). Head Start plays an important role in understanding the barriers to preventing childhood obesity (Frey, 2011; Fortuny, Hernandez, & Chaudry, 2010). Researchers have used available data from Head Start to see if the evidence indicates prevention methods are working (Fortuny et al., 2010; Frey, 2011).

Theoretical Foundation

Very few studies include theoretical or conceptual frameworks in the final analysis. Running themes indicate that descriptive studies have worked well for past researchers studying the causes and effects of childhood obesity. Studies synthesized within this literature review were descriptive, and many included quantitative techniques to study the data. With continuing lack of agreement among researchers about the causes of obesity, there is a lack of predictive results about the effects of obesity in communities across the United States. As a result, researchers have turned their primary research from adolescent obesity to preschoolers who are overweight or obese.

Social cognitive theory focusing on self-efficacy (Bandura, 1997) was suitable as the primary component for studying preschool children. The conceptual framework used for this research was modeling. Modeling coincides with self-efficacy in a format that complemented the research aimed at the preschool population.

According to Bandura (1997), social cognitive theory is a social behavior model describing how human beings learn through observation. From an educational

perspective, researchers use social cognitive theory to understand components of learning and achievement (Pajares, 1996; Schunk & Zimmerman, 1994, 1998). Researchers can view classroom learning among preschoolers through social cognitive theory. Learning appropriate eating behaviors through observation, self-efficacy, and the belief that one's interpretation of this learning can result in a positive outcome fighting childhood obesity. Under Bandura's social cognitive theory, it is also important to note that preschoolers' behavior can change through learning, but they must feel motivated to do so, such as through the concept of modeling. In establishing modeling as a core concept to study preschoolers, researchers have shifted research focus from adolescence to children in child care settings only within the past 7 years (Ammerman et al., 2007). As the number theoretical and conceptual models increases, the focus of the medical urgency must be on real-life barriers to develop stronger prevention methods in childhood obesity.

Previous theories have not shown clear data on prevention methods in treating childhood obesity (French & Sherwood, 2011). As a result, studies aimed at children ages 3–5 are less theory driven and more descriptive with a real-world focus toward application. In the interim, newer remedies aimed at prevention methods have occurred, such as social marketing theories (Bellows, Anderson, Davies, & Kennedy, 2009; Berkowitz & Borchard, 2009) that follow a different path to reach younger children through programs such as Food Friends Get Movin' With Mighty Moves, which is an evidence-based program that became widely accepted among staff and children in accepting newer foods and learning healthy eating components within their daily learning

tasks. This program includes the concept of audience (staff and children), product (long- and short-term directives at increasing physical activity), and place (Head Start facilities).

Self-efficacy under the social cognitive theory and modeling under the social marketing theory further advance the knowledge that researchers can study preschoolers in their own school environment using the above theories to demonstrate that the data can provide real world answers toward stable prevention methods among children aged 3–5. Challenges in using the above studies would rest upon each Head Start and other child care settings. Prevention methods can only become successful if facilities opt to use the aforementioned techniques in their daily routines. Previous knowledge has mostly included theory-driven results without avenues for future studies to build upon. This study built upon the knowledge of past public data in increased childhood obesity rates within the United States, along with continuing barriers as stated in the SHAPES study (Hughes et al., 2010). Through the study, I advance newer data in the regional area of the Carolinas to show if the effects of previous barriers still exist.

Prevalence of Childhood Obesity in the Carolinas

The state of North Carolina ranks 13th in childhood obesity rates in the United States. The percentages show children aged 10–17 have a 32% rate of obesity, whereas children aged 2–4 have a 31% rate of obesity (NCDHHS, 2011). The latter are children who participate in WIC in North Carolina. Ancillary information that further documents the state's obesity problem indicates that 19% of children aged 1–17 drink three or more sugary drinks daily, children under the age of 10 watch two hours of television daily, and high school students watch a minimum of three hours of television daily in addition to

nonacademic computer-related activities and video games (Eat Smart, Move More NC, 2011; NCDHHS, 2011). As a child's age increases, so does the burden of teaching the child to stay healthy and physically active (Eat Smart, Move More NC, 2011; NCDHHS, 2011).

According to PedNSS (2011), data showed an increase in obesity among children up to age 4 from 1998 to 2003 by as much as 14%; however, increased obesity rates trailed in 2003 according to NHANES. NHANES data indicated a strong stabilization among prevalence of obesity from ages 2 to 19. Unfortunately, no clear data show the stabilizing of pediatric obesity cases. According to NHANES, the sample sizes of existing studies were too small. Data extracted for children under the age of four from the PedNSS are from federally funded programs such as WIC. The state of North Carolina transmits its data from both WIC and non-WIC programs, but not all children are preschool age and from lower economic conditions. As a result, the most reliable data for preschool-aged children are from PedNSS (CDC, 2009).

Perceived Barriers Among Staff at Head Start

In general, directors and general staff in child care settings do not understand that their role in educating families about childhood obesity is crucial. Staff should receive training to become advocates for fostering healthier living standards beyond federal and state regulation (Lovejoy, 2011).

Although each state regulates child care settings, there are no uniform standards across the states. This becomes problematic when relying on data and pediatric intervention programs within child care settings to gauge current progress or failures.

Directors and staff at Head Start, in cooperation with related national programs, have access to the largest pool of federal monies. If the federal government mandated more uniform guidelines, the results could help reduce the prevalence of childhood obesity. Several guidelines are positive only if followed consistently as mandates in educational programs for all directors and appropriate staff working in a Head Start facility. These programs could then be developed into a curriculum for the preschoolers, educating them on health living and eating. Because using technology motivates children, an Internet-based program would capture their attention easily. Particular methods should have a component that involves the entire family so that preschoolers can receive additional positive messages from family about healthy living, physical activity, and proper eating standards (Lovejoy, 2011).

According to the quantitative survey conducted by Hughes et al. (2010), among 1,583 Head Start facilities, money is an ongoing barrier. One of the largest costs leaders of various Head Start facilities encounter is the cost of food. As the U.S. Department of Agriculture only subsidizes the cost of each meal, Head Start facilities must pay the difference out of other revenue funds available to their center. Next, directors and staff find that most parents who have children enrolled in Head Start cannot afford to purchase healthy food sold in stores (Huang et al., 2009; Hughes et al., 2010). The lack of updated equipment that fosters physical activity is another ongoing concern among directors and staff. Programs offered within Head Start have been unsuccessful at changing daily routines to accommodate increased physical activity or vigorous exercise (Hughes et al., 2010).

Both staff and parents agree about the seriousness of weight issues and childhood obesity, but in different ways. Parents do not acknowledge these issues exist among their own children, and some staff beliefs are similar. These cultural beliefs further stall efforts between directors, staff, and parents to work together to further childhood obesity prevention initiatives (Hughes et al., 2010). Intervention programs should include both staff and families in the process of education while developing healthier learning and eating environments at Head Start. The overarching goal is for leaders of Head Start to train equally and foster strong relationships with both staff and parents alike. In doing so, the leaders can develop other goals that encourage staff and parents to be healthy, providing positive role models for the preschoolers who attend Head Start programs (Hughes et al., 2010).

Children With a Low Socioeconomic Status

The CDC (2012b) data show that educators are playing a different role than in previous years when lower obesity rates existed. Educators are reaching America's children and youth through health education courses, physical activity, nutrition education, and nutritional services by providing balanced meals to school-aged children; replacing fatty and fried foods with more fruits, vegetables, and salads; and decreasing sweetened beverages in favor of natural juices and milk. Clearer understandings are still necessary to analyze why so many families are losing the fight against childhood obesity in their homes.

Evidence shows there are no significant primary reasons for a child's weight gain and obesity but rather a myriad of reasons working together as a conglomerate while the

child continues to age. When the focus is on specific subcategories such as social and individual factors, researchers, parents, and educators have a responsibility to educate the afflicted children while instilling self-worth and a belief that they can overcome obesity. According to Jackson, Mannix, Faga, and MacDonald (2005), sedentary lifestyle, low socioeconomic status, and diet are key risk elements for children who are obese. Low socioeconomic status plays a pivotal role in fighting childhood obesity. Regardless of ethnicity or gender, children with low socioeconomic status have a higher chance of obesity (McDermott & Stephens, 2010).

Researchers understand that lifestyle can affect sedentary living, and corporate marketing strategies aimed at reaching young people highly influence less physical activity while promoting soft drinks, candy, and video games (Braet & Crombez, 2003; Philippas & Clifford, 2005). Genetics and biological effects are not explainable in many cases, but medical intervention can help. One of the most important focuses of childhood obesity research is the popular culture aspects of children living with obesity (Braet & Crombez, 2003). Key emotional elements need careful examination to guide an obese child through the rigors of growing up and maturing in an age-appropriate way. Researchers have shown such is not the case with ongoing stigmas against obese children experienced in their formative years at school. Children are not capable of handling such a negative influx of antisocial behaviors against them; as a result, an increase in health maladies can occur, emotional development slows, and the child becomes more vulnerable to his or her peers (Puhl & Latner, 2007). It is especially important that Asian and Hispanic children receive proper attention when living in multigenerational families

with grandparents caring for the children, living in single parent households, and facing immigration issues such as deportation. North Carolina, in particular, has shown an increase by 30% of immigrant children or native-born children with immigrant parents (Frey, 2011). All the above creates a great emotional burden on U.S.-born children with immigrant parents. Early education has a significant purpose beyond educating preschoolers that includes offering hope and continuity within the community (Chaudry, Capps, Pedroza, Castaneda, & Santos, 2010).

According to Warschburger (2005), social discrimination can occur as young as 3–5 years of age among overweight children and continues through adolescence into adult years. Continued social discrimination can affect an individual through economics, education, and health care. Although the numbers increase significantly among children having obesity issues, this condition has not become an acceptable standard; instead, discrimination and negative attitudes toward the obese have increased exponentially (Klein & Dietz, 2010). When examined as a covariate, popular culture that ridicules obese and overweight children can restrict their educational success, mental well-being, and overall quality of life (Warschburger, 2005).

Physical Activity and Play Time

One of the best ways to promote physical, mental, and emotional well-being in children is through play (Copeland, Sherman, Kendeigh, Kalkwarf, & Saelens, 2012). Playtime reinforces strength, fosters competitive learning, and encourages overcoming barriers beginning early in life while encouraging physical activity (Floriani & Kennedy, 2008; Timmons, Naylor, & Pfeiffer, 2007). Without playtime, young children begin to

falter in the above areas and become candidates for childhood obesity more quickly than other children (Reilly, 2008).

Understanding that parents, doctors, and teaching staff are a triumvirate in any given community demystifies these challenges. Families with children and a low socioeconomic status face many complex issues; in this study, the focus was exclusively on preschoolers. Many poorer communities do not have clean and safe areas for children to play, which leads to the problem of where children should participate in physical activity outside of school. This troubling occurrence fuels increased rates of childhood obesity. Families in poverty face disproportionately high numbers of obesity due to sedentary living patterns (Ginsburg, 2007). Not having an outlet for play decreases the number of well-behaved children in class and accelerates a pattern of obesity starting in early education. Sedentary living due to lack of play options includes an increase in television use, weight gain, and constant video game use, which leads to a lifelong cycle of weight gain that increases the odds of other diseases such as sleep apnea, asthma, coronary artery disease, and hypertension (Raj, 2012). The socioemotional response to childhood obesity is deafening. Current research showed that not all answers would end childhood obesity; however, consistent research exists, and interventions have shown the effectiveness of reaching younger children in obesity interventions. The lack of playtime and physical activity are significant barriers that lead preschoolers into the world of obesity (McWilliams et al., 2009; Reilly, 2008). Educators, doctors, and parents know how best to mobilize the community into a call to action to fight this disease (Ginsburg, 2007; Klein & Dietz, 2010).

According to Copeland et al. (2012), physical activity is not adequate in most of the nation's child care facilities, including Head Start. Because states or the federal government govern all licensed child care facilities, most facilities comply with minimum standards. As a result, 70–83% of a preschooler's day in child care involves sedentary activities. These data do not include meals throughout the day or naptime. Thus, children spend 2–3% of their day in a facility in vigorous play. This rate is troubling because most research indicates a need for increased physical activity to decrease obesity rates among young children. With 75% of preschoolers in child care facilities, these numbers seem particularly daunting if the goal is to reduce childhood obesity. Copeland et al.'s findings indicate only nine states have written policies outlining a period for physical activity in each facility. Other states provide guidelines on what to provide, safety guidelines, surfaces, and so forth. Federal mandates such as the Program Performance Standards (U.S. Department of Health and Human Services, 2012a) emphasize physical activity; however, it is up to the provider of the facility to go beyond the minimums to provide adequate physical activity for preschoolers. Researchers found that child care settings are the key element in providing children with physical outdoor activities due to many barriers such as parents who cannot afford optional activities after the school day is over, safety concerns in a neighborhood or community, and parents not valuing the importance of physical activities (Klein & Dietz, 2010). Both teachers and parents viewed injury as a barrier to physical activity. The final barrier to increased physical activity was cost. Facilities did not have budgets to buy newer equipment. As long as governing authorities approve the existed equipment, it would remain in use.

Parental demands exceed almost any suggestion a teacher can make in a child care facility. Another barrier to fighting childhood obesity is that parents want more focus on academics versus outdoor activities (Copeland et al., 2012). Teachers and directors should recondition their thinking beyond authoritative guidelines and begin to brainstorm how to inform parents of the need for increased physical activity in an inspiring way while encouraging each child to have fun (Copeland et al., 2012). There are continued opportunities to turn these barriers around through increased education among teachers and for pediatricians to become more astute on how best to communicate these concerns to parents. In using focus groups, and as verified through the triangulation method of study, the final overall barriers to physical activity were injury, financial issues, and a total emphasis on academics versus valuing physical activity (Copeland et al., 2012). In contrast, Klein and Dietz (2010) emphasized not only the physical activity barrier but also the need for society to "shift the social norms" (p. 388) effectively and advocate against obesity. The thinking is similar to tobacco use, in that after the public realizes it is everyone's problem, there will be no "consensus" (p. 388) on how to control the disease through multiple approaches (Klein & Dietz, 2010). The gap in the literature indicated that researchers need to study more barriers among children in preschool to have a better understanding of how to apply "social norms" (Klein & Dietz, 2010, p. 388) to the children at an early age and how best to address existing barriers with newer solutions. Research is stagnant in this area.

Social Marketing Programs

Berkowitz and Borchard (2009) found a need for additional social marketing techniques to assist in preventing childhood obesity. Stronger professional advocacy roles are necessary to work in tandem with preventing the disease. One of the best ways to reach families and preschoolers is through prevention (Berkowitz & Borchard, 2009; Wofford, 2008). Such social marketing is from a professional viewpoint, assuming uniform guidelines can become a pivotal force in helping to guide childhood obesity prevention techniques.

According to Bellows et al. (2009), social marketing programs at some Head Start facilities have been an effective learning tool for both teachers and preschoolers. In using an existing physical activity program called Food Friends Get Movin' With Mighty Moves. This program was developed for some Head Start facilities that needed a social marketing component to stress nutritional learning with the physical activity component of the program. Program developers highly valued teachers' viewpoints within the development of the program. The advocacy role taken by teachers is commendable, as there are few programs such as these developed with teacher input. Food Friends was successful and driven by an evidence-based background. Since its inception in 1999, aimed at Head Start and other early education centers, research has shown an increase in staff and child acceptance of the program, primarily in trying new and healthy foods and receiving nutrition education, along with the program being fun for preschoolers. Leaders of Head Start facilities have not adopted the program on a national level. A few Head

Start locations have used a few Head Start facilities in pilot testing, but most Head Start facilities, specifically in the Carolinas, have limited knowledge of the program.

Programs such as Food Friends Get Movin' With Mighty Moves have a strong foundational framework using social marketing techniques. Developers used the marketing concept of audience, product, and place primarily when developing the products in their infant stage. For audience segmentation, preschoolers are the focus, with parents and teachers guiding the program with their observations in their respective environments. The product includes long- and short-term directives aimed at decreasing overall childhood obesity among preschoolers while increasing physical activities in the school atmosphere. Finally, place was within Head Start facilities, as they had stable federal and state guidelines reflective of what the program was trying to do, such as guidelines emphasizing indoor/outdoor play.

Competition refers to direct competitiveness against existing Head Start policies in place during a normal day at school such as the kindergarten readiness curriculum. To be able to introduce the Food Friends Get Movin' With Mighty Moves program, Head Start locations would need to establish a suitable time in any given day for the program to work effectively. If teachers did not have pressure to add the program daily, they could view it as a special activity (Bellows, Anderson, Gould, & Auld, 2008) and would no longer consider the program to be competing against the existing curriculum. This suitable solution enabled the nutrition and physical activity program to work as an add-on component to the daily school readiness for the preschoolers. As a result, Food Friends Get Movin' With Mighty Moves gave evidence-based results showing that using a social

marketing framework coupled with social learning theories in day-to-day curriculum can spearhead future programs within the preschool dynamic to fight childhood obesity.

Hughes et al. (2010) completed a national report pertaining to preschool eating habits and physical activity within Head Start, which became SHAPES. Although staff and directors acknowledged implementing programs and policies fighting childhood obesity and raising awareness for increased outdoor activity, no one witnessed or evaluated any. Hughes et al. found that the larger the center, the higher the possibility that staff were not deficient in learning practices related to preventing childhood obesity.

The study showed staffers that they could revise areas in their program and ways to make the changes in each facility. Continued assistance from the federal Child and Adult Care Food Program administered from the U.S. Department of Agriculture provides guidelines on nutritious choices for meals and snacks, as well as a subsidy to facilities for reimbursement of some of the food costs. The Office of Head Start follows federal guidelines for nutritious meals and general regulations on day-to-day business affairs, but it is unclear in the literature why significant decreases in childhood obesity have not been observed within Head Start (Whitaker, Gooze, Hughes, & Finkelstein, 2009).

Other situations preventing adequate outdoor activity include underdressed or overdressed children attending preschool among other themes. Copeland et al. (2009) showed that in their focus groups comprised of 34 child care facilities within a large city and surrounding suburbs, these troubling themes exist not just in Head Start, but in Montessori schools, child care centers, and other corporate and for-profit facilities.

Children not having proper outerwear such as a coat during cold winter months could impede classes from going outside during playtime. During warmer months, having too many layers prevented children from receiving adequate playtime (Copeland et al., 2009). Another barrier to playtime outside is improper or inadequate shoes. Wearing nonrubber-soled shoes such as sneakers prevented children from keeping their shoes on their feet and playing safely in mulch, sand, or rocks, and offered no physical support to the feet. A minor barrier to outdoor playtime is jewelry, which can become hazardous to children and can become restrictive if snagged in the outdoor playground. These barriers are not atypical of physical activity. This study found most facilities had ongoing communication with parents about these inadequacies. Solutions for many of the barriers seemed to be easy fixes, but a lack of coordination and efficiency within the facilities prevented staff from ending these barriers. Facility staff often required a child to wear exactly what the parents sent them to school to wear (indoors and outdoors), or parents insisted staff make sure their child stayed clean due to a special outfit they may have worn to school (Copeland et al., 2009).

Updating written policies could result in many of the simple changes occurring immediately. Copeland et al. (2009) found that simple solutions are shifts in perceptions and that more complex issues are at hand such as low-income parents who cannot afford to send their children to school wearing coats during the winter season. Also, in a “car culture” (Copeland et al., 2009) parents do not see a need for their child to wear a coat in the car or when going from the car into the preschool. A small percentage of parents did not want their children to go outside during playtime and purposely left outerwear at

home. The overall problem with these barriers is that outdoor activity outdoors is only a small portion of the day, and staff and parents do not make an effort to change the problems. Sacrificing outdoor playtime due to one or two improperly dressed children prevents the other children in the class having quality physical activity. Staff members indicated that they would keep the entire class inside only if there were not enough staff to stay behind with the children improperly dressed. The problem with this solution was it further exacerbates the barrier of fighting childhood obesity. Parent and staff education continues to be an ongoing need for fighting childhood obesity. There is little research on preschoolers (Ammerman et al., 2007; Copeland et al., 2009), which indicated the need for further studies on the health of preschoolers and possible intervention studies related to barriers, physical activity, and childhood obesity.

In general, most researchers agree that childhood obesity among preschoolers needs critical study, as this would be the first major level of obesity and leads to adolescent obesity and beyond (Ammerman et al., 2007). The Children's Activity and Movement in Preschool Study (Williams et al., 2008) became a pivotal study and gave researchers urgent information on the amount of physical activity performed in a child care setting. The preschools were Head Start facilities, child care facilities, and religious child care facilities. Over 400 children aged 3–5 years participated in the study in an urban setting in South Carolina. The findings showed 3 year olds to be more physically active than the 4 and 5 year olds when engaging in moderate to vigorous physical activity. Boys were more active than girls, and child care settings viewed as nicer and of better quality than lower income and less quality driven facilities had a higher level of

physical activity among their preschoolers. The total percentage of the day that all preschoolers in the study had physical activity was only 3.4%. The children seemed to be in school environments that offered physical activity as an outdoor activity, but when examining the indoor environment, most of the activities were sedentary. Teacher-assisted physical activity located indoors was not an everyday occurrence, but such activity would increase the daily intake beyond 3.4% of the total school day. Williams et al. (2008) showed that preschoolers expend a great amount of time in sedentary preschool activities and less time doing moderate to vigorous physical activity.

Supportive Feeding Environments

Sigman-Grant et al. (2011) posited that supportive feeding environments are important when guiding preschoolers ages 3–5 away from early childhood obesity. The immediacy of preventing childhood obesity is best addressed through methods aimed at younger children. To understand better how child care facilities implemented their daily feeding practices, Sigman-Grant et al. compared nonfunded child care centers and funded child care centers through the Child and Adult Care Food Program. The funded child care centers provided supportive eating environments and the distribution of food. Sigman-Grant et al. showed that centers in compliance with a healthy eating environment had five components within their structure: physical, social, developmental, established routines, and trust. In group feeding environments, group dining must accompany a relaxed and safe atmosphere. This, in turn, advocates the idea that eating together as a group fosters positive experiences in a social setting, such as a child care setting, and enables children to eat when hungry or not at all. It also enables children to eat another serving if they are

still hungry. Children become acquainted with eating when hungry and not eating when not hungry, which supports the notion that a child will eat proper amounts of food when necessary and participate in physical activity; this is a key component to winning the war on childhood obesity. The primary methodology Sigman-Grant et al. used was Satter's division of feeding responsibility.

Hendy and Raudenbush (2000) encouraged food modeling from within the family and at school. Although the structure of family ties has become more complex, the notion that a child receives his or her best advisement from family is still valid. In addition to this theory is the acceptance among parents that a child care setting is just as important in teaching nutritious feeding practices along with serving the meals and snacks (Birch, McPhee, Shoba, Pirok, & Steinberg, 1987). Preschoolers tend to dislike vegetables and begin their journey of liking or disliking foods through daily contact at school and at home. Preschoolers are also accepting of trying newer foods if introduced to those foods on a regular basis and if the taste is somewhat similar to other foods pleasing to their palate (Birch et al., 1987). Thus, modeling in schools and homes is a framework that allows children to adjust their eating habits if shown by a teacher or parent in a loving and supportive way (Ammerman et al., 2007).

Preschoolers who watch teachers and parents try new foods are more willing to try different foods than if the teachers or parents simply place the food in front of them during mealtime. After staffers established modeling as a positive enforcement to get a child to eat, staff at child care facilities suggested that providers sit with the children during mealtimes and eat the same foods as the children. Initial acceptance of these

recommendations was slow, and neither federal nor state governments mandated them. Further inquiries found the staffers would sit with the children during mealtimes but did not eat the same food, instead opting for nonnutritional foods such as fast food while consuming high-calorie sugary drinks. This form of modeling will not translate into healthier eating for children at home or school and was counterproductive to fighting childhood obesity (Hendy & Raudenbush, 2000).

Authoritarian and authoritative methods aimed toward preschoolers during mealtimes were effective in getting the children to eat nutritious food and resulted in more preschoolers drinking milk (Hughes et al., 2007). Hendy and Raudenbush (2000) showed how 549 children reacted to their Head Start providers during lunch. Hendy and Raudenbush observed positive modeling, with staff speaking to the children in authoritative tones. Twenty-five African American and 25 Hispanic Head Start centers provided this form of modeling. The limitation based on observing these two ethnic groups was whether other ethnic groups would show the same promise with eating habits at mealtime and the use of the authoritarian tone. Because of this method, children showed positive results in eating well in proportion and eating nutritional foods. Hendy and Raudenbush also found that within African American homes, the authoritarian tone is successful in getting children to eat, while in Hispanic homes, parents tend to focus on bribing a child to eat, which can lead to permissiveness, with as much as 76% recanting the bribe and giving in to the child's wishes. In a preschool format, ethnicities represented by the children's characteristics show that parents of both ethnicities within Head Start empower their staff to be firm with the children about eating, and in turn,

children do as they are asked. Within Hendy and Raudenbush's study, the self-reported feeding styles from home differed slightly from the observed feeding styles in Head Start. The final observation showed differences in feeding practices between home and school. Authoritarian feeding practices resulted in an increase in dairy consumed daily among the children. Providers' interaction with children at mealtime resulted in an increase in food intake overall. Hendy and Raudenbush (2000) did not identify the staff's perceptions of the study or if the staff used the methods every day or just when under observation. Staffers did not discuss some children's eating habits, as they could give a negative perception of Head Start as evidenced by the staff.

A key barrier discussed was that although modeling was one of the most interactive and favorable techniques to get children to eat, whether the results would be positive or not depended on the environment and the level of modeling encouraged. Teachers who exhibit an upbeat demeanor in expressing how good the food is or how good it smells typically fare better with preschoolers than do teachers who say nothing beyond dispensing the food and sitting next to the children. The latter is not a positive relationship with modeling as it pertains to preschoolers. The last barrier showed that the teachers' perceptions were not clear on what healthy foods entailed compared to eating and preparing unhealthy foods. Training could therefore benefit Head Start providers (Hendy & Raudenbush, 2000; Hughes et al., 2007).

Not all studies within Head Start are predictable or contain surmised outcomes. Lumeng, Kaplan-Sanoff, Shuman, and Kannan (2008) completed a study within five Head Start facilities in the northeastern region of the United States. Teachers felt

generally uncomfortable gauging whether a child was at risk for obesity or was obese to both parents and facilitators. The teachers felt some control by providing nutritious meals to the children as outlined by Head Start and the Child and Adult Care Food Program. A lack of continuity in serving the meals to the children, along with a sense of drama occurring during mealtime, was problematic. Staff members were not well equipped to handle increased appetites from the children who come from poverty-stricken backgrounds. Staff also felt reluctant to approach families about the health of a child, as they had no formal education on how best to communicate with the families about healthy eating portion control and weight control. Many of the children ate their best meals at Head Start and had access to a limited amount of food, which was often unhealthy, at home. As a result, facilitators found that weight and eating behaviors were not the same, and therefore did not combine them (Lumeng et al., 2008). The finding poses a sense of uncertainty regarding how best to educate and train staff in Head Start. The findings also revealed a need for further research on studying barriers within the Head Start program (Lumeng et al., 2008; Whitaker et al., 2009).

Conceptual Framework

Since 1965, more than 27 million children have enrolled in Head Start. With total funding surpassing $7 billion, Head Start is one of the most influential ways to reach preschoolers in the fight against obesity (U.S. Department of Health and Human Services, 2012b). Preparing preschoolers for a healthy life is a complex problem. The cost of medical problems if researchers do not reach these young children can be staggering. If researchers and Head Start programs do not reach young children in

fighting this disease, the children will become obese adolescents and possibly obese adults.

According to Klein and Dietz (2010), U.S. social attitudes on how Americans eat, proportion sizes, and sedentary living versus being physically active need to change. Organizations such as Child and Adult Care Food Program help guide leaders of licensed child care facilities and Head Start facilities to provide nutritious meals to each preschooler served. Without programs such as the Child and Adult Care Food Program, many preschoolers who attend Head Start programs might not receive most of their meals during the week on a regular basis or in a nutritious format. Parental values need to shift to the health of their child, and societal attitudes must shift toward healthy living standards modeled within their child's life when not in school (Klein & Dietz, 2010). Teachers, parents, and researchers need to become advocates against childhood obesity. More preschool research on how best to circumvent barriers against childhood obesity within the Head Start organization, specifically pertaining to the Carolinas, is necessary.

The most appropriate conceptual framework for this research was Bronfenbrenner's ecological theory. Everyone in the working community and environment must work tirelessly together to achieve a successful outcome. According to Zigler and Muenchow (1992), the early workings of Head Start began when the community, child, and parent involved themselves around the betterment of a child's welfare. The theoretical framework of self-efficacy (a derivative of the social cognitive theory) and the conceptual framework of modeling are two of the best and strongest principles developed to show continual results among preschoolers' progress and

prevalence as they pertain to childhood obesity (Ammerman et al., 2007; Hendy & Raudenbush, 2000; Hughes et al., 2007).

Summary

The review of literature indicated that preventing childhood obesity is a pressing public health problem that needs addressing (Hesketh & Campbell, 2012); however, effective prevention methods among studies focusing on preschoolers have stalled (French & Sherwood, 2011). This has led to a need for studies on the barriers that affect the effectiveness of known childhood obesity prevention measures. Building on the work of SHAPES (Hughes et al., 2010), this study involved examining some of the potential barriers to the effectiveness of childhood obesity prevention measures among preschool children within the context of the Carolinas.

Chapter 3: Methodology

Introduction

The purpose of this research was to evaluate barriers toward decreasing rates of childhood obesity within Head Start facilities in the Carolinas. The information gathered contained newer data and findings building on the previous national SHAPES study (Hughes et al., 2010). It remained unknown if the Carolinas had made progress at reducing barriers toward this obesity since Hughes et al.'s (2010) study.

This study consisted of a quantitative, correlational design in which I extrapolated data via an online survey consisting of closed ended questions. The study included three research questions with three appropriate independent variables and three dependent variables. The design involved comparing barriers to outdoor activities, staff behaviors, and healthy eating within each facility's characteristics. The study involved showing whether correlations exist between barriers of outdoor activities and staff behaviors as they pertain to healthy eating. Included participants worked in Head Start facilities within the Carolinas that had children aged 3–5 currently attending.

In the United States, epidemiological data indicate that socioeconomic, emotional, and prevalence factors all interact with risk factors of childhood obesity when health care providers diagnose children as obese. According to researchers at the (CDC, 2009a), an estimated 61% of obese children 5–10 years of age have cardiovascular disease risk factors such as high cholesterol, high blood pressure, and ineffective insulin secretion.

According to Boon and Clydesdale (2005), while treating obesity is admirable, a greater focus should be on prevention. Boon and Clydesdale's final opinion of prevention

stemmed from reviewing interventions across a variety of races and socioeconomic levels. Resources such as additional training and additional funding are necessary within the early education child care settings of federally funded programs for kindergarten readiness such as Head Start. Devoting more resources and training to staff can greatly increase the chances of lowering childhood obesity among preschoolers. Fighting childhood obesity earlier could become pivotal in reducing ancillary medical risk factors along with reducing adolescent obesity and ultimately adult obesity.

In this study, I used a quantitative, correlational design. The study involved collecting data using a survey instrument with closed-ended questions related to the research questions. This design was suitable because the focus was on the relationships between the staff and their perceptions toward childhood obesity within Head Start facilities. As I retrieved and analyzed the numbers, I extrapolated the results into a final report detailing the findings, as laid out by Creswell (2009). This research design allowed me to describe best how to examine less framework and more computational data to explain causal factors of childhood obesity. A postpositive worldview, also known as using the scientific method, works well with quantitative studies because the final goal of such research is not to prove hypotheses right or wrong but to show outcomes as they relate to the defined variables of the research. This measure of using postpositive worldview is also ideal because it lends itself to future research by denying evidence of absolute truth. As childhood obesity increases, each research problem or study completed adds value to past research, further advancing the no-absolute-truth theory of postpositive worldviews.

Data collection involved using portions of a previous national study instrument developed by Hughes et al. (2010). Respondents had the opportunity to complete the survey within a stated time frame. I collected final data results from the Survey Monkey online instrument, and I used the SPSS software system to determine what the responses reflected in the current time frame given to each participant.

Research Design and Rationale

The research questions for this study were as follows:

RQ1: Are outdoor activities related to childhood obesity within the ages of 3–5?

RQ2: Are staff behaviors related to healthy eating among preschoolers aged 3–5?

RQ3: Is the rate of childhood obesity related to the center's characteristics?

For Research Question 1, the independent variable was outdoor activities and the dependent variable was percentage of children who are obese within Head Start facilities. For Research Question 2, the independent variable was staff behavior and the dependent variable was healthy eating. For Research Question 3, the independent variable was characteristics within Head Start facilities and the dependent variable was childhood obesity. The descriptive correlational design involved comparing the barriers to gross motor activities and staff behaviors as they pertained to healthy eating within the facilities' characteristics. The research design showed the correlation between barriers of outdoor activities and staff behaviors as they pertain to healthy eating.

Statistical Analysis Plan

Table 1 includes a description of the variables for this study, along with the scoring protocol for each of the three summated scale scores: healthy eating, activity, and

staff behaviors. Of special note is the scoring protocol for the activity scale score. Selected survey items measure potential activity barriers (Items C8a to C8e and C9a to C9f). Each endorsed barrier reduced the total activity score by 1 point (see Table 1).

Table 1

Description of Variables

Construct	No. of items	Scoring for survey items (correct answer in parentheses)	Level of measurement
A. Healthy Eating Scale	21	A1 (1), A2 (1), A3 (3), A4a (1), A4b (1), A4c (1), A4d (1), A4e (1), A4f (1), A5a (1), A5b (1), A5c (1), A6a (2), A6b (2), A6c (2), A6d (2), A6e (2), A6f (2), A7 (2), A8 (2), A9 (2)	Ratio
B. Activity Scale	14	B1 (2), B2a (1), B2b (1), B2c (1), B2d (1), B2e (1), B2f (1), B2g (1), B2h (1), B2i (1), B3a (1), B3b (1), B3c (1), B3d (1)	Ratio
C. Staff Behaviors Scale	29	C1 (1), C2 (4), C3 (1), C4 (1), C5a (1), C5b (1), C5c (1), C5d (1), C5e (not scored), C5f (not scored), C6a (1), C6b (1), C6c (1), C6d (1), C7a (1), C7b (1), C7c (1), C7d (1). For C8a to C8e and C9a to C9f each endorsed barrier subtracts one point from the total.	Ratio
D. Characteristic Items	6	Each of the six items was created on the ratio level of measurement.	Ratio

Time and Resource Constraints

This regional study within the Carolinas represents a snapshot of barriers and staff behaviors at the time of the survey. As the survey was an online survey, one of the time constraints was to impress upon the participants that the study would be available once during a given time frame. The participants were not able to revisit the survey for any reason. The typical resource constraints were that I would depend on individual offices within the Head Start in North Carolina while working solely through the office of South

Carolina's Head Start State Association office to administer the survey. The primary person of contact was the on-site local administrator within the North Carolina region of Head Start. The South Carolina contact was the president of the South Carolina Head Start State Association office. Within both Carolinas, communication concerning this study occurred via phone or through the Head Start e-mail system. The administration of consent letters took place online, and the local administrator within North Carolina and the president of the South Carolina Head Start State Association office approved and signed the master consent letter. No further time and resource constraints occurred, as each location had several computers for staff to use at various times of the day. In addition, with the survey being on the servers of Survey Monkey, there were no constraints of losing information or not tabulating data correctly.

Design Choice Selected With Research Design to Advance Knowledge

The descriptive correlational design was suitable for the selected research questions to determine how variables correlate to one another singularly and simultaneously. In reviewing the data retrieved post survey, I made comparisons based on current childhood obesity barriers in the Carolinas and childhood obesity barriers through the national SHAPES study administered by Hughes et al. (2010). This study was a partial replication of the 2010 national SHAPES study using only portions of the original questionnaire and gathering responses from centers in the Carolinas. The intent was to determine how the Carolinas samples compare to the national sample.

Methodology

The target population was 53 Head Start locations within North Carolina and 18 locations within South Carolina. The grantee information came from the Office of Head Start. Participants involved in the study fulfilled the inclusion criteria and were current Head Start employees. Head Start employees who work in the Early Head Start program were not part of this study. I expect that each director, assistant director, lead teacher, and nutrition specialist would complete the survey.

Designated locations where the target population worked receive federal monies for Head Start. In most instances, these designated locations control the smaller and sub locations of Head Start facilities. Larger counties in the Carolinas may have larger staff than counties with lower populations. I estimated that, within the locations of Head Start, 150 participants would take part in the study.

Sampling Strategy

Purposive sampling was the chosen sampling method for the study. I selected the population from the various Head Start facilities in both North and South Carolina. I purposely selected participants based on their knowledge of barriers pertaining to childhood obesity within the Head Start locations at which each participant was working.

The population consisted of directors, lead teachers, and nutritionists from 71 Head Start locations in the Carolinas. The procedures used to reach the aforementioned employees were through individual Head Start offices in North Carolina and through the South Carolina Head Start State Association office. The leaders of Head Start locations that directly received local funding, also known as grantees, then received notification via

email of the survey to complete online within certain time parameters from all the grantee facilities. Grantees typically have multiple locations but are the main point of contact to administer a survey to employees through their various facilities across the Carolinas. I drew the samples, assimilated them via Survey Monkey online, and extrapolated the data from the responses using SPSS software.

Participants in this study were the director of each facility or the assistant director if the director was unavailable. Lead teachers and nutritionists also participated in the study. All were active employees in Head Start facilities at the time of the survey. All employees also had the titles of their employment at the time of participating in the survey.

Exclusion criteria were other employees not previously mentioned who were working for Head Start. No Early Head Start employees participated, as Early Head Start serves age groups younger than required for this study. Also excluded from the study were administrators and other ancillary staff working for Head Start such as administrative assistants, cooks, nonlead teachers, and general assistants.

Power Analysis

In determining the sample size, the calculation included three multiple regression models. The dependent variables were percentage of obese children within Head Start facilities, healthy eating, and barriers to preventing childhood obesity. The power analysis included three independent variables.

The G*Power 3.1 software (Faul et al., 2009) helped to determine sample size within the multiple regression models chosen for this study. In using a medium effect size

(f^2 = .15) and an alpha level of p = .05, the needed sample size to achieve sufficient power (.80) was 109 participants.

Data Analysis Plan

The dependent variables were percentage of obese children within Head Start facilities, healthy eating, and barriers to preventing childhood obesity in the Carolinas. The independent variables were outdoor activities, staff behavior, and characteristics within Head Start facilities. Alpha level was p = .05. I retrieved data using a standard summary, including means, standard deviations, frequencies, and percentages. In using this method, bivariate comparisons used adhered to Pearson product–moment correlations and *t* tests for independent means or one-way ANOVA tests. The use of multiple regression tested the hypotheses of the study (Tabachnick & Fidell, 2001).

Table 2

Data Analysis Chart

Research question	Null hypothesis	Survey items	Statistical approach
RQ1: Are outdoor activities related to childhood obesity within the ages of 3-5?	$H1_0$: Outdoor activities are not related to childhood obesity.	Activity items (Survey Section B) with obesity (Characteristic Item 6)	Pearson correlations and multiple regression
RQ2: Are staff behaviors related to healthy eating among preschoolers aged 3-5?	$H2_0$: Staff behaviors are not related to healthy eating among preschoolers aged 3-5.	Staff behaviors (Survey Section C) with healthy eating (Survey Section A)	Pearson correlations and multiple regression
RQ3: Is the rate of childhood obesity related to the center's characteristics?	$H3_0$: The rate of childhood obesity is not related to the center's characteristics.	Obesity (Characteristic Item 6) with center characteristics (Characteristic Items 1 to 5)	Pearson correlations and multiple regression

Procedures for Recruitment, Participation, and Data Collection

A designated administrator within North Carolina and president of the South Carolina State Association office communicated with me to conduct the study. The designated representatives coordinated efforts internally through their company e-mail, detailing the study as I explained because it was less disruptive for the employees. Each facility has computers for staff to use throughout each workday. The employees received an e-mail regarding the study, and after they opened the survey via the online link located in the same e-mail, they could complete the study.

This study included new data and previous barriers from the SHAPES study (Hughes et al., 2010) as a comparison tool. I extracted data collected for this study from an online survey that took place over a 10 business day time frame. All participants completed the survey online via Survey Monkey. There were no alternative ways to complete the study. No follow-up procedures were necessary to extrapolate the data received from the survey. Both Survey Monkey and I maintain a backup file to prevent loss of data.

Informed Consent

The online survey had verbiage detailing informed consent that explained to the participants that there was no obligation to take the online survey. If they agreed to the terms of the informed consent, the survey proceeded and recorded the participants' answers. If participants chose not to agree to the informed consent page, the survey did not proceed. The Institutional Review Board (IRB) at Walden University approved all informed consent forms developed.

Threats to Validity

External Validity

According to Gall, Gall, and Borg (2003), there are 12 threats to external validity within a study, which are the extent to which one can generalize from the experimental sample to a defined population, the extent to which personological variables interact with treatment variables, explicit description of the experimental treatment, multiple-treatment interference, Hawthorne effect, novelty and disruption effects, experimenter effect, pretest sensitization, posttest sensitization, interaction of history and treatment effects, measurement of the dependent variable, and interaction of time of measurement and treatment effects. This descriptive study included three threats, as this was a single group, and I took data and measurements at one time. The three threats were the ability to generalize said defined population. The overall threat in this category was of a participant electing not to participate when previously agreeing to do so. The Hawthorne effect was a potential threat because participants understand they were taking a survey, which could have had an effect on their opinions and answers. Lastly, the measurement of the dependent variables could become a potential threat because the participants may have felt the need to provide socially correct answers. There is no way to measure if a participant will answer a survey truthfully (Gall et al., 2003).

Internal Validity

According to Gall et al. (2003), the 12 threats to internal validity within a study are as follows: history, maturation, testing, instrumentation, statistical regression, differential selection, experimental mortality, selection-maturation interaction,

experimental treatment diffusion, compensatory rivalry by control group, compensatory equalization of treatments, and resentful demoralization of the control group. The aforementioned would apply to study designs with a treatment and control group, along with a pretest and posttest. As the study was a descriptive study with data and measurements taken at a specific time, Gall et al.'s 12 threats did not apply to this study of barriers to childhood obesity within the Head Start program.

Ethical Procedures

The administrators from the North Carolina Head Start facilities and the president of the South Carolina Head Start Association's office were the chief contacts in retrieving final approval of the Head Start locations to allow employees to participate in this study using company premises and computers. After I submitted this proposal to the Walden University's IRB, I received approval to conduct the study; this document included the IRB approval number of 03-28-14-0112295.

The study included several items to reduce bias and external validity issues; first, the administrators of the North Carolina and South Carolina's Head Start offices received an overview of the study to e-mail to the employees who participated in the study. This overview included the nature of the study as it related to the directors' employment and their employers' environment. Respondents also received information indicating I was not conducting this study in conjunction with other studies and the study had no affiliation with the Office of Head Start or any other agency. The notice of consent asked for participants' names, but the overview and the online consent form indicated that

names would remain strictly confidential and would not appear in the findings of the study or in future research projects.

Next, each participant received an e-mail containing a link to click on to enter the surveymonkey.com website to begin the survey. For the survey to begin, each person participating in the study received a copy of a consent form online. After they provided agreement, the survey began. If anyone chose not to give consent, the survey would not have begun. Thus, each person had the ability to change his or her mind and not participate (Creswell, 1998). Lastly, I extrapolated the data into measurements to define the final analysis of the study; the data will remain on a thumb drive and on my computer for a period not exceeding three years. The purpose of saving the information on two sources was to protect the research project should one source become corrupt. Each source holding the data was password protected. After three years, I will destroy the data.

Summary

This purpose of this study was to assess barriers to childhood obesity prevention within Head Start facilities in the Carolinas. In this chapter, I described the study methodology with regard to rationale, sampling methods, research questions and hypotheses, statistical analysis protocol, study limitations, and how I addressed ethical aspects of the research. Chapter 4 includes the results for the study, and Chapter 5 includes an interpretation and discussion of the results, including recommendations and implications of the results for bringing about positive social change in the target population.

Chapter 4: Results

Introduction

The goal of this research study was to determine if barriers still exist to fighting childhood obesity in Head Start facilities in the Carolinas. One hundred ten respondents from North Carolina (47.3%) and South Carolina (52.7%) completed surveys. Chapter 4 begins with a restatement of the research questions and hypotheses. A description of the study sample and an overview of the data collection method and the analysis results that relate to each research question follow.

RQ1: Are outdoor activities related to childhood obesity within the ages of 3–5?

RQ2: Are staff behaviors related to healthy eating among preschoolers aged 3–5?

RQ3: Is the rate of childhood obesity related to the center's characteristics?

The hypotheses were as follows:

$H1_0$: Outdoor activities are not related to childhood obesity.

$H1_a$: Outdoor activities are related to childhood obesity.

$H2_0$: Staff behaviors are not related to healthy eating among preschoolers aged 3–5.

$H2_a$: Staff behaviors are related to healthy eating among preschoolers aged 3–5.

$H3_0$: The rate of childhood obesity is not related to a center's characteristics.

$H3_a$: The rate of childhood obesity is related to a center's characteristics.

The study sample was from 53 Head Start locations in North Carolina and 18 Head Start locations in South Carolina. Participants selected for this study were the director, assistant director, lead teachers, and nutritionists. All were employees in Head

Start facilities in North Carolina and South Carolina and maintained the above titles at the time of the survey.

Data Collection

Data collection involved using a previous national study instrument developed by the SHAPES program leaders in 2010 (Hughes et al., 2010). Eligible adult respondents received a link to the Survey Monkey website via e-mail to take the survey. The survey was open to 125 respondents for 30 days. Each respondent had no time limit during the survey but had to conclude the survey continuously from beginning to end on the same day. I extracted the data results from the Survey Monkey online instrument into an SPSS format and used the SPSS software system to develop data tables. Analysis included 110 completed surveys. The data analysis did not include the remaining 15 participants due to inactivity accessing the link or declining to participate after logging into the survey. I drew the 110 study samples from 53 Head Start locations in North Carolina and 18 Head Start locations in South Carolina.

Descriptive Statistics

The descriptive statistics for selected variables are in Table 3. These variables include seven characteristic metrics pertaining to the center (53 in North Carolina; 18 in South Carolina), such as center years of operation (M = 25.07), current enrollment of children (M = 249.46), number of full-time (FT) nonteacher staff (M = 21.44), number of FT teachers (M = 25.05), number of FT teachers with at least an associate in applied science (AA) degree (M = 18.14), percentage of FT teachers with AA degree or higher (M = 84.38), and percentage of students estimated to be obese (M = 12.92). In addition,

Table 1 includes descriptive statistics for the staff behaviors (M = 67.79), outdoor activities (M = 33.64), and healthy eating (M = 70.52).

Table 3

Descriptive Statistics for Selected Variables

Variable	*M*	*SD*	Low	High
Center years of operation	25.07	15.30	1.00	52.00
Current enrollment of children 3-5 years	249.46	307.64	0.00	1725.00
Number of FT nonteacher staff	21.44	28.54	0.00	205.00
Number of FT teachers	25.05	25.76	1.00	125.00
Number of FT teachers with at least AA degree	18.14	18.49	0.00	110.00
Percentage of FT teachers with AA degree or higher	84.38	40.62	0.00	350.00
Percentage of students estimated to be obese	12.92	11.50	0.00	60.00
Staff behaviors score [a]	67.79	17.57	28.57	100.00
Outdoor activities score [b]	33.64	11.90	7.14	85.71
Healthy eating score [c]	70.52	7.86	52.38	85.71

Note. N = 110. FT = full time.

[a]Obtained from Section C in the Healthy Eating Questionnaire (see Appendix A).

[b]Obtained from Section B in the Healthy Eating Questionnaire (see Appendix A).

[c]Obtained from Section A in the Healthy Eating Questionnaire (see Appendix A).

Data Handling and Statistical Assumptions

Box plots (see Appendix B) indicated most of the characteristics had positive skews (a few large centers within NC and SC) and 3 to 14 outliers per variable. In addition, I found multicollinearity among all the center-size characteristic variables: current enrollment, number of staff, number of FT teachers, and number of FT teachers with at least an AA. Therefore, the Spearman correlation was used for bivariate analysis (see Table 4). Aggregating the four center-size variables into a single variable resulted in a Cronbach alpha reliability coefficient of $\alpha = .85$. A square root transformed this aggregated size variable to minimize its positively skewed distribution, and I then included it in the regression models as a covariate to remove the multicollinearity problem (Tabachnik & Fidell, 2001).

Answering the Research Questions

This section includes the analysis results of the data that related to each research question. Research Question 1 was as follows: Are outdoor activities related to childhood obesity within the ages of 3–5? The related null hypothesis ($H_0 1$) was as follows: Outdoor activities are not related to childhood obesity. The Spearman product–moment correlation that led to an answer to RQ1 is in Table 4. The correlation found between the two variables was significant and negative, $r_s = -.33$, $p < .001$ (see Table 2).

Table 4

Spearman Correlations for Selected Variables With the Summated Scale Scores and Childhood Obesity

Variable	1	2	3	4
1. Healthy eating scale	1.00			
2. Activity scale	-.16	1.00		
3. Staff behaviors scale	.07	.01	1.00	
4. Percentage of obese students	.13	-.33****	-.08	1.00
Square root of size variable	.05	-.16	-.23**	.43****
Center years of operation	.20*	.01	-.06	.18
Current enrollment of children 3-5 years	.00	-.08	-.17	.33****
Number of FT nonteacher staff	.08	-.15	-.38****	.37****
Number of FT teachers	.11	-.14	-.14	.46****
Number of FT teachers with at least AA degree	.02	-.11	-.13	.35****
Percentage of FT teachers with AA degree or more	-.32****	.06	-.07	-.24**

Note. $N = 110$.

*$p < .05$. **$p < .01$. ***$p < .005$. ****$p < .001$.

A relevant multiple regression model between outdoor activities and childhood obesity, controlling for three center characteristic variables (center years of operations, center size, and state of facility location), is in Table 5. The overall model was significant

(p = .001) and accounted for 28.1% of the variance in the dependent variable. Inspection of the beta weights found childhood obesity to be higher when (a) the size of the center was larger (β = .32, p = .001), (b) the center was in North Carolina (β = -.28, p = .002), and (c) the outdoor activity score was lower (β = -.25, p = .005). This combination of findings provided support to reject $H_0$1.

Table 5

Relation of Childhood Obesity With Outdoor Activity Scale Controlling for Characteristic Variables

Variable	*B*	*SE*	β	*p*
Intercept	-7.82	11.52		.50
Center years of operation	0.03	0.07	.04	.69
Square root of size variable	18.95	5.49	.32	.001
State of facility location [a]	-6.32	1.96	-.28	.002
Activity scale	-1.70	0.59	-.25	.005

Note. N = 110. Full model: $F(4, 105) = 10.25$, p = .001. R^2 = .281.

[a] State: 1 = *North Carolina.* 2 = *South Carolina*.

Research Question 2 was as follows: Are staff behaviors related to healthy eating among preschoolers aged 3–5? The related null hypothesis ($H_0$2) was as follows: Staff behaviors are not related to healthy eating among preschoolers aged 3–5. The relevant Spearman product–moment correlation that led to an answer for RQ2 is in Table 4. There was no significant correlation between the two variables, r_s = -.07, p = .39.

The relevant multiple regression model between the two variables controlling for three center characteristic variables was in Table 6. The overall model approached

significance. The hypothesis stays the same (p = .05) and accounted for 8.8% of the variance in the dependent variable. Inspection of the beta weights revealed the healthy eating scale was higher when (a) the center had been in operation more years (β = .27, p = .008) and (b) the center was in South Carolina (β = .18, p = .06). In addition, no relationship existed between the staff behaviors scale and the healthy eating scale score (β = .08, p = .39), which supported the finding to accept $H_0$2.

Table 6

Relation of Staff Behaviors Scale with Healthy Eating Scale Controlling for Characteristic *Variables*

Variable	*B*	*SE*	β	*p*
Intercept	12.94	1.91		.001
Center years of operation	0.03	0.01	.27	.008
Square root of size variable	-0.16	0.87	-.02	.85
State of facility location [a]	0.61	0.32	.18	.06
Staff behaviors scale	0.11	0.13	.08	.39

Note. N = 110. Full model: F (4, 105) = 2.53, p = .05. R^2 = .088.

[a] State: 1 = *North Carolina*, 2 = *South Carolina*.

Research Question 3 was as follows: Is the rate of childhood obesity related to the center's characteristics? The related null hypothesis ($H_0$3) was as follows: The rate of childhood obesity is not related to a center's characteristics. The relevant multiple regression model between childhood obesity and the three center characteristic variables is in Table 7. The overall model was significant (p = .001) and accounted for 22.4% of the variance in the dependent variable. Inspection of the beta weights revealed childhood

obesity was higher when (a) the center was larger (β = .39, p = .001) and (b) the center was in North Carolina (β = -.30, p = .001. This combination of findings provided support to reject $H_0$3.

Table 7

Prediction of Childhood Obesity Based on Center Characteristic Variables

Variable	*B*	*SE*	β	*p*
Intercept	-22.73	10.62		.03
Center years of operation	0.00	0.07	.00	.98
Square root of size variable	23.11	5.47	.39	.001
State of facility location [a]	-6.81	2.02	-.30	.001

Note. N = 110. Full model: F (3, 106) = 10.23, p = .001. R^2 = .224.

[a] State: 1 = North Carolina, 2 = South Carolina.

In summary, 110 individuals responded to the survey questionnaire to investigate as to whether barriers to fighting childhood obesity still exist in Head Start facilities in the Carolinas. For Hypothesis 1 (activity with obesity, see Tables 4 and 5), the data supported accepting $H_0$1. The data did not support Hypothesis 2 (staff behaviors with healthy eating, Tables 4 and 6); therefore, the findings accepted H_a2. For Hypothesis 3 (obesity with center characteristics, Table 7), the data supported accepting $H_0$3. Chapter 5 includes a comparison of these findings to the literature, the conclusions and implications drawn, and the recommendations suggested.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to determine if barriers still exist fighting childhood obesity in Head Start facilities in the Carolinas. This study consisted of a quantitative correlational design that involved extrapolating data via an online survey of closed-ended questions. This examined as to barriers to fighting childhood obesity persist among preschool children in the Carolinas. I used the information from the 2010 SHAPES (Hughes et al., 2010) with newer findings from this research to see if there are continuing barriers of childhood obesity within Head Start facilities. In the current study, while outdoor activities relate to childhood obesity, staff behaviors do not relate to healthy eating among preschoolers aged 3–5, and the rate of childhood obesity relates to centers' characteristics.

Interpretation of the Findings

Few studies in the United States have included continual successful strategies that prevent childhood obesity (Anderson & Whitaker, 2011; Bluford et al., 2007; Hesketh & Campbell, 2012; Story et al., 2006; Summerbell et al., 2005). As a result, the intent for this study was to understand if the prevalence of childhood obesity in the Carolinas is making progress within the Head Start locations. Head Start centers located in North Carolina that were larger and had lower outdoor activity supported the theory that outdoor activity plays a role in childhood obesity. Healthy eating was higher in the South Carolina Head Start facilities that had been in operation longer. Staff behaviors had no direct effect on healthy eating among preschoolers aged 3–5 (see Table 4). Centers were

larger in North Carolina, and the findings showed childhood obesity had a direct relationship with the center's characteristics.

Discussion of Results

The topic of RQ1 was whether outdoor activities relate to childhood obesity. The data from the research showed that larger Head Start facilities in North Carolina had lower rates of outdoor activity. As gross motor activities are a major component of the fight against childhood obesity, the low outdoor activity scores in this study are a troublesome factor in fighting childhood obesity among preschoolers. Hughes et al. (2010) found staff at Head Start facilities felt a need to raise awareness about increasing outdoor activity. Unfortunately, it could not be evaluated since this outdoor activity was not witnessed. Whitaker et al. (2009) did not understand why Head Start directors did not realize major decreases in childhood obesity prevalence because they participated in the federal government's guidelines to fight obesity. Copeland et al. (2009) posited that a general prevention using adequate outdoor activity had many themes such as improper outwear (too much or too little worn during the school day), insistence from parents that their children stay clean during outdoor time, improper shoes, and choking hazards such as wearing jewelry to school. Although these barriers to outdoor activity were not difficult to overcome, coordinating staff communications with parents about these issues became problematic and resulted in little improvement (Copeland et al., 2009). The general consensus from staffers at Head Start was that outdoor activity is a small part of the day; as a result, no major preventive techniques took place using outdoor activity. When staff members forego outdoor activities, the children cannot enjoy quality outdoor

time during the school day. The lack of research studies within the preschool population indicate significant changes have not occurred in this component of fighting obesity (Ammerman et al., 2007; Copeland et al., 2009).

The topic of RQ2 was whether staff behaviors related to healthy eating among preschoolers aged 3–5. Healthy eating was better in South Carolina facilities when the center had been operating longer. In addition, staff behaviors had no direct effect on healthy eating among preschoolers aged 3–5. This result was independent of framework theories prior to the study. Prior to the findings of this research, Erinosho et al. (2012) believed modeling was a key component in fighting obesity among preschoolers. The belief was that, according to social cognitive theory, if parents and staff at Head Start facilities modeled healthy eating behaviors, the children would be more willing to try new foods and would eat healthier (American Dietetic Association, 2005; Bandura, 1997; Hendy & Raudenbush, 2000; National Cancer Institute, 2005). Bandura (1986) and Erinosho et al. (2012) believed that through self-efficacy of modeling, preschoolers would have guided attitudes into eating healthier. The research revealed the theory of modeling was not pivotal at all. In fact, the research showed that staff behaviors had no direct effect on healthy eating among preschoolers aged 3–5.

The topic of RQ3 was whether the rate of childhood obesity related to a center's characteristics. The data confirmed that childhood obesity had a direct relationship with a center's characteristics in North Carolina Head Start facilities. The findings indicated that the more education staffers have, the more perceptions should become evidence-based to find alternative ways in preventive care for childhood obesity. The less education staffers

had, the higher the potential for obesity among children attending Head Start. Higher educated staffers can find creative ways to implement obesity prevention programs that benefit children at school and at home and that further the concepts of healthy living, increased physical activity, and proper eating standards (Lovejoy, 2011). Intervention programs within Head Start must allow parents to participate as well (Hughes et al., 2010). Successful outcomes of preventing childhood obesity is a shared goal between parents and staff, but a center's characteristics can be a pivotal factor and viewed as either a successful component of prevention or a stagnant one (Hughes et al., 2010).

Theoretical/Conceptual Framework

This study included the principles of self-efficacy under the social cognitive theory (Bandura, 1986). The study also included modeling, which shows a conceptual framework under social marketing (Bellows et al, 2009; Berkowitz & Bochard, 2009; Wofford, 2008). Bandura (1986) contended that self-efficacy, a component of the social cognitive theory, is important to change preschoolers' behaviors. Modeling is an important step so preschoolers can witness healthy eating standards from staff at Head Start (American Dietetic Association, 2005; Bandura, 1997; Hendy & Raudenbush, 2000; National Cancer Institute, 2005). Erinosho et al. (2012) posited that research is not sufficient to make the determination that modeling helps fight childhood obesity. Erinosho et al. found in their study of 50 child care facilities that 80% of staff used modeling techniques in front of the children during meal times. Children seemed highly responsive and displayed positive attitudes to try newer foods if modeling was actively occurring during the stated meal times (Ogden et al., 2007). As indicated in the review of

literature, theoretical and conceptual frameworks lack agreement in the study of childhood obesity among preschoolers. Because most researchers used a descriptive method, they opted away from using a conceptual framework in the final study results. Another framework carefully reviewed for this study was the ecological model. The logical choice was self-efficacy coupled with modeling under the social cognitive theory. This research could not indicate whether modeling is a direct component of preventing childhood obesity. The findings showed that staff behaviors had no impact on childhood obesity. The following discussion on limitations reveals whether any significance occurred during this research process.

Limitations of the Study

This study had several limitations. Because it was a regional study within North and South Carolina, the findings do not reflect most of the Head Start facilities in the United States. To recap, the power analysis stated in chapter 3 reported needing 109 participants. Hence, based on the number of participants (N = 110) representing a sampling of the Carolinas Head Start facilities, this was a small regional study compared to the national SHAPES study with 1,583 participants. The quantitative descriptive correlational study also showed only a snapshot of the perceptions of participants through the closed-ended survey (Polit & Beck, 2008). Generalizability was a limitation, as the study did not include all lower socioeconomic preschoolers but only preschoolers enrolled in the Carolina's Head Start facilities. Although the study included a structured online format, there is a possibility that the participants answered questions that are viewed to be socially correct answers or that providing their best answer in the format

required might not have reflected their professional perception. Closed end surveys do not provide expansive answers to the questions asked to participants. As a result, the focus of this study was on the data extrapolated into a perceptive picture or the generalizability factors that the findings can be repeated within other Head Start locations across the United States. As a result, the validity and reliability previously considered a possibility for this research included four components: generalized population data retrieved after extrapolating all data, participants electing not to participate, the Hawthorne effect affecting participants' answers, and measuring dependent variables could become a threat where participants may feel the need to provide socially acceptable answers on the survey. No threat to validity and reliability occurred. Further, there is no measurement of truthfulness from a participant (Gall et al., 2003). Internal validity would be higher if this study had a treatment and control group. As this was a descriptive study with data and measurements taken at a specific time, the 12 threats according to Gall et al. (2003) were not applicable within the study of barriers within the Head Start program. This research addressed perceptions found in the national study of SHAPES by providing current data to fill in the gaps observed in the literature review.

Recommendations

This study had three key findings. Head Start facilities in North Carolina that were larger and had lower outdoor activity supported the theory that outdoor activity plays a role in childhood obesity; healthy eating was higher in South Carolina facilities that had been in operation longer showing that staff behaviors had no direct effect on healthy eating among preschoolers aged 3–5; larger centers in North Carolina showed

childhood obesity has a direct relationship with a center's characteristics. The following recommendations could help advance the knowledge for future research among preschoolers in child care settings such as Head Start facilities.

Researchers have developed few theories regarding the increasing prevalence of childhood obesity for children ages 3–5 years in the United States (Powers et al., 2012). In addition, empirical studies have shown no agreement with prevention methods within this population (French & Sherwood, 2011). To move forward successfully, leaders of national facilities such as Head Start could start their initiatives with the most successful facilities showing the lowest obesity rates. A comparison between what leads to the lower rates of obesity within these facilities and established evidence-based studies could lead to developing a national plan within the whole organization.

Successful modern approaches with less theory driven research and more evidence-based and descriptive studies are including social marketing theories (Bellows et al., 2009; Berkowitz & Bochard, 2009) that reach preschoolers such as Food Friends Get Movin' and Mighty Moves. These programs include the concept of audience (staff and children), product (long and short-term directives aimed at increasing physical activity), and place (Head Start facilities). Leaders of Head Start facilities have creative control over what programs to use. Because cost is always a factor, researchers for the federal government could conduct a pilot test using the aforementioned programs over a time. Facilities that have used them show positive results from both children and staff.

In sum, uniformity is key is lowering childhood obesity rates among preschoolers aged 3–5. If the federal government mandated use of evidence-based obesity programs

such as Food Friends Get Movin' and Mighty Moves, national results could be encouraging. If Head Start began using these programs, they could develop these evidenced-based programs into curricula. If implemented, these initiatives would educate preschoolers on healthy living and eating through technology and involving the entire family. These recommendations would further extend the knowledge about healthy living and proper eating standards (Lovejoy, 2011). The prospect of social change becomes exciting as the focus of eradicating childhood obesity becomes a reality.

Implications

Social Change

Researchers have learned that there is no general path to how each child becomes obese, as well as no specific formula to prevent the disease. To consider how best to lower each state's preschool obesity rates, future researchers should focus on regional studies. Such studies may give useful data through a focus on particular trends each state is encountering in the fight against childhood obesity. Key areas of concern with many researchers continue to be training, money, supportive feeding environments, marketing strategies, lower socioeconomic children, and time for physical activity and play. These characteristics show strong similarities across the United States.

Agreement among researchers on how best to treat child obesity continues to be lacking; however, there is a general agreement that researchers would be remiss if data and newer studies did not follow state-licensed child care facilities. There is general acceptance toward nurses, directors, nutrition workers, and general staff working within child care facilities. Because staffers within a child care facility such as Head Start spend

most of a child's waking hours in a facility (Academy of Nutrition and Dietetics, 2011; Hughes et al., 2010), researcher's view these pivotal hours with a child as a strong advocacy role to teach children healthier eating habits and promote daily physical activity as two of the best inhibitors of childhood obesity (Berkowitz & Bochard, 2009; Academy of Nutrition and Dietetics, 2011; McWilliams et al., 2009). As a result, treating the disease early within preschool facilities will be yet another factor in lowering childhood obesity rates (Academy of Nutrition and Dietetics, 2011; Hughes et al., 2010).

Few researchers have conducted studies in the United States showing long-term strategies in preventing childhood obesity (Anderson & Whitaker, 2011; Bluford et al., 2007; Hesketh & Campbell, 2012; Story et al., 2006; Summerbell et al., 2005). In this study, I found that continuing barriers of childhood obesity still exist within the Carolinas Head Start facilities. Researchers have not been able to work successfully across the United States to develop theories showing why prevalence cases are still increasing (Powers et al., 2012). Prevention methods seem to show basic movement to fight obesity such as state or federal guidelines fighting childhood obesity, but research does not show agreement on how best to use prevention methods in this population range of preschool children. Assimilating school, health providers, parents, and preschooler's daily environments consisting of school, home, and food seem equally important but consistent roadmaps in developing empirical knowledge and prevention methods continue to fall short of successful strategies (French & Sherwood, 2011). According to Hesketh and Campbell (2012), eliminating childhood obesity should be an ongoing medical objective.

The social implications of this disease include the challenges of childhood obesity developing into adult obesity (Whitaker et al., 1997). Pediatric health maladies among children such as hypertension, various liver diseases, type 2 diabetes, and atherosclerosis are another concern (Daniels et al., 2005; Din-Dzietham et al., 2007; Lorch & Sharkey, 2007). If researchers can develop prevention methods with long-range goals using more evidence-based initiatives, there is a high possibility of extending life spans if conquered early enough within a child's life. This study may be useful for promoting future programs implementing social change in the study of fighting childhood obesity among preschoolers. Social change can occur if researchers can unify their research strategies and efforts across the United States and reduce new prevalence data annually. This change would indicate society is on the mend toward healthier living standards, along with reducing potential health maladies among young children. The benefits would be enormous, as more children are becoming obese during the preschool years.

Conclusion

I have shown that although leaders of Head Start facilities are following federal nutritional guidelines, the lack of uniformity among facilities prevents childhood obesity prevalence rates from decreasing. Increasing outdoor activity, and serving healthy meals and snacks, are effective measures to fight childhood obesity. A need exists for continuity among staff and parents working together to achieve goals that will sustain children throughout their lives. This research adds actionable information to the body of knowledge for fighting childhood obesity among the preschool population. Further research that takes into account institutional differences and related characteristics such

as gender, race/ethnicity and other environmental factors that affect the fight against childhood obesity among preschoolers is warranted.

References

Ammerman, A. S., Ward, D. S., Benjamin, S. E., Ball, S. C., Sommers, J. K., Molloy, M. & Dodds, J. M. (2007). An intervention to promote healthy weight: Nutrition and physical activity self-assessment for child care (NAP SACC) theory and design. *Preventing Chronic Disease, 4*(3), 1–12. Available from http://www.cdc.gov/pcd/issues/2007/jul/06_0115.htm

American Dietetic Association. (2005). Position of the American Dietetic Association: Benchmarks for nutrition programs in child care settings. Journal of the American Dietetic Association, *105*(6), 979–986. doi:10.1016/j.jada.2005.04.015

Anderson, S. E., & Whitaker, R. C. (2011). Attachment security and obesity in US preschool-aged children. *Archives of Pediatrics & Adolescent Medicine, 165*, 235–242. doi:10.1001/archpediatrics.2010.292

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W.H. Freeman.

Bellows, L., Anderson, J., Davies, P., & Kennedy, C. (2009). Integration of social marketing elements in the design of a physical activity program for preschoolers. *Social Marketing Quarterly*, *15*(1), 2–12. doi:10.1080/15245000802695190

Bellows, L., Anderson, J., Gould, S. M., & Auld, G. (2008). Formative research and strategic development of a physical activity component to a social marketing

campaign for obesity prevention in preschoolers. *Journal Community Health, 33*(3), 169–178. doi:10.1007/s10900-007-9079-z

Berkowitz, B., & Borchard, M. (2009). Advocating for the prevention of childhood obesity: A call to action for nursing. *Online Journal of Issues in Nursing, 14*(1). doi:10.3912/OJIN.Vol14No1Man02

Birch, L., McPhee, L., Shoba, B., Pirok, E., & Steinberg, L. (1987). What kind of exposure reduces children's food neophobia? Looking vs. tasting. *Appetite, 9*(3), 171–178. doi:10.1016/S0195-6663(87)80011-9

Bluford, D. A., Sherry, B., & Scanlon, K. S. (2007). Interventions to prevent or treat obesity in preschool children: A review of evaluated programs. *Obesity, 15*(6), 1356–1372. doi:10.1038/oby.2007.163

Boon C. S., & Clydesdale F. M. *(*2005*).* A review of childhood and adolescent obesity interventions. *Food Science & Nutrition, 45*(7–8), 511–525 doi:10.1080/10408690590957160

Braet, C., & Crombez, G. (2003). Cognitive interference due to food cues in childhood obesity. *Journal of Clinical Child & Adolescent Psychology, 32*(1), 32–39. doi:10.1207/S15374424JCCP3201_04

Centers for Disease Control and Prevention. (2009a). *The power of prevention: Chronic disease…the public health challenge of the 21st century*. Retrieved from http://www.cdc.gov/chronicdisease/pdf/2009-power-of-prevention.pdf

Centers for Disease Control and Prevention. (2009b). *Obesity among low-income preschool aged children appears to be slowing: Major racial and ethnic*

differences persist. Retrieved from http://www.cdc.gov/media/pressrel/2009/r090723.htm

Centers for Disease Control and Prevention. (2010). *State indicator report on physical activity, 2010*. Retrieved from http://www.cdc.gov/physicalactivity/downloads/PA_State_Indicator_Report_2010.pdf

Centers for Disease Control and Prevention. (2012a). About BMI for children and teens. Retrieved from http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html

Centers for Disease Control and Prevention. (2012b). Coordinated school health. Retrieved from http://www.cdc.gov/healthyyouth/cshp/index.htm

Centers for Disease Control and Prevention. (2012c). Overweight and obesity: A growing problem. Retrieved from http://www.cdc.gov/obesity/childhood/problem.html

Centers for Disease Control and Prevention. (2012d). Overweight and obesity: Basics about childhood obesity. Retrieved from http://www.cdc.gov/obesity/childhood/basics.html

Centers for Disease Control and Prevention. (2012e). Using the BMI-for-age growth charts. Retrieved from http://www.cdc.gov/nccdphp/dnpa/growthcharts/training/modules/module1/text/page4btext.htm

Centers for Disease Control and Prevention. (2013). About BMI for children and teens. Retrieved from http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html

Chaudry, A., Capps, R., Pedroza, J., Castaneda, R. M., & Santos, R. (2010). *Facing our futures: Children in the aftermath of immigration enforcement.* Washington, DC: The Urban Institute. doi:10.1037/e726272011-001

Childhood Obesity Action Network. (2013). *How much do you know about the childhood obesity epidemic in South Carolina?* Retrieved from http://www.childhealthdata.org/docs/nsch-docs/southcarolina04_23_508-pdf.pdf

Copeland, K., Sherman, S., Kendeigh, C., Kalkwarf, H., & Saelens, B. (2012). Societal values and policies may curtail preschool children's physical activity in child care centers. *Journal of the American Academy of Pediatrics. 129*(2), 265–274. doi:10.1542/peds.2011-2102

Copeland, K., Sherman, S., Kendeigh, C., Saelens, B., & Kalkwarf, H. (2009). Flip flops, dress clothes, and no coat: Clothing barriers to children's physical activity in child care centers identified from a qualitative study. *Internal Journal of Behavioral Nutrition and Physical Activity, 6*(1), 74. doi:10.1186/1479-5868-6-74

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among the five traditions.* Thousand Oaks, CA: Sage.

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage

Daniels, S. Arnett, D., Eckel, R., Gidding, S., Hayman, L., Kumanyika, S., . . . Williams, C. (2005). Overweight in children and adolescents: Pathophysiology, consequences, prevention, and treatment. *Circulation, 111*(15), 1999–2012. doi:10.1161/01.cir.0000161369.71722.10

DeNoon, D. (2012). State obesity rankings: No winners. *WebMD Health News*. Retrieved from http://www.webmd.com/diet/news/20120813/state-obesity-rankings-no-winners

Din-Dzietham, R., Liu, Y., Bielo, M., & Shamsa, F. (2007). High blood pressure trends in children and adolescents in national surveys 1963–2002. *Circulation, 116*(13), 1488–1496. doi:10.1161/circulationaha.106.683243

Neelon, S., Briley, M. (2011). Position of the American dietetic association: Benchmarks for nutrition in child care. *Academy of Nutrition and Dietetics*, *111*(4), 607–615. doi:10.1016/j.jada.2011.02.016

Eat Smart, Move More NC. (2011). Physical activity and nutrition data resources. Retrieved from http://www.eatsmartmovemorenc.com/Data/Texts/Quick%20Facts.pdf

Erinosho, T., Hales, D., McWilliams, C., Emunah, J., & Stanton Ward, D. (2012). Nutrition policies at child care centers and impact on role modeling of healthy eating behaviors of caregivers. *Journal of the Academy of Nutrition and Dietetics, 112*(1), 119–124. doi:10.1016/j.jada.2011.08.048

Faul, F., Erdfelder, E., Buchner, A., & Lang, A-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149–1160. doi:10.3758/BRM.41.4.1149

Floriani, V., & Kennedy, C. (2008).Promotion of physical activity in children. *Current Opinions Pediatrics, 20*(1), 90–95. doi:10.1097/mop.0b013e3282f3d9f9

Fortuny, K., Hernandez, D. J., & Chaudry, A. (2010). *Young children of immigrants: The leading edge of America's future.* Washington, DC: The Urban Institute. doi:10.1037/e721852011-001

French, S., & Sherwood, N. (2011). Linking primary care, communities, and families to prevent obesity among preschool children. *Childhood Obesity, 7*(3), 237–239. doi:10.1089/chi.2011.0300.fren

Frey, W. H. (2011). *America's diverse future: Initial glimpses at the U.S. child population from the 2010 Census.* Washington, DC: Metropolitan Policy Program at the Brookings Institute.

Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational research: An introduction* (7th ed.) Boston, MA: Allyn & Bacon.

Ginsburg, K. (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Journal of the American Academy of Pediatrics, 119*(1), 182–191. doi:10.1542/peds.2006-2697

Head Start. (2013). About Head Start: What we do. Retrieved from http://eclkc.ohs.acf.hhs.gov/hslc/hs/about

Hendy, H., & Raudenbush, H. (2000). Effectiveness of teacher modeling to encourage food acceptance in preschool children. *Appetite, 34*(1), 61–74.

Hesketh, K. D., & Campbell, K. J. (2012). Interventions to prevent obesity in 0–5 year olds: An updated systematic review of the literature. *Obesity, 18*(Suppl.1), S27–S35.

Huang, J., Donohue, M., Golnari, G., Fernandez, S., Walker-Gallego, E., & Becerra, K. (2009). Pediatricians' weight assessment and obesity management practices. *BMC Pediatrics, 9*(1), 19. doi:10.1186/1471-2431-9-19

Hughes, C., Gooze, R., Finkelstein, D., & Whitaker, R. (2010). Barriers to obesity prevention in Head Start. *Health Affairs, 29*(3), 454–462. doi:10.1377/hlthaff.2009.0499

Hughes, S., Patrick, H., Power, T., Fisher, J., Anderson, C., & Nicklas, T. (2007). The impact of child care providers' feeding on children's food consumption. *Journal of Developmental and Behavioral Pediatrics, 28*(2), 100–107. doi:10.1097/01.dbp.0000267561.34199.a9

Jackson, D., Mannix, J., Faga, P., & McDonald, G. (2005). Overweight and obese children: Mothers' strategies. *Journal of Advanced Nursing, 52*, 6–13. doi:10.1111/j.1365-2648.2005.03558.x

Kaphingst, K. M., & Story, M. (2009). Child care as an untapped setting for obesity prevention: State child care licensing regulations related to nutrition, physical activity, and media use for preschool-aged children in the United States. *Preventing Chronic Disease: Public Research, Practice and Policy, 6*, 1–13. Retrieved from http://www.cdc.gov/pcd/issues/2009/jan/07_0240.htm

Klein, J., & Dietz, W. (2010). Childhood obesity: The new tobacco. *Health Affairs 29*(3), 388–392. doi:10.1377/hlthaff.2009.0736

Lakshman, R., Elks, C. E., & Ong, K. K. (2012). Childhood obesity. *Circulation, 126*(14), 1770–1779. doi:10.1161/circulationaha.111.047738

Lorch, S., & Sharkey, A. (2007). Myocardial velocity, strain, and strain rate abnormalities in healthy obese children. *Journal of Cardiometabolic Syndrome, 2*(1), 30–34. doi:10.1111/j.1559-4564.2007.06001.x

Lovejoy, J. (2011). Five steps healthcare leaders can take to address childhood obesity. *American Health & Drug Benefits, 4*, 50–52. Retrieved from http://secure.coagcare.com/assets/docs/ahm/ahdb_lovejoy.pdf

Lumeng, J., Kaplan-Sanoff, M., Shuman, S, & Kannan, S. (2008). Head Start teacher's perceptions of children's eating behavior and weight status in the context of food scarcity. *Journal of Nutrition Education and Behavior 40*(4), 237–243. doi.org/10.1016/j.jneb.2007.07.001

Maher, E. J., Li, G., Carter, L., & Johnson, D. B. (2008). Preschool child care participation and obesity at the start of kindergarten. *Pediatrics, 122*(2), 322–330. doi:10.1542/peds.2007-2233

McDermott, A. J., & Stephens, M. B. (2010). Cost of eating: Whole foods versus convenience foods in a low-income model. *Family Medicine, 42*(4), 280–284.

McWilliams, C., Ball, S., Benjamin, S., Hales, D., Vaughn, A., & Ward, D. (2009). Best practice guidelines for physical activity at child care. *Pediatrics, 124*(6), 1650–1659. doi:10.1542/peds.2009-0952

National Cancer Institute. (2005). Theory at a glance: A guide for health promotion practice. Retrieved from http://www.cancer.gov/PDF/481f5d53-63df-41bc-bfaf-5aa48ee1da4d/TAAG3.pdf2005

North Carolina Department of Health and Human Services. (2011). Physical activity and nutrition data resources. Retrieved from http://www.ncdhhs.gov/factsandfigures/topics.htm

Ogden, C., Carroll, M., Curtin, L., McDowell, M., Tabak, C., & Flegal, K. (2006). Prevalence of overweight and obesity in the United States, 1999–2004. *JAMA, 295*(13), 1549–1555. doi:10.1001/jama.295.13.1549

Ogden, C. L., & Flegal, K. M. (2010).Changes in terminology for childhood overweight and obesity. *National Health Statistics Report, 25*, 1–5.

Ogden, J., Karim, L., Choudry, A., & Brown, K. (2007). Understanding successful behaviour change: The role of intentions, attitudes to the target and motivations and the example of diet. *Health Education Research, 22*(3), 397–405. doi:10.1093/her/cyl090

Olshansky, S. J., Passaro, D. J., Hershow, R. C., Layden, J., &Carnes, B. A., . . . Ludwig, L. S. (2005). A potential decline in life expectancy in the United States in the 21st century. *New England Journal of Medicine, 352*(11), 1138–1145. doi:10.1056/nejmsr043743

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research, 66*(4), 543–578. doi:10.3102/00346543066004543

Pediatric Nutrition Surveillance System. (2011). Retrieved from http://www.cdc.gov/pednss/index.htm

Philippas, N., & Clifford, W. (2005). Childhood obesity: Etiology, prevention, and treatment. *Nutrition in Clinical Care, 8*(2), 77–88.

Polhamus, B., Dalenius, K., Thompson, D., Scanlon, K., & Borland, E. (2002). *Pediatric nutrition surveillance report*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Polit, D., & Beck, C. (2008). *Nursing research: Generating and assessing evidence for nursing practice* (6th ed.). Philadelphia, PA: Lippincott, Williams & Wilkins.

Powers, S., Chamberlain, L., Schaick, K., Sherman, S., & Whitaker, R. (2012). Maternal feeding strategies, child eating behaviors, and child BMI in low-income African-American preschoolers. *Obesity, 14*(11), 2026–2033. doi:10.1038/oby.2006.237

Puhl, R., & Latner, J. (2007). Stigma, obesity, and the health of the nation's children. *Psychological Bulletin, 133*(4), 557–580. doi:10.1037/0033-2909.133.4.557

Raj, M. (2012). Obesity and cardiovascular risk in children and adolescents. *Indian Journal of Endocrinology and Metabolism, 16*(1), 13–19. doi:10.4103/2230-8210.91176

Reilly, J. J. (2008). Physical activity, sedentary behavior and energy balance in the preschool child: Opportunities for early obesity prevention. *Proceedings of the Nutrition Society, 67*(3), 317–325. doi:10.1017/s0029665108008604

Schunk, D., & Zimmerman, B. (Eds.). (1994). *Self-regulation of learning and performance: Issues and educational applications*. Hillsdale, NJ: Erlbaum.

Schunk, D., & Zimmerman, B. (Eds.) (1998). *Self-regulated learning: From teaching to self-reflective practice.* New York, NY: Guilford Press.

Sigman-Grant, M., Christiansen, E., Fernandez, G., Fletcher, J., Johnson, S. L., Branen, L., & Price, B. A. (2011). Child care provider training and a supportive feeding

environment in child care settings in 4 states, 2003. *Preventing Chronic Disease, 8*(5), A113. Retrieved from http://www.cdc.gov/pcd/issues/2011/sep /10_0224.htm

South Carolina Department of Health and Environmental Control (2013). *2011 South Carolina obesity burden report*. Retrieved from http://www.scdhec.gov/health /epidata/docs/Obesity%20Burden%20Report%202011.pdf

South Carolina State Head Start Association (2013). South Carolina Head Start census. Retrieved from http://www.scacap.org/5-14-14_schs_census_dec2013.pdf

Story, M., Kaphingst, K., & French, S. (2006). The role of child care settings in obesity prevention. *The Future of Children, 16*(1), 143–168. doi:10.1353/foc.2006.0010

Summerbell, C. D., Waters, E., Edmunds, L. D., Kelly, S., Brown, T, & Campbell, K. J. (2005). Interventions for preventing obesity in children. *Cochrane Database System Review,* (3) CD001871.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Needham Heights, MA: Allyn & Bacon.

Timmons, B. W., Naylor, P. J., & Pfeiffer, K. A. (2007). Physical activity for preschool children how much and how? Advancing physical activity measurement and guidelines in Canada: A scientific review and evidence-based foundation for the future of Canadian physical activity guidelines. *Applied Physiology, Nutrition, and Metabolism and the Canadian Journal of Public Health, 32*(S2E), S122–S134. doi:10.1139/h07-112

Warschburger, P. (2005). The unhappy obese child. *International Journal of Obesity*, *29*, S127–S129. doi:10.1038/sj.ijo.0803097

Whitaker, R., Gooze, R., Hughes, C., & Finkelstein, D. (2009). A national survey of obesity prevention practices in Head Start. Archives of Pediatrics & Adolescent Medicine, *163*(12), 1144–1150. doi:10.1001/archpediatrics.2009.209

Whitaker, R., Wright, J., Pepe, M., Seidel, K., & Dietz, W. (1997). Predicting obesity in young adulthood from childhood and parental obesity. *New England Journal of Medicine*, *337*(13), 869–873. doi:10.1056/nejm199709253371301

Whitaker, R., Pepe, M., Wright, J., Seidel, K., & Dietz, W. (1998). Early adiposity rebound and the risk of adult obesity. *Pediatrics, 101*(3), e5. Retrieved from http://pediatrics.aappublications.org/content/101/3/e5.full

Williams, G., Pfeiffer, K., O'Neill, J., Dowda, M., McIver, K., Brown, W., & Pate, R. (2008). Motor skill performance and physical activity in preschool children. *Obesity, 16*(6), 1421–1426. doi:10.1038/oby.2008.214

Wofford, L. G. (2008). Systematic review of childhood obesity prevention. *Journal of Pediatric Nursing*, *23*(1), 5–19. doi:10.1016/j.pedn.2007.07.006

Zigler, E., & Muenchow, S. (1992). *Head Start: The inside story of America's most successful educational experiment.* New York, NY: Basic Books.

Appendix A: Healthy Eating Questionnaire

SECTION A: PRACTICES AND ENVIRONMENTS FOR HEALTHY EATING

The questions in Section A ask about current program practices and environments related to children's eating.

A1. Which statement best describes who provides meals for most centers in your program?

MARK ONLY ONE

1 ☐ Cooks who are hired directly by our program

2 ☐ The food service program of a school, school district, or school food authority

3 ☐ A food service company

A2. Which statement best describes how meals are delivered to most centers in your program?

MARK ONLY ONE

1 ☐ Meals are prepared at the center or in a facility that is adjacent to the center

2 ☐ Meals are prepared away from the center and are delivered to the center

A3. How much control does your program currently have over the types of foods and beverages that are served to children?

MARK ONLY ONE

1 ☐ No control

2 ☐ Some control

3 ☐ A great deal of control

The next set of questions is about practices for serving foods and beverages in your program.

A4. For each item, check one box to indicate whether this is a practice that your program is "already doing" or is "not doing right now".

	We Are Already Doing This	We Are Not Doing This
a. Each day we serve some fruit other than 100% fruit juice	☐	☐
b. Each day we serve some vegetable other than French fries, tater tots, or hash browns	☐	☐
c. We prepare cooked vegetables without adding meat fat, margarine, lard, or butter	☐	☐
d. Milk served to most children is either skim (non-fat) or 1%	☐	☐
e. To celebrate holidays or special events, such as birthdays, we use either healthy foods or non-food	☐	☐
f. Only non-food items, such as wrapping paper, coupon books or magazines, can be sold for fundraisers	☐	☐

A5. For each item, check one box to indicate how often your program serves these foods.

	Never Serves Or Serves Less Often Than Once Per Week	Serves Once Per Week Or More Often
a. Fried or prefried meats or fish, such as chicken nuggets, corn dogs, or fish sticks	☐	☐
b. High-fat meats, such as sausage, bacon, hot dogs, bologna, or ground beef	☐	☐
c. Sweets such as cookies or cakes	☐	☐

A6. For each item, check one box to indicate whether this is a practice that your program "allows" or "does not allow".

	Allows	Does
a. Serving children sugary drinks, such as Kool-Aid, sports drinks, sweet tea, punches, or soda	☐	☐
b. Serving children juice drinks that are less than 100% fruit	☐	☐

c. Serving children flavored milk, such as chocolate or strawberry milk	☐	☐
d. Having soda or other vending machines that are available for children to use	☐	☐
e. Having soda or other vending machines that are available for staff to use	☐	☐
f. Staff may consume foods or beverages in front of children that are different than those that children are served	☐	☐

The remaining questions in this section ask about obtaining height and weight measurements on children.

A7. Does your program obtain information on children's heights and weights?

MARK ONLY ONE

2 ☐ Yes, on all children

1 ☐ Yes, on some children

0 ☐ No

A8. Does your program use height and weight measurements to calculate the body mass index (BMI) of children in your program?

MARK ONLY ONE

2 ☐ Yes, on all children

1 ☐ Yes, on some children

0 ☐ No

A9. Does your program staff discuss the height and weight measurements with families?

MARK ONLY ONE

2 ☐ Yes, on all children

1 ☐ Yes, on some children

0 ☐ No

SECTION B: PRACTICES AND ENVIRONMENTS FOR CHILDREN'S OUTDOOR ACTIVITY

The questions in Section B ask about practices related to children's outdoor activity in your program such as moving large body muscles, dancing, walking, running, kicking, hopping, jumping, and climbing.

B1. Does every center in your program have an on-site outdoor play area?

MARK ONLY ONE

2 ☐ Yes, every center has an on-site outdoor play area

1 ☐ No, only some of our centers have an on-site outdoor play area

0 ☐ No, none of our centers have an on-site outdoor play area

B2. Below is a listing of outdoor play areas used by the facility.

Please check one box per question.

	Not Generally True	**Generally True**
a. Includes an open area for large group games (for example, large enough for 15 preschool children to hold hands in a circle)	☐ 0	☐ 1
b. Contains natural elements which the children are free to reach and use during play (examples of natural elements include trees, shrubs, smooth rocks, and naturally uneven terrain, like mounds or slopes)	☐ 0	☐ 1
c. Contains a large shaded space (for example, a space shaded by buildings or trees that is large enough for 15 preschool children to hold hands in a circle)	☐ 0	☐ 1
d. Has fixed play equipment (for example, a slide, swing, or climbing structure)	☐ 0	☐ 1
e. Has enough fixed play equipment so that children can use it without too much competition	☐ 0	☐ 1
f. Has portable play equipment that can be used outdoors (for example, balls, hoops, jump ropes, or sand	☐ 0	☐ 1

g. Has enough portable play equipment so that children can use it without too much competition	☐ 0	☐ 1
h. Has wheeled toys that can be used outdoors (for example, tricycles or wagons)	☐ 0	☐ 1
i. Has enough wheeled toys so that children can use them without too much competition	☐ 0	☐ 1

B3. Below is a list of practices. Please check one box per question.

	We Are Already Doing This	**We Are <u>Not</u> Doing This Right Now**
a. Full-day children are given <u>structured</u> (adult-led or -guided) outdoor activity for at least 30 minutes per day, and half-day children are given <u>structured</u> outdoor activity for at least 15 minutes per day	☐	☐
b. Full-day children are given the opportunity for <u>unstructured</u> outdoor activity for at least 60 minutes per day, and half-day children are given the opportunity for <u>unstructured</u> outdoor activity for at least at least 30	☐	☐
c. Children are not kept sitting (excluding naps and meals) for more than 30 minutes at a time	☐	☐
d. Television and videos are used only for instructional purposes	☐	☐

SECTION C: STAFF BEHAVIOR

The questions in Section C ask about staff behaviors that could influence children's eating and outdoor activity during the Head Start day.

C1. In general, which of the following practices most closely describes how children and staff sit together during meals?

MARK ONLY ONE

1 ☐ Staff sit with children during meals

2 ☐ Staff are in the room, but they do not sit with children during meals

C2. In general, which of the following practices most closely describes how food is served to children during meals?

MARK ONLY ONE

1 ☐ Children serve themselves most foods, and children mostly decide what size portions they take

2 ☐ Children serve themselves most foods, but staff mostly decide what size portions children may take

3 ☐ Staff serve most foods to the children, but staff mostly let the children decide what size portions they want

4 ☐ Staff serve most foods to the children, and staff mostly decide what size portions to give to the children

5 ☐ This question does not apply. Food arrives already portioned on each child's plate

C3. In general, which of the following practices most closely describes how food is passed around the table during meals?

MARK ONLY ONE

1 ☐ Only staff pass the food

2 ☐ Both the children and staff pass the food

3 ☐ This question does not apply. Food arrives already portioned on each child's plate

C4. In general, which of the following practices most closely describes what your staff eat during meals?

MARK ONLY ONE

1 ☐ Staff eat only the food and beverages that are being served to children

2 ☐ Staff eat the same foods and beverages that are being served to children, but staff also supplement this with items that they bring from outside the center

3 ☐ Staff primarily eat their own food that they bring from outside the center

C5. In general, how does your program make sure that there is enough food for everyone at meals?

MARK ALL THAT APPLY

A ☐ Staff pay close attention to make sure that children do not take too much

B ☐ Staff serve the children to make sure there is enough food for everyone

C ☐ Staff tell children how much food to serve themselves

D ☐ Serving cups or utensils are provided that hold the amount of food that children should take

E ☐ This question does not apply. Food arrives already portioned on each child's plate

F ☐ This question does not apply. There is usually more than enough food available

The next set of questions asks about how staff is trained on children's eating and outdoor activity.

C6. How does your program train newly hired staff about the practices and routines that apply to feeding children at meal and snack times?

MARK ALL THAT APPLY

A ☐ An experienced staff member verbally explains the practices and routines that apply to feeding children

B ☐ Staff are asked to review the program's written guidelines for feeding children

C ☐ Staff attend a workshop or training session about feeding children

D ☐ Staff do not receive any training about feeding children other than observing what the more experienced staff do during meals and snacks

C7. How does your program train newly hired staff about routines that apply to children's outdoor activity?

MARK ALL THAT APPLY

A ☐ Senior staff verbally explain practices and routines for encouraging children's outdoor activity

B ☐ Staff are asked to review the program's written guidelines for encouraging children's outdoor activity

C ☐ Staff attend a workshop or training session about children's outdoor activity

D ☐ Staff do not receive any training about children's outdoor activities other than observing what the more experienced staff do during children's outdoor activities

The next set of questions asks about barriers to staff encouraging children's healthy eating and outdoor activity during the school day.

C8. Which of the following do you think are barriers among the staff to encouraging children's healthy eating during the school day?

MARK ALL THAT APPLY

A ☐ Staff do not have time to focus on children's healthy eating

B ☐ Staff lack knowledge about how to encourage children's healthy eating

C ☐ Staff themselves do not like the taste of the healthy foods that are served at Head Start, so they have trouble encouraging children's healthy eating

D ☐ Staff have cultural beliefs about food that are not always consistent with healthy eating

E ☐ None of the above. Staff do not generally have a problem encouraging children's healthy eating

C9. Which of the following do you think are barriers to the staff encouraging children's outdoor activity during the school day?

MARK ALL THAT APPLY

A ☐ Staff do not have time to focus on children's outdoor activity

B ☐ Staff lack knowledge about how to encourage children's outdoor activity

C ☐ Staff are uncomfortable with their own level of physical coordination, so they have trouble encouraging children's outdoor activity

D ☐ Staff are afraid the children will get hurt doing outdoor activities

E ☐ Staff like to use children's unstructured play time to socialize with each other

F ☐ Staff like to use children's unstructured play time as a break from interacting with the children

G ☐ None of the above. Staff do <u>not</u> generally have a problem encouraging children's outdoor activity

SECTION D: CHARACTERISTICS

The questions in Section D ask about characteristics within the facility.

D1. How many years has your center been in operation?

_____ years.

D2. What is your current enrollment of children aged 3–5?

_____ children.

D3. How many fulltime equivalent staff members (nonteachers) are currently employed within the facility?

_____ staff members.

D4. How many fulltime equivalent teachers are currently employed within the facility?

_____ teachers.

D5. How many of those fulltime teachers equivalent teachers have at least an Associate of Arts college degree?

_____ teachers.

D6. What percentage of your students do you estimate to be obese?

_____ percent obese.

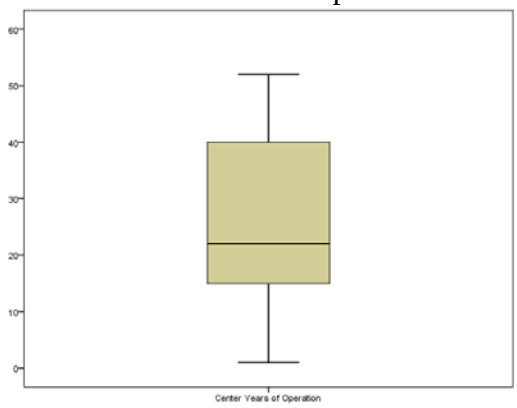
D7. What state is your facility located in North Carolina or South Carolina?

_____

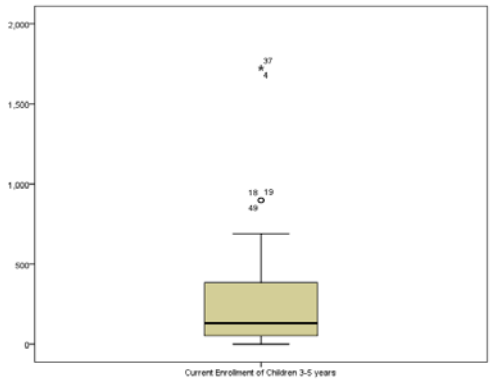
Thank you for completing this questionnaire!

Appendix B: Box Plots for Primary Study Variables

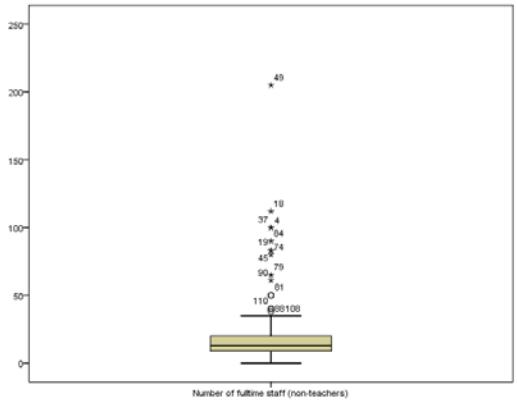
Center Years of Operation



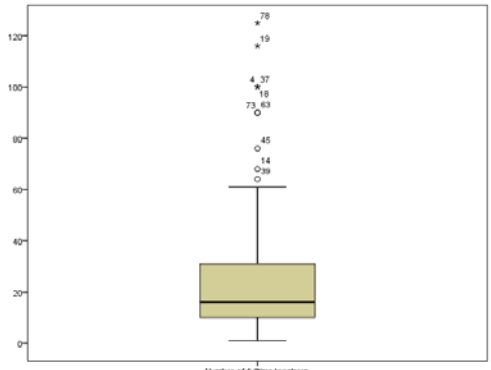
Current Enrollment of 3–5 Year Olds



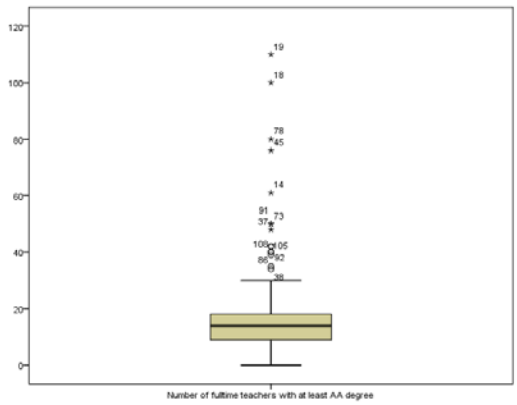
Number of Full-time Staff (Nonteachers)



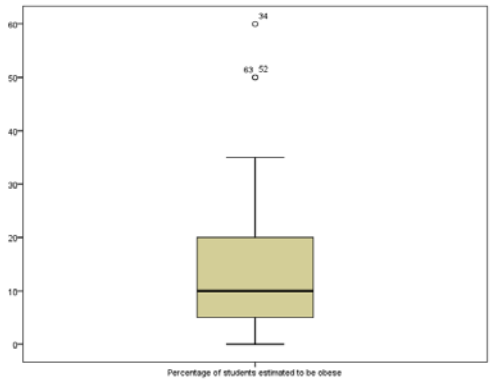
Number of Full-time Teachers



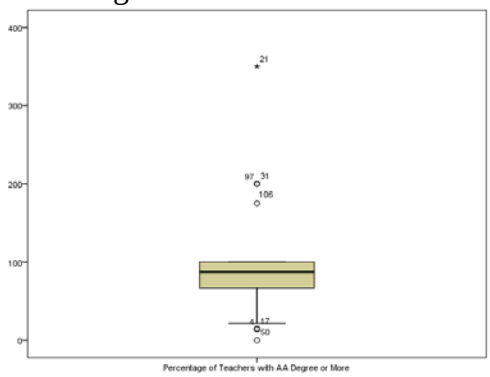
Number of Full-time Teachers With AA



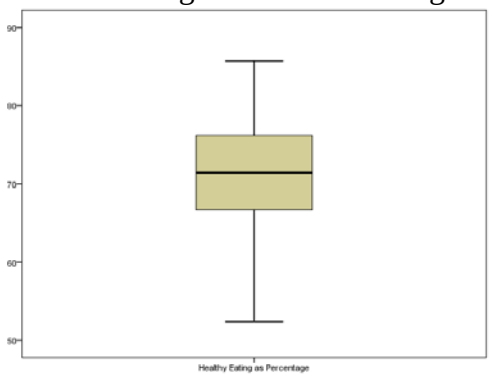
Percentage of Students Estimated Obese



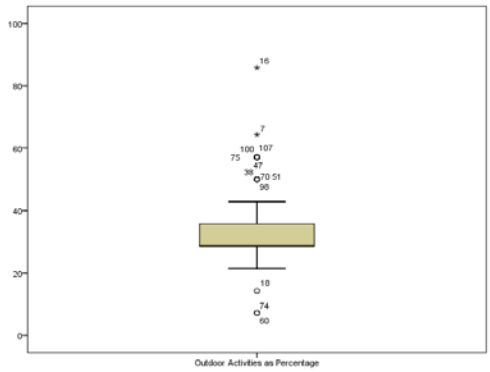
Percentage of Teachers With AA



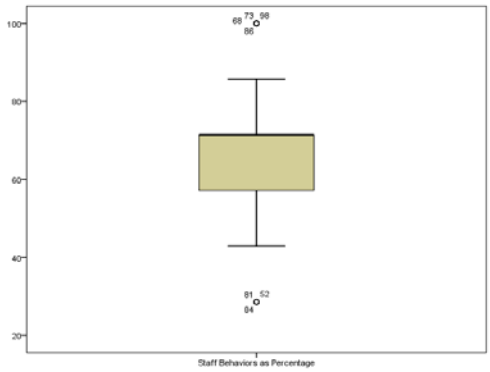
Health Eating Score as Percentage



Outdoor Activities as a Percentage



Staff Behaviors as a Percentage



Note. $N = 110$.

Appendix C: Email Invitation

Email Invitation

You are invited to take part in a research study of The Effects of Barriers Toward Fighting Childhood Obesity Within Head Start.

The research is to determine if North Carolina and South Carolina have continuing barriers fighting childhood obesity among the preschoolers aged 3–5.

The researcher, Vanessa Chaney, a doctoral student at Walden University is inviting you take the online survey. You have been chosen because of the following criteria: currently employed at Head Start, are a director, assistant director, lead/assistant teacher, or nutritionist. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

Background Information:

The purpose of this research study is to determine if continuing barriers among preschoolers aged 3–5 still exist in Head Start facilities in North and South Carolina against childhood obesity. The answers retrieved from this study will be compared with a prior Head Start study called SHAPES to see if progress has been made in fighting childhood obesity.

Procedures:
If you agree to answer questions in the online survey you will be asked to do the following:

- Answers questions to the best of your ability; you are free to skip any question you want
- Understand there is no right or wrong answer
- The survey can only be taken one time per individual
- The complete online survey should take you no more than 15 minutes
- This survey does not ask you for your name or any other identifying information

Sample Questions:

- What percentage of your students do you estimate to be obese?
- How many fulltime teachers are currently employed within the facility?

Voluntary Nature of the Study:

This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at Walden University or Head Start will treat you

differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:

Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as discomfort in giving a particular answer, believing there is a right or wrong answer, or not being comfortable with some of the questions. Being in this study would not pose risk to your safety or wellbeing.

Benefits of the Study:

You will be part of providing needed and beneficial information in the fight against childhood obesity.

Payment:

There is no compensation for taking this online survey.

Privacy:

Any information you provide will be kept confidential. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the study reports. Data will be kept secure by researcher's personal computer and external drive. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:

Any questions that you may have can be sent via email to the researcher, Vanessa Chaney at Vanessa.Chaney@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number (612) 312-1210. Walden University's approval number for this study is **03-28-14-0112295** and it expires on **March 27, 2015.**

Please print or save this consent form for your records.

Statement of Consent:

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By returning a completed online survey, I understand that I am agreeing to the terms described above. I also understand by completing the online survey this will also serve as my implied consent giving consent to use the answers I have provided online for the collection of data for this study.

Thank you for your participation!

Appendix D: Letter of Consent for North Carolina and South Carolina

Letter of Cooperation from Bonnie Beam

[redacted]

April 7, 2014

Dear Mrs. Chaney,

Based on my review of your research proposal, I give permission for you to conduct the study entitled The Effects of Barriers Toward Fighting Childhood Obesity Within Head Start. As part of this study, I authorize you to send emails to each local director within Head Start in North Carolina inviting them to participate in your study. The process would involve allowing staff members to take the online survey. We understand that the following criteria set forth to participate in this study is as follows: currently employed at Head Start, as a director, assistant director, lead/assistant teacher, or nutritionist. At no time will local staff be required to supervise this online survey.

Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include: to inform the staff of the survey, and allow access for each staffer to participate. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Walden University IRB.

Lastly, it is understood that Walden University's Institutional Review Board has approved this study through approval number **03-28-14-0112295, which expires March 27, 2015.**

Sincerely,

Bonnie Beam

Bonnie Beam

[redacted]

Page 2
Continued

Walden University policy on electronic signatures: An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically. Electronic signatures are regulated by the Uniform Electronic Transactions Act. Electronic signatures are only valid when the signer is either (a) the sender of the email, or (b) copied on the email containing the signed document. Legally an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. Walden University staff verify any electronic signatures that do not originate from a password-protected source (i.e., an email address officially on file with Walden).

Page2
Signature

Bonnie Beam
[redacted]

SOUTH CAROLINA STATE HEAD START ASSOCIATION, INC.

"Investing in Our Future……..One Child at a Time"

904 South Fourth Street
Hartsville, South Carolina 29550
Telephone (843) 332-3923
Email: epatterson@dccaa.net

Ref: Letter of Cooperation

April 2, 2014

Dear Mrs. Chaney,

Based on my review of your research proposal, I give permission for you to conduct the study entitled The Effects of Barriers Toward Fighting Childhood Obesity Within Head Start. As part of this study, I authorize you to send emails to each local director within Head Start in South Carolina inviting them to participate in your study. The process would involve allowing staff members to take the online survey. We understand that the following criteria set forth to participate in this study is as follows: currently employed at Head Start, as a director, assistant director, lead/assistant teacher, or nutritionist. At no time will local staff be required to supervise this online survey.

Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include: to inform the staff of the survey, and allow access for each staffer to participate. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Walden University IRB.

Lastly, it is understood that Walden University's Institutional Review Board has approved this study through approval number **03-28-14-0112295, which expires March 27, 2015.**

Sincerely,

Evelyn Patterson
South Carolina Head Start Association
Email: epatterson@dccaa.net
Office: (843) 332-3923
Fax: (843) 332-3971
Cell: (843) 319-8041

SOUTH CAROLINA STATE HEAD START ASSOCIATION, INC.

"Investing in Our Future……..One Child at a Time"

Evelyn Patterson, President
Sarah Simmons, Vice-President
Shadie Hall, Secretary
Rene Blanton, Treasurer
Jerome Thompson, Parliamentarian

904 South Fourth Street
Hartsville, South Carolina 29550
Telephone (843) 332-3923
Email: epatterson@dccaa.net

Walden University policy on electronic signatures: An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically. Electronic signatures are regulated by the Uniform Electronic Transactions Act. Electronic signatures are only valid when the signer is either (a) the sender of the email, or (b) copied on the email containing the signed document. Legally an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. Walden University staff verifies any electronic signatures that do not originate from a password-protected source (i.e., an email address officially on file with Walden).

Signature

Evelyn Patterson
South Carolina Head Start Association
Email: epatterson@dccaa.net
Office: (843) 332-3923
Fax: (843) 332-3971
Cell: (843) 319-8041