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The Effect of Socioeconomic Status on Local School Wellness Policy Implementation in Mississippi Public Schools

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by

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Table of Contents

Chapter 1: Introduction

In recent years, rates of overweight and obesity have increased dramatically in America due to nutritionally poor diets and more sedentary lifestyles. Research has shown that obesity is a risk factor for numerous other conditions such as stroke, heart disease, cancer, type 2 diabetes, and sleep apnea. Unfortunately, overweight and obesity do not only affect the adults in our nation. Rates of overweight and obesity have also increased among American children. Approximately 17% of American children are obese, which is three times the rate of 1980 (Menifield, Doty, & Fletcher, 2008). In order to improve the overall health of America's children, national, state, and local governments have implemented various wellness policies into public schools that address the physical, emotional, and mental health of children. Since the implementation of these programs and policies, researchers across the nation have been monitoring the effectiveness of these programs in improving the health of American children (Belansky, Cutforth, Delong, Litt, & Gilbert, 2010; Coffield, Metos, Utz, & Waitzman, 2011; Kolbo et al., 2006; Kolbo et al., 2008; Molaison et al., 2010; Probart, McDonnell, Weirich, Schilling, & Fekete, 2008; Rodney, O'Meara, Hepburn, & Potter, 2011; Serrano et al., 2007).

Because obesity rates of both children and adults in Mississippi rank at the top of the entire nation, previous research has been conducted in Mississippi to monitor the weight status and changes in weight status in children since various programs and policies were implemented (Centers for Disease Control and Prevention, 2011). This research has shown that minority students in Mississippi have higher rates of overweight and obesity than white students. However, overall obesity rates among children have

shown slight decreases since the local school wellness policy was implemented in 2006. In addition, researchers have noted a relationship between an improved health status of children and the implementation of local school wellness policies. (Kolbo et al., 2006; Kolbo et al., 2008; Molaison et al., 2010). While more research is needed on the total effect of these policies on children's health, there is much potential to the benefits that these policies could offer to youth.

Theoretically, schools in communities with less available funding for public education might suffer when implementing a school wellness policy, as resources would be first allocated to academic versus health needs. One study found evidence that only two percent of school districts across the country had allocated funding specifically for the implementation and evaluation of local wellness policies (Local, 2007). Food service directors saw limited funding and resources as a significant barrier to developing and implementing local school wellness policies (Longley & Sneed, 2008). Fewer children could have access to the health benefits of the policy or the policy might be enacted for a shorter period of time if there is limited funding. Additional research is needed to determine if the economic status of an entire community has a direct impact on the implementation of school wellness policies and the improvement of health of the children in that community.

Previous research studies on the health and nutrition of children reported data focused primarily on the age, race, and gender of the children (Hedley et al., 2004; Ogden, Flegal, Carroll, & Johnson, 2002; Wang, Monteiro, & Popkin, 2002). However, there has been little research on the relationship between socioeconomic status of the communities in which the children live and the effect of the economic status on public

schools' wellness policy implementation. It is important to understand the role of socioeconomic status of communities in determining the success or failure of a public policy in improving the health of children within that area. This is because if communities of lower socioeconomic status continually have less success with implementing policies such as the local wellness policies, more aid should become available to these communities so that the children of these communities have the same available resources as children in communities of higher socioeconomic status. After this relationship has been evaluated, more research can be gathered on the type of aid that is needed in these communities such as additional funding, resources, education, or methods for evaluating their policies. Detailed information on how the local wellness policies in Mississippi schools were implemented based on the socioeconomic status of their communities must be gathered so that the correlation between these two variables can be examined and the specific needs of these communities can be discovered.

For this research, all public schools in Mississippi were requested to complete surveys regarding the implementation of the nutritional components of their school wellness policies. Also, socioeconomic status of communities will be determined using the percentage of students that qualify to receive free or reduced lunch from the National School Lunch Program. This data will be used to evaluate the extent of implementation of different schools' wellness policies, and if funding was a key factor in this. If schools with higher rates of students who qualify for free or reduced lunch have poorer implementation of school wellness policies, it can be concluded that funding does impact implementation. If funding is related to implementation, perhaps other steps need to be

taken by health professionals in order to aid communities with less funding better implement wellness policies for their children in public schools.

Several terms related to this research will now be defined. The first is Local School Wellness Policy. Local School Wellness Policies were mandated by the federal government in 2006. This legislation required that all public schools in the United States create and implement a policy in their school to improve the overall physical and mental health of their children. These policies could include components ranging from providing more nutritious foods in the cafeteria, to providing physical education, to providing psychological counseling. While the examples of policies were made available, it was the responsibility of each individual school district to create and implement individual policies to better meet the individual needs of children across the United States (Amendments, 2004).

Another term to be defined is the Mississippi Healthy Students Act. This act was passed in 2007 and mandated that all students in Mississippi public schools have increased physical activity, physical education, and health education. Requirements specific to improved nutritional health include healthy food and beverage choices, healthy food preparation, marketing of healthy food choices, standard times for both breakfast and lunch periods, and increased participation in the Child Nutrition School Breakfast and Lunch Programs. These nutrition requirements as well as other health requirements were put in place in an attempt to continue to improve the overall health of Mississippi children (Mississippi Legislature, 2007).

The National School Lunch Program must also be defined. This is a federal meal program offering assistance to thousands of schools in the United States. It helps to

provide well-balanced and affordable meals to children. This program must also abide by the current nutritional recommendations to ensure that children in the United States have access to the appropriate nutrients at school. All children may purchase a lunch through the National School Lunch Program. However, for families between 130% and 185% of the poverty level, reduced-price meals are available. For families below 130% of the poverty level, children's meals can be acquired for free. If schools meet the United States Department of Agriculture nutrition guidelines, children in United States public schools have access to a well-balanced meal at school (United States Department of Agriculture, 2011).

Another term to be defined is body mass index (BMI). BMI is calculated with a formula using an individual's height and weight. BMI is used as a health indicator of body fatness and can be used to categorize individuals into weight categories. Individuals categorized into the overweight or obese categories based on their BMI are at an in increased for stroke, heart disease, cancer, type 2 diabetes, and sleep apnea (Centers for Disease Control and Prevention, 2011).

It is also important to understand the differences between nutrition education and physical education in schools. While the goal of both of these types of education is to improve the health of children, they contain significant differences that make them unique from one another. Topics that are typically covered in nutrition education would include the relationship between diet and health, how to choose healthy foods, different nutrients and their foods sources, and the current dietary guidelines (Katz et al., 2011; Position, 2010). On the other hand, physical education classes focus on components of health such as cardiovascular fitness, muscle strength, muscle endurance, flexibility, and

body composition (American Alliance for Health, Physical Education, Recreation and Dance, 2011). While both of these types of classes provide educational benefits on health, it is important that researchers distinguish between the two as they focus on very different aspects of health.

Several research questions will be addressed in this study. These include:

1.What is the overall level of implementation of the nutrition components of the Local School Wellness Policy and the Mississippi Healthy Students Act in Mississippi Public Schools?

2. What is the quality of the nutrition components of the Local School Wellness Policy and the Mississippi Healthy Students Act in Mississippi Public Schools?

3. What is the relationship between implementation of the nutritional components of the Local School Wellness Policy and the Mississippi Healthy Students Act and the percentage of students who qualify for free or reduced lunch?

4. What are the differences in implementation of the nutritional components of the Local School Wellness Policy and Mississippi Healthy Students Act between elementary, middle, and high schools?

Chapter 2: Literature Review

In recent decades, there have been significant increases in overweight and obesity in both adults and children in the United States. Along with weight gain, certain chronic diseases, namely type 2 diabetes, heart disease, stroke, hypertension, and high cholesterol are also on the rise. While there have been increases across the nation, Mississippi has risen to the top, with obesity rates being highest among all states in all age groups. Researchers have named several factors that contribute to this problem in children, including a lack of knowledge concerning both nutritional and general health knowledge, family influence, environment, race, and socioeconomic status. In an attempt to slow the rate of weight gain in the nation's children, the national government required all schools to implement local wellness policies in schools that address issues such as nutrition and physical activity. Mississippi also implemented the Mississippi Healthy Students Act in attempt to further decrease the childhood obesity rates in this state. This research study will evaluate the relationship between socioeconomic status of the students and the implementation of the nutritional components of local school wellness policies in Mississippi.

In the United States, obesity rates have dramatically increased in recent decades. In 1990, 12% of the American population was obese. In 2005, these rates almost doubled, with 23% of the population being classified as obese (Menifield et al., 2008). In 2009, the numbers showed another increase, as 27% of the American population was determined to be obese. In Healthy People 2010, the goal set for Americans concerning weight was to lower the prevalence of obesity to 15%. However, since the year 2000

when this goal was set, the number of states with obesity rates of 30% or higher jumped from 0 to 12 (Centers for Disease Control and Prevention, 2010).

In 2009, Mississippi had the highest obesity rates in the nation with 34.4% of the population being obese. In 2008, the county with the lowest rate of obesity in Mississippi was Tishomingo County with 26.3% of its residents being obese. The county with the highest rate of obesity in Mississippi in 2008 was Coahoma County with 43.0% of its residents being obese (Centers for Disease Control and Prevention, 2011).

Overweight and obesity rates have not only seen an increase in adults, but have also greatly affected the youth of America. In 1980, 6.5% of children from age six to eleven were obese. In 2008, 19.6% of children age six to eleven were obese. Between these same years, rates of obesity among adolescents between the ages of twelve and nineteen increased from 5.0% to 18.1%. Mississippi also has the highest childhood obesity rates in the nation with 23.9% of children in the state being obese (Centers For Disease Control, 2011).

Factors Affecting Weight Status

In America, overweight and obesity rates have seen significant increases due to countless variables. Three of the major factors contributing to weight gain include metabolic factors, diet, and physical activity (Weinsier, Hunter, Heini, Goran, & Sell, 1998). Numerous other variables such as environment, race, region, education level, and income level play significant roles in predicting trends of weight status in populations. However, these factors do not define weight status in individuals.

Metabolic factors include how energy is used in the body and how fuel is utilized. How nutrients are metabolized in the body is the same in all individuals; however, the

rate of metabolism differs in everyone. Factors such as age can slow down metabolism, while physical activity and strength training can increase metabolism. Overall, individuals have the least control over their metabolism as it is predominantly determined by genetics (Weinsier et al., 1998).

Diet has also contributed greatly to the epidemic of obesity in Americans. The shift from preparing home cooked meals from scratch to purchasing convenience foods has becoming an increasing trend in America over the last decade. Convenience food popularity has seen dramatic increase as these foods have a longer shelf life and are more easily prepared or consumed. These foods are perfect for quick eating which fits seamlessly into the current, fast-paced lifestyle in the United States. However, most convenience foods have added saturated fats, sugar, and sodium, which reduce the nutritional value of these foods. Also, the prevalence of eating in restaurants has increased. In most cases, restaurant meals are loaded with saturated fats, sodium, sugar, and portion sizes are significantly larger than dietary recommendations would permit. Because of these trends in the typical American diet, diet is a huge contributing factor in the current obesity epidemic (Weinsier et al., 1998).

Physical activity is another major factor contributing to the weight problem in America. Regular physical activity is needed by all individuals to either lose weight or maintain a healthy weight. However, sedentary lifestyles are becoming more common in America as sitting at the television or computer has taken the place of vigorous physical activity in most individuals. In 2008, 36% of adults were considered inactive and 59% of adults did not participate in more than ten minutes of vigorous physical activity per week.

Because of this inactivity, the majority of Americans do not receive the health benefits related to physical activity and continue to gain weight (Weinsier et al., 1998).

Health Risks Associated with Childhood Obesity

While childhood obesity rates have not increased to the point of adult obesity rates, extreme concern has been raised on this issue because obesity negatively impacts not only the physical, but the emotional health of children and their families. This trend is of great concern for health professionals because childhood and adolescence is the time when individuals are developing habits that will be repeated throughout their lifetime. Research has shown that seven year old obese females have a 48.6% chance of remaining obese in adulthood, and seven year old obese males have a 40% chance of remaining obese in adulthood (Starc & Strel, 2011).

Overweight and obesity dramatically increases the risk for the development of chronic diseases in children such as type 2 diabetes, heart disease, stroke, hypertension, high cholesterol, certain cancers, sleep apnea, and other various complications of these diseases such as arthritis, reproductive health complications, and memory loss. In 2007, 70% of obese children were reported to have at least one additional risk factor for cardiovascular disease and 39% of obese children had developed two additional risk factors. Also, until recent years, Type 2 Diabetes was unheard of in children and was known as “adult-onset” diabetes. Today, children and adolescents represent a significant percentage of new cases of this disease. Depending on the population studied, Type 2 diabetes represents 8-45% of new cases of diabetes diagnosed in children and adolescents (American Diabetes Association, 2000; Centers for Disease Control and Prevention, 2009).

Researchers have explored numerous factors with this sudden increase in weight. Geographic region of the country, education level, income, race, and health care spending are all possible contributors to weight status in addition to overall health status. Because these variables can lead to changes in weight status and overall health, it is imperative that health professionals explore these areas and understand the effects these factors have on the American population.

Causes of the Childhood Obesity Epidemic

Because of the recent increase in the weight of America's children as a whole, researchers are exploring the possible causes of this epidemic. Research results indicate that factors such as a lack of knowledge concerning both nutritional and general health knowledge, family influence, environment, race, and socioeconomic status, have all contributed to the current increases in childhood overweight and obesity rates (Nauta, Byrne, & Wesley, 2009; Lambert, Monroe, & Wolff, 2010; Sealy, 2010; Luttikhuis, Stolk, & Sauer, 2010; Cullen, Eagan, Baranowski, Owens, & de Moor, 2000; Johnson et al., 2007; DeMattia & Denney, 2008; Power, Bindler, Goetz, & Daratha, 2010).

Lack of knowledge concerning children's nutrition and weight.

The majority of educators and parents understand there has been a dramatic increase in the weight status of children in the United States. However, having knowledge that childhood obesity is a problem is not enough to make changes to stop and reverse this trend. In New Jersey, researchers found that 99% of school nurses are knowledgeable about the increasing numbers of childhood obesity, but 35% of them did not feel knowledgeable enough on this topic to recommend a weight loss program for the children (Nauta et al., 2009). A study by Lambert, Monroe, and Wolff (2010) also

showed evidence that teachers realize that childhood obesity is on the rise and the importance of the health benefits that will occur if they are able to implement the wellness policies of their school effectively. This evidence supports the idea that educators and health professionals in school systems are aware that more and more children are now affected by the growing obesity epidemic.

While educators and health professionals are knowledgeable of the presence of a weight problem in children, they are unaware of the specific ways in which they can help to solve this problem. Educators in public schools are charged with the responsibility of implementing portions of the local wellness policies into their schools and classrooms. However, if teachers and faculty in schools are not educated themselves, they cannot be effective in educating their students. Without adequate preparation of teachers, schools cannot expect to effectively use teachers as an educational resource in the fight against childhood obesity.

Lambert et al. (2010) found that teachers have not been given adequate time, resources, or education to execute the changes of these policies. The teachers surveyed felt they were unable to implement the local school wellness policies as effectively as needed. This gives evidence that even if good policies are put in place to positively change a child's environment at school, additional support for teachers is needed to make the ideals in these policies a reality.

Health professionals and parents in Australia are in support of more obesity prevention in schools; however, researchers found that teachers were not in support of implementing policies promoting health in schools. Because schools can play such an important role in reversing this trend, teachers need to be educated on not only on

techniques for promoting health in the classroom, but also on the reasons for health promotion in schools and the impact this can have in the lives of children. Perhaps this could improve teacher support of school-based obesity prevention education and programming and in turn improve the success and quality of these proposed interventions (Sutherland, Gill, Binns, & 2004).

Parent obesity.

Researchers have found correlations between the weight status of parents and their children. Some evidence supports the fact that if a child has one or two overweight or obese parents, the child's risk of being overweight or obese as an adult increases to 80%. However, it is unknown if this correlation is related to genetics or lifestyle factors (U.S. Department of Health and Human Services, 2007). The severity of parental overweight and obesity also impacts the severity of childhood overweight and obesity. The severity of parental obesity has the highest correlation with child weight status during adolescence and parental weight status does not necessarily determine when the onset of weight gain will appear in children (Svensson et al, 2011).

Another factor to consider when evaluating parent and child weight status is the correlation between same-sex parent and child weight statuses. Mothers who are obese increase their eight-year-old daughter's chance of developing obesity ten-fold. Fathers who are obese increase their eight-year old son's chance of developing obesity six-fold. The link does not appear to be genetic, but is instead influenced by dietary, physical activity and other lifestyle factors. On the other hand, children with normal weight parents consistently had a BMI in the normal weight range (Perez-Pastor et al., 2009).

Parental weight status has a strong correlation with child weight status. In a study with obese parents who lost weight, their obese children's BMI also decreased by 2.4% (Jansen, Mulkens, & Jansen, 2011). By changing their own lifestyle, parents can greatly influence the health status of their children and change the norms of nutrition and physical activity in their household. This provides evidence that parents' weight status can have both negative and positive effects on child weight status.

Parent schedules.

The hectic schedules of parents heavily influence the foods that children eat. Often, foods that can be prepared quickly are the only foods that families consume. This is because parents often have demanding work schedules, limited time, limited transportation, or lack of knowledge and confidence in preparing meals (Snethen, Hewitt, & Petering, 2007.) Sixty-seven percent of parents reported that a busy lifestyle makes a healthy lifestyle difficult for their family to achieve (Slater et al., 2010). Because of this busy lifestyle, convenience foods that can be quickly prepared by parents, which are usually very processed, high sodium, energy-dense foods make up the meals prepared at home. Over time, this eating pattern can contribute to weight gain in both parents and children. Therefore, it is important for parents to receive an appropriate education on how to prepare healthy foods in a quick manner for their families (Sealy, 2010).

Parent education level.

Research has also been gathered to support the evidence that parent's education level has an impact on the food intake of children. Children in households with women of low education level had a higher risk of obesity (Greves Grow et al., 2010). Also, children whose parents reported earning only a high school education consume less total

fruit and vegetable intake (0.64 servings) than children whose parents reported some college or higher education (0.83 servings) (Cullen et al., 2000). Bere, Van Lenthe, KIepp, and Brug (2008) stated that this lack of fruit and vegetable intake in homes of parents with a low level of education is due to a lack of accessibility of fruits and vegetables. This limited accessibility could be affected by income level as well as household proximity to grocery stores with fruits and vegetables.

Also, in a nutrition intervention completed with Gronbaek, Madsen, and Michaelsen (2009) children with parents with less education were more likely to drop out of the intervention. The dropout rate during this research study intervention could also reflect participation in other nutrition intervention and education programs. Researchers and educators must implement more intensive measures to ensure continued participation in different programs for this population. This along with a low level of parent education, the dropout rate could also have been affected by socioeconomic status, lack of motivation, and a lack of active engagement, which are also characteristic of parents with a lower education level.

Parent perception of child weight status.

Another issue that could potentially contribute to the childhood obesity epidemic is parent's perception of their child's weight status. Parents with a child in the "normal" weight range often perceive their child as "too little." Parents with a child in the "overweight" category perceived their children as being "normal" or "a little too heavy." Less than 50% of parents identified their overweight or obese child as "too fat" (Luttikhuis et al., 2010; Abbott, Lee, Stubbs, & Davies, 2010; Muhammad, Omar, Shah, Muthupalaniappen, & Arshad, 2008). Other researchers reported that 7.3% of children

were categorized as overweight by parents while 23.7% were actually overweight. Overweight or obese children were categorized as normal weight by their parents 69.3% of the time. This skewed perception was due to the fact that parents made their judgments based solely on visual assessments along with comparing their child to other children. Parents often indicated knowledge that childhood obesity is a national problem, but did not recognize that it is a problem in their own child's school or community (Jones et al., 2011).

These consistent results indicate that parents of overweight or obese children often have a distorted view of their child's weight status. While this may not directly contribute to childhood overweight and obesity, this distortion in perception does make education and behavior change more difficult for health professionals. Understanding if a problem is present is key whenever trying to implement change. If parents are unaware of a problem such as their child's obesity, then will also be less open to implementing behavior changes to decrease their child's weight.

Race.

Another factor that can contribute to overweight and obesity in children is race and ethnicity. African American children were more likely to be overweight in kindergarten; African American girls and Hispanic boys were most likely to be overweight overall, and Asian girls were least likely to be overweight. These rates of overweight and obesity among different races remain consistent even across differing socioeconomic statuses. This provides evidence that race could have a bigger part in determining health and weight status than does wealth (Johnson et al., 2007).

More risk factors for overweight and obesity exist in Hispanic and African American children than in white children from infancy to early childhood. Some of these risk factors include maternal depression, rapid weight gain, introduction of solid food before four months, more television in bedrooms, higher intake of sugar-sweetened beverages, and higher intakes of fast foods (Taveras, Gillman, Kleinman, Rich-Edwards, & Rifas-Shiman, 2010). This is noteworthy data as these risk factors for overweight and obesity are evident in children of minorities long before they are capable of making decisions concerning their own health.

In 2004, African American women had the highest prevalence of obesity while the highest prevalence of metabolic syndrome existed in Hispanic women, then Hispanic men, and then African American women. In children, the development of obesity as well as metabolic syndrome was evident in both of the minority populations. In a study conducted by Cossrow and Falkner (2004) 4.2% of adolescents age 12-19 displayed all of the characteristics of metabolic syndrome. Thirty percent of the overweight children displayed the characteristics of metabolic syndrome. The study showed that white and Hispanic boys had a higher prevalence of metabolic syndrome than African American boys. Hispanic girls also had a higher prevalence of metabolic syndrome. Another study found evidence of risk factors for Type 2 diabetes in overweight five to ten year old African American girls (Young-Hyman, Herman, De Luca, Counts, & Schlundt ,2001). This data supports that an individual's race can affect risk of both obesity and chronic disease in adults and children.

Cultural food preferences.

Cultural food preferences can also affect health for individuals of various ethnicities. While there may be healthy ways to prepare foods from any culture, some groups of people might not be aware of the changes that can be made in different recipes that could dramatically improve the nutritional value of their food. Researchers found that some groups must be educated individually on ways that their cooking methods could be made healthier so that the information will be relevant and useful for each group. One study found that educating parents how to prepare food in healthier ways could not only improve the health of the parents, but also improve the health of the children (Sealy, 2010). A study on race found that while African Americans could be motivated to lose weight through dietary changes, evidence has shown that they are not likely to modify their diet if the recommendations are unfamiliar to their lifestyle. Therefore, nutrition therapy specific to different races and cultural food preferences could help individuals to be more successful in making healthy dietary changes (Ard, Rosati, & Oddone, 2000).

School environment.

A child's school environment has the potential to greatly impact overall health. Health professionals realize that a critical relationship exists between nutrition, health, and learning (Mississippi Department of Education, 2008). This relationship is the reason for the current mandate of local school wellness policy implementation. Children in elementary schools that offer french-fries and desserts more than once per week had a higher risk of obesity. Energy-dense foods available in vending machines had the same effect in middle schools students (Fox, Dodd, Wilson, & Gleason, 2009). Schools that

sell snacks and drinks have students with increased total calorie, soft drink, total fat, and saturated fat intake along with a decreased intake of fruits and vegetables (Story, Nanney, & Schwartz, 2009). There is sufficient evidence that initiatives to improve nutrition guidelines in schools have been successful in improving the school food environment as well as the quality of the student diet. However, more research is needed on the total effect on of these changes on children including the changes in children's weight status and the changes of obesity rates in schools (Jaime, & Lock, 2009). This is one goal of the local school wellness policies.

Physical activity is also recognized as an essential component of local school wellness policies. Physical activity has proven benefits for health such as a lowered risk of chronic disease and lowered risk of overweight and obesity. Physical activity can be added to the curriculum in schools without negatively affecting academics and can offer positive physical, emotional, and social benefits (Story et al., 2009). Recess is an opportunity for physical activity for children at school. However, different groups of children exercise at differing levels of intensity. For example, boys are typically more active than girls, while third and fifth graders are more active than fourth and sixth graders. While all of these groups do engage in physical activity, interventions to increase the intensity of physical activity in all groups could prove to be beneficial (Ridgers, Saint-Maurice, Welk, Siahpush, & Huberty, 2011). This research provides support that more structured physical education classes at school could provide more benefits of physical activity for all children than unstructured time for play such as recess. Local school wellness policies require this type of structured physical education. There is also research that supports that physical activity interventions are more successful in younger

children and girls. However, more long-term studies need to be done to assess the long-term effects of physical activity interventions in schools on overall child health and weight status (Brown & Summerbell, 2009).

Previous initiatives have been put in place in the school environment in order to lower the incidence of drunk driving and smoking. It has been suggested that some of the same methods used in these campaigns might also be beneficial in lowering in the incidence of childhood obesity. According to these studies, altering a child's environment at school has the potential to positively impact their learning abilities, overall health, and weight status (DeMattia & Denney, 2008).

Socioeconomic status.

Research has found that the weight status of children is highly correlated with their socioeconomic status. Children of low socioeconomic status are more likely to be overweight or obese than children of middle or high socioeconomic status (Vieweg, Johnston, Lanier, Fernandez, & Pandurangi, 2007; Li & Hooker, 2010; Stamatakis, Wardle, & Cole, 2010; Sutherland, Finch, Harrison, & Collins, 2008). Socioeconomic status effects weight in children as socioeconomic status helps to define a child's opportunities and resources concerning extracurricular activities that encourage physical activity such as team sports. Low socioeconomic status can also limit the types of foods eaten by children as most nutrient-dense foods are more expensive while more energy-dense foods are often less expensive. Both of these factors can contribute to more weight gain in children of lower socioeconomic status.

Research studies focus on the socioeconomic statuses of children and their families, but there is little data on the effect that low socioeconomic status of schools and

communities has on children's health and weight status. Because of this gap in data, this study will focus on the socioeconomic status of the communities of children and will explore the possibility of a correlation between the socioeconomic status of communities and the weight status of their children. This data regarding school socioeconomic status will be gathered based on the level of participation in the National School Lunch Program. The National School Lunch Program is a federal meal program offering assistance to thousands of schools in the United States, which helps to provide well-balanced and affordable meals to all children. This program must abide by the current nutritional recommendations to ensure that children in the United States have access to the appropriate nutrients at school. All children may purchase a lunch through the National School Lunch Program. However, for families between 130% and 185% of the poverty level, reduced-price meals are available. For families below 130% of the poverty level, children's meals can be acquired for free. Through this program, all children in the United States can have access to a well-balanced meal at school (United States Department of Agriculture, 2011). For this research study, schools that have a high number of children who receive free or reduced lunch will be considered to be in an area of low socioeconomic status.

Using free and reduced lunch for a measure of socioeconomic status is popular in educational research. Researchers realize that this is not the ideal method of collecting data on socioeconomic status of students as there are several limitations. However, in the case of this research study, this was the most accurate measure of socioeconomic status available (Harwell & LeBeau, 2010).

Responsibility for childhood obesity.

Another looming dilemma related to childhood obesity is the lack of ownership for the problem by a specific entity. Because there are so many potential contributing factors to the increase in children's weight, health professionals are unable to pinpoint to what or whom the responsibility should belong. One study involving students, parents, and teachers revealed everyone placed the blame for the childhood obesity problem on someone or something else, and no group took the responsibility. The students in the study placed the blame for their weight status on situational factors such as their schedules. The teachers in this study blamed the parents for the children's unhealthy habits. Lastly, the parents placed the blame on their children for their overweight. This study suggested that nutrition interventions for children should include the students as well as the parents and teachers in order to provide the optimum environment for a healthy change in students. This could also reduce the blaming that currently is spreading throughout these groups, as all groups will be included, in some way, into the nutrition intervention (Power et al., 2010).

Media and advertising companies state that parents are solely to blame for their overweight children. While most children might be exposed to hours of television, other sedentary activities, and countless food advertisements through the media daily, it is the parents' job to get their overweight kids physically active and eating healthy foods (Parents, 2007). While the home environment is very powerful and parents do have much influence over the lifestyle of their kids, blame cannot be placed solely on this group for the childhood obesity problem. Children are influenced daily by many other factors such

as teachers, school, extracurricular activities, and the media, so changes and interventions need to be focused on these variables as well.

On the subject of who or what is truly responsible for the American childhood obesity epidemic, Iowa Senator Tom Harkin states, "First we must move beyond the fruitless blame game as who or what is responsible for America's epidemic of childhood obesity and related chronic diseases. Are individuals at fault? Corporations that relentlessly advertise unhealthy foods? Public schools that slight recess and physical education? A changing society that is increasingly sedentary? Isn't it obvious that there is plenty of blame to go around? And isn't it obvious that any successful effort to combat obesity, diabetes, heart disease, and other preventable conditions must mobilize all sectors of our society and economy: individuals, families, corporations, employers, schools, and government at all levels?" According to Senator Harkin, it is time to stop blaming other people and things for the health problems America is currently facing. It is now time for all components of our society to take action in their field in order to enact the change that is needed to stop and reverse the current health trends in America's children (Harkin, 2007, p. 165)

Policies to Combat Childhood Obesity

In an attempt to stop and reverse the current increases in childhood obesity, the government has taken action and mandated wellness policies into schools. The purpose of these policies is to improve the overall health of children. Included in these policies are requirements for nutrition and physical activity, which can help to improve the weight status of American children. In addition to local school wellness policies, Mississippi implemented the Mississippi Healthy Students Act. This piece of legislation requires

increased physical activity, improved nutrition, and more health education in schools. While these pieces of legislation will not stop childhood obesity on their own, these steps made by the government can help America to move in the right direction in making changes to reverse current behaviors that lead to the weight gain affecting children.

Local school wellness policy legislation.

Because of significant increases in overweight, obesity, and the health risks that accompany these increases, the United States Congress enacted legislation with the purpose of reducing the incidence of these risks in children. The requirement was established by Section 204 of the Public Law 108-265, the Child Nutrition and WIC Reauthorization Act of 2004 (Amendments, 2004). The legislation required that public schools in all states that have been authorized by the National School Lunch Act or the Child Nutrition Act of 1966 develop a local school wellness policy by the 2006 school year. The enactment of this legislation displays the acknowledgement of United States Government of the key role that schools play in health education, obesity prevention, and the problems that are related to poor nutrition and a lack of physical activity in children. These mandated local wellness policies help schools to commit to providing a healthy environment for their children. Individual school districts are responsible for creating their own wellness policies in order to better meet the needs of their specific children. These wellness policies give local communities the opportunity to expand on federal initiatives currently in place and reminds communities that they too are responsible for the health of their children. These policies also acknowledge the importance of schools in making changes in the current childhood overweight and obesity trend (United States Department of Agriculture, 2004).

While specific components of these polices are up to the discretion of individual schools, they are required to contain goals for nutrition education, nutrition promotion, physical activity, activities to promote student wellness, and nutrition guidelines to improve health and reduce childhood obesity rates in their schools. Physical education teachers, school health professionals, parents, students, the school food authority, the school board, school administrators, and the public can contribute to the development of local school wellness policies. This team of collaborators has the task of developing, implementing, and evaluating the local school wellness policy. Schools must update the public on content of local school wellness policies as well as progress being made to attain the goals in the policies (United States Department of Agriculture, 2004).

Mississippi Healthy Students Act.

In addition to the implementation of local wellness policies in 2006, Mississippi adopted the Mississippi Healthy Students Act in 2007. This act mandated that students in public schools have increased physical activity, physical education, and health education. Students in kindergarten through eighth grade are required to receive 45 minutes of health education and 150 minutes of physical activity per week. In grades 9-12, students are required to achieve class credit for both health education and physical education in order to graduate (Mississippi Legislature, 2007).

Beginning in 2006, each school was required to adopt a local wellness policy promoting healthier lifestyles among students. However, beginning in 2008, more specific requirements were put in place for these policies such as increased physical activity, healthy eating, and abstinence from tobacco and illegal drugs. Beginning in 2008, the specific regulations for nutritional health were required to be in compliance

with the most current scientific findings for good human health and fitness. The nutrition regulations included these areas: healthy food and beverage choices, healthy food preparation, marketing of healthy food choices, standard times for both breakfast and lunch periods, and strategies to increase participation in the Child Nutrition School Breakfast and Lunch Programs. Schools were recommended to have a coordinated approach to school health in order to prevent conditions such as obesity, cardiovascular disease, and Type 2 diabetes. This coordination was between health education, physical education, nutritional services, parental/community involvement, drug-use prevention, physical activity, health services, healthy environment, counseling/psychological services, healthy lifestyles, and staff wellness. These health requirements were put in place in hopes of continued improvement of the overall health of the children of Mississippi (Mississippi Legislature, 2007).

Local school wellness policies across the nation.

Since the implementation of the local wellness policies across the country, both positive and negative results have been reported. One school district in Colorado reported that after the wellness policy implementation, more healthy items were being served in classroom parties ($p<0.04$), fresh fruits now served daily in the cafeteria ($p<0.04$), and more skinless poultry was being served in the cafeteria ($p<0.01$). However, researchers reported that the policies were worded weakly and food service managers did not notice a significant difference in the nutritional content of foods served in the cafeteria. The only changes observed by food service managers were in the foods served at classroom parties and the contents of foods available in vending machines. From the data collected in Colorado, researchers concluded that schools needed both procedural and financial

assistance in order to effectively implement local wellness policies (Belansky et al., 2010).

Another study evaluated local wellness policy implementation in Pennsylvania and found similar results. Researchers reported that 100% of Pennsylvania schools implemented local wellness policies and 85.6% of these schools met all of their requirements for nutrition education, physical activity, activities promoting student wellness, nutrition guidelines, and plan for the implementation of the wellness policy. However, upon evaluation, many of the goals that were met were broad and ambiguous and the goals that were not met as often were more specific and measurable. This revealed that school staff might need more training and guidance in creating goals that can be more specifically measured so that policy implementation and progress can be more accurately evaluated (Probart et al., 2008).

Another study of Utah local wellness policies reported a significant reduction in adolescent overweight and obesity (2.5-3.4%, respectively) with the implementation of every additional wellness policy component. These findings suggested that school wellness policies could be extremely beneficial in the efforts to stop and prevent childhood and adolescent overweight and obesity. However, researchers insisted that these efforts to encourage a healthy lifestyle at school are only a small part of promoting overall health in the child's household and community (Coffield et al., 2011).

Immediately after local wellness policies were mandated in 2006, research was gathered on policy implementation in Virginia. Researchers found that school districts set impressive goals for improving the health of their children. On average, schools set 5.7 goals for nutrition, 3.7 for physical activity, and 2.5 for nutrition education. No data was

collected on the achievement of these goals or the success of their implementation. However, 89.1% of schools studied added an evaluation goal to their wellness policy, which included assessments such as calculating students' BMIs, conducting surveys, or evaluating local wellness policy implementation progress. Findings could provide physical data for evidence of the policies' success or failure in improving student's overall health. However, 37% of these schools reported that a lack of funding presented major challenges in policy implementation (Serrano et al., 2007).

Researchers in Georgia assessed local wellness policy implementation and found that school districts with higher academic performance had stronger overall wellness policy goals for nutrition education and school activities. Researchers also found evidence that school districts of lower socioeconomic status implemented weaker wellness policy goals than districts of higher socioeconomic status, specifically in the areas of physical activity and competitive foods. Weaker wellness policy goals in districts of lower socioeconomic status may only intensify the risk of health disparities in the population that currently has the greatest necessity for health promotion and obesity prevention (Rodney et al., 2011).

Local wellness policies in Mississippi.

In the Mississippi Local School Wellness Policy, there are guidelines for nutrition, safe foods, physical activity, physical education, comprehensive health education, healthy school environment, quality health services, counseling, psychological and social services, family and community involvement, as well as the implementation of all of these elements (United States Department of Agriculture, 2004).

Since the wellness policy implementation in 2006, much research has been conducted on its effectiveness on improving the health of Mississippi's children (Mississippi Department of Education, 2008). Research has shown that in 2008, 96% of schools had implemented a wellness policy versus 78.2% in 2006 ($p<.05$). There were significant improvements ($p <.05$) made in nutrition among schools including an increased number of schools implementing a nutrition education for students (72.3% vs. 35.2%). Also more schools served fresh fruits daily in 2008 compared to 2006 (46.1% vs. 40.0%). In 2008, more schools served whole grains daily compared to 2006 (31.7% vs. 21.5%). There were significant improvements made in physical education among schools including an increased number of schools implementing a physical education for students (84.2% vs. 57.1%). Schools also had a significant improvement in comprehensive health education as 75.9% of schools educated 75-100% of their students in 2008 on health versus only 38.4% of schools completing this education for students in 2006. From this data, it is evident that the local wellness policies in Mississippi have had increased implementation since 2006 (Kolbo, Molaison, Rushing, Zhang, & Green, 2009).

Another study conducted in Mississippi elementary schools found that 59.7% of teachers believed that local wellness policies were having a positive impact on student health. Also, 57.7% of teachers believed that they did not have adequate time in the classroom to include the nutrition education required by local wellness policies. Of the teachers surveyed, 63.9% reported having the skills to incorporate the nutrition components of the wellness policy into their classroom; however, only 30.4% actually reported implementing these policies into their lesson plans. The teachers in this study reflect little time or resource investment in the local school wellness policies. However,

while these teachers reporting not having adequate resources to implement these nutrition components into their classroom, numerous free resources were made available for these teachers through the National Institutes of Health and Healthy School Environment Services. These findings indicate that teachers may need more assistance in learning how to use and implement the resources made available to them in the classroom (Lambert, Monroe, & Wolff, 2010).

Effectiveness of local wellness policies in Mississippi.

Research has previously been conducted in Mississippi concerning the trends of children's weight status. Heights and weights were collected from a sample of children in public schools throughout the state in 2005, 2007, and 2009. In 2005, the Local School Wellness Policies were implemented throughout Mississippi, so the patterns in the data collected during these studies reflect the changes, if any, in the health of Mississippi's children since the implementation of these policies. The findings showed that between the studies in 2005 and 2007, the prevalence of obesity in Mississippi's children decreased by 2%. Between the studies in 2007 and 2009, the prevalence of obesity in Mississippi's children remained the same. This data is promising in that decreasing obesity rates even by 2% in a four-year span could mean that the wellness policies that were implemented have helped to improve the health of Mississippi's children (Kolbo et al., 2006; Kolbo et al., 2008; Molaison et al., 2010).

In these studies, factors such as gender and race were taken into consideration. Researchers found that, in general, white children had lower incidence of overweight and obesity than nonwhite children (Kolbo et al., 2006; Kolbo et al., 2008; Molaison et al., 2010). Hopefully, these findings will prove helpful for health professionals, as they will

be able to use this data to focus interventions to the specific populations that have a higher prevalence of overweight and obesity.

One variable that was not considered in these studies was the socioeconomic status of the children in the samples. Other studies have looked at socioeconomic status as a variable and inconsistent results were found. Therefore, in this research study, socioeconomic status will be a factor that will be analyzed. More specifically, the samples of children used in this study will come from areas of both high and low socioeconomic statuses. Comparing the children's weight statuses while they are categorized by the socioeconomic status of communities will help to reveal if socioeconomic status needs to become a larger focus for nutrition interventions in the future. If health professionals are able to identify the specific populations that have additional needs, alternate education, interventions or treatment programs could be implemented in order to improve the overall health of these populations.

Key Variables

In this research study, several specific factors will be taken into account including the implementation of the key components of the Local Wellness Policies and Mississippi Healthy Students Act, as well as the socioeconomic status of the schools included as measured by the percentage of students that qualify for free or reduced lunch. The focus of this study will be on the children of Mississippi. Therefore, the data for this study will be gathered from public schools in Mississippi in children in grades K to 12.

The data analyzed concerning the implementation of the Mississippi local wellness policies includes the level of implementation, the commitment to implement nutritional component, the implemented nutrition standards for MS Healthy Students Act,

the percentage of students in the National School Lunch and Breakfast programs, the number of students receiving nutrition educations, the barriers to nutrition education, and the amount of vending machines and snacks sold on campus. These components of implementation will be analyzed, as they are key to reflecting the success that schools have had with improving the nutrition and nutrition education of their children.

Socioeconomic status was an important variable in this research study. Socioeconomic status is a measure of income, education, occupation, and wealth. In this study, the socioeconomic status variable was focused on that of the communities of the children rather than on the socioeconomic status of individuals. Schools with higher percentages of students who qualify for free or reduced lunch were considered to have a lower socioeconomic status. On the other hand, schools with lower percentages of students who qualify for free or reduced lunch were considered to have a higher socioeconomic status. In this way, the schools in communities of different overall socioeconomic status were compared and their implementation of school wellness policies was evaluated based on the data gathered.

Summary

Because of the obesity epidemic that is currently sweeping America and her children, a significant amount of research has taken place in recent years in order to investigate the causes of this increase. Factors such as a lack of knowledge, parenting, home and school environment, race, and socioeconomic status have all contributed to the increases in weight among children in the United States. Because of inconsistent results concerning socioeconomic status and weight, this research study will focus on the

socioeconomic status of the communities of children in Mississippi and its relation to local school wellness policy implementation.

Hypothesis

The level of implementation of the local wellness policies and the Mississippi Healthy Students Act will be greatly affected by the socioeconomic status of the students. The schools with children at a higher socioeconomic status will show evidence of a higher level of implementation of the nutrition-related policies. In addition, all schools will have a higher level of implementation for nutrition-related policies.

Chapter 3: Methods

The 2010 Local School Wellness Policy Principal Survey was designed for the principals of K to 12 Mississippi public schools to complete. Other school officials could answer some sections of the survey. However, in the end, the principal of each school was responsible for the completion of the survey.

On the 2010 survey, items were developed through the efforts of the representatives of the Mississippi Department of Education's Office of Healthy Schools, a review of relevant state and federal laws, and also from similar surveys conducted in 2006 and 2008. The categories that were evaluated in the survey were the school's commitment to implementing the Local School Wellness Policy, nutrition, food safe schools, physical activity/physical education, comprehensive health education, healthy school environment, quality health services, providing counseling as well as psychological and social services, family and community involvement, a quality staff wellness program, and marketing a healthy school environment. The survey will also ask for general demographic information, knowledge, overall implementation, quality of the policy, health status measures of students, participation in Office of Healthy Schools' programs, performance classification of the school, and indicators of the effectiveness of the School's Health Council.

The survey was distributed in the fall of 2010. During the first week in October, all of the principals and superintendents in Mississippi were mailed a letter from the researchers at The University of Southern Mississippi. This letter provided information to all of the principals about the study and that the survey would be completed online, with the survey delivered through an email. Also during this same week, the Superintendent of

Education contacted the principals and superintendents in the study and encouraged all to participate in the survey. Software provided by Qualtrics Inc.® allowed researchers to indicate which schools had completed the survey. In case the survey had not been completed, the principals were contacted by phone in order to see if any additional assistance was needed. Surveys were accepted until the last week in November.

Of the information collected from the principals and superintendents on the surveys, the level of implementation, the commitment to implement nutritional components, the implemented nutrition standards for the Mississippi Healthy Students Act, the percentage of students in the National School Lunch and Breakfast programs, the number of students receiving nutrition educations, the barriers to nutrition education, and the amount of vending machines and snacks sold on campus will be analyzed. These variables were compared against the socioeconomic status of the schools as well as the number of students in each school and the grade levels of the school.

In order to get data on the socioeconomic status of the different schools, data on the number of students who qualified for free or reduced lunch from the National School Lunch Program were gathered. Schools with trends of higher percentages of students who qualified for free or reduced lunch were considered to have a low socioeconomic status while schools with trends of lower percentages of students who qualified for free or reduced lunch were considered to have a high socioeconomic status.

Descriptive statistics were used to describe the sample including the average age of the student population, grade level, and health characteristics of the schools. Chi-Square tests were used to analyze the differences in the level of implementation of both the nutrition components of the Local School Wellness Policy and the Mississippi

Healthy Student Act. Chi-Square tests were also used to analyze the quality of these implementations. Lastly, Chi-Square tests were used to evaluate the differences in the implementation of these policies between elementary, middle, and high schools. This analysis revealed the level of change that occurred within schools between the 2008 and 2010 school years. ANOVA was used to assess the mean difference in the percent of students receiving free and reduced lunch based on the level of implementation of the nutritional components of both the Local School Wellness Policy and the Mississippi Healthy Student Act.

Chapter 4: Research Findings

A total of 907 Mississippi public school principals were e-mailed the link to the survey. A total of 506 surveys were answered and emailed back to the researchers (55.84%). Of those that were submitted, 417 were included in the final analysis (46.0%), down from 59.3% in 2008, but still higher than the 41.8% in 2006. Only 417 of the surveys were included because once the data were cleaned, these were considered the only viable surveys. These surveys either had a sufficient number of responses or they did not duplicate responses. Of the schools that submitted completed surveys, 51 (12.2%) were elementary schools, 49 (11.8%) were middle schools, 67 (16.1%) were high schools, and 234 (56.1%) did not fit into the previous categories and were categorized as other. On average, the total number of students enrolled in the schools was 568.5 $\pm$ 405.4. The percentage of students in each school that qualified for free or reduced lunch was 65.4 $\pm$ 29.4. The average number of students in each school to receive nutrition education as a part of a structured and systematic unit of instruction was 383.7 $\pm$ 340.2 (71.2 $\pm$ 39.1% of students). The schools were also surveyed on their performance classification for the 2009-2010 school year. Of the schools that responded, 19 (4.6%) were Level 1 or Low Performing, 67 (16.1%) were Level 2 or Under Performing, 100 (24.0%) were Level 3 or Successful, 67 (16.1%) were Level 4 or Exemplary, and 47 (11.3%) were Level 5 or Superior Performing. It should be noted that these percentages as well as the responses in the following tables do not match total responses because missing data were not included in the analysis.

Principals were asked to evaluate the overall implementation of their school's local wellness policy. Principals from 68.9% of schools surveyed reported that their

school wellness policy was currently in place and fully implemented. In all categories mentioned on the survey, the majority of principals stated that their school had fully implemented the different portions of the wellness policy. Table 1 describes the survey responses of the principals.

Table 1

Overall Local Wellness Policy Implementation

	Not currently and no plans to do so	Not currently, but plans are in place	Currently in place, but only partially implemented	Currently in place and being fully implemented
Has a local wellness policy as required by section 37-13-134 Mississippi Code of 1972 annotated, Mississippi Public School Accountability Standard 37.2, and the 2004 Child and Nutrition WIC Reauthorization Act	2/0.5%	9/2.3%	110/28.3%	268/68.9%
Used monitoring instruments, developed by the Office of Healthy Schools to conduct a self assessment that identified strengths and weaknesses toward implementation of the minimum requirements	8/2.1%	40/10.3%	133/34.4%	206/53.2%
Established a plan for implementation of the local wellness policy	3/0.8%	16/4.1%	110/28.5%	257/66.6%
Designate one or more persons to insure that the school wellness policy was implemented	2/0.5%	16/4.2%	89/23.1%	278/72.2%

Established a School Health Council that addresses all aspects of a coordinated school health program, including a school wellness policy	4/1.0%	32/8.3%	89/23.0%	262/67.7%
Has the School Health Council meet three times per year and maintains minutes of each meeting	5/1.3%	47/12.2%	120/31.1%	214/55.4%
Prepares and submits a yearly report to the school board regarding the progress toward implementation of the school wellness policy and recommendations for any revisions to the policy, as necessary	13/3.4%	78/20.2%	94/24.4%	201/52.1%

Principals also evaluated the nutrition components of their school's local wellness policy. Principals from 97.0% of schools surveyed reported that their school lunch program menu met the standards established by the USDA and the MDE Office of Child and Nutrition Programs. In all categories mentioned on the survey, at least 81.9% of principals stated that their school had fully implemented the different portions of the wellness policy. Table 2 describes the survey responses of the principals.

Table 2

Implementation of Nutritional Components of Local Wellness Policies

	Not currently and no plans to do so	Not currently, but plans are in place	Currently in place, but only partially implemented	Currently in place and being fully implemented

Offers a school lunch program with menus that meet meal patterns and nutrition standards established by the USDA and the MDE Office of Child Nutrition Programs	1/0.3%	1/0.3%	9/2.4%	357/97.0%
Offers School breakfast and snack programs (where approved and applicable) with menus that meet the meal patterns and nutrition standards established by the USDA and MDE Office of Child Nutrition Programs	26/7.0%	5/1.4%	13/3.5%	325/88.1%
Promotes participation in school meal programs to families and staff	14/3.8%	11/3.0%	41/11.1%	303/82.1%
Operates all Child Nutrition Programs with school foodservice staff who are properly qualified according to current professional standards	3/0.8%	1/0.3%	7/1.9%	356/97.0%
Follows State Board of Education policies on competitive foods and extra food sales	1/0.3%	3/0.8%	10/2.7%	353/96.2%
Established guidelines in accordance with the Mississippi Beverage and Snack regulations for foods available on the school campus during the school day	2/0.5%	4/1.1%	17/4.6%	343/93.7%

Schools also reported about their school's implementation of the nutrition standards of the Mississippi Healthy Students Act. 94.8% of principals reported serving healthy food and beverage choices, 97.3% reported healthy food preparation, and 97.3% reported allowing the appropriate time for both breakfast and lunch. In all categories mentioned on the survey, at least 81.9% of principals stated that their school had fully implemented the different portions of the Mississippi Healthy Students Act. Table 3 describes the survey responses of the principals.

Table 3

Implementation of the Mississippi Healthy Students Act Nutrition Standards

	Not currently and no plans to do so	Not currently, but plans are in place	Currently in place, but only partially implemented	Currently in place and being fully implemented
Healthy food and beverage choices	1/0.3%	0/0.0%	18/4.9%	347/94.8%
Healthy food preparation	2/0.5%	0/0.0%	8/2.2%	355/97.3%
Marketing of healthy food choices to students and staff	0/0.0%	0/0.0%	36/9.9%	329/90.1%
Food preparation ingredients and products	3/0.8%	1/0.3%	17/4.6%	345/94.3%
Minimum/maximum time allotted for students and staff lunch and breakfast	2/0.5%	1/0.3%	7/1.9%	354/97.3%
Availability of food items during breakfast and lunch periods of the Child Nutrition Breakfast and Lunch Programs	1/0.3%	1/0.3%	10/2.7%	354/96.7%

Methods to increase participation in the Child Nutrition School Breakfast and Lunch Programs	9/2.5%	10/2.7%	47/12.9%	298/81.9%

The survey also addressed the different foods served at schools on a weekly basis. 98.1% reported that at least three different fruits were served per week. 97.8% reported that at least five different vegetables were served per week. 97.5% reported that at least four different entrees or meat were served per week. Principals were also asked how often their schools served various types of foods. 87.6% reported serving low fat or fat free milk daily, 47.1% reported serving fresh fruit daily, and 64.9% reported serving good sources of Vitamin C daily. 48.0% reported serving raw vegetables at least three times a week and 50.4% reported serving whole grain foods at least three times a week. Table 4 summarizes the principles' responses.

Table 4

Foods Served in Schools Weekly

	At least once a week	At least three times a week	Daily
Fresh fruit	35/9.7%	155/43.2%	169/47.1%
Raw vegetables	88/24.7%	171/48.0%	97/27.2%
Whole grain foods	48/13.5%	179/50.4%	128/36.1%
Low fat (1%) and/or fat free milk	12/3.4%	32/9.0%	311/87.6%
Cooked dried beans or peas	142/40.3%	161/45.7%	49/13.9%
Two or more sources of iron	40/11.3%	161/45.6%	152/43.1%

Dark green and/or orange fruits/vegetables	31/8.7%	169/47.5%	156/43.8%
Good sources of Vitamin C	23/6.5%	101/28.6%	229/64.9%

Principals also reported about the current status of nutrition programs in their schools. 69.1% of principals stated that plans for reducing or eliminating fried foods at school were fully implemented. Also, 90.3% of principals stated that the appropriate time of 24 minutes is given to students for lunch and 84.3% stated that the appropriate time of 10 minutes is given to students for breakfast. A summary of all responses is summarized in Table 5.

Table 5

Nutrition Programs in Schools

	Not currently and no plans to do so	Not currently, but plans are in place	Currently in place, but only partially implemented	Currently in place and being fully implemented
The school has developed plans for reducing and/or eliminating fried products in lunch and breakfast menus	5/1.4%	15/4.2%	91/25.3%	248/69.1%
The time allotment for student lunch period is a minimum of 24 minutes, including wait time and consumption time	3/0.8%	6/1.7%	26/7.2%	325/90.3%
The time allotment for student breakfast period is a minimum of 10 minutes, including wait time and consumption time.	29/8.1%	5/1.4%	22/6.2%	300/84.3%

Schools also evaluated their school's commitment to different aspects of their local wellness policies. 48.2% stated that they were committed to the implementation to their school's wellness policy. 64.0% stated they were committed to good nutrition in their schools and 65.9% stated they were committed to physical activity and physical education in their schools. Table 6 summarizes all of the responses.

Table 6

Schools' Commitment to Local Wellness Policies

	Not currently and no plans to do so	Not currently, but plans are in place	Currently in place, but only partially implemented	Currently in place and being fully implemented
Implementation	0/0.0%	10/2.4%	103/24.7%	201/48.2%
Nutrition	2/0.5%	4/1.0%	44/10.6%	267/64.0%
Food Safe Schools	1/0.2%	4/1.0%	29/7.0%	282/67.6%
Physical Activity/Physical Education	1/0.2%	3/0.7%	39/9.4%	275/65.9%
Comprehensive Health Education	4/1.0%	11/2.6%	74/17.7%	228/54.7%
Healthy School Environment	0/0.0%	4/1.0%	47/11.3%	266/63.8%
Quality Health Services	1/0.2%	11/2.6%	61/14.6%	243/58.3%
Providing Counseling, Psychological, and Social Services	2/0.5%	4/1.0%	46/11.0%	265/63.5%
Family and Community Involvement	0/0.0%	11/2.6%	116/27.8%	191/45.8%
Quality Staff Wellness Program	2/0.5%	31/7.4%	108/25.9%	175/42.0%

Marketing a Healthy School Environment	7/1.7%	33/7.9%	117/28.1%	159/38.1%

In addition, principals rated the quality of their local wellness policy programs and activities with the choices "not part of our local wellness policy," "poor," "fair," "good," and "excellent." 39.8% rated their implementation as "good" and 24.9% rated their implementation as "excellent." 40.8% rated their nutrition as "excellent" and 42.7% rated their physical activity and physical education as excellent. Table 7 summarizes all responses.

Table 7

Quality Ratings of Local Wellness Policies

	Not part of our Local Wellness Policy	Poor	Fair	Good	Excellent
Implementation	1/0.2%	1/0.2%	42/10.1%	166/39.8%	104/24.9%
Nutrition	1/0.2%	2/0.5%	16/3.8%	125/30.0%	170/40.8%
Food Safe Schools	2/0.5%	1/0.2%	11/2.6%	100/24.0%	200/48.0%
Physical Activity/Physical Education	2/0.5%	2/0.5%	27/6.5%	107/25.7%	178/42.7%
Comprehensive Health Education	2/0.5%	6/1.4%	39/9.4%	137/32.9%	132/31.7%
Healthy School Environment	1/0.2%	1/0.2%	18/4.3%	117/28.1%	177/42.4%
Quality Health Services	3/0.7%	2/0.5%	20/4.8%	125/30.0%	166/39.8%
Providing Counseling, Psychological, and Social Services	3/0.7%	0/0.0%	20/4.8%	99/23.7%	192/46.0%

Family and Community Involvement	1/0.2%	12/2.9%	65/15.6%	143/34.3%	92/22.1%
Quality Staff Wellness Program	2/0.5%	16/3.8%	66/15.8%	138/33.1%	92/22.1%
Marketing a Healthy School Environment	4/1.0%	17/4.1%	70/16.8%	131/31.4%	91/21.8%

Because actual socioeconomic status of students was not collected and free and reduced lunch qualification was used to reflect socioeconomic status, socioeconomic status was not reported by researchers. ANOVA was used to compare the average percentage of students receiving free or reduced lunch based on level of implementation of the components of the wellness policy. There was a significantly lower percentage of students receiving free and reduced lunch when the school did not offer breakfast and snack programs in comparison to those schools that had partial or full implementation of the breakfast or snack program ($p<.001$). There was a significantly higher percentage of students on free or reduced lunch in schools with a partially implemented time allotment of 24 minutes for lunch versus only plans to implement this time limit ($p=0.02$). Also, there was a significantly higher percentage of students on free or reduced lunch in schools with a partially implemented time allotment of 10 minutes for breakfast versus only plans to implement this time limit ($p=0.000$). Using Chi-Square analysis, no significant difference in the level of implementation of different portions of the local wellness policies based on grade level was found.

Chapter 5: Discussion

The results and conclusions from this research study are important for health professionals in Mississippi as socioeconomic status could play a role in the nutritional health of children in public schools. Understanding the relationship between socioeconomic status and local wellness policy implementation can help health professionals and educators to stop and reverse the trend of increasing weight status among the children of Mississippi and the United States.

Discussion

The socioeconomic status of a community could heavily impact the implementation of the local wellness policies that have recently been implemented into public school systems. If discrepancies can be identified between the implementation of wellness policies in communities of different socioeconomic statuses, changes need to be made within these schools so that these implementations can be made equally for all children. Children in any community should be afforded the same opportunities for health and wellness benefits. High or low socioeconomic status should have no effect on policy implementation.

Because of the resources required to implement wellness policies into schools, researchers hypothesized that schools with more students who qualify for free or reduced lunch would have lower levels of wellness policy implementation and that the schools with fewer students who qualify for free or reduced lunch would have higher levels of wellness policy implementation. However, the levels of implementation of wellness policies were not significantly affected by this variable ($p=0.555$). These results are positive for low-income schools in Mississippi as it shows evidence that they are

implementing wellness policies into their schools as successfully as schools with children with higher incomes. Perhaps these results show that monetary resources do not determine the implementation and success of wellness policies in schools. These findings are inconsistent with results found in both Colorado and Virginia where more financial resources were needed for better wellness policy implementation (Belansky et al., 2010; Serrano et al., 2007). Other possible factors that could contribute to the success of implementation include teacher and faculty knowledge of the wellness policy and teacher and faculty commitment to the wellness policy. Also problems with cooperation between students, faculty, and parents to implement the policies successfully have been found in previous research studies (Power et al., 2010).

There was also no significance found between the different levels of implementation of different portions of the local wellness policies and grade level ($p=.459$). While it was hypothesized that there would be a significant difference in implementation between the different types of schools surveyed, this lack of significant difference between types of schools is a positive result for the schools of Mississippi. Schools with every age group of children had high rates of implementation, so additional efforts to increase implementation of local wellness policies in schools should not be focused on any specific type of school or age group.

Also, 97% of principles in the survey reported that the nutritional components of the local wellness policy were currently in place and fully implemented. 94.8% also reported that healthy food and beverages were being served and 97.3% reported healthy food preparation in accordance to the Mississippi Healthy Students Act. These results indicate that schools in Mississippi are successfully reaching the goals set for their

schools in the local wellness policies and Mississippi Healthy Students Act. Because the majority of schools have reached these goals, perhaps the next step for these schools is to increase the standards of the nutrition components of the wellness policies so that the health of their students can continue to improve. Also, in previous research studies, the goals met by schools were more broad and ambiguous versus specific and measurable (Probart et al., 2008). The local school wellness policies in Mississippi should be evaluated for specificity as well so that the goals and their achievement can be more accurately evaluated.

When asked to consider the quality of the implementation of the local wellness policies, principals were asked to rank their policies as poor, fair, good, and excellent. 24.9% of schools ranked their schools implementation as excellent and 39.8% of schools ranked their implementation as good. Principals also ranked the quality of their nutrition components on this same scale. 40.8% of schools ranked their nutrition as excellent and 30.0% ranked their nutrition as good. Also, only 22.1% of schools ranked their family and community involvement in their wellness policy as excellent. This quality of total implementation as well as implementation of the nutritional components is something that can be improved in schools across Mississippi. Increases in standards for implementation and nutrition in schools as well as increased preparedness of teachers and staff in schools could help to increase the quality of both of these components. Also, increasing the amount of family and community involvement in school wellness could contribute to the overall quality and enthusiasm in these policies. As stated by Iowa Senator Tom Harkin, “individuals, families, corporations, employers, schools, and government at all levels” are responsible for combating the obesity epidemic in the

United States, so it is key for schools to utilize all of these groups to their advantage whenever implementing policies (Harkin, 2007, p. 165). An increase in the quality of local school wellness policies in all of these areas is vital in improving the overall health of students across Mississippi.

Conclusions

In conclusion, there are no significant differences in wellness policy implementation between schools of differing socioeconomic status or schools of children with differing ages. Because of these findings, interventions to improve the implementation and quality of implementation do not need to be focused on these variables. While the quality of local school wellness policies can still be improved, other factors need to be considered when identifying trends in the schools that need assistance with their wellness policies. These policies are vital for improving the health of Mississippi's children so constantly evaluating implementation and quality of these policies is imperative.

Summary

Schools of varying socioeconomic status and age groups throughout Mississippi had high levels of implementation of the local wellness policies. Most schools also reported having high implementation of the nutritional components of the Mississippi Healthy Students Act. However, results also show that the quality of implementation of these policies can improve. Continuing to improve the quality of these policies is vital for improving the health of children in Mississippi.

Limitations

The main limitation for this research study was that the percentage of students who qualified for free or reduced lunch was used to assume the socioeconomic status of the schools. This data was used as the socioeconomic status of individual students could not be obtained through the type of survey that was used by researchers. Qualifying for free or reduced lunch from the National School Lunch Program can only be used to estimate the socioeconomic status of students. The income range to qualify for free or reduced lunch is very wide so students from a variety of economic backgrounds might fit into this group. Also, the number of students who qualify for free or reduced lunch might be exaggerated at this time because of hard economic times in communities across America. Because of these different variables, using the percentage of students who qualify for free or reduced lunch to categorize schools by socioeconomic status is a limitation of this study.

Another limitation of this study is that all data was gathered through a survey based on the principals' subjective evaluation of their own schools. This self-evaluation might cause some bias in the data collected. If outside evaluators had completed the surveys on each school, a more objective evaluation might have been completed on these schools. While this can be considered a limitation, self-evaluation of schools by the principals allowed for a much larger sample size and a much more timely collection of data than if outside evaluation was required for each school.

Suggestions for Future Research

For future research, methods to increase the response rate of schools should be incorporated. In this study, only 506 (55.84%) of schools answered and emailed back the

survey. This leaves a gap in the research, as researchers are unaware of the status of wellness policies in 44.16% of schools in Mississippi. In order to increase the response rate of schools in research studies like this, an incentive for completing the survey could be incorporated. An incentive might include nutrition education for teachers and faculty or individual assistance in improving wellness policies for schools. While this would require a large time commitment on the part of the researcher, it could help to improve the response rate of the schools and improve the thoroughness and quality of the research.

In the future, it would also be beneficial to not only track implementation of wellness policies in Mississippi, but also track the changes of child weight status as these wellness policies are implemented and improved. This would allow researchers to not only evaluate the quality of wellness policies, but also track the benefits of the policies in the health of children. Without improved health of children such as lowering weight status and lowering incidence of chronic disease, the efforts put into implementing and improving the quality of local wellness policies are futile. While studies tracking both wellness policy implementation and changes in child weight status will probably have to be completed on a smaller sample because of the increase in effort required by researchers, it is important to track the changes in weight status of children in response to changes in local wellness policies in order to understand the benefits of these efforts.

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