PRINCIPALS' PERCEPTIONS OF RESOURCE ADEQUACY FOR ADDRESSING CHILDHOOD OBESITY

by

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ABSTRACT

OTIS HENRY FLOYD. The perceptions of the K-12 principals on resource adequacy for professional development addressing student obesity (Under the direction of DR. RICHARD G. LAMBERT).

With the rapid expanse in childhood obesity and the school's continuous involvement with children, an investigative look at the role of the principal and the perception of professional development (PD) was the primary focus of the research. Specifically, the researcher wanted to determine the extent of elementary, middle and high school principals' views, opinions and perceptions of policies, programs for decreasing childhood obesity, and the promotion of professional development for teachers and staff. At the turn of the twenty-first century, several states began to provide mandates for examining the school food environment locally, in order to evaluate the district schools' food environment and to suggest improvements for state obesity policies. One state, Mississippi in 2007, passed legislation in several areas to improve the school food environment in order to reduce obesity. To improve the school food environment, many schools prohibited non-nutritious foods in vending machines in areas used by children. However, Mississippi required that all vending machine content meet the requirements of the state's nutrition regulation for meals and snacks in places where children congregate (Mulheron, Vonasek, & The NGA Center Best Practice Health Division, 2009). Principals in schools of the eight highest obesity states and principals from eight states with the lowest obesity rates were invited to complete a survey as part of a descriptive study to share viewpoints on local and state policies, programs and procedures for the prevention of childhood obesity. Principals from the high and low body mass index (BMI) states responded to the perceived role

the school should commit to and to what degree if any, should educators encourage professional development for the prevention of obesity. When studying the principal's role in combating obesity, specific variables emerged which with the support of state and local government would make a positive change in obesity levels if implemented at the local school level.

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LIST OF ABBREVIATIONS

ADA	American Dietetic Association
AMA	American Medical Association
ANOVA	analysis of variance
BMI	body mass index
BC	British Colombia
CDC	Center for Disease Control and Prevention
HOPS	Healthier Options for Public School Children
MVPA	Moderate to Vigorous Physical Activity
NCLB	No Child Left Behind
NGA	National Governors Association
NSLP	National School Lunch Program
PE	physical education
SNA	School Nutrition Association
SNE	Society for Nutrition Education
SPSS	statistical package for social science
RWJ	Robert Wood Johnson
USDA	United States Department of Agriculture
UTMB	University of Texas Medical Board

CHAPTER 1: INTRODUCTION

This dissertation examines K-12 principals' perceptions of the adequacy of funding, resources and professional development for teachers and staff based on three independent variables, location (high or low BMI states), gender and years of administrative experience. This dissertation seeks to determine to what extent principals use the policies and programs of the district and state to promote professional development for all staff members. This researcher will argue that principals have no perspective of resource adequacy needed for the prevention of childhood obesity, because of too many duties and not enough time to carry out such responsibilities. The significance of the principals' role is that the principal is the individual within any school with the responsibility for ensuring the success of students, as well as teachers and staff. This dissertation uses a univariate factorial analysis of variance (ANOVA) to examine the relationship between principals and the three independent variables previously mentioned. The dissertation will use a 24-question survey to exam the role of principals from high and low BMI states in principals' perceptions of resource adequacy and providing professional development in accordance with district and state policies. Only limited literature was found addressing these problems.

Purpose Statement

How has the principal's location (high or low BMI state), gender and total years of experience influenced principals perception of resource adequacy by districts and

states for providing professional development needed by school's faculty and staff to implement policies and programs for the prevention of childhood obesity? Principals from states with low BMI rates were compared with principals from states with high BMI rates, in order to determine how principals perceived the role as school leaders in carrying out the implementation of state and district obesity policies and programs in the schools, based on gender and years of administrative experience.

Obesity levels today are what some researchers called a problem, an epidemic, which appeared to be taking over the United States, as well as many other countries. As the rate of obesity continually increased, school principals and community leaders are expected to act upon the realization, that schools and members of society-at-large must take a more proactive role in combating the growing, global pandemic of childhood obesity. Although schools and the U.S. Department of Agriculture (USDA) had made small strides in the fight against childhood obesity, the CDC (2013) contended that there was still much work to be done in order to stem the rising tide of obesity. From 1980 to 2008, childhood obesity increased radically from 5% to 17% (American Medical Association [AMA], 2014; CDC, 2012). Statistics from the CDC (2012) have shown obesity rates to be higher among teenagers than among preschoolers, with about 19% of teenage boys and 15.0% of teenage girls identified as obese. About 10% of children up to 2 years of age were overweight while 12% of children 2 to 19 years were obese and 17% of children 2 to 19 years were overweight (CDC, 2012).

Over the past 50 years, our evolving highly technical society had made it harder for children to eat healthily and be physically active causing children to gain weight. However, recently and as predicted by some researchers, childhood obesity in the

United States has been on a slight decline in some states. From 2003 to 2010, the occurrence of childhood obesity dropped from 15.21% to 14.94% (CDC, 2013a). However, the rate of obesity levels is more than likely to continue rising. Obesity in children though indirectly linked to death in children, if allowed to advance, will adversely affect the lives of children, and possibly incur adulthood death at an early age (55 years or younger; Doheny, 2010). This familiar trend was projected to continue until family and community members can work together to stop or slow down this perilous disease. The American Dietetic Association (ADA), School Nutrition Association (SNA), and Society for Nutrition Education (SNE) are in full agreement that teachers, along with community personnel should join families with a primary goal of combating obesity (Briggs, Mueller, & Fleischhacker, 2010; Meyers, Marshak & Conklin, 2004; Trout & Graber, 2009).

Obesity has been defined as a somewhat extreme above average body mass when measured by the body mass index (BMI; Guillaume 1999). According to the BMI chart, the indicators for overweight and obesity were positively related to certain childhood diseases and sophisticated rates of adult health anxieties and concerns (CDC, 2015). As childhood obesity progressed in the 1960s, childhood obesity was recognized as a serious problem and the launching of scientific research and studies were used in attempting to solve the problem (Bowman, Gortmaker, Ebbeling, Pereira & Ludwig, 2004). Included in childhood health concerns were anemia, a weakened glucose acceptance by the body, and hypertension, all which had a tendency to cluster together in children, and were strongly related to obesity that endured into adulthood (CDC, 2004; Csabi, Torok, Jeges & Molnar, 2000). Research conducted in Norway confirmed

that increased risks of obesity in childhood positively linked to deaths in adults (Kvaavik, Tell, & Klepp, 2003).

Some Vital Issues and Need for the Study

Childhood obesity became a high public interest item, due to the comorbidity concerns placed upon the public healthcare system (such as high blood pressure, diabetes, and heart disease), the stress on individuals (mental illness and 365,000 deaths per year) and the cost of medical treatments to the American taxpayer. Some scientists believed childhood obesity and related characteristics were only cosmetic in nature at most (Reilly et al., 2003). Reilly et al. (2003) conducted a review of the literature to appraise the characteristics of childhood obesity. In the study, the authors conducted a critical review of the literature and found particular features of childhood obesity. The characteristics included the comorbidity (other health problems coupled with obesity) and several cardiovascular risk factors. In an earlier study, Strauss, Smith, Frame, and Forehand (1985) found characteristics of obesity, which when compared to non-obese participants, opened the way for obese children to be rejected by peers, caused more depression and caused a lower concept of self.

According to Moran (1999), obese children presented an increased danger for orthopedic difficulties. The researcher also found that childhood obesity improved the risk for some skin diseases (such as heat rash). Moran (1999), similar to Strauss, et al. (1985) concluded, psychological problems increased, including poor self-esteem, a poor perception of self and withdrawal from the public. At an early age, society stigmatizes obese people as lazy, slow and self-absorbed.

These conditions required more medical attention when compared with obesity alone. Consequences for adults who were obese as children were socioeconomic, a rising tenacity for continued obesity, cardiovascular risk factors, as well as eventual morbidity and premature mortality. The reviews on obesity showed a high correlation between childhood obesity and several major causes of illnesses in adults. In 2012, Americans spent well over $117 billion for medical expenses brought on by health problems associated with obesity (CDC, 2012a). In 2010, Pappas estimated that the hidden cost of obesity to the American worker to be about $73 billion. Hidden costs involved a propensity for obese people to be less industrious in the workplace (Pappas, 2010). Hidden cost also included obese people's tendencies to be absent from work more often than others (Pappas, 2010). As previously stated childhood obesity was responsible for much of the complex societal (such as stigmatization and bullying) and environmental issues (such as poverty, where one lives and inducements to eat fattening foods).

There were other hidden dangers associated with childhood obesity as well. Researchers found obesity manifested in stress to the body was significantly related to mental illness. In children, the results of stress has been found to affect brain waves which can produce mental health issues that correlated positively with childhood learning disabilities (Krans, 2013). Krans (2013) found high levels of anxiety hormones in obese children to be statistically significant in children who had a history of family mental illness. The cause of the anxiety appeared to be high levels of cortisol, which is produced when the body reacts to the fight-or-flight response (Krans, 2013). This

condition linked childhood obesity with attention-deficit-hyperactivity-disorder and asthma (Krans, 2013).

As previously stated, principals, other school staff and the community as a whole must assume a significantly more healthful and proactive role in the growing epidemic of childhood obesity. The fight to eradicate childhood obesity in school is vital since researchers have found schools to play a significant role in the life of all children and youth. Many students have hidden problems, which cause such individuals to become obese adults, which can be readily revealed in the school setting (Wright, Parker, Lamont & Craft, 2001).

In a report, the CDC (2013) warned that minorities and low-income youth were more apt to gain weight than their higher income peers were. One in five African-Americans and one in six Hispanic children between the ages of two and five were obese (CDC, 2013). One in eight minority preschoolers is overweight. Obesity rates among lower-income preschoolers declined between 2008 and 2011 in 19 of 43 states (CDC, 2013). Overweight preschoolers were five times as likely as normal-weight children to be overweight or obese as adults (CDC, 2013). As previously stated important vital issues in childhood obesity involved the cost to our children, costs to the taxpayers and the deficiencies brought to bear upon society for the present and in the future.

The issues previously mentioned are important issues because of the responsibilities and obligations of both parents and especially schools (principals). The six to eight hours a day, five days a week, 279 days per years is the amount of time children spend away from home and in school. Because of the fact alone, principals

were given a unique opportunity to help control childhood obesity. However, the majority of children spent a considerable amount of time in the home as well (about 15 – 17 hour a day). Because of the quantity of time, children spent at home and in school, both parents and principals must be held accountable for the knowledge associated with the causes and preventions of childhood obesity. Parents and principals must also be prepared to act responsibly and individually to be good role models for the children and the students, especially, in matters regarding obesity prevention.

There were a number of studies, in which researchers examined the issues of obesity and the role of school personnel in combating overweight and obesity. Price, Desmond, Ruppert and Stelzer (1987) conducted one of the earliest research studies on childhood obesity coupled with the role of the schools. In the study, the roles of principals and physical education (PE) teachers were investigated. The result of the study found that 51% of principals agreed that a healthy weight and activities were essential for healthy and successful students (Price et al., 1987). However, according to the authors, 35% of principals believed schools were not fulfilling their full obligations in the fight against obesity. Most principals acknowledged an antagonistic view of the idea of schools becoming obesity treatment centers (Price et al. 1987). At the same time, principals believed parents would not give full support to any obesity program established in schools (Price et al., 1987). More importantly, the principals were of the belief that the main function of schools was to teach, the foremost role of the students was to learn, and the school could not become a panacea for the prevention of childhood obesity (Price et al., 1987). However, all agreed that noncompetitive foods, sugary sweets, and sodas could be elimination from the school's menu. Some even suggested

eliminating noncompetitive food from the school's campus entirely (Price et al., 1987).

Recently, it was revealed that one in three students would maintain an above-normal body weight (Rossen & Rossen, 2011). However, researchers also found, anything, which increased energy consumption (high-energy foods), while decreasing energy expenditure, contributed significantly to obesity and was instrumental in maintaining an above-normal body weight (Ebbling, Pawlak, & Ludwig, 2002). School principals become essential in combating obesity, because of the authority and the overall responsibility for the school food environment. Approximately 95% of all children, five to 17 years of age, ate one to two of the most important meals of the day, while at school (Story, 1999).

The public is divided over whether obesity is a public health issue or a personnel problem (Fried & Simmons, 2007). Researchers had declared that because of the cost to children (loss of self-esteem), schools were a great place for obesity programs, when compared to the clinical setting (Story, 1999). Veugelers and Fitzerald (2005) studied the effects of school obesity programs and found the programs to be effective in controlling obesity. The clinical settings used in the treatment of obesity were too expensive, considering the number and the income of the obese children being served (Story, 1999), leaving schools as a least expensive alternative.

Weschler, McKenna, Lee and Dietz (2004) reported the role of school personnel in the prevention of childhood obesity. The investigators reported that school personnel's recent attention to obesity had been lost or was somewhere else other than on children's health. In the summation, Weschler, McKenna Lee & Dietz blamed teachers and principals for part of the rise in childhood obesity. The researchers

surmised that what a child ate at school was vital to the health and welfare of the child. At school, the children had access to many sugary and saturated fat food items. The authors presented data which emphasized the prevention of childhood obesity and prescribed obesity strategies for schools to increase nutrition and physical activity while reducing the amount of fats consumed (Weschler, McKenna, Lee & Dietz, 2004).

In 1999, Planet Health was one such school-based strategy, which focused on obesity prevention. Planet Health attempted to limit the amount of fats in a student's diet and increased the amount of fruits and vegetables (Ebbeling et al., 2002). In Planet Health, the intervention included curriculum options, teachers, core subject matters and physical activities. The focus of the intervention was on modification of behaviors and decreasing television viewing. Primarily, the emphasis of Planet Health was placed on decreasing eating of high-fat foods, while increasing the consumption of fruits and vegetables and physical activities (Gortmaker, et al., 1999; Lindsay, Susser, Kim, & Gortmaker, 2006). A control group and an intervention group of boys and girls took part in the investigation. Results indicated that girls in the intervention group lost more weight than did girls in the control group. However, the results for boys were found not to be statistically significant.

Other prevention strategies included behavioral strategies which increase physical activities and approaches, which met certain guidelines (Epstein, Paluch, Consalvi, Riordan & Scholl, 2002). Approaches such as creating, applying, and evaluating food and beverage policies for children's settings that met United States Department of Agriculture (2013) and Centers for Disease Control and Prevention's food guidelines (2013). "Schools can help students adopt and maintain healthy eating

and physical activity behaviors. The CDC and others had published guidelines that identify school policies and practices most likely to be active in promoting lifelong physical activity and healthy eating" (Weschler et al., 2004, p.6).

Some schools have started down the wrong track (not focusing on weight control), with standardized testing. However, because the role of the school has become imperative in the life of students, principals and teachers must place greater emphasis on nutrition and physical activity, when considering all the time spent preparing students for standardized testing. School administrators, though it was not the intention, made it appear that standardized testing of students was more important than a healthy mind and body. All the extra time, found in the school day (including time for physical activities) was used to prepare students for testing. Soon childhood obesity became a matter of urgency, and the policies of all-out testing continued to be revisited, and the problem of obesity highlighted in the mindset of the school administrator.

As stated, principals must play a greater active role in the eradication of childhood obesity. Principals have access to a student for much of a typical school day, and students eat at least two substantial meals per school day while at school. Principals need a working knowledge and understanding of what children eat during school hours, how much daily physical activity they are getting, and what are the primary causes of childhood weight problems.

Because of the authority given to school principals, principals are responsible for the food policy and environment of the school and accountable to the students and parents for providing healthy nutritious meals for consumption. In order to cut down on waste, principals adopted the policy of allowing students to select some of the foods

liked by the student, for serving on the lunchroom menu, though often such foods were less healthy (Dwyer, 1995). The downside to the policy was that the student would be less apt to select fruits and vegetables for consumption (Dwyer, 1955). The very purpose of the policy was to ensure students patronized the school cafeteria. Principals surmised that if students did not like the menu offered at school, the student would not eat the school lunch but would bring more unhealthy food from home to eat. Some students would even patronize fast-food restaurants, which principals categorized as mostly unhealthy. School officials decided, that in order to ensure good healthy eating at school; it would be necessary to provide a healthy nutritious school menu that followed guidelines set forth by the USDA and students liked. What is important to remember, is America is the land of freedom and Americans hold freedom as the most important of all rights. Therefore, not giving students the right to choose what to eat would be looked upon as sacrilegious, while many may argue that the rights of parents were being neglected.

Research Problem

During the last 30 years, childhood obesity increased from 5% to 17% (Affenito et al. 2013; Centers for Disease Control and Prevention, 2012). As previously stated, statistics from the CDC (2012) showed obesity to be higher among teenagers than among preschoolers (19% of boys and 15% of girls). Approximately 10% of 2 years olds were overweight while 12% of 2 to 19 years olds were obese, 17% of two to 19-year-olds were overweight. More research is needed to improve the overweight situation in children.

The purpose of the study was to investigate how principals' location, gender and total years of administration experience influenced the principal's perceived perception of the adequacy of resources and for providing professional development needed by teachers and other staff as prescribed by state and district policies. Principals from states with low BMI rates were compared to principals from states with high BMI rates in order to determine how principals perceived their roles as school leaders in carrying out the task of implementing state and district policies and programs in the schools. Gender and years of experience were variables, also investigated.

The tasks of principals, as leaders and responsible role models of the school environment and school food environment, will be examined in the research. As previously stated, the study will attempt to understand what are the effects of principal's perceptions and behaviors of the perceived adequacy of resources and the inclusion of professional development concerns with childhood obesity? The researcher investigated the role gender played in affecting childhood obesity and general feelings of good health. The study also looked at how a principal's years of experience affected childhood obesity. Lastly, the investigation also looked the location of the principal (high or Low BMI state) to see if that has an effect on principal's perceptions.

A quantitative inquiry based on positivism has replaced religion and mysticism as the purveyor of knowledge. Positivism is a theory that proclaimed theology and metaphysic were the first flawed models of knowing, built upon natural phenomenon, with the variables of positivism measured by scientific research only (Merriam Webster, 2013). "The ontological position of the quantitative paradigm is that there is only one truth; an objective reality that exists independent of human perceptions" (Sale, Lohfeld,

& Brazil, 2002, p. 44). Seeking the vital role of the school principals in how to combat obesity is the truth, to which the researcher attempts to give understanding.

The research initiated in the investigation sought to find answers to the problem the U.S. is experiencing, regarding childhood obesity. It became necessary for obesity to be stopped in childhood (due to the high toll taken in adulthood) through school obesity wellness and prevention programs and professional development (PD). Story (1999) contended that there were two types of childhood obesity programs—primary and secondary. Primary prevention concentrates on the beginnings of obesity and makes everyone susceptible (Story, 1999). Secondary prevention applies to early symptoms and intervention of obesity in order to prevent the worsening of the condition and focuses on individuals who are in danger of becoming obese (Story, 1999). Both categories provide excellent subjects for PD.

Heredity, lifestyle, and the environment presented much to the problem of obesity; however, the exact amount of each is unknown. Because of such problems, some researchers have called the rise in obesity an epidemic or what Natalie Boero characterizes as a "postmodern epidemic…epidemics in which unevenly medicalized phenomena lacking a clear pathological basis get cast in the language and moral panic of 'traditional' epidemics" (Boero, 2007, p. 41). Important, in the research, was that the findings of the researcher is to be used to provide some needed answers in confronting the problem of childhood obesity.

In order to show the implications for controlling childhood obesity at an early age, researchers wrote in the *British Medical Journal* that body BMI for a 9 years old was significantly correlated with adult BMI at age 50, however, not with the amount of

adult body fat (Wright et al., 2001). Wright et al. (2001) conducted a study with the goal of finding out if being an overweight child increased the risk of becoming overweight as an adult; and what chance, there was of contracting a persistent disease. The researchers found a significant correlation existing among overweight children, and the BMI of adults (90th percentile in body mass index at age 9 or 13 years) that was between five to nine times more likely that a child would be an obese adult (body mass index > 30 in adulthood), than those who weighed less (Wright et al., 2001). The authors also found the relationship between BMI in childhood and the BMI in adulthood was weaker than in the relationship among adult BMIs (Wright et al., 2001). This particular study also found an inverse relationship between childhood obesity and adult disease. Body mass index for children showed a distinct correlation when associated with adult BMI and adult diseases, especially for females who tended to have high cholesterol in adulthood (Wright et al., 2001).

Many obese children are growing up to have higher rates of chronic diseases in adulthood, such as adult obesity, Type II diabetes mellitus, hypertension, colon cancer, depression, and osteoporosis (Wright et al., 2001). Univariate analysis of BMI and percentage of body fat at age 50 were strongly associated with adult diseases in the study conducted by Wright et al. (2001). "After adult body mass was adjusted for, childhood BMI showed a consistent association with adult disease" (Wright et al., 2001, p.1282).

Whitaker, Wright, Pepe, Seidel, and Dietz (1997) found in an investigation "that the probability of a young child who was obese growing up to become an adult who was obese was 8% for 1 to 2 year olds and 79% for 10- to 14-year-olds who were obese" (p.

869). The probabilities of a child growing up to be obese, after amending for obese parents were 1.3% at age 1 to 2 years of age and 17.5% for those 15 to 17 years of age (Whitaker et al., 1997, para.3). They concluded that children under three years of age without obese parents presented little chance of becoming obese adults. However, among somewhat older children, obesity was a precise indicator of an overweight condition in adulthood (Whitaker, et al., 1997).

In a follow-up to the Third Harvard Growth Study of 1922-1935, Must, Jacques, Dallal, Bajema, & Dietz (1992) hypothesized that "overweight adults were associated with increased morbidity and mortality" (p. 327). Must, Jacques, Dallal, Bajema & Dietz also contended that the long-term determinates of being overweight during adolescences was being overweight as an adult. Additionally, the authors found that overweight in adolescents projected an array of adverse health problems that marginalized adult weight after 55 years of uninterrupted follow-ups (Must et al., 1992).

Haskins, Paxson and Donahue (2006) stated, "A pervasive finding of research on child development is that actions taken in childhood have significant impacts on [the] adult status and behavior" (p. 2). In a discussion of the school's focus on obesity, the authors concluded that schools can impact, as well as institute nutritious lifelong eating habits (Haskins et al.). Haskins et al. (2006) also stated that schools have the principal responsibility of making certain children get regular exercise, as well as taking health related courses. Therefore, like Whitaker et al. (1997) concluded, treating obesity in childhood was not only necessary but essential, in order to attempt to prevent or control obesity in adults. The two most crucial places to accomplish such tasks are in

the home and the school. The researcher presented the following research questions for study.

Major Research Question

Are principal's location (high- or low-BMI state), gender, and total years of administration experience associated with the principal's perceived perceptions of the adequacy of resources for addressing childhood obesity?

Principals from states with low BMI rates were compared with principals from states with high BMI rates, in order to determine how principals perceived the role as school leaders in carrying out the implementation of state and district obesity policies and programs in the schools.

Delimitations

- Sample representation of the study was limited to principals while other school staff members (that include food preparers, nurses, and students) have been purposely omitted.
- In the study, only the principal's opinion was considered significant when discussing the school's food environment.
- The study was delimited by the locations of the study, at schools with the lowest and highest obesity states only, as opposed to all schools.

Limitations

Survey limitations included the accuracy of self-reported survey responses.

- The study was voluntary and information could not be verified.
- The study only included principals and did not include other staff members in completing the study.

- Non-nutritious food policies presented in the study are fully investigated.

Definition of Terms

Adolescents: A young person who has undergone puberty but has not yet reached adulthood (for example a teenager age 12-19; Fried & Simon, 2007).

Body Mass Index (BMI): A key index of relating height to weight. A measure of a person's weight in kilograms (kg) divided by the height in meters squared (Medicine Net, 2012).

Caloric density: The measurement of the average calories per weight of food (Adams, 1997). Lean body mass: the mass of body weight minus the fat (lipid storage) (Medicine Net, 2014).

Gatekeeper: a person who has charge of a gate and controls who may pass through it (Random House Kernerman [2010] Webster's College Dictionary).

National School Lunch Program: A government program providing sustenance to school children and supports food pricing by ensuring farm surpluses go to the school's food system (Fried & Simon, 2007).

Normal body weight: a weight considered healthy for individuals.

Nutrition: Materials, foods needed to support life (The George Mateljan Foundation, 2001-2014).

Obesity: A chronic medical condition in which people have excessive body weight (Frost, 2003).

Overweight: A way of saying imprecisely that a person is heavy. As a matter of weight somewhere between healthy and obese (Story, 1999).

Physical activity: Movement of the body in ways that use energy.

School environment or climate: An all-inclusive valuation of all the programs and people that go together to make up a school system (Story, 1999).

Summary

Medical science has recognized the link between childhood and adult obesity. Health advocates, health professionals, and policymakers, had moved to a position of enlisting schools, (businesses) food producers and homes to help steer children toward proper nutrition and exercise. Thus, putting the focus squarely on the school principals, as a conduit and control for children's access to food and exercise. The association proposed that children be able to associate the differences between healthy and unhealthy eating. Professional organizations, such as the American Medical Association placed the nutritional services of youth in the hands of kindergarten through Grade 12 (K-12) school systems. At school, principals are responsible for ensuring the students get the right fruits, vegetables, and other nutritious foods on a daily basis (CDC, 2010). In chapter 2 of the study, the researcher provides a detailed review of the literatures related to the research question. In chapter 3, the researcher provided an explanation of how the study was conducted. In chapter 4, the results of the findings of the study were analyzed and reported.

In chapter 5, the researcher presented a discussion of the findings of the investigation.

CHAPTER 2: LITERATURE REVIEW

The problem of childhood obesity is a serious one that threatens societies. The rate of childhood obesity has been on a continuous and steady increase for more than thirty years. Currently, with help from the media, childhood obesity has been recognized as both a serious social and individual problem that requires the attention of many stakeholders in order to find a successful solution. One critical stakeholder in this matter is the school K-12 principal, who has access to a majority of children on a daily basis. The increase in the rate of obesity had been the reason for much research. State and local government, as well as the federal government is looking for ways to combat childhood obesity. Legislation for combating this epidemic has had limited positive effects, but primarily the cost keeps researchers looking for lasting answers. The cost of obesity in one state alone (California) is estimated to be 41.2 billion dollars (Chenoweth, 2005).

The Weight of Opinion (WOO) study found all teachers and principals interviewed were of the belief that overweight and obesity formed important and weighty issues for their schools (Wilkenfeld, Pagnini, Booth, Booth & King, 2007). All teachers and principals declared that schools play vital roles in the discouragement of overweight and obesity among school children (Wilkenfeld, Pagnini, Booth, Booth & King, 2007). Primary schools were inclined to want to get the communities involved as part of the foundation for the introduction of nutrition and physical

activity (Wilkenfeld, Pagnini, Booth, Bootj & King). Whereas, secondary schools were more apt to approve the curriculum as set-forth in the Personal Development, Health, and Physical Education (PDHPE) and Food Technology as ways to approach the task of obesity prevention (Wilkenfeld, Pagnini, Booth, Booth & King, 2007). The primary schools set guidelines for the promotion of such novel ideas as the introduction of fruit breaks and morning exercise routines to encourage good health in students (Wilkenfeld, Pagnini, Both, Booth and King, 2007). The teachers and principals must accept the fact schools have been given an enormous role to play and except the responsibilities needed to influence eating and physical activity in schools. However, all agreed; parents played the most significant role in influencing a child's behaviors, especially eating behaviors.

The Childhood Obesity Epidemic

Researchers have called current childhood obesity levels an epidemic that appears to be taking over the United States, as well as other countries. From 1980 to 2008 childhood obesity increased dramatically, in the United States, from 5% to 17% (American Medical Association, 2014; Affenito et al., 2013; CDC, 2012). Obese children suffer from both negative physical and psychological consequences. While obesity has risen in all of the age groups, obesity is particularly high among teenagers, with 18.6% of boys and 15.0% of teenage girls being classified as obese (CDC, 2012). The CDC (2012) also reported 10% of children up to 2 years of age were overweight while 12% of children 2 to 19 years were obese, and 17% of children 2 to 19 years were overweight. As the rate of childhood obesity continually increased, schools and communities were expected to step up and lead the way in combating the growing,

global pandemic of childhood obesity. Although schools and the U.S. Department of Agriculture (USDA) made small strides in childhood obesity, the CDC (2013) contended that there was still so much work that needed to be done, and problems solved. One of the problems faced was distinguishing whether childhood obesity was a public issue or an individual issue.

Heredity, lifestyle, and the environment presented much to the issue of childhood obesity; however, the exact contribution of each has not been explored. Given the many and varied contributing factors related to childhood obesity, researchers, school officials and community leaders found it impossible to agree on whether or not childhood obesity was a public health issue or a personal issue (Fried & Simon, 2007).

The Surgeon General noted in 2001 that the community had a significant role to play in the problem of childhood obesity. The community was responsible for providing safe places for both children and adults to play and exercise. Schools, as an integral part of the community, must take on the added responsibility of providing a healthy and safe food environment for children. Schools must somehow accommodate physical education and promote joint-use facilities, as part of the community (Ohio, Department of Education, 2012). Even a mother's breastfeeding is a type of community responsibility (CDC, 2013b).

Personally, individuals must make healthy choices in order to reduce or fight obesity. The County of San Mateo Health System (2015) reported:

> While changing our own personal behavior is an important way to reduce obesity, asking the public to change their behavior without making the healthy

> choice the easiest choice, makes it nearly impossible to create lasting change for generations to come. (para. 6)

When viewed from a public health perspective, reducing or eliminating childhood obesity requires attention from many stakeholders within the community becoming personally involved (Pilant, 2006). When viewed as an individual issue, making a broad assumption such as "healthy choices" becomes part of the problem. Healthy choices are subjective and are not always the same to all people.

In the United States, legislative bodies have concluded that a shared response was needed to combat the problem of childhood obesity (Phillips, Ryan & Raczynski, 2007). Many opportunities exist for fighting obesity, including communities and schools (Phillips, Ryan, & Raczynski, 2011). Such community-based responses are in line with Bandura's theory of collective efficacy. Collective efficacy was defined as "group conscious" opinions based of its mutual experiences and used to create and to accomplish the courses of action needed to produce given levels of accomplishments (Bandura, 1994). The practical tendency of collective efficacy is community outreach, which has proven effective in controlling obesity (Phillips, Ryan & Raczynski, 2011). Many researchers believe schools, as part of a community, are in a strategically located position to fight childhood obesity. Schools play a somewhat vital role in the lives of all youth, simply by the amount of time children spend in schools. According to Battistich (2011), besides providing knowledge about many subjects and aspects of life, schools also promote character and personality building, as well as providing answers to many of the societal problems children will encountered. As such, schools provide an excellent environment for addressing community concerns regarding

obesity. In addition to medical concerns, student weight issues often lead to other social problems such as name-calling and harassment (Puhl, Andreyeva & Brownell, 2008). Thus, in the literature, the importance of the school and the school principal are overly emphasized in the fight against childhood obesity.

The main purpose of the current quantitative inquiry was to determine if participants' (principals) perceptions of the adequacy of resources including professional development, based on their location (high or low BMI status), gender, and years of experience were significantly related. The school principal (as the Gatekeeper) is responsible for the school environment, the food environment, staff training, and the students, and as such is the primary focus of this investigation. By determining if there is a relationship between location, gender, and years of experience, the study can be used to inform governments, school districts, principals, and the research literature, in ensuring the adequacy of resources, for teachers, based on the variables used in this investigation. The researcher anticipated that the study would stimulate school administrators and other school officials to rethink the roles and responsibilities placed upon principals regarding childhood obesity.

Defining Obesity and Obesity's Effects

According to the University of Texas Medical Branch (UTMB;2013), the definition of obesity includes a body weight of 20% or more over ideal body weight using height, weight, gender, and age as the basis for measurement. By dividing an individual's weight (in kilograms), by the square of a person's height (in meters), a personal body mass index (BMI), is produced (UTMB, 2013). An individual who is equal to or more than 20% over ideal body weight has a BMI of 30 kg/m2 or higher

(UTMB, 2013). Morbid obesity identified as an individual 100 pounds or more over ideal body weight, corresponds to a BMI of 40 kg/m2 (UTMB 2013). People with BMIs greater than 35 kg/m2 were more likely to experience more obesity-related health problems (UTMB, 2013). According to the BMI model, the markers for adults and childhood overweight and obesity were found to be significantly correlated (positively) with adult and childhood diseases (CDC, 2012b). The health problems of childhood obesity have become quite newsworthy, harmful and costly, giving rise to societal, psychological, and emotional problems.

According to the CDC (2013), the presence of childhood obesity in the United States had been on a slow decline. In the last 12 years, the prevalence of childhood obesity declined from 15.21% to 14.94% (CDC, 2013). However, from 1998 to 2003 childhood obesity showed an increase from 13.5% to 15.21% (CDC, 2013), a difference of almost 1.5 percentage points, which at the time represented a slight increase in obesity.

After 2010, childhood obesity reached epidemic proportions and negatively affected the lives of an untold numbers of children. The proportions of those affected became important because of its effects on adults, with obesity rapidly overtaking smoking as the leading cause of death in the U.S. (Frost, 2003; Mokdad et al., 2004). Without some controls and/or preventions being found and implemented, obesity will continued to affect the lives of a large proportion of American children, as well as children from around the world. Projections showed the rise in childhood obesity in the U.S. will continue until schools, families, and communities, working together, come up with a purposeful plan to stop the epidemic called obesity.

According to the CDC, childhood obesity produces effect that are both immediate as well as long-term. Obese children are more apt to experience cardiovascular diseases, such as high cholesterol and high blood pressure. A report by the CDC (2014) predicted that 70% of obese children will suffer from at least one cardiovascular condition. Obese adolescents are more likely to experience pre-diabetes, as well as diabetes (CDC, 2014). Obese children and adolescents possess the prospects of bone and joint problems, sleep apnea, and social and psychological problems such as poor self-esteem, along with depression (CDC, 2014; Surgeon General, 2010).

Long-term problems are just as severe as the short-term problems. Problems such as being obese as a child can almost ensure obesity as an adult. The problems come with accompanying ailments such as heart disease, Type 2 diabetes, stroke, several types of cancer, and osteoarthritis (CDC, 2014; Surgeon General, 2010). Childhood overweight and obesity provide links to increased risk for particular adult types of cancer (CDC, 2014). Included in the types of cancers are breast cancer, cancer of the colon, endometrium, kidney cancer, cancer of the pancreas, and Hodgkin's lymphoma (CDC, 2014; Kushi, et al, 2012).

Interventions

About 95% of all children, age 5 to 17 years of age are in school for about 6-8 hours per day, and children eat one to two of the most important meals of the day while at school (Story, 1999). Researchers declared the school a safe and controlled environment, in which to start and continue an obesity program, when compared to the clinical settings (Story, 1999). The safe and controlled environment of the schools

allowed low-income children to be able to take part in a school-based obesity program at no cost (Story, 1999). Story (1999) conducted a literature review and identified intervention and prevention studies. Eleven studies carried out between 1965 and 1996 found students involved in school-based obesity control programs had significantly more reduction in overweight conditions than did students in a control group (Story, 1999). In the review, only one study reported that there was no difference between the treatment group and the control group (Story, 1999).

In the school setting, principals have the responsibility of determining the best policies, guidelines and goals needed for a school's obesity program (Fried & Simon, 2007). In setting food program goals, principals decide how much competitive and junk food to allow in the school's food environment. Competitive foods contain unhealthy fats, sugars, and caloric density, while junk foods inundate the school with unhealthy foods, calories and "with advertisements and commercialism…with effects that could last into adulthood" (Fried & Simon, 2007, p.1497). "The school food setting can have a major impact on obesity because …35% to 40% of a child total energy is consumed at school" (French, Story, Fulkerson & Gerlich, 2003, p.1161).

French, Story, Fulkerson & Hannan (2004) hypothesized, that an increase in the availability of low-fat à la carte foods, within the school environment, would result in increased sales of low-fat foods, in the school environment. The authors conducted a randomized trial of an environmental intervention using two school groups (a no intervention control and low-fat treatment group). The purpose of the environmental intervention was to increase the availability of low-fat foods in the cafeteria a la carte area and promote the sale of low-fat food items by students and school staff in one

group (French, Story, Fulkerson & Hannan, 2004). After the first year, no significant difference was found between the two groups. However after the second year, “42% of a la carte foods were low-fat (a 51% increase) compared with 28% of the no intervention a la carte foods, a decrease of 5% “(French, Story, Fulkerson & Hannan, 2004, p.1510). According to the author, the result showed increased low-fat foods consumption by students. The result marks one study that showed how the effectiveness and importance of low-fat foods investigations, changed the school food environment.

PE classes, in most schools, were curtailed due to federally mandated student testing and the preparation for testing for the No Child Left Behind (NCLB) Act of 2001. According to Filbrun and Fletcher (2005):

> Math and reading requirements put forth by NCLB, along with the nationwide budget cuts in education, are forcing administrators to diminish the time and resources available to nonessential subjects such as physical and health education. Unfortunately, the ever-increasing obesity crisis in America necessitates the inclusion of effective, well-funded physical education and health programs to help educate today's youth about the physical, emotional, and mental problems associated with poor health and inactivity. (para.1)

As reported by Bodgen, “Health and success in school are interrelated. Schools cannot achieve the primary mission of education if students and staff are not healthy and fit physically, mentally, and socially" (cited in The State Education Standard, 2004, p.3). Through the combined efforts of principals, state, local policy-makers and

wellness programs, one state's school obesity program was able to make significant progress in reducing childhood obesity. The progress achieved by the Mississippi Healthy Student Act of 2007 marked improvements in childhood obesity rates and made great contributions to the mission of the schools in Mississippi. The improvements while not novel could have a positive effect at other schools as well.

At the University of Southern Mississippi, investigators reported a slight decline in obesity rates among Mississippi's school children (Essary, 2010). One of the highest rated states for adult and childhood obesity in the U.S was Mississippi. "For the first-time obesity rates are declining for elementary-aged students" (Essary, 2010, para. 2). In 2010, Mississippi became the first state to report a statistically significant reduction in childhood obesity (Essay, 2010). The decline was due in part to the change in state regulations of the school food environment, and the re-addition of physical education classes (Essary, 2010). In 2005, 43% of Mississippi's elementary school students were obese or overweight. However by 2011 those rates dropped to 37.3% (Eisen, 2012) indicating that school-based interventions can and do influence childhood obesity rates.

Obesity became a high public interest matter, due to obese children growing up and becoming obese adults, the stress to individuals, issues of self-esteem and the cost of health care to the American taxpayers. Last year, Americans spent 14 billion dollars on healthcare related to childhood obesity and well over 117 billion dollars in medical expenses for obesity and obesity-related health problems in the general population (Almeling, 2003; CDC, 2012). According to the CDC (2012), childhood obesity has been responsible for many health issues:

> the risk of high blood pressure and high cholesterol and other cardiovascular problems. Obese adolescents tend to have impaired glucose tolerance, insulin resistance, and Type Two Diabetes. Obesity causes breathing problems, such as sleep apnea and asthma. It also causes joint and musculoskeletal problems. Fatty livers, gallstones, and gastro-esophageal reflux are also prominent. Obese children have a higher risk of social and emotional problems, such as discrimination and poor self-esteem, which can carry over into adulthood. (para. 4)

As the obesity epidemic became one of the leading causes of higher rates of juvenile health concerns, investigators found obesity that started in childhood emphasized the importance of early childhood intervention. Historically, it was mistakenly believed that an overweight child was a healthy child who would survive the rigors presented at birth and early childhood (Ebbeling, Pawley & Ludwig, 2002). However, obese children have been found to have slightly higher rates of chronic diseases in both childhood and adulthood. Included in these diseases are adult obesity, Type II diabetes mellitus, hypertension, colon cancer, depression, and osteoporosis (Ebbeling et al, 2002)). Investigators reported in *The British Medical Journal* "that the body mass index at 9 years of age was positively correlated with body mass index at age 50, but not with the percentage of body fat" (Wright et al., 2001, p.1280).

According to Whitaker et al. (1997), a child aged 1 to 2 years, without obese parents had an 8% chance of being overweight. According to the authors, there is at least a 79% chance for children aged 10 to 14 years to be obese with at least a single obese parent (Whitaker et al., 1997). "The odd ratio of a child growing up to be obese,

after adjusting for obese parents was 1.3% at age 1 to 2 years of age, and 17.5% for those 15 to 17 years of age" (Whitaker et al., 1997, p.869). Whitaker et al. (1997) concluded, children under 4 years of age, who did not have obese parents, were at low risk of becoming obese adults. However, among older children as previously stated, obesity was an accurate predictor of a child being overweight in adulthood. Therefore, as Whitaker et al. (1997) concluded, intervening in obesity during childhood was necessary and essential, in order to promote good health and to control obesity in adulthood.

Two crucial places to accomplish the task of intervention in childhood obesity are in the home and the school. Thus, the principal, as the Gatekeeper has a significant role in the school setting in the fight against obesity. Principals are responsible for the elements, used in reducing body weight such as health education, healthy school meals, physical activities, professional development and the overall school food environment.

Sedentary Lifestyle and Childhood Obesity

Due to the obesogenic nature of today's lifestyles, childhood obesity has almost become a way of life. According to Ebbeling et al. (2002), American children spend 75% of their wakening hours being inactive or sitting. It was estimated that children averaged about 12 minutes a day in vigorous exercise (Ebbeling et al., 2002). Only 12 minutes a day of vigorous exercise was due in part, to the lifestyle change of Americans, in the 21st century. As long ago as 40 years, mothers stayed home and ensured children ate somewhat healthy meals and got plenty of outside activities. Today many mothers are working at least 40 hours per week. Home-cooked meals are

quickly becoming relics of the past. TVs and video games are the new babysitters. In place of home cooked-meals, children are eating more fast foods loaded with salt, fat, and sugar. Most importantly, children do not get outside and burn off energy like children did 40 years ago. Fast foods coupled with sedentary lifestyles equates to childhood obesity.

Mitchell et al. (2009) conducted an investigation examining the association between a sedentary lifestyle and childhood obesity:

> The minimally adjusted association between sedentary behavior and obesity was positive, OR (odds ratio) =1.18 (1.08, 1.28). After adjusting for a series of potential confounders (i.e. gender, social factors, early life factors and maturation) the positive association remained OR = 1.32 (1.14, 1.53). (Mitchell et al., 2009, p.1)

Engaging in 15 minutes of moderate to vigorous physical activity per day was negatively associated with obesity, OR = 0.54 (0.48, 0.62; Mitchell et al., 2009). When 15 minutes of MVPA was measured in the model, there was not a positive association between sedentary behavior and obesity. A lack of physical activity or a sedentary lifestyle (along with various other issues) helped our country's youth gain more weight within the last 40 years than ever before.

Researchers labeled childhood obesity brought on by a sedentary lifestyle an epidemic and an ominous factor in the rising cost of health care. New diseases caused by obesity have replaced older ones. Diseases once reserved for adults are now becoming the quandaries of youth, such as Type 2 diabetes (Center for Disease Control and Prevention, 2013; CDC, 2004). Dietary patterns amongst children showed

an absence of certain types of foods (fruits, vegetables, whole grains), and a sedentary lifestyle, which vastly contributed to health risks and the obesity process.

The Problems School Principals Face

Many researchers have asked a very poignant question: Why would anyone want to be a school principal? Some have even described the principals as having the look of a deer whose eyes are caught staring in the headlights of a speeding car (Tucker & Codding, 2002). A speeding car with headlights represented "accountability". Parents, school boards, and the federal government are demanding an account of exactly what kids are doing in school, due to the rising cost to the American taxpayer. The federal government, while offering help, is also pressuring states to come up with answers for the education gap as well the obesity epidemic (Driscoll, D., Halcoussis, D. & Svorny, S., 2003; MWMR, 2011). States and parents are passing on the pressures to the board of education, and the board of education are pressing the school principal for accountability and raising student performance (Tucker & Codding, 2002). The pressures are causing some principals to leave the principalship and return to the classroom to teach (Yerkes & Guaglianone, 1998). Childhood obesity presented added pressures for school principals and demands attention of all school personnel and the other associated people.

Principals were confronted with the estimates showing one in three students maintained an above average body weight (Rossen & Rossen, 2011). Researchers traced the causes of the average body weight and obesity among students, to genetics, a lack of physical activities, eating habits, the home, school and the food environment (Rossen & Rossen, 2011). Researchers agreed with the idea of the principal's healthy

school food environment, as well as professional development for staff, as essentials, in any attempt at reducing obesity and improving academic success, among students.

Environment Risk Factors Associated With Childhood Obesity

In a research study conducted by Doak, Visscher, Renders & Seidell (2006), the authors found four risk factors associated with childhood obesity. The risk factors identified were (a) globalization of markets, more convenient foods and sedentary entertainment, (b) the marketing of foods specifically to children, (c) food and nutrition, and, (d) the development of children spending and buying power. Costa-Font et al. (2013) in another study found a significant positive correlation between social globalization and obesity. Specifically, the expansion of fast food restaurants, lifestyles changes, Americanization (an absence of home cooked meals) and acclimatizing to energy saving technology has been scientifically linked to the current obesity epidemic (Costa-Font et al., 2013). All these factors contributed to obesity around the world, especially in children. More importantly, many of these factors originated in the United States.

Unfortunately, the Unites States has the dubious honor of being the worldwide leader in the production and selling of high energy, low nutritious foods (Fairburn & Brownell, 2005). Food companies, while focusing on children, have been subjected to self-regulation; that is, they determined what foods were considered good to eat and that all too often equates to likeability by our youth. While productions of those foods had proven to be quite profitable, the selling of high-energy, low nutritious foods has, in part, fueled the obesity epidemic.

Globalization was responsible for the transportation of junk foods to the far corners of the world. At the same time, modern technologies (including TVs and electronic games) have become wildly available and highly popular. Physical activities are no longer a natural part of life (Hoeger & Hoeger, 2009). The two conditions (junk food and sedentary entertainment) made it possible for huge profits for the food, beverage, and gaming companies and in this way, were not likely to change. The direct marketing of foods to children was a recent phenomenon. The cause of the phenomenon is related to today's children having more independence than children of previous generations were. Perhaps, parents, who could afford to give, began to give children relatively large allowances and allowed the child to use the allowance for whatever purpose the child saw fit. For whatever reason, children's spending and buying power rose in recent years and children were able to buy non-nutritious, as well as nutritious foods, without parental consent (Chin, 2001). Since the taste of non-nutritious food scores higher than nutritious foods, non-nutritious foods are made readily accessible to children.

The School Environment's Effects on Students' Obesity

Today's teachers and principals are more apt to say the job of the school is to educate, not to babysit or parent students. Such attitudes may deemphasize the lesser notion of the school's responsibility for teaching students how to live a healthy life. However, according to Rossen and Rossen (2011), education and healthful living are both just as vital to a child's education and growth. "Healthy eating and physical activity can improve memory, learning, attention and cognition" (Rossen & Rossen, 2011, p.13).

While at school, principals are responsible for ensuring students received a healthy diet (food environment), the requirements of physical activities, as well a safe learning environment (school environment). It is the responsibility of the school principals to promote energy balance between foods and drinks consumed at school. Energy balance encompasses energy intake equal to energy output. The principal also provides opportunities for physical activity so that the amount of energy expended by students throughout a typical school day is appropriate (Nestle, 2000).

The buildings and all its surroundings, the teachers, staff, curriculum, students, foods services, and physical activities are defined as the school environment. French, Story, Fulkerson and Gerlach (2003) conducted an investigation and proposed positive food choices resulting from changes in the food environment. The changes showed the increase in the availability of low-fat foods, when students promoted the sale and consumption of low-fat foods. The results indicated a 10% increase in the sale of low-fat foods in Year 1 and a 33.6% increase in Year 2. Conversely, the study reported that students involved in the changing of the food environment did not self-report any significant changes in daily diets. The school environment was not part of the school curriculum, and the school curriculum played no role in these findings (French et al., 2003).

In a study, Cullen et al. (2007) examined the practicality of introducing environmental changes during a pilot study of the school's foodservice programs. The purpose of the study was to expand nutritional quality and to preclude obesity and Type 2 diabetes in students (Cullen et al., 2007). In the final analysis, 13 policies were instituted for the investigation, forming the basis for the environmental change pilot

program (Cullen et al., 2007). Five goals were introduced related to serving more fresh fruits and vegetables, lower fat entrees in the National School Lunch Program, and the a la carte food lines (Cullen et al., 2007). Reduced portion sizes were initiated for large sweetened beverages and chips in the a la carte lines, and 25% of the chips were to be either reduced-fat and/or baked (Cullen et al., 2007). According to the investigators, bottled water was made available in a la carte lines while vending machines, and beverage vending machines changes were being instituted (i.e., reduced sweetened beverage size and increased water availability). While implementing changes, the investigators implemented policies from the USDA banning the availability of sodas during meals (Cullen et al., 2007).

A change of the school food environment may be responsible for adding additional responsibilities and changes to the role of the school principals. One change to the food environment entailed the principals monitoring vending and soda machines. Principals also became responsible for ensuring more vegetables were made available for school meals. Principals were forced to look at the practice of receiving moneys from commercial food companies for pouring rights and other commercial advertisements in schools. Feuerstein (2001) investigated corporate involvement in schools as well as principals' perception of commercialism. Feuerstein found that because of the power and responsibilities of principals ambivalent among principals was rampant, regarding commercialism in schools.

> Through a survey conducted by Duke University, researchers found that principals are almost entirely supportive of activities, such as collecting Campbell's Soup labels or putting Coke or Pepsi machines in the halls to pay

> for baseball uniforms and band trips to Florida. These intrusions are viewed as salutary and almost necessary to enhance the goals of the school. Schools condone corporate involvement benefits the school and hence the student. (Di Bona et al., 2003, p.42)

Investigators have recognized the school environment as a viable resource for fighting childhood obesity (Scholtens, Middel, Rutz, Buijs, & Bemelmans, 2010). Because of the time spent by students in schools and school-related activities, schools became an essential place for understanding students' eating habits and promoting education in physical activities. Scholtens et al., (2010) conducted a study in which Dutch secondary schools were investigating excessive weight in the school environment. The study was an investigation of school principals' attitude towards student obesity, and what actions to take in order to prevent childhood obesity (Scholtens et al., 2010).The study found the majority (91%) of principals permitted vending machines with sweet drinks and candy bars in the schools (Scholtens et al., 2010) and on school campuses. The results of the study indicated that schools and principals were allowing unhealthy food and drink consumption on campuses. Thirty-three percent of the reported schools contended that obesity among students was increasing, and only half of the schools committed to some obligation for student obesity (Scholtens et al, 2010). Interestingly, only 3% of schools reported of having a policy or necessary environment for the prevention and control of obesity (Scholtens et al., 2010).

In a study conducted by Neumark-Sztainer, French, Hannan, Story and Fulkerson (2005), the investigators looked at the connection among high school

students' lunch arrangements, soft drink, vending machine procurements, and the school's food environment. A sample of students' surveys were completed concerning lunch practices, sodas and vending machine purchases and prescribed school food policies (Neumark-Sztainer, et al., 2005). Results of the study revealed that students in schools where principals allowed students to leave campus (open campus) for lunch, were significantly more likely to eat junk foods and drink more sweetened drinks than students on campuses (closed) where during the lunch period, students were restricted from leaving (Neumark-Sztainer et al., 2005). Snack food purchases, whether in an opened or closed campus, significantly correspond to the number of sodas and vending machines on campus and tended to allow food companies to set the policies for regulating those vending machine purchases on open campuses (Neumark-Sztainer et al., 2005). Some principals turned off drink machines while students were eating and students bought drinks 1.4+/-1.6 times per week (Neumark-Sztainer et al., 2005). The study also revealed that students bought less soft drink than those in which drink machines remained on, during lunchtime 1.9 +/- 1.8 days per week (Neumark-Sztainer et al., 2005). In discussing the results, the authors concluded that decreasing access to competitive foods (vending machines and sweetened drinks) associated positively with fewer purchases of competitive foods and less weight gain. The authors suggested that policymakers and principals examine the food policies and guidelines and provide restrictions to non-nutritious foods. More specifically, foods inundated with fats and sugars and low in nutritional value should have restrictions placed on them during lunchtime at school (Neumark-Sztainer et al., 2005).

Neumark-Sztainer et al. (2005) found that in school settings, where students were restricted from leaving campus, students regularly ate meals from the school's lunch menus (M = 2.4 days/week), more than any other sources, although often, students ate à la carte (1.8 days/week; Neumark-Sztainer et al., 2005). According to the authors, students consumed lunches brought from home on average once per week (0.9 days/week). On average, students made purchases from vending machines once per week (M = 0.9). Once a week, students bought such items as snack, cookies, and sugary drinks from the vending machines located throughout the campus (Neumark-Sztainer et al., 2005). Almost two-thirds (61.5%) of the students on average made vending machine soft drink purchases at least 1 day per week (Neumark-Sztainer et al., 2005).

Recently, states have passed laws intended to improve nutrition (Marin and Brown, 2008), and schools are once again offering more physical education classes (Marin & Brown, 2008). School personnel need more emphasis placed on professional development in order to prevent or control the consumption of non-nutritious foods. At the same time, the consumption of nutritious foods must be encouraged and physical activities emphasized. These are subjects for professional development.

Noellen et al. (2007) "investigated principals' perceptions of the school environment, the impact of obesity and the potential effects of legislation regulating food and beverage offerings" (p.2). Outcomes of the study revealed tensions integral to school officials' perceptions of the principal's roles and responsibilities in combating obesity. While most principals agreed that obesity was a problem, in general, most did not feel it was problematic at their schools (Noellen et al., 2007).

Although admitting there were a few obvious overweight students, principals felt overweight and obese students were not the norm at their schools (Noellen et al., 2007). In addition, according to the authors, those principals agreed to have the responsibility for combating obesity in schools and for taking a proactive stance in reducing obesity. However, while schools have a role to play in fighting obesity; principals were not the cause and did not have a cure (Noellen et al., 2007). To the principal, it came down to priorities, with all the mandates schools were responsible for, hardly any time for attending to obesity problems, presented itself (Noellen et al., 2007). Noellen et al. noted, principals felt the eating and dietary practices of children were deep-seated by the time the child reached school, and have proven to be quite hard to amend or change. According to the authors, any attempt at changing children eating habits must start at a much earlier age (infancy). Most principals felt that health and obesity were significant concerns in the school environment, but they were not a top priority (Noellen et al., 2007).

In 2008, Marin and Brown presented empirical research useful in attempting to reverse childhood obesity from the standpoint of the school principal. The authors outlined several relevant factors and developments relating to food and exercise in school. Factors outlined, were "teaching health classes, physical education classes, after-school sports, nutrition through school lunches content, off-campus eating policies and vending machine content" (Marin & Brown, 2008, p.1). In the investigation, principals were able to change some aspects of the school environment in order to accommodate obese children. By introducing health classes and physical education classes and by changing the types and availability of snack foods, and fast

foods, schools, and principals were able to improve nutrition and show a reduction in obesity (Marin & Brown, 2008).

Terry-McElrath, O'Malley, Delva, and Johnston (2009) examined tendencies in the accessibility of certain types of foods in American middle and high school from 2004 to 2007. “Examined was the potential association between food availability, students’ eating habits (self-reported) and body mass index” (Terry-McElrath et al., 2009, p. S45). Results indicated:

> A decrease in the availability of regular sugar/fat food items in both middle and high school and some indication of an increase in high school availability of reduced-fat food item through school lunch or à la carte. Some minimal evidence was found for relationships between the school food environment and student BMI-related outcomes and food consumption measures. (Terry-McElrath et al., 2009, p. S45)

Although schools fall under the auspices of state and local government, the principal has the primary responsibility for making decisions about the academic environment at the local level. The principal is the chief administrator or CEO of the school. The principal is responsible for all policies and programs in the school (including those involving obesity, as well as food programs). Academic and obesity prevention policies and programs presented an excellent opportunity for principals to offer professional development and to exercise role-modeling capabilities by leading by example.

Effects of Obesity on Students

Among children, psychological and emotional problems caused by obesity had been well documented (Jutel, 2005). With what appeared as an obsession with a thin body, perceived physical abnormalities such as being overweight caused some children to socially withdraw from peers (Frost, 2003). Research has shown that obese children tended to be lonelier, have a sadder outlook on life and are more likely stressed than children who were of a healthier body weight (Conley, 2012). Stigmatization caused by being overweight often led to low self-esteem, bullying and name-calling by peers, and other forms of harassment with these problems beginning early in life and lasting well into and thru-out adulthood (Puhl & Heuer, 2010).

Studies showed many obese children were thought of as less attractive or not as good at playing sports, running, or dating as the peers who were of average weight (Anesbury & Tiggerman, 2000). At school, some obese students preferred to stay away from peers. Some became social misfits and self-imposed social outcasts. Many obese children felt “left out” of relevant plans and decisions made by peers and may have been more likely to commit suicide than healthy weight peers. From the community’s standpoint, at school, the principal had the responsibility to protect and to play the important role of leader, to ensure that does not happen or at least try to rectify the situation with students. The principal occupies a strategic role in leading the fight against obesity; for this reason, the principal’s role deserves a closer historical look.

How the Principal Became Situated to Help Reduce Childhood Obesity

During the colonial period, schools were disorganized, unregulated, and mostly unaccountable (Crews & Counts, 1997). The first American schools were not compulsory nor linked to any higher authority (except the church; Crews & Count). The colonial schools were established, so children could learn the rudiments of education in order to master the reading and understanding of the Bible for the salvation of the soul. The very first principals were called schoolmasters and were little more than persons in-charge of the building. Many taught in the same one-room building where they were taught. It was not until the "progressive era" that schoolmaster name was changed to principal-teacher and eventually to the principal. With the name change came a change in responsibility, to include the carrying out of administrative duties necessary for a school to run and eventually to reporting to a board (the board of education).

The principal teacher was responsible to the local community through an elected or appointed local school board for what went on inside the school, which was the democratizing of individuals (Kafka, 2009). The position of principal-teacher came with the added responsibilities of carrying out the administrative duties necessary for the school to run properly (Kafka, 2009). "The duties included caring for the building, carrying out discipline, taking attendance, and making sure the school opened and closed on time" (Kafka, 2009, p. 321).

As time progressed, the title of principal-teacher changed to principal, and teaching duties of the principal were dropped (Kafka, 2009). The principal's position increased to a managerial function, where the principal's duties entailed supervision,

training, and politician (Kafka, 2009). “By the mid to late 1800s, the principalship had gained authority and formal institutional power” (Kafka, 2009, p. 321). By the end of the 19th century, the principalship had become a very powerful function and entered into the principal we know today. Soon after that, the principalship became a supervisory position (Kafka, 2009).

Principals as a Source of Obesity Control

Despite the potentially important role of principals in the reduction of the obesity epidemic, there was limited practical research, describing what role principals play in combating obesity (Yager & O’Dea, 2005). More importantly, there was also limited data on the nutritional training principals received during staff development and training concerning obesity and the effects of role modeling (Yager & O'Dea, 2005). According to Yager and O'Dea, principals had an archaic understanding of the causes of obesity, as many believed that obesity was caused by excessive nutritional intake, regardless of any genetic or societal factors. Principals have a stake in increasing the knowledge and understanding of overweight children, and in promoting healthy eating and physical activity, in an attempt to solve or control the problem of obesity.

Although a principal’s time is precious, principals and schools are one of the first lines of defense in the war against obesity, followed closely behind parents and the community. As mentioned earlier, students spent roughly a third of the day in school (Schanzenbach, 2009; Story, Kaphingst & French, 2006; Swinburn & Egger, 2003). During the time spent in school, students exposure to the school's food environment (breakfast, lunch, and snacks) had been noted (Story et al., 2006). Since

millions of students participated in the setting on a daily basis, it provided an excellent opportunity for promoting weight reduction and obesity programs (Institute of Medicine, 2005; Schanzenbach, 2009). The significance of the school setting, under the guidance of the principal, allowed for professional development for teachers and staff in childhood obesity and the establishment of policies that manage students' eating habits. A knowledge of the sources (commercial food entities) and types of foods served to students while in school were essential to attempts at controlling the obesity epidemic.

A necessary element for principals to consider in obesity prevention is how to get children to eat healthy, nutritious foods, which are not typically served or eaten in the home. Some children are fussy eaters, and others have not had the experience and opportunity of eating fruits, vegetables, and whole grains at home. An understanding of how children come to like and dislike certain foods becomes vital information principals need to know.

Researchers from the Weight of Opinion (WOO) Study, conducted by the New South Wales (NSW) Centre for Overweight and Obesity (COO), collected data from teachers, principals, parents, and students (Wilkenfeld, Pagnini, Booth, Booth, & King, 2007). The purpose was to investigate the perceptions of teachers, principals, parents and students on childhood overweight and obesity (Wilkenfeld et al., 2007). "The issues of the relationship, prevention, and accountability for overweight and obesity, between the two groups were critical to the planning and use of suitable resources and policies" (Wilkenfeld, et al., 2007, p. 4). Some of the major findings of the study were:

- All teachers believed childhood obesity was a concern at their school, as well as student being underweight.
- Teachers felt school should play a significant role in fighting obesity.
- While acknowledging the role of the school in confronting obesity, all teachers felt the parents of the children must lead the fight.
- The teachers all stated that they would never raise the issue of a student being overweight or obese, unless the child physical or emotional well-being were in jeopardy.
- Students reported weight issues were a problem.
- Students believed it was a challenge for students to maintain a healthy weight, primarily due to the fatty and unhealthy foods found at school. (Wilkenfeld, et al., 2007, p. 4)

The teacher/principal surveys were intended to gain valuable information about how the schools were promoting nutritious eating and more physical activities within the schools (Wilkenfeld et al., 2007). The surveys also provided information concerning the thoughts of teacher/principal regarding the consequences of the situation within the school's environment (Wilkenfeld et al., 2007). Priorities regarding the health and welfare of the students were of the highest priority. Bullying, psychological issues, and drugs and alcohol issues also presented pressing matters (Wilkenfeld et al., 2007).

Obstacles to new programs included a shortage of time, inadequate staffing and funding, which is needed to sustain health and welfare programs (Wilkenfeld et al., 2007), and professional development. All principals required such necessities as

additonal support in terms of funding, staffing, and professional development (Wilkenfeld et al., 2007).

Principals who are aware of the causes of overweight and obesity believe physical activity, and nutrition issues should be addressed by parents at an early age. In bringing together the community and the school, suggestions are needed concerning what actions are most needed in contributing to the prevention of obesity (Wilkenfeld, et al., 2007). "Suggestions were introduced promoting positive role models, changes in the marketing of unhealthy foods, decreasing costs of healthy food and the costs associated with participating in sport" (Wilkenfeld, et al., 2007). Much like the WOO study, Odum, McKyer, Tisone and Outley (2013) conducted a study, as a part of a larger study, investigating elementary school teachers and principals' opinions regarding obesity. Odum et al. (2013) examined school personnel's perceptions of obesity in students and gathered personal views of the factors which caused obesity. In order to get the perceptions of the "insider experts", the researchers conducted community-based participatory research in order to investigate the viewpoints of principals and teachers on childhood obesity (Odum et al., 2013, p.207). The research centered on "the pervasiveness and facilitating factors of childhood obesity" (Odum et al., 2013, p.206). Results showed everyone, with the exception of one person ($N = 30$) purported that obesity in elementary school students was a significant problem (Odum et al., 2013). "While all personnel were aware of the evaluating of the occurrence of obesity among elementary school students, only one participant recalled the rates for a particular school" (Odum et al., 2013, p. 208). Fifty-eight percent of the school's students were found to be overweight or obese (Odum et al., 2013). The reported

condition presented a 15% increase from the previous year weights were recorded (Odum et al., 2013). Findings of the study were reliable across urban and rural schools, age groups and genders, and provided the foundation for the development of a school-based intervention (Odum et al., 2013). The most commonly recognized factors contributing to childhood obesity "by elementary school personnel were (a) parents/home environment (b) poor nutrition, (c) child control of dietary choices, (d) child inactivity, and (e) the prevalence of" entertainment electronics" (Odum et al., 2013, p. 208).

An earlier study by Schwartz and Puhl (2002) assessed the research literature regarding elementary school principals' beliefs about the primary contributors of student obesity. The authors presented similar research, "which found 59% of school principals cited a lack of self-control, and 57% attributed psychological problems as key elements to childhood obesity" (cited in Schwartz & Puhl, 2002, p. 65). The assessment made it clear that these principals blamed the individual for being obese. While principals agreed childhood obesity was one of the leading causes of peer rejection, principals also believed teachers would not support the implementation of a school-based treatment program (Schwartz & Puhl, 2002). Principals also believed obese children faced stigmatization from educators, as well as other students (Schwartz & Puhl, 2002).

Characteristics of Male and Female Principals

The pressures and stresses of being a school principal can take a serious toll on an individual, whether male or female. A principal must be able to address the pressures and stresses in a timely and professional manner. One of the stressors faced

by principals deals with the students coming from many and varied family situations and backgrounds. Some students came from homes where great emphasis was placed on education, while others came from homes and situations where little or no emphasis was placed upon education. Many students came from homes where English was not the primary language. Some students came from low socioeconomic backgrounds. All students brought of unique values and a set problems to school, and a principal had the responsibility of trying to blend and relate successfully to each student.

Principals were also subjected to budget restraints and cuts, brought on by the U.S. economic collapse of 2007-2008. Principals were forced to make class sizes larger and drop certain courses (e.g., physical education). Principals were put into the unenviable position of doing more with less. Schools had been hit hard by the cuts from federal and state budgets. Principals have been forced to look for other funding sources. Researchers have attempted to come to the aid of the principal. In order to lend credence to the school principal, researchers estimated a school principal's span of control was six to ten times more than an ordinary chief executive officer (CEO) in private industry (Tucker & Codding, 2002). The principal's job demanded an individual's full attention and an individual with exceptional abilities, and an abundance of professionalism.

During the 2011-2012 school years, there were about 116,000 principals in the United States. According to the National Center for Education Statistics:

> 89,000 were public school principal while 26,000 were private school principals. Among the public schools, 80 percent of principals were White

> (non-Hispanic), 10 percent were Black (non-Hispanic), seven percent were Hispanic, and three percent were of another race/ethnicity…. Females made up 52 percent overall: 64 percent in primary school, 42 percent in middle school, 30 percent in high school, and 40 percent in combined schools. (Bitterman, Goldring, & Gray, 2013, p.3)

However, the distributions (sex and race) were seemingly consistent across school types (Bitterman, Goldring & Gray, 2013). Identical arrangements appeared when comparing schools based on community type (low income, middle income), size of enrollment and staffing, and the percentage of students eligible for free or reduced priced lunches in all K-12 schools. (Department for Professional Employees, AFL-CIO, 2014, para.3)

Bitterman, Goldring, and Gray (2013) reported the average age of school principals to be 50 years. The authors continued that sixty-two percent of principals held a master's degree, while only two percent held a bachelor's degree or less. Some principals had an education specialist/professional diploma (26%), and 10% had a doctorate professional degree (Bitterman, Goldring and Gray., 2013, p. 3). Bitterman, Goldring and Gray continued:

> Among private schools, more principals held a master's degree (50 percent), compared to principals with a bachelor's degree or less (31 percent), an education specialist/professional diploma (10 percent), or a doctorate/first-professional degree (9 percent). (2013, p.3)

During the early days of the American school system, women were a natural selection for teacher because of the domestic role played in the home (schooling for

children was considered an extension of maternal duties). For the one room schoolhouse, there were no special skills needed, making the woman a natural selection for teacher. However, when schools became more sophisticated and scientific management took hold, men began to move into the senior administration positions, as women were left behind in the classroom.

Most studies of principals have centered on the experiences and behaviors of White males (Holtkamp, 2002; Shakeshaft, 1989). However, female and male leadership styles have proven to be quite different in the way women and men principals manage (Shakeshaft, 1989). Characteristics traditionally associated with men (commanding, imposing, decisive leadership, and behaviors based on less emotion) were respected in education more than the more democratic approach of women in leadership positons (Shakeshaft, 1989). Women were thought to possess a more dispersed leadership style that involved the principal's shared visions and shared decision making characteristics (Shakeshaft, 1989). In sum, women have been found to be more representative and participatory in their leadership style while men tend to be more authoritarian (Shakeshaft, 1989).

However, Holtkamp (2002) conducted an investigation in which female principals were allowed to clarify and appraise their individualities in order to develop a greater understanding of the mentality of women principals. Holtkamp (2002) found five female characteristics women possessed that were constant with female principals: drive to achieve, use of spiritual values, involvement in professional organizations, involvement as community leaders, and valuing personal relationships.

Despite differences in years of experience, culture and age, most of the women in the study shared a set of shared values and similar belief systems (Holtkamp, 2002).

In making a comparison, Shakeshaft (1989) found that, compared with male principals:

> Female principals are more people-oriented, have better interpersonal skills, and create school environments that are more person oriented and more encouraging of community involvement (p. 174). Female principals are better informed about pedagogy, more inclined to be direct instructional leaders, and create climates that are more conducive to learning (pp. 173-174). Female principals adopt a more democratic, participatory leadership style, and encourage and develop a stronger sense of the school community and one where achievement is emphasized (p. 187).

Shakeshaft's (1989) explanations for the differences she found were:

- Differential abilities in males and females aspiring to a teaching career.
- Differential ability due to past differences in the available career choices for women and men; thus, women who became teachers were of higher ability than men. (p. 169)
- Differences in motivation caused more women than men to want to be teachers. (pp. 70–71)
- Differences in experience, with women taking longer to become school administrators. (p. 63)
- Differences in communication patterns including supervisory conferences, critical feedback, and interpretation. (p. 181)

The Impact of Principal's Years of Experience on Childhood Obesity

Principals' years of experience have been shown to be consequential in changing the school food, as well as the school environment through the effective use of resources. Newton, Giesen, Freeman, Bishop and Zeitoun (2003) reasoned that principals should draw on previously experienced principals for ideas related to changing the school and food environments in a manner consistent with the applications of district food policies and wellness programs.

According to Noellen et al. (2007), researchers have noted that wellness programs for changing the schools environment have proven beneficial. However, many principals, with years of experience, have negative feelings about wellness programs and resources being adequate when dealing with childhood obesity, especially if states do not provide the proper monetary assistance and adequate resources. Some principals see childhood obesity programs as useless and a waste of time and resources. However, as stated, experienced principals tend to believe other teachers with experience in combating childhood obesity through professional development (Morbidity and Mortality Weekly Report [MMWR], 2011) should inform other principals and staff. Experienced principals believe that other school staff are important in establishing obesity programs, such as nurses, physical education teachers, and food service personnel (Morbidity and Mortality Report, 2011). According to the same report, experienced principals also noted that schools should seek resources beyond the school environment and present policies which address childhood obesity outside school grounds to establishments within proximity to the schools (Morbidity and Mortality Report, 2011).

Jefferies (2014) noted that a principal's years of experience was negatively correlated with a principal's belief in the responsibility to require instruction and training on policies of childhood obesity. Principals with 2 or more years of experience were least likely to agree with the criterion set forth by such policies. The researcher determined that a principal's years of experience was significant when considering "The factors that influence principal perceptions of local, state and federal school wellness policies designed to impact or eliminate childhood obesity' (Jefferies, 2014, p. 48). In examining principals' perceived beliefs relating to their responsibility for successful implementation of school wellness policy, both the novice and most senior principals, were least likely to agree with the criterion. Jefferies (2014) also determined that a principal's years of experience were not significant when considering a principal's belief in responsibility to require instructions on nutrition. Jefferies (2014) also determined principals with 2 or more years of experience were least likely to agree with such criterion. The researcher determined a principal's years of experience were significantly related to factors influencing a principal's perceptions of local, state, and federal school wellness policies intended to influence or eliminate childhood obesity (Jefferies, 2014). In research conducted by Francis (2014) the investigation revealed similar results.

Professional Development

Research has already shown that principals play a significant role as leaders in the instigation of professional development for both teachers and staff. Professional development (PD) is defined in the context of childhood obesity as developed specialized skills and training for teachers and other support personnel to present

+6knowledge and better support students with or might have a weight issue (Hidden Curriculum, 2014). The term professional development, as used in childhood obesity studies, "describes an in-depth, continuous, intensive approach to refining teachers' and principals' effectiveness in promoting state and local policies on childhood obesity" (Hidden Curriculum, 2014, para.1).

Blasé and Blasé (2000) sought to determine features of principals that enrich professional development and the influence those characteristics had on teachers. Two themes emerged in the findings: a principal's ability to talk to teachers and a principal's ability to explain what was required in order to promote reflection (Blasé and Blasé, 2000). The American educator and education reformer, John Dewey (1916) declared reflection to be a means of professional development (Blasé & Blasé, 2000). Dewey understood reflections to be more important than teaching techniques used in the classroom (Blasé & Blasé, 2000). Reflection after professional development causes the teacher to seriously consider the purpose of the professional development. Reflection allows time for one to reach a conclusion and form an opinion for one's self (Blasé & Blasé, 2000). Results of the Blasé and Blasé' study found self-evaluation after reflection involved careful considerations that allows teachers to establish more relaxed teaching methods (Blasé & Blasé, 2000). Self-evaluation is an examination of one's beliefs and knowledge systems combined, leading to growth, and a better understanding of self and the teaching profession (Blasé & Blasé, 2000).

As an instructional leader and an individual, what the principal believes has a significant influence on the development of teachers and staff development. According to Bredeson and Johanssen (2000, p.391), "Principals are 'stewards' of learning."

Moreover, principals show concern for staff development daily (Bredeson and Johanssen, 2000). Most principals realize there is a link between professional development and other school issues (i.e., childhood obesity) as well as teacher learning. All are integral responsibilities of the school principal. Therefore, if a principal truly believes professional or staff development is necessary to combat childhood obesity, then it is supposed to have to positive effect on teachers and staff (Bredeson and Johanssen, 2000).

The Role of School Leaders in Combating Childhood Obesity

Childhood obesity was recognized as a major problem for the United States and the rest of the world. The U.S. leaders including the president, senators, and governors, all the way down to community leaders and school board members, have been looking for ways to combat the dreaded pandemic. .

For example in 2010, First Lady Michelle Obama started an ambitious plan to aid in the reduction of childhood obesity in a nationwide campaign entitled “Let’s Move”. According to Ferran (2010), “Let’s Move” was based on four pillars. The first pillar involved teaching parents about the effects of nutrition and physical activities (Ferran, 2010). The second included improving the quality of food the schools provided (Ferran, 2010). The third pillar involved making healthy foods more affordable and accessible to all families, or eliminating food deserts (Ferran, 2010). The fourth pillar included promoting physical activities, both at home and at school (Ferran, 2010). The objective of “Let’s Move” was to eliminate childhood obesity within a generation, thus reducing adult obesity (Ferran, 2010). According to “Let’s Move”:

> Thanks to these efforts put forth by Let's Move, families have more access to more of the information they need to make healthier decisions for their children. Young people now have more opportunities for physical activity in their communities. Food in schools has been dramatically improved. Moreover, more Americans now have access to healthy, affordable food right in their communities. ("Let's Move," n.d., para.2)

The CDC found obesity rates among children aged 2-to-5 years old have declined by "40 percent in the past 8 years from an obesity rate of 13.9 percent in 2003–2004 to 8.4 percent in 2011–2012" (Torres, 2014, para.1) following the "Let's Move" campaign.

As previously stated, for many years, Mississippi led the country in both childhood and adult rates of obesity. In 2006, the state set nutritional standards for vending machines located in schools. In 2007, the state passed the Healthy Students Act in 2007, which set standards "for physical education, health education, wellness policies, and school meals, snacks, and drinks" (Robert Woods Johnson Foundation, [RWJF], 2013, para.1). In 2005, 43% of Mississippi's elementary school students were obese or overweight (RWJF, 2013). By 2011, those rates had dropped to 37.3%. In 2013, the state reported a 13.3% decline in obesity for grades kindergarten through grade 5 (RWJF, 2013). After years of steady increases in rates of childhood obesity, the state saw a significant decrease in rates among its youngest students, including both Black and White children (RWJF, 2013). The primary possible reason for this success was a school policy called the Healthy Student Act, which lead to a major overhaul of Mississippi public schools, in regards to childhood obesity (RWJF, 2013).

Table 1 displays the childhood obesity policy enacted in low and high BMI states in order to address this significant childhood problem. As can be seen in Table 1, more policies have been enacted in high BMI states (see Table 1).

Table 1: State childhood obesity policies enacted in 2012 for low and high BMI states

Highest BMI States	School nutrition	Physical education physical activity	School wellness	Joint shared use agreement	Insurance coverage for obesity	Task forces study
Louisiana		X				X
Mississippi			X			
Texas						
Kentucky					X	
West Virginia						
Tennessee	X					
Michigan						
South Carolina						

Lowest BMI states	School nutrition	Physical education physical activity	School wellness	Joint shared use agreement	Insurance coverage for obesity	Task forces study
----------						
Colorado	X					
Vermont						X
New Jersey						
New Hampshire						
Washington						
Wyoming						
Hawaii						X
Wisconsin						

National Conference of State Legislators (2013). Childhood obesity | 2012 update of legislative policy options. NCSL. http://www.ncsl.org/research/health/childhood-obesity-2012.aspx

From another statewide perspective, Arkansas, though not listed as a BMI state provided another excellent example of a state's determination to control childhood obesity, by passing Act 1220 (state policy). Although most research has centered on

childhood obesity being an individual problem, Arkansas took a different approach and looked at obesity as a school environment and public health issue. In 1999, Arkansas became one of the first states to recognize the toll on the health-care system brought about by obesity. In 2006, Arkansas, a state that ranked 7th highest in obesity, began to make obesity prevention a top priority by implementing a mandated wellness program.

> The law created a fifteen-member statewide Child Health Advisory Committee (CHAC) to, among other things, (1) make recommendations to the state Board of Education and state Board of Health regarding nutrition standards in public schools, (2) eliminate access to vending machines in public elementary schools, (3) require that schools disclose contracts for competitive foods and beverages, (4) assess body mass index for all public school students, and (5) create school district-level advisory committees to create local policies. (Fried & Simon, 2007, p.1522)

The advisory committee needed no other approval for recommendations submitted for final approval by the committee (Fried & Simon, 2007). The committee had been granted autonomy, thus alleviating the red tape (Fried & Simon, 2007).

In the study, Fried and Simon (2007) asked, "If the current regulatory approaches are valid public health policy tools for improving school nutrition" (Fried & Simon, 2007, p. 1497). Admitting an absence of a balanced nutrition policy, along with a fundamental lack of a meaningful enforcement of regulating non-nutritious foods, principals proposed the need for more focused strategies (Fried & Simon,

2007). The researchers proposed as the ultimate solution, a complete ban on all competitive foods, in all grades, and at all times (Fried & Simon, 2007).

As expenses brought on by obesity grow larger each year, state coffers continued to grow smaller. Ways that are efficient and effective must be found to combat childhood obesity. In order to address this problem, states are looking more and more to scientific research for answers.

> School superintendents can collaborate with agents from local governments and various community organizations such as the American Association of School Administrators and National School Boards Association to implement innovative policies and programs, which help prevent and reduce childhood obesity. The combined efforts and collective strength of schools, families, and communities are needed to reverse obesity trends. (Li & Hooker, 2010, p.102)

Li and Hooker (2010) explored the relationships between childhood obesity and different school type. National School Lunch Program and School Breakfast Program eligibility, membership in sports clubs and other socio-demographics, and household factors all contribute to childhood obesity (Li and Hooker). "Nonlinear regression models with interaction terms were developed to investigate how the relationships affected childhood BMI rates" (Li & Hooker, 2010, p.96). In the report:

> Results of the study revealed statistically significant effects on BMI for children from households eligible for the NSLP/SBP attending public schools. A mean BMI value of 0.401 higher was found for counterparts attending private schools ($p < .05$). If the child both attends public school and is eligible for the NSLP/SBP, then his or her BMI is 0.725 higher ($p < .001$). Children

> taking part in the NSLP or SBP have a 4.5% higher probability of being overweight ($p < .001$). (Li & Hooker, 2010, p. 96)

From the findings, the results showed public schools need to take substantial steps in reducing childhood overweight and obesity. Developing outstanding wellness programs through partnerships between communities, nongovernmental organizations, as well as government agencies are critical to creating healthy eating and exercising habits (Li & Hooker, 2010). In order to ensure youth have more occasions to take part in aerobic and physical activities, outside of school, joint-use access to community exercise facilities must be provided (Li & Hooker, 2010). Another recent school-based obesity prevention study implies such intervention through physical activity, and healthy snacks can result in a significant reduction in the percentage of body fat (Wang et al., 2008).

Summary

The causes of childhood obesity are many and varied; however, the reasons highlighted in the report revolve around high-energy foods (sweets and salts) consumption, lack of exercise and a sedentary lifestyle. Minorities and individuals from low-income families tend to be more overweight than their White counterparts.

As noted by Jefferies, in changing the school environment, years of experience correlated negatively with a principal's belief in the responsibility to require instruction and training on policies of childhood obesity. However, Newton et al. (2003) reasoned that experienced principals could draw on previous experienced principals to change the food environment in a manner consistent with the prospective applications of district food policies and wellness programs. Interventions include

providing more access to physical exercise facilities and aiding sports organizations are within the schools' abilities to ensure youth have more occasions to take part in aerobic and physical activities (Li & Hooker, 2010). Another school-based obesity prevention study implies interventions through physical activity, and healthy snacks can result in a significant reduction in percent body fat (Wang et al., 2008).

Research by Feuerstein (2001) showed that commercialism often clouded principals' perceptions. Principals are more likely to condone commercialism because of the monies received from commercial food companies. The money is needed to fill the gap left by cuts in funding.

> In a survey conducted by Duke University, researchers (2003) confirmed: Male and female principals proved to be quite different with female principals being more people-oriented, have better interpersonal skills and better able to create school environments that were more person oriented and more encouraging of community involvement. Female principals were better informed about pedagogy, more inclined to be direct instructional leaders, and create climates that are more conducive to learning (pp. 173-174).

Despite women appearing to be better suited to control childhood obesity, this research does not verify this assumption.

According to the CDC, childhood obesity has been responsible for many societal as well as psychological problems. Childhood obesity is linked to adult obesity, so it is important that prevention start as soon as possible, hopefully, during early childhood. Since about 95% of all American children attend school, the school has been identified as the best place for an obesity intervention. Principals and schools

are responsible for some of the components used in reducing body weight such as health education, healthy school meals, physical activities and the overall school food environment.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

Childhood obesity has remained on the rise worldwide. As frustrated researchers have discovered, failure is eminent in most obesity programs and ideas being researched and tested today. A few researchers have found significant results in isolated areas or within groups globally, albeit short-lived in most situations. While growth in BMI levels of most measured groups is reported annually, the 2-year-old to 19-year-old age group (see Table 2), continues to average out at a sustaining increase in BMI levels.

Table 2: Childhood obesity rates 2011-2012

Characteristics	Overweight or obesity BMI-for-ages >/= 85th%	Obesity BMI-for-ages </= 95th%
	Percentile	Percentile
All	31.8	16.9
2-5-years-old	22.8	8.4
6-11-years-old	34.2	17.7
12-19-years-old	34.5	20.5
All females		
2-19-years-old	31.6	17.2
White (non-Hispanic)	29.2	15.6
Black (non-Hispanic)	36.1	20.5
Hispanic	37.0	20.6
All males		
2-19-years-old	32.0	16.
White (non-Hispanic)	27.8	12.6
Black (non-Hispanic)	34.4	19.9

Hispanic	40.7	24.1

Source: Ogden C. L., Carroll, M. D., Kit, B.K., & Flegal K. M. (2014). Prevalence of childhood and adult obesity in the United States, 2011-2012. Journal of the American Medical Association, 311(8), 806-814.

In 2003-2004, 17% of 2-year-old to 19-year-old were overweight compared to 14% of the same age group in 1999-2000, with 28% at risk of becoming overweight (Ogden, et al., 2006). One subset of the group, the preschoolers, has shown a decrease in BMI levels catching researchers by surprise. The *Washington Post* reported for the CDC that there was a 43% drop in obesity rates for 2- to 5-year-olds (Sun, 2014). Ogden, Carroll, Kit, and Flegal (2014) reported the drop to be from 13.9% to 8.4% in the 2-to 5-year-old-child subgroup, which is a substantial redirection for the childhood obesity epidemic. The author reported all of the findings of the national study in a report published in the March 2014 edition of the *Journal of the American Medical Association*. Tavernese (2014) announced that other age groups had remained flat, and the obesity levels for women over the age of 60 had increased.

The Eight Highest and Eight Lowest Obesity States

The researcher utilized the eight lowest BMI states as identified by CDC (2014): Colorado (22), Vermont (24.6), New Jersey (24.7), New Hampshire (26), Washington, (26.2), Wyoming (26.6), Hawaii (27.4), and Wisconsin (28) (CDC 2014). The eight highest obesity states utilized for the research were Louisiana (39.8), Mississippi (39.2), Texas (36), Kentucky (35.7), West Virginia (33.5) Tennessee (33), Michigan (32.3), and South Carolina (31.5; CDC 2014).

The Youth Risk Behavior Survey (YRBS) provides data on health-risk behaviors among students in the United States, including unhealthy nutritional

behaviors; and physical inactivity (CDC, 2014a). YRBS also measures the prevalence of obesity and asthma among youth and young adults.

Adult Obesity Rates for Highest and Lowest Childhood Obesity States

Adult obesity rates from the lowest childhood obesity states: Colorado (21.3), Vermont (24.7), New Jersey (26.3), New Hampshire (26.7), Washington (27.2), Wyoming (27.8), Hawaii (21.8), and Wisconsin (29.8). Adult obesity rates from the highest childhood obesity states: Louisiana (35.1), Mississippi (35.1), Texas (30.9), Kentucky (33.2), West Virginia (35.1), Tennessee (33.7), Michigan (31.5), and South Carolina (31.7). Table 3 shows a comparison of adult and childhood obesity.

Table 3: Percentage of adult obesity rates by state growth

State	2003	2005	2007	2012	2013	State	2003	2005	2007	2012	2013
AL	16.7	34.6	36.1	33.0	32.4	MT	11.1	27.3	25.6	24.3	24.6
AK	11.5	30.7	33.4	23.7	28.4	NE	11.9	26.0	31.5	28.6	29.6
AR	16.9	32.9	37.5	34.5	34.6	NV	12.4	26.6	34.2	26.2	26.2
AZ	12.2	32.9	37.5	34.5	26.8	NH	12.9	26.6	29.4	27.3	26.7
CA	13.2	30.0	30.5	25.0	24.1	NJ	13.7	36.5	31.0	24.6	26.3
CO	9.90	21.9	27.2	23.5	21.3	NM	16.8	28.6	32.7	27.1	26.4
CT	12.3	27.3	25.7	25.6	25.0	NY	15.8	30.9	32.9	23.6	25.4
DC	10.8	39.5	33.2	21.9	22.9	ND	12.1	26.9	25.7	29.7	31.0
DE	14.8	35.5	33.2	26.9	31.1	NC	19.3	33.9	32.9	29.6	29.4
FL	14.4	32.5	33.1	25.2	26.4	OH	14.2	30.4	33.3	30.1	30.4
GA	16.4	31.7	37.3	29.1	30.3	OK	15.4	25.2	29.5	32.2	32.5
HI	13.3	26.9	28.5	32.6	21.8	OR	14.1	26.5	21.3	27.3	26.5
ID	10.1	23.6	27.5	26.8	29.6	PA	13.3	29.3	29.7	25.7	30.0
IL	15.8	31.2	34.9	26.1	29.4	RI	11.9	27.0	27.0	25.7	27.3
IN	15.6	32.9	29.9	31.4	31.8	SC	18.9	36.1	33.2	31.6	31.7
IA	12.5	25.5	26.5	30.4	31.3	SD	12.1	25.8	28.4	28.1	29.9
KS	14.0	30.1	31.1	29.9	30.0	TN	20.1	35.3	36.5	31.1	33.7
KY	20.6	38.2	31.1	29.9	33.2	TX	19.1	32.4	32.2	29.2	30.9
LA	17.2	35.6	35.9	43.7	33.1	UT	8.50	20.9	23.1	24.3	24.1
ME	12.7	30.0	28.2	28.4	28.9	VT	8.50	25.6	26.7	23.7	23.7
MD	13.3	29.9	30.0	22.6	28.3	VA	13.8	30.8	31.0	27.4	27.2
MA	13.6	28.9	30.0	22.9	23.6	WA	10.8	25.5	29.5	26.8	27.2
MN	10.1	23.9	23.1	25.7	25.5	WV	11.7	27.5	31.7	35.1	35.1

MS	17.8	36.2	44.0	34.6	35.1	WI	13.5	29.4	31.9	29.7	35.1
MO	15.6	31.0	31.0	22.6	30.4	WY	8.70	22.9	25.7	24.6	27.8

Source: The State Of Obesity (2014). Adult obesity rate remains high. The State of Obesity is a project of the Trust for America's Health and the Robert Wood Johnson Foundation. Retrieved from http://stateofobesity.org/

One of the concerns of the researcher for the present study was in getting surveys completed by principals who were overworked and overstressed. In the journal, *Principal*, which was themed, "The Healthy Principal," Queen (2004) stated:

> Whether dealing with curriculum standards, inappropriate student behavior, irate parents or budget issues, principals are constantly moving from one crisis to another. This level of time-consuming behavior does not give much time for completing surveys and just getting emails through is a miracle. (Queen, p. 44)

Still our society expects the schools to be the perfect panacea and make things normal. There are national and state laws trying to force the teachers to make things fit socially, and principals appear to be at odds with roles the school should take. Principals have voiced concerns over inadequate professional development for the faculty, staff and instructional materials for teaching nutrition and wellness as provided by the district or state.

Major Research Question and Null Hypothesis

In chapter 1, the researcher presented the following major research question for research:

> Are principal's location (high- or low-BMI state), gender, and principal's total years of administration experience associated with the principal's perceived adequacy of resources for addressing childhood obesity?

Null Hypothesis 1.1: There is no statistically significant difference in principals' perceived adequacy of resources to address childhood obesity between high- or low-BMI states at the $p \leq .05$ alpha level of acceptance.

Null Hypothesis 1.2: There is no statistically significant difference in principals' perceived adequacy of resources to address childhood obesity according to the gender of the principal at the $p \leq .05$ alpha level of acceptance.

Null Hypothesis 1.3: There is no statistically significant difference in principals' perceived adequacy of resources to address childhood obesity according to principals' years of administrative experience at the $p \leq .05$ alpha level of acceptance.

Populations and Samples

Modification of the survey instrument came from a model originally developed by Dr. Robert Algozzine and Dr. J. Allen Queen. Later revisions were developed by Dr. Jim Watson and colleagues. The survey used University of North Carolina at Charlotte's (UNCC) Survey Share for data responses to the survey. A total of 24 items were included in the survey. The time of completion for respondents was approximately 30 minutes. The survey consisted of 14-Likert Scale items relating to childhood obesity. Ten items were dedicated to demographic data. Four items were included specific to policy implementation and professional development. The survey was sectionalized and contained items regarding policy, intervention, physical activity, professional development, and bullying (see Appendix A). Survey Question 21 is the foundation of the purpose of this study. Based on Likert scale responses, Question 21 states:

> 21. My district provides all teachers the opportunities to receive necessary resources, including staff development, instructional materials and adequate funding for full implementation of state and local wellness policies targeting childhood obesity.

Strongly Disagree Disagree Strongly Agree Agree

The researcher surveyed the population of kindergarten through Grade 12 public school principals from the eight highest BMI states and the eight lowest BMI states as determined by the average BMI levels of children from the ages of 10 to 19. Principals were asked to respond to 10 demographic questions and 14 survey questions. Participation was voluntary, anonymous, and boundaries for participation were set.

In the survey used in the study by the researcher and five other researchers principals had to identify three independent factors (predictor variables), school location (low or high BMI state), and principal gender and years of experience. The factors (state BMI, years of experience and gender) served as the independent variables and the delivery of adequate resources including staff professional development by principals served as the dependent variable (see Table 4).

Table 4: Principal respondents' descriptions

Items	Percentage	Total
Low BMI state	38	225
High BMI state	62	371
Male	39	234
Female	61	362
1-5 years of admin experience	38	226
6-20 > years of admin experience	62	370

In determining final survey questions, items were first reviewed by expert colleagues of K-12 principals and healthcare professionals who were familiar with the survey's targeted respondents. The experts and practitioners provided feedback on question format, clarity, and relevance. Upon completion of the review, the survey was finalized and prepared for use.

E-mail addresses were purchased for almost 40,000 principals working in the eight highest BMI states and the eight lowest BMI states. Invitations were sent out inviting principals to go to Survey Share used by UNCC faculty. The mass distribution used only school e-mail addresses. Due to the highly effective blocking of e-mails by systems and perhaps limited interest in the study, only 596 principals' responses were available for use after an initial examination of outstanding outliers. In order to protect the identity of principals who are in the participant pool, all personal information was excluded. Participants were provided with a multiple-digit identity code. The respondents served in elementary, middle and high schools within public school districts at the time of the study.

Research Design

The researcher used a quantitative, descriptive model to conduct the study. Expo facto (after-the-fact) research is a category of research designed for the investigation to start after the facts have occurred and without intrusion from the researcher. The researcher used survey data collected from public school principals in the 16 states through Survey Share to examine the levels of relationships between the variables. ANOVA was utilized for examining variable predictors. The survey used by the researcher included K-12 principals' sex (male or female), years of experience and

states of employment (high/low BMI) to assess the adequacy of resources perceptions of principals, related to policies for state and district childhood obesity professional development programs. The alpha level for rejecting the nulls, throughout the survey was set at or below the $p \leq .05$ levels.

Data Collection

All data pertaining to completed surveys were collected through online responses. Participants were assigned a number by the organization hired to send the study out and collect returned forms. The Statistical Package for the Social Sciences (SPSS) Version 20 was used to analyze the collected data. ANOVA was used to determine any predictors for principals' perceptions and behaviors linked to location (high/low BMI state), years of experience, gender.

Data Analysis

The researcher used the Statistical Package for the Social Sciences (SPSS) Version 20 to assess for statistical significance. Data analysis included inferential statistics computed for survey items related to principal opinions beliefs and attitudes on preventing and eliminating childhood obesity and increasing professional development.

Summary

In Chapter 3, the researcher described the research design and methodology used in the study. Included were a review of the proposed study, research questions, null hypotheses, alternative hypotheses population, sampling procedures, instrumentation, data collection and data analysis. In chapter 4 of this dissertation, the researcher reported the findings of the study and concluded with a summary. An ANOVA was used to answer the question and to respond to the null for chapter 4 and to

provide the researcher's summary, conclusion and recommendations for further research in chapter 4.

CHAPTER 4: REVIEW OF FINDINGS

In chapter 3, the researcher described the research design and methodology of the study. Also discussed were the research nulls in examining the impact of the predictor (independent) variables on the criterion (dependent) variable. In chapter 4, the researcher provides the findings based on the data collected and analyzed from principals from the states studied, gender and years of experience in relation to state and district policies on professional development. After a pilot study with K-12 administrators in the profession, the researcher found similarities in responses. The primary purpose of this study was to assess the perceptions of K-12 principals in relation to the implementation of professional development to combat obesity. The responses of 597 principals in 16 states were subjected to an ANOVA. The states selected for the study consisted of the eight highest BMI rankings and the eight lowest BMI rankings. Significant differences in principal perceptions were found when considering principals' years of administrative experience.

The researcher utilized the eight highest BMI states for childhood obesity as identified by the CDC (2014): Louisiana (39.8), Mississippi (39.2), Texas (36), Kentucky (35.7), West Virginia (33.5) Tennessee (33), Michigan (32.3), and South Carolina (31.5). The researcher also utilized the eight lowest BMI states as identified by The CDC: Colorado (22), Vermont (24.6), New Jersey (24.7), New Hampshire (26),

Washington, (26.2), Wyoming (26.6), Hawaii (27.4), and Wisconsin (28). Northeastern and Western states remained on top to lead the states with the lowest rates of obesity while Southern States dominated the states with the highest obesity rates (Robert Wood Johnson Foundation, 2010). Significant differences were not found when considering high and low BMI states and gender. A significant effect was found when analyzing years of administrative experience.

Research Question

What effect does a principal's location (high of low BMI state), gender and total years of administrative experience have on the perceived adequacy of funding and resources for professional development, as mandated by state and district policies for the prevention of childhood obesity? Principals from states with low BMI rates were compared with principals from states with high BMI rates, in order to determine how principals perceived the role as school leaders in carrying out the implementation of state and district obesity policies and programs in the schools.

The main research question in this study is:

> Are principal's location (high- or low-BMI state), gender, and principal's total years of administration experience associated with the principal's perceived adequacy of resources to address childhood obesity?

The Null Hypothesis

The researcher addressed the question using three null hypotheses (presented in chapter 3) to test among the means of the variables, to determine any significant differences.

Null Hypothesis 1.1: There is no statistically significant difference in principals' perceived adequacy of resources to address childhood obesity between high- or low-BMI states at the $p \leq .05$ alpha level of acceptance.

Null Hypothesis 1.2: There is no statistically significant difference in principals' perceived adequacy of resources to address childhood obesity according to the gender of the principal at the $p \leq .05$ alpha level of acceptance.

Null Hypothesis 1.3: There is no statistically significant difference in principals' perceived adequacy of resources to address childhood obesity according to principals' years of administrative experience at the $p \leq .05$ alpha level of acceptance.

Findings

A univariate factorial ANOVA test was selected as the researcher examined one dependent variable: District provided resources and professional development for teachers. The univariate test allows the researcher to test as many independent variables as desired. In this study, the fixed factors or independent variables were high and low states (BMI), principal gender, and principal's years of experience. The researcher seeks to understand the factors that influence principal perceptions of professional development based on state and district school policies and funding. The policies are designed to impact or eliminate childhood obesity. The dependent variable was entered and analyzed by ANOVA test.

The Dependent Variable

I. State and district provided resources to principals for professional development for teachers.

The Independent Variables

I. Location (high or low BMI states)

II. Gender of the principal

II. Years of experience

Null Hypothesis 1.1

Null Hypothesis 1.1: There is no statistically significant difference in principals' perceived adequacy of resources to address childhood obesity between high- or low-BMI states at the $p \leq .05$ alpha level of acceptance.

Univariate factorial ANOVA was used to test the main effects of state BMI (high or low) levels, gender, and years of administrative experience on principals' perceptions of the adequacy of resources and professional development for staff development of teachers and staff, according to state and district policies on the prevention of childhood obesity. Results for high and low BMI states indicated no statistical significant difference in the main effects, in principals' perception of adequacy of resources for teachers and staff professional development in preventing childhood obesity (Low, $M = 2.761$, $SD = .115$) and (High, $M = 2.775$, $SD = .092$) when $F(1, 594) = .924$, $p > .05$. Therefore, the researcher failed to reject the null hypothesis as $p = .924$, is greater than .05. The researcher found no statistically significant differences in the main effects of BMI levels.

Null Hypothesis 1.2: There is no statistically significant difference in principals' perceived adequacy of resources to address childhood obesity according to the gender of the principal at the $p \leq .05$ alpha level of acceptance.

There is no statistically significant difference in reported perceptions based on gender of principals (Males, $M = 2.755$, $SD = .113$) and (Females, $M = 2.782$, $SD =$

.095) in their perceived adequacy of resources and professional development in preventing childhood obesity for the teachers in schools from the high and low BMI states at the $p \leq .05$ level, $F(1, 594) = .856$, $p > .05$. Univariate factorial ANOVA tested the effect of a principal's gender in the perception of the adequacy of resources for providing adequate teacher and staff professional development in the prevention of childhood obesity. The researcher found no significance statistical differences for gender. The researcher failed to reject the null hypothesis $p = .856$ is greater than .05.

Null Hypothesis 1.3: There is no statistically significant difference in principals' perceived adequacy of resources for addressing childhood obesity according to principals' years of administrative experience at the $p \leq .05$ alpha level of acceptance.

There is a statistically significant effect on the reported perceptions of principals' number of years of administrative experience (1-5 years $M = 3.11$, $SD = 1.665$), and (6-20+ years $M = 2.44$, SD = 1.666), in ensuring districts and states provided adequate resources for staff professional development, for teachers at the $p \leq .05$ level, $F(1, 594) = 19.520$, $p < 05$. Years of experience provided a significant statistical difference (effect size .409, moderate). The researcher rejects the null hypothesis. Test resulted in significant statistical effects; $p = .000$. According to the analyzed data, principals with 1-5 years of administrative experience were more likely to consider resource adequacy for the prevention of childhood obesity than were principals with 6-20 years of experience.

There was no statistically significant difference in reported perceptions based principals from high and low BMI states, and gender of principals (Low, $M = 2.725$, $SD = .169$) and (High, $M = 2.798$, $SD = .156$) and (Male, $M = 2.785$, $SD = .150$) and

(Female, $M = 2.766$, $SD = .108$) in ensuring the adequacy of district and state resources for staff professional development in preventing childhood obesity, $F(1, 594) = .755$, $p > .05$. Test results in no statistically significant effects, $p = .755$, which is greater than .05.

There was no statistically significant difference in reported perceptions in principals of high and low BMI states and in ensuring the district and state provided adequate resources and professional development for teachers and staff, $F(1, 594) = .887$, $p > .05$. Test resulted in no statistically significant effects; $p = .863$, which is greater than .05.

There was no statistically significant difference in reported perceptions of principals' perceived adequacy of resources for high and low BMI states and gender, $F(1, 594) = .728$, $p > .05$. Test resulted in no statistically significant effects; $p = .728$, which is greater than .05.

Research Conclusions

In the literature review the important role and responsibility of the school principal was emphasis. Given the dependent variable and independent variables, no statistical difference was found for BMI states (high and low) and gender in principals' perceptions of resource adequacy for addressing childhood obesity. However, there was a significant effect for a principal's years of administrative experience in perceptions of resource adequacy for addressing childhood obesity

Summary

In this chapter, the researcher reported the findings of the study. Given the dependent variable and independent variables, no statistical difference was found for

BMI states (high and low) and gender in principals' perceptions of resource adequacy for addressing childhood obesity. However, there was a significant effect for a principal's years of administrative experience in perceptions of resource adequacy for addressing childhood obesity

Chapter 5 will present a summary and a conclusion of the findings, recommendations for future research, and recommendations for how policy makers and school leaders can use the research are presented.

CHAPTER 5: RECOMMENDATIONS

In this chapter, the researcher provides the finding from the data collected and analyzed from the eight low and eight high BMI states. The major purpose of this study was to assess the perceptions of K-12 principals' perceptions of resources adequacy for addressing childhood obesity. The responses of 597 principals in 16 states were subjected to an ANOVA. No significant difference was found for location (high or low) or gender. However, significant differences in principal perceptions were found when considering principals' years of administrative experience.

Research Questions

In Chapter 1, the researcher stated the following research question:

> Are principals' location (high- or low-BMI state), gender, and principals' total years of administration experience associated with the principal's perceptions of the adequacy of resources to address childhood obesity?

Why would leaders care to know these findings? State and local leaders are seriously concerned with the childhood obesity problem. State and local leaders control the purse strings for funding, so desperately needed by schools and principals to confront childhood obesity. The researcher's focus was on how the principal's location (high or low BMI state), gender, and total years of experience influenced funding and resource adequacy for providing professional development and other

resources by districts and states needed by school's faculty and staff to implement policies and programs for the prevention of childhood obesity.

The perceived role of K-12 school principals in the perception of adequacy of resources for professional development for teachers and staff on student obesity was the impetus for the study. The ANOVA used to test the data revealed no significant difference in the mean scores of high- and low-rated BMI states. Although the investigation found no significant difference in the relationship between high- and low-BMI states, there are obvious differences between the two types of states (see Tables 5 and 6).

When the two types of states (high and low) are compared, some differences are readily noticed. States with low BMI rates have fewer minorities than states with higher obesity rates (see Table 5 and Table 6). High BMI states averaged 19% for minorities, while low BMI states averaged 4.5% for minorities. The finding emphasizes other researchers' contentions that minorities tended to be more overweight than others in the population (CDC, 2013; Johnston, Delva & O'Malley, 2007), as noted by the high number of minorities found in high BMI states. Also found was the effects of income on BMI. States from the highest BMI states averaged $23,943, while states from the lowest BMI states averaged $30,707. The percentage for poverty levels for the High BMI States levels was 18.58%, while poverty levels for low BMI states was 11.7%. These findings suggest there is a correlation between minority status, income levels, and obesity (see Tables 5 and 6 for comparisons).

The average percentage high school graduation rate for low BMI states was 90.6 (see Table 6). The average percentage graduation rate for high BMI states was

83.6 (see Table 6). The number of people with a bachelor's degree in low BMI states was 31.9%. The number of bachelor's degrees in high BMI states was 22.9%. Parent's education levels were directly linked to childhood obesity and poor quality of dietary intake (Burnier, Dubois, & Girard, 2011).

Table 5: Highest BMI states obesity rate factors

Characteristic avg.	LA	MS	TX	KY	WV	TN	MI	SC
% of minorities 27.9	32.4	37.4	12.4	8.2	3.6	17.0	14.3	19.1
Per-capita income	24,442	20,618	26,019	23,462	22,966	24,409	25,681	23,943
U.S. per-capita income	28,155	28,155	28,155	28,155	28,155	28,155	28,155	28,155
Below poverty level 18.58	19.1	22.7	17.6	18.8	17.9	17.6	16.8	18.1
U.S. poverty level 15.4	15.4	82.6	81.5	81.2	83.0	83.9	84.4	88.9
% of high school Grads 83.8	82.6	81.5	81.2	83.0	83.9	84.4	88.9	84.5
% of US HS grads 86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0
% bachelor's degree 22.9	21.8	20.1	26.7	21.5	18.3	23.8	25.9	25.1
% U.S. bachelor's degree 28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8

The United States Census Bureau (2015). The 2015 census test. www.census.gov

Such numbers indicated by low BMI states explain why these states lead the nation in the least obese states, because 72% of the children living in these states live without graffiti and advertisements from competitive food companies. These children also have access to community-provided physical education equipment, and safe areas to walk, run, or do other physical activities.

The researcher found no significant difference between male and female principals (*sig*. 856) in the perceived role of school principals in the perception of adequate resources for professional development for teachers and staff. The difference between men principals and women principals was surprising. This researcher's contention was that women would show a strong leaning towards overweight and obese students, and therefore showing concern for the adequacy of resources for professional development because, according to Shakeshaft (1989), females are more people oriented and better informed than men. However, this was not the case.

ANOVA statistics were computed for survey items. Frequencies, percentages and standard deviation were calculated for each item. Gender is a single factor with two levels (male and female) influencing a single outcome (adequacy of resources).

Table 6: Lowest BMI state's obesity rate factors

Characteristic avg.	CO	VT	NJ	NH	WA	WY	HI	WI
% of Minorities 4.5	4.4	1.2	14.7	1.5	4.0	1.7	2.3	6.5
Per-capita income 30,707	31,109	29.167	36,027	33,134	30,742	28,902	29,305	27,273
U.S. per-capita income 28,155	28,155	28,155	28,155	28,155	28,155	28,155	28,155	28,155
% below poverty level 11.7	13.2	11.8	10.4	8.7	13.4	11.5	11.2	13.0
% US poverty level 15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
% High School Grads 90.6	90.2	91.4	88.1	91.8	90.0	92.4	90.4	90.4

The United States Census Bureau (2015). The 2015 census test. www.census.gov

Researcher's Conclusion

Analysis of the data caused the researcher to reject one of the null hypotheses. The researcher concluded that there was at least one predictor (years of administrative experience) that indicate strong effects for the criterion variables in how principals' perceptions of adequacy of resources effect childhood obesity when impacted by the variable (years of administrative experience). Principals with 1-5 years of administrative experience were more likely to perceive the adequacy of resources than principals with 6-20 years of administrative experience.

In one of the first childhood obesity studies conducted in 1987, Price and associated found that schools were not doing enough to fight obesity and principals felt it was not in the best interest of the school to attempt fighting childhood obesity. However, today childhood obesity has worsened, and has become high priority in our schools and the rest of society. The present scientific review of childhood obesity is relatively new, considering that wellness programs were only introduced about 10 years ago. Noellen et al (2007) noted that wellness programs were proving to be beneficial to school obesity programs. Research articles pertaining to principals' years of experiences and attitudes about childhood obesity are few. As previously stated, many principals had negative opinions about the effects of wellness programs when referencing resources supplied by states. However, the current research has shown from years of administrative experience, principals have come to recognize the importance of the school environment in reducing childhood obesity. Shelton (2014) found principals' years of experience was negatively correlated with principals' beliefs in responsibility for implementing policies on obesity. However, results of the

present study indicated that young principals (1-5 years of experience) were more likely than older principals (6-20 years of experience) to ensure adequate resources for combating childhood obesity. Experience tells us that principals with 6-20 years of experience are hesitate to implement new obesity policies, due to heavy workloads and finding time necessary to carry out such policies. This researcher surmises that because childhood obesity has become such a high priority in the schools and the community, childhood obesity training has found its way into the training of new principals. Older principals must set new priorities and get used to the idea that schools and communities must work together to combat childhood obesity.

Recommendations for Further Research

The focus of the present study was on the perception of the adequacy of resources for principals in providing professional development and addressing childhood obesity. Previous literature indicated that female principals may be more people-oriented, have better interpersonal skills, and created school environments that were more person oriented and more encouraging of community involvement. This researcher surmised that female principals would be more concerned with the adequacy of resources. However, this research did not confirm that notion.

In 2014, Jefferies found a statistically significant effect when considering state BMI levels, gender and years of experience when considering principals perceptions of policies designed to reduce childhood obesity. Francis (2014) likewise found a statistical significant difference in how principals' perceptions were impacted by BMI state, gender and years of experience This study results led to the researcher examining key predictors (BMI state levels, gender and years of experience) and the relationships of the

significance to the criterion variables (principals' perceptions. Unlike the two studies previously mentioned this investigation found no significant effect between BMI and gender. However a significant effect was found for years of experience. As a result of this examination, the researcher makes the following recommendations for further study:

1. Further research should be conducted on the beliefs of teachers, as well as other stakeholder (regarding childhood obesity) in high and low BMI states, as many stakeholders were excluded from the study. How these groups relate to the belief that principals are responsible for the adequacy of resources and professional development for the control of obesity would be of interest to other investigators. These groups should be further examined for feedback if principals are to be more heavily relied upon to promote professional development on obesity control.

2. Further research on what role gender plays in the perception of professional development. Females would appear to be better suited for professional development because of the idea of reflection. Researchers have long ago espoused the benefits of reflection in professional development. It would be interesting to know which gender (of principals) benefits the most from professional development devoted to childhood obesity.

3. Further research must conducted on principals' perceptions of adequacy of resources and promoting professionals development, because this investigation's finding were difference that those produced by Jefferies and Francis.

Summary

In chapter 1, the researcher presented the problem as it relates to school principals' perceptions of adequacy of resources for obesity-related professional

development. Some of the causes of childhood obesity, such as the school environment and individual causes of obesity as well as the perceived results were also discussed. Historical information on principals, and how principals became situated to help fight obesity was also provided. The purpose of this quantitative inquiry was to investigate how the perceptions of principals regarding resource adequacy of school principals from the most obese states in the United States compared with those of principals from those states with the lowest obesity rates. Results of this study found no correlation between high and low BMI states or gender. However, significant differences were found among principals' years of administrative experience.

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APPENDIX A: IRB APPROVAL

UNC CHARLOTTE

Research and Economic Development

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Institutional Review Board (IRB) for Research with Human Subjects
University of North Carolina at Charlotte

Approval of Exemption

Protocol #	**14-02-27**	
Protocol Type:	**Exempt 2**	
Title:	**School Principals Perceptions on the Role of the Schools in Preventing Childhood Obesity**	
Date:	**3/13/2014**	
Investigator:	**Dr. J. Allen Queen**	**Educational Leadership**
Co-investigators:	**Dr. Jimmy Watson**	**Educational Leadership**
Co-investigators:	**Dr. Bob Algozzine**	**Educational Leadership**
Co-investigators:	**Mr. Shelton Jefferies**	**Educational Leadership**
Co-investigators:	**Ms. Stacey Barber**	**Educational Leadership**
Co-investigators:	**Mr. Otis Floyd**	**Educational Leadership**
Co-investigators:	**Mr. Philip Frances**	**Educational Leadership**
Co-investigators:	**Ms. Michele Aikens**	**Educational Leadership**

The Institutional Review Board (IRB) certifies that the protocol listed above is exempt under category 2 (CFR 46.101.b.2).

Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and
b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

This approval will expire one year from the date of this letter. In order to continue conducting research under this protocol after one year, the "Annual Renewal" form must be submitted to the IRB. The renewal form can be obtained from the Office of Research Compliance web page (http://research.uncc.edu/compliance-ethics/human-subjects).

Please note that it is the investigator's responsibility to promptly inform the committee of any changes in the proposed research, and of any adverse events or unanticipated risks to subjects or others. Amendment and Event Reporting forms are available on the Compliance Office web page.

M. Lyn — 3/14/14

Dr. M. Lyn Exum, IRB Chair — Date

UNC CHARLOTTE

Research and Economic Development

Office of Research Compliance

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Institutional Review Board (IRB) for Research with Human Subjects

University of North Carolina at Charlotte

Continuing Approval of Exemption

For Year 2 of Study

Protocol #	**14-02-27**	
Protocol Type:	**Exempt 2**	
Title:	**School Principals Perceptions on the Role of the Schools in Preventing Childhood Obesity**	
Date:	**3/25/2015**	
Investigator:	**Mr. Otis Floyd**	**Educational Leadership**
Responsible Faculty:	**Dr. Jim Watson**	**Educational Leadership**

The Institutional Review Board (IRB) certifies that the protocol listed above continues to be exempt under category 2 (CFR 46.101.b.2).

Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:

a) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and

b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

The continuing approval of this protocol will expire one year from the date of this letter. In order to continue conducting research under this protocol after one year, the "Annual Renewal" form must be submitted to the IRB. The renewal form can be obtained from the Office of Research Compliance web page (http://research.uncc.edu/compliance-ethics/human-subjects).

Please note that it is the investigator's responsibility to promptly inform the committee of any changes in the proposed research, and of any adverse events or unanticipated risks to subjects or others. Amendment and Event Reporting forms are available on our web page.

M. Lyn — 4/7/15

Dr. M. Lyn Exum, IRB Chair — Date

APPENDIX B: SURVEY INSTRUMENT

SCHOOL PRINCIPALS ROLE IN THE PREVENTION AND REDUCTION OF CHILDHOOD OBESITY

As principal, you have been included in this descriptive study as a principal of a school in a state ranked within the lowest or highest eight states, as determined by the BMI levels of students (in the form of state averages) determined by the CDC as of December 1, 2013. The survey has been emailed to you as part of the Survey Share system. This major researcher is being assisted by five doctoral students completing their dissertations. They are Shelton Jefferies, Stacey Barber, Otis Floyd, Philip Francis, and Michele Aikens. A brief resume is available on each student by requesting by email to Dr. Queen at JAQueen@gmail.com

No identifying information or knowledge of you by name, or by any other means, is or will be available. The same is true of your assistant principals, classroom teachers, supportive staff and students.

We are most interested in your opinions, beliefs and perceptions of any policies, mandates or laws required to develop or implement any commercial or school-developed programs to prevent obesity and to learn about your perceptions, opinions and attitudes about teaching prevention of childhood obesity at your school.

To what degree should the prevention of childhood obesity instruction be part of the statement district curriculum and what would be your perceived role as principal. Finally, we hope to discover if there is any significant difference between the two groups of principal perceptions and to learn what the faculties, staff, parents and students have achieved at the different levels by implementing any specific local, district or state policies, procedures and programs in your school?

Please do not sign your name anywhere on the survey. This survey has arrived in your email at school with information and directions on how to open and use the Survey Share system. There are demographic questions followed by questions about general characteristics of your current school, teachers and students that can be checked directly on the system followed by survey questions. We estimate about 12-15 minutes to complete the survey. We hope you will join us in this important study and take a few minutes to complete the survey.

Contact Dr. Queen (jaqueen@uncc.edu) for questions about this study. Contact the Office of Research Compliance at UNC Charlotte for questions about research participation. 704-687-1871 or uncc-irb@uncc.edu

Please give us some basic information about yourself:

(1) My current school is in the State of _____.
(2) I am a male_____, I am a female_____.
(3) I am Hispanic ____, I am White non-Hispanic _____, and I am Black non – Hispanic_____. I am an American Indian/Alaska Native_____, I am an Asian/Pacific Islander __, Other__

(4) My highest level of graduate school degree or related certificate completed for principal licensure is:
Master's _____, Educational Specialist_____, Doctorate (Ed.D or Ph.D.) _____, Post-Doctoral Study of at least six months of full-time study_____, Other_____.

(5) I have been a principal for 1 year_____, 2-5 years_____, 6-10 years_____, 11-20 years _____, 21 or more years_____.

(6) For the 2013-2014 school years: I am an elementary principal _____, I am a middle 85school principal____, I am a high school principal_____. I am a Grades K-8 principal____, I am a K-12 principal_____, Other_____. (Please Explain)

Please tell us about the students IN YOUR SCHOOL:

(7) Number of Students and Grade Organizational Divisions: Elementary, K-5___, Middle/Jr High, 5-8 or 6-9_____, Other_____ (Please briefly describe):

(8) The majority of our students come from a home environment that could be considered as being: poor/poverty level _____, blue collared/working class_____, professional/upper middle class_____, wealthy/upper class/top 10 percent income _____, Ultra-wealthy/top 1 percent of national income.

(9) Our school is in a physical location that would be considered as: Inner city _____. Urban _____, Suburban _____, Small town_____ Rural/Agricultural_____. Rural/sparsely populated._____.

(10) What percentage of students eats lunch: prepared at school_____, brings lunch _____, Eats No lunch _____, students participate in the free or reduced lunch program_____.

Survey Directions: Please select the response that best reflects your level of agreement with EACH Question.

III. Specific Area II K – 12 Policy and Intervention.

GENERAL	PLEASE SELECT ONLY ONE CHOICE FOR EACH STATEMENT	THANK	YOU

11 Principals should participate annually in professional development on physical activity, health and nutrition to support school wellness policy implementation and the prevention of childhood obesity.
Strongly Disagree Disagree Strongly Agree Agree

12. Implementing state and local wellness policies and the prevention of childhood obesity is an appropriate responsibility for public school educators.
Strongly Disagree Disagree Strongly Agree Agree

13. With proper training, K-12 educators can play a vital role in the proper implementation of school-level interventions and the elimination of childhood obesity.
Strongly Disagree Disagree Strongly Agree Agree

14. The principal is responsible for ensuring implementation of the school's wellness policy and the prevention of childhood obesity.
Strongly Disagree Disagree Strongly Agree Agree

15. Our school district requires student's BMI (body mass index) to be documented as an ongoing practice.
Strongly Disagree Disagree Strongly Agree Agree

16. Our school district provides students with healthy meals, snacks, and activities to promote a healthy lifestyle.
Strongly Disagree Disagree Strongly Agree Agree

17. It is my responsibility as a school leader to support society's efforts to resolve childhood obesity by promoting and supporting health and physical education as much as support the major academic areas.
Strongly Disagree Disagree Strongly Agree Agree

18. It is my responsibility as a school leader to promote and support health and physical education instruction as much as I support mathematics, language arts, science, and social studies instruction.
Strongly Disagree Disagree Strongly Agree Agree

19. It is my responsibility as a school leader to require teachers to implement interactive instruction of physical movement activities within core courses.
Strongly Disagree Disagree Strongly Agree Agree

20. It is my responsibility as a school leader to promote athletic participation as an important component in keeping the average student physically active and healthy.
Strongly Disagree Disagree Strongly Agree Agree

21. My district provides all teachers the opportunities to receive necessary resources, including staff development, instructional materials and adequate funding for full implementation of state and local wellness policies targeting childhood obesity.
Strongly Disagree Disagree Strongly Agree Agree

22. I firmly believe the principal is primarily responsible for ensuring implementation of the schools wellness policy and the prevention of childhood obesity
Strongly Disagree Disagree Strongly Agree Agree

23. Districts leadership holds principals accountable for implementation of state and local wellness policies focused on the prevention of childhood obesity.
Strongly Disagree Disagree Strongly Agree Agree

24. My district provides faculty staff development to ensure that students are not bullied, physically, emotionally, or socially at school or in the local community
. Strongly Disagree Disagree Strongly Agree Agree