Walden Dissertations and Doctoral Studies

2016

An Ecological Approach to African American Adolescent Food Choices in Low Income Neighborhoods

Clarence E. McMillan
Walden University

Follow this and additional works at: https://scholarworks.waldenu.edu/dissertations

Part of the Public Health Education and Promotion Commons

Walden University

College of Health Sciences

This is to certify that the doctoral dissertation by

Clarence McMillan

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

Review Committee
Dr. Michael Dunn, Committee Chairperson, Public Health Faculty
Dr. Shirley Gerrior, Committee Member, Public Health Faculty
Dr. German Gonzalez, University Reviewer, Public Health Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2016

Abstract

An Ecological Approach to African American Adolescent Food Choices in Low Income

Neighborhoods

by

Clarence E. McMillan

MPA, Kean University, 2006

BA, Kean University, 2004

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Walden University

January, 2016

Abstract

Childhood obesity remains prevalent among African American (AA) adolescents in low income neighborhoods with limited access to a variety of foods from stores. Guided by the ecological framework, the purpose of this study was to examine the impact of neighborhood stores on food choices, and physical activity among AA adolescents in a low income neighborhood. A quantitative research design with cross sectional primary and secondary surveys was used. Participants included 176 high school students and 42 store merchants. Data sources were the 2011 New Jersey Student Health Survey with core questions from the Youth Risk Behavior Survey and the Hmong Food Store Survey. Descriptive statistics were used to describe the sample characteristics and food store food variety and cost. Inferential statistics were used in analyzing the association between the dependent variable (grade level, age, or gender) and the independent variables, food choices and physical activity level, and to test for hypotheses. The findings revealed there were no significant associations between grade level, age, or gender and food choices, or physical activity level. Food variety reported as MyPlate food items were low for adolescents who shopped at small grocery and convenience stores as compared to those who shopped at supermarket and large grocery stores. Average cost differed by, MyPlate food groups and store type. Convenience stores had the lowest costs for fruits, grains, and protein, and highest for diary, reflecting the lack of variety in the mix of foods used to calculate costs. This study demonstrated the need for policy change at the community that will benefit disadvantaged AA adolescents in low income neighborhoods and improve access to a variety of food choices for purchase that are nutritious and affordable.

An Ecological Approach to African American Adolescent Food Choices in Low Income

Neighborhoods

by

Clarence E. Mc Millan

MPA, Kean University, 2006

BA, Kean University, 2004

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Walden University

January, 2016

Dedication

This completed study is dedicated to Brother Anthony Bembry-Bey and students

from colleges in the New Jersey area who have inspired this academic achievement.

Acknowledgments

The writing of this dissertation has been a long journey and an exceptional learning experience. I wish to acknowledge that the completion of the journey was possible with the support of several people. I would like to express my sincere gratitude to all of them. First of all, I would like to thank my committee chair Dr. Michael Dunn for his support, guidance, and suggestion that were extremely appropriate.

I also would like to thank research committee member Dr. Shirley Gerrior for her outstanding expertise, support, and guidance on this journey. To extended family members, Walter Clark, Ms. Emma Herron, Gill Grant, Ken Mariano, Omani Allen, Paul Vargas, Rose Johnson and all other professional associates you have provided the support that has helped me to reach this point in my academic career. Together we continue to make a difference at the level of the community.

.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

Introduction

The United States faces an obesity epidemic of with more than one-third of American adults and 17% of youth obese in 2011-2012 (Ogden, Carroll, Kit, & Flegal, 2014). The availability of residential neighborhood resources which support physical activity and healthy food choices may influence obesity rates (Diez-Roux & Mair, 2010). Proximity to supermarkets has been positively associated with consumption of a healthy diet (Laraia, Siega-Riz, Kaufman, & Jones, 2004).Vlahov et al., (2007) stated that Western nations have witnessed a dramatic transformation in the impact of nutrition on the health of the public in the past century.

The problem of nutritional excess has overtaken deficiency as a leading threat to health in the United States and is increasing throughout much of the world (Vlahov et al., 2007). Thus, studies that link socioeconomic status to healthy diets have special relevance to any city. The neighborhood is important especially in regard to having equal access to healthier food options. Larson, Story, and Nelson (2009) indicated neighborhood disparities in access to food are of great concern because of the potential to influence dietary intake and obesity. Points of food access of concern are convenience and small stores, large stores, supermarkets, and fast food restaurants in low income neighborhoods.

The overconsumption of fast foods occurs across race and class lines but there was an increase in racial disparities in communities of color (Freedman, 2007). Also, Zenk, et al., (2005) indicated racial disparities in the burden of chronic diet-related disease are well documented with African American (AA) individuals often having the highest morbidity and mortality. To help address this issue, Healthy People 2020 established an objective to reduce health disparities in disadvantaged populations (Healthy People, 2010).This was important because health risks and resources are spatially and socially structured and despite research efforts in economically disadvantaged neighborhoods relatively little is known about the mechanism by which neighborhood environments affect health. Therefore, research was needed to address various limitations of current studies as well as identify policy actions, and evaluate intervention strategies designed to promote more equitable access to healthy food in a low income neighborhood.

Background

Over the past few decades, food and home environments have changed. Environmental changes include characteristics that affect eating behavior, such as the nature of food supply, increased reliance on foods consumed away from home, food advertising, marketing, promotion, and the cost of healthier foods. These changes have disproportionately affected diets of individuals living in low income areas who have less access to healthy food options. Treuhaft and Karpyn (2009) noted urban communities of color experience the harshest effects of poor nutrition. Adolescents living in these communities lack sufficient access to adequate healthcare and education compounding

the deleterious effects of a diet monopolized by unhealthy food choices. Continuing research efforts has expanded the obesity research paradigm by increasing knowledge and understanding about the problem of unhealthy food consumption among AA adolescents and other groups.

Overall the health status for many Americans has improved because of advances in medical research; however, there is increasing concern regarding health disparities in communities of color and the growing body of evidence indicates residential segregation by income, race, and ethnicity contributes to health disparities (Gordon-Larsen, Nelson, Page, & Popkin, 2006). The increasing rate of obesity has serious implications for the health of Americans today and in the future. Medical costs of obesity are high; in 2008 dollars, the costs totaled about $147 billion (Finkelstein, Trogdon, Cohen, & Dietz, 2009). Public health researchers must find sustainable solutions through exploration of the casual effects of unhealthy food consumption among Americans.

Acculturation is a term used to describe how an individual from one culture has given up the traits of that culture and adopted the traits of the dominate culture in which he or she now resides (Huff & Kline, 1999). Efforts to change unhealthy behavior specifically related to race and ethnicity influence life contexts including many aspects that relate to eating and physical activity behaviors (Kumanyika et al., 2008).Culture is a dynamic construct in that shared understanding changes over time. Modifying cultural habits requires in-depth examination of the effects of acculturation on the population. Evidence of behavior modification as an effective tool is primarily derived from White, middle class mild-to-moderate obese children (Caprio et al., 2008).

The principles of behavior modification have been applied to community health education with some success and offer considerable promise for public health in general (Elder et al., 2007). Nuss, Freeman-Graves, Clarke, Klohe-Lehman, and Milani (2007) observed from a study of mothers and their children an increased awareness of the health risk of childhood obesity. Although knowledge does not always predict behavior it can be an important and influential force in establishing dietary patterns (Baranowski, Cullen, Nickolas, Thompson, & Baranowski, 2003). Behavioral modifications programs can help obese children manage their weights.

A report released by the Agency for Health Care Research and Quality (AHRQ) found that after completion of a behavioral, pharmacological, and surgical weight management program weight improvement could be maintained for up to one year after (McCormick, Escobar, Zheng, & Richardson, 2008). Prior to substantial changes occurring, further exploration of individual contributing factors was needed to enhance health promotion efforts regarding eating patterns among adolescent AAs. Further investigation was necessary based on the food restaurants, convenience, and grocery stores which are abundantly located in urban communities. Davis and Carpenter (2009) examined the relationship between fast food restaurants near schools and obesity among middle and high school students in California. The authors found that students with fast food restaurants near schools consumed fewer servings of fruit and vegetables, more servings of soda, and were more likely to be overweight.

Although, the harm caused by overconsumption of fast food is prevalent across race and class lines, its effect on low-income people of color supports the Healthy People

2020 objective 39 to improve understanding of social determinates of all groups (Centers for Disease Control [CDC], 2010). Brown and Carter (2002) noted some disparities could be the result of institutionalized practices and government polices within the fast food industry. However, others are the result of environmental conditions such as food deserts and unsafe places to play. This was important because poor quality retail food environments in disadvantaged areas, in conjunction with limited economic resources, contribute to increased risk of obesity within racial and ethnic monitories and socioeconomically disadvantaged populations (Ford, & Dzewaltowski, 2008). Paschal, Lewis-Moss, Sly, and White (2010) reported inadequate physical activity and poor fruit and vegetable intake as contributors to health disparities among AA adolescents. Additionally, they found that poor fruit and vegetable intake was associated with poor health outcomes such as chronic depression, stress, anxiety, and other chronic diseases and conditions (Lewis-Moss et al., 2010).

It is important to understand why adolescents are susceptible to unhealthy diets in low income neighborhoods. Sebastian, Wikinson-Enns, and Goldman (2009) emphasized location may not be as important as previously thought. For example, the pervasiveness of fast food consumption among U.S. adolescents makes it an important factor to consider especially in terms of dietary intakes and the associations between fast food intake and portion size. Unfortunately, little is known about how adolescent's dietary intake contributes to total energy intake. St. Onge, Keller, and Heymsfield (2003) explained there are more families in which both parents work, and time limitations have become an important factor in deterring the type of foods consumed. Other factors to

consider are the increase in number of convenience stores and prepared meals available, portion sizes over the past two decades, and the increase in the per capita availability of added sugars and fats from 74.1% of total daily energy by foods consumed at home to 68.3% and 60.5% respectively, in the 1989-1991 and 1994-1996. Smith, Ng, and Popkin (2013) noted in 2007-2008, foods from the home supply accounted for 65% to 72% of total daily energy, with 54% to 57% of the sample reporting cooking activities. The low income group showed the greatest decline in the proportion cooking, but consumed more daily energy from home sources and spent more time cooking than high income individuals (Smith et al., 2013).

Economic factors affect what people eat and how much people overeat. Therefore, food cost must be clearly understood prior to improving access and availability in low income areas (Yale Rudd Center, 2010).The availability of residential neighborhood resources that support physical activity and healthy food choices may also influence obesity rates (Larkin, 2003). Proximity to supermarkets has been positively associated with consumption of a healthier diet within higher income neighborhoods and negatively associated with overweight or obesity among low income populations. However, other researcher's food environmental measurements with dietary intake or obesity have found mixed results (Laraia, Siega-Riz, & Jones, 2004; Zenk et al., 2005). Discrimination and social implication on an individual level are also associated with obesity. This includes discrimination in employment, barriers in education, biased attitudes from healthcare professionals, stereotypes in the media, and stigma in interpersonal relationships (Yale Rudd Center, 2010).

Larson, Story, and Nelson (2009) noted poor dietary intake and obesity, established risk factors for chronic disease, have been linked to neighborhood deprivation, neighborhood minority composition, and low income population density. In particular, adolescents are surrounded with opportunities for overeating, leading to overconsumption of highly processed foods that are high in fat and sugar. Specifically, to minimize overweight and obesity effective education and environmental strategies must be designed to increase awareness. Healthy eating and regular physical activity are recommended behaviors that help to promote normal health. Additionally, it is essential to raise these topics carefully and assess the teen's readiness to make behavioral change before a plan of action. Early parent involvement can foster adequate food consumption and healthy exercise habits that children will continue into adolescence (Risica, 2005).

Access to reasonably priced and nutritious food in low-income neighborhoods has been documented in a number of American cities by social scientists and medical researchers (Block, Scribner & De Salvo, 2004; Haas et al., 2003). Compounding the issue of access is cost for low income neighborhoods (Jetter & Cassidy, 2005). Drewowski and Darmon (2005) indicated that healthy food cost more per calorie in the United States and abroad for diets rich in healthy food. Limited access to healthy food choices can lead to poor diets and higher levels of obesity and other diet related diseases. Additionally, limited access to affordable food choices can lead to higher levels of food insecurity, increasing the number of low and moderate income families without access to enough food to sustain a healthy active live (Let's Move, 2011).

Food sold in low income neighborhoods typically contains high concentrations of unhealthy fats, carbohydrates, and additives which contribute to health problems such as obesity, diabetes and heart disease. Lewis et al., (2005) reported understanding the range of individual choices available in different communities may help public advocates develop a strategy to reduce the adverse health effects of meals that are purchased away from home for groups at elevated risk within our society.

Evidently, program intervention should be offered to obese adolescents as part of their weight management behavioral intervention so that they are able to participate in society to the same extent as their non obese peers. This was important because the correct approach that will substantially reduce the burden of obesity among AA adolescents is not yet known. There have been previously conducted efforts within the community. However, the outcome has not decreased the rate of adolescent obesity. The next logical step in the progression of research was this proposed study.

Obesity

More than two-thirds of adults and nearly one-third of children and adolescents in the United States are overweight or obese, which puts them at risk for serious and life-threatening health problems (Ogden et al., 2014). Although obesity affects everyone, communities of color and lower-income populations are disproportionately affected. There are many contributions of the obesity epidemic, and barriers to accessing healthy food and limited opportunities to increase physical activity play a significant role (Public Health Law Network, 2011).

Obesity is a major risk factor for chronic disease and can decrease longevity, quality of life, and economic productivity. Braweman (2009) emphasized childhood obesity has more than tripled in the past 30 years. The primary data source for monitoring the national prevalence and population trends in obesity in the United States is the National Health and Nutrition Examination Survey (NHANES).The 2011-2012 survey reported that 8.1% infants and toddlers had high weight for recumbent length, and 16.9% of 2-19 year-olds and 34.9% adults aged 20 years or older were obese. Overall, there was no significant change from 2003-2004 through 2011-2012.

Environment

With regard to diets, health promoting environments are those which facilitate healthy food choices. Research on school environments, neighborhood food environments (stores, restaurants), and state school policies are illustrative of well-developed measurement tool and important needs in this area (Glanz, Sallis, Saelens, & Frank, 2007). However, there are major gaps in the understanding of the way shifts in the physical and social environments affect changes in dietary, intake, physical activity patterns, and weight. Nonetheless, progress has been made in the past decade to understand some aspects of this complex relationship (Popkin, Duffey, & Gordon-Larsen, 2005). According to United States Department of Agriculture (USDA, 2010) and United States Department of Health and Human Services (HHS, 2007) the environments of children include the home, child-care settings, school, community, recreational facilities, and transportation infrastructure. The CDC (2010) released the 2011 Children's Environment Indicator Report showing that 32 states scored at or below the national

average. The report shows that as of December 2008, only Georgia had enacted all of the state license regulations for children. It is important to understand environmental characteristics which influence adolescents in their daily lives as they have a positive effect on their food choices.

Food Cost Availability and Economics

The Center for Public Health Nutrition (2010) reported that the United States has the most affordable food supply in the world. However, this does not mean that all food is inexpensive. A key problem in our food supply is that while calories are cheap nutrients, vitamins and minerals are costly. For most people food prices are still a major consideration. Having a small food budget can mean relying on foods and beverages that have plenty of calories but few nutrients. Drewnowski and Eichelsdoerfer (2009) noted that rising food costs are a problem, and not only for the poor. Kumcu and Kaufman (2011) noted a salient feature of the recent recession was a significant and sustained increase in unemployment. In addition, food prices increased substantially during the early part of the recession. Food prices peaked in 2008, when the annual rate of food price inflation was 5.5 %. Even though food prices started to decline in February 2009, the average annual growth rate for 2007-2009 was still almost 3.8%. This double squeeze of lower incomes and higher food prices put pressure on consumer expenditures (USDA, 2009).

The link between obesity and socioeconomic position may be related to dietary energy and energy cost (Drewnowski & Darmon, 2005). Research on this phenomenon indicates that food-insecure people may be consuming inexpensive poor quality foods.

Although logical in the face of economic constraints the coping mechanism of food-insecure families may cause physiological response that contributes to weight problems (Jones & Frongillo, 2006). Cassady, Jetter, and Culp (2007) conducted a descriptive study of 25 supermarkets to determine if price is a barrier to fruits and vegetable consumption for low-income families. This study found consumers would have to devote 43% to 70% of their food budget to obtain recommended servings of daily servings of fresh fruit and vegetables at the given cost to meet the 2005 Dietary Guidelines for Americans.

This information needs to be updated with more recent cost data on food prices as well as the new nutrition guidance from the 2010 Dietary Guidelines to determine how relevant price information is in low income areas. Similarly, the rising rate of unemployment in the past two years within low income areas makes price a definite barrier to consuming healthier foods such as fruits and vegetables. Nutrient profiling and new diet optimization techniques can help consumers and expert committees identify those nutrient rich foods that are affordable, good tasting, and part of the main stream American diet (Drewnowski & Eichelsdoerfer, 2009). The evidence is emerging that obesity in America is a largely economic issue (Drewnowski & Darmon, 2005). One argument in favor of the notion that poorer households pay more for the same goods is that discount retailers tend to locate in suburban areas that maybe hard for the poor household to reach. It is commonly agreed that poor households are forced to purchase their goods in smaller, higher-priced stores while wealthier households purchase their goods in discount stores that offer lower prices (Broda, Liebtag, & Weinstein, 2009).

Bailkey (2007) indicated it is not unusual for many remaining inner-city grocery and convenience stores to hike prices even on basic food items. Even when cash is available to low-income urban residents, food is not always so readily accessible. Many supermarkets have closed or moved from the inner city due to complex market forces related to the increasing impoverishment of their clientele and the deterioration and depopulation of once vibrant communities. Several well documented studies have emphasized the importance of addressing the problem of rising food costs in disadvantaged neighborhoods. According to Caprio et al., (2008) the price disparities between the low nutrient high-calorie foods and healthier food option continue to grow.

For decades the examination of wages and income, while ignoring the crucial role that variation in price indexes suggests striking findings about poverty and low wages in the United States that are contrary to some widely held beliefs (Broda et al., 2009). According to USDA (2008) to determine whether healthy diets are affordable public researchers need some notion of what a healthy diet costs. Since the 1960s, changes in living standards and relative prices have reduced the average share of income spent of food from 30% to around 20 %. More importantly, low income households as other household's budgets are clearly pulled in many directions.

Conceptual Framework for a Study of Neighborhood Effects and Food Choice

The public health community actively confronts diseases and conditions in our society by viewing the state of health through the collection of information (Risica, 2005). A theoretical base for the study of food choices of AA adolescents who consume food from

neighborhood stores is an ecological framework. The present findings demonstrate that variations play an important role in mediating socioeconomic status variation in adolescent's intake of fruits, energy-dense snack foods and fast foods (Ball et al., 2009). The public health approach to the prevention of childhood obesity must take into account race/ethnicity, and socioeconomic status (SES) within a socioecological framework (Caprio et al., 2008). Ecological theory is useful to guide research in the examination of characteristics which influence food choices in low income neighborhoods (Brown & Landry-Meyer, 2007). An ecological approach includes urban environments, community nutrition, (food stores accessibility) organizational environment (home school, work) consumer nutrition environment as well as media information (Glanz, 2009).

The presence and magnitude of neighborhood affects required addressing a series of conceptual and methodological issues. Many of these issues relate to the need to develop theory and specific hypotheses on the processes through which neighborhoods and individual factors may jointly influence specific health outcomes. The completed study was based on the social ecological model of health and wellness promotion. Stokols (2000) emphasized taking in to account individual, interpersonal, community, and societal factors when exploring health problems and their solutions. Green and Ottoson (1999) presented social ecology as related less to the physical environment than to the dynamic social forces operating on the situation. For example, population approaches goes beyond health education, incorporating tools to help people take charge of their own health. Risica (2005) emphasized changes to the community environment will also require a creative view of the many influences on diet and physical activity. For example, access to nutritious food varies

among neighborhoods. Supermarkets are able to supply higher quantities of low-cost fruits and vegetables, but neighborhoods where no supermarkets exist rely on small stores or other food outlets. Residents of low-income neighborhoods where a supermarket cannot make profits are likely to have more limited fresh fruits and vegetables and to increase the cost of groceries.

Socioecological Model

The socioecological model (SEM) is an approach to health promotion that offers this broader perspective than (SCT). Recognizing that most public health challenges are too complex to be adequately understood and addressed from single level analyses, the SEM includes a more comprehensive approach that integrates multiple levels of influence to impact health behavior and ultimately health outcomes (Robinson, 2008). More than 30 years of intervening primarily at the individual level without sustainable results points to the need for a different model to address obesity. The SEM stresses that society is composed of interconnected elements-individual, interpersonal, organizational, community and social and these elements affect one another (Koplan, Liverman, & Kraak, 2005).

The Robert Wood Foundation (2007) reported that the neighborhood food environment refers to, the availability of healthy foods within a community and how easily residents can access those foods. Barriers, to accessing healthy foods play a role in poor dietary decisions. It is difficult to make healthy choices if healthy food is not available or require more effort to obtain. This is often the case with AA adolescents living in a disadvantaged neighborhood. Increasingly, public health professionals

recognize the dynamic interplay between individuals and their environments. There have been growing interests in understanding aspects of the physical environment that encourage over consumption of energy-dense food and sedentary behavior. At the same time there is a growing consensus that the norms, values, and assumptions entrenched in children's and adolescents social environment play a significant role in the development and maintenance of obesity. Family and peer enviornments are primary social contexts contributing to young peoples' norms regarding weight and weight-related behaviors. There is growing evidence that children and adolescents are influenced by parents as well as their peers as regards to eating and physical activity behavior (Salvy, Haye, Bowker, & Herman, 2012).

The environment can affect health through behavior. For example, large supermarkets with fresher foods and lower prices are more likely to be located in middle class neighborhoods rather than in low-income urban neighborhoods. Therefore, access to such foods helps to increase their consumption of healthier foods. Baranowski et al., (2003) further wrote the ecological model has been applied conceptually to obesity in regard to both diet and physical activity, encompassing physical, economic, political, and sociocultural influences Robinson (2008) indicated there have been well documented studies on the intrapersonal or individual factors which contribute to the dietary behaviors of AA adolescents. This is important because African Americans continue to have higher mortality and morbidity rates that could be prevented, delayed, or more properly managed if fruit and vegetables consumption was improved. The application of the SEM

can help expand the public health paradigm in regard to increasing our understanding of unhealthy food consumption among the population.

Statement of the Problem

African American (AA) adolescents are at a greater risk for developing obesity than some of their counterparts. Boyington et al.,(2008) found that food access, availability; and cost contribute to unhealthy eating behaviors by adolescents due to purchase of poor foods choices from neighborhood stores and this has led to an insurmountable amount of preventable diseases and diet related health conditions.

The rate of childhood obesity and the risk of Type 2 diabetes were significantly correlated with unhealthy food consumption and the lack of physical activity. Freedman(2007)reported in addition to obesity there has been a dramatic and alarming increase in Type 2 diabetes in children, a disease once seen almost exclusively in adults, while indication of cardiovascular disease are showing up. In response to this growing threat, everyone from nutritionists to the United States Surgeon is urging Americans to eat healthier foods. The CDC (2009) reported in the last two decades, Type 2 diabetes, formerly known as adult-onset diabetes, has been reported among U.S.children and adolescents with increasing frequency.

Also, CDC (2010) noted a strong relationship between childhood obesity and later insulin resistance. Therefore, the primary emphasis of public health action in the adolescent years is to improve the health and preventive practices among all youth, and more particularly among girls already diagnosed with diabetes. Two of the challenges that had to be overcome are the lack of awareness of the need for weight control, healthy

diets and physical activity among adolescents and a decrease in the plethora of fast food and other unhealthy eating options. In support of this Story, Nanney, and Schwarz (2009) reported the environment is ideal for children to more energy that they expend as they are consistently exposed to high-fat and high calories. Therefore, ongoing research is needed to understand the impact of environment on children and adolescents with a goal to prevent disease and improve treatment options.

.   The Robert Wood Johnson Foundation's bridging the gap program studied the effect of environmental factors on youth physical activity, diet, and weight outcomes (Robert Wood Johnson Foundation, 2010). Program researchers have documented disparities in access to healthy food and opportunities for physical activity are relatively less available in communities with lower income and larger populations. They have found that healthier environments are associated with more physical activity, lower body mass index (BMI) and reduced likelihood of obesity among adolescent and children. For example, Powell Auld, Chaloupka, O'Mailley, and Johnson (2007) examined the association between food store availability and adolescent weight outcomes for the years 1997 through 2003. The results highlight the importance of various potential public policy measures for improving access to supermarkets that may serve to reduce systematic local area barriers shown to exist by race, ethnicity, and income (Powell et al., 2007).

At the community level neighborhood environments have many contributing factors which influence unhealthy food consumption among the target group. According to the CDC (2007) at the individual level, childhood obesity is the result of an imbalance

between the calories a child consumes as food and beverage and the calories children used to support normal growth and development, metabolism, and physical activity. Adolescents are also surrounded with opportunities for overeating leading to over consumption of highly processes foods that are high in fat and sugar. Effective prevention of excessive body fat includes education and environmental strategies. For example, adolescents can be trained to assess eating and physical activity habits and to recommend necessary modifications to adolescents and their families as a component of prevention care especially when they find that poorer habits are affecting normal healthy development (CDC, 2007).

Lewis et al.,(2005) emphasized the importance of understanding the range of individual choices available in different communities may help public advocates develop a strategy to reduce the adverse health effects of meals purchased away from home among at risks groups. Moreover, there was a pattern of findings which demonstrates significantly fewer advertisements for healthier food and beverages, and less fruit, vegetable and dairy products in magazines and television shows that target AA specifically compared with those that target more general audiences (Kumanyika & Grier, 2006). This was an increasing concern among public health organizations because the rate of preventable diseases and health conditions has increased among the population.

These researchers studied the conjectured relationship between food choices and foods purchased from various store types in a low income AA adolescent's neighborhoods. The food choices were categorizes as follows: fruit, vegetable, grain,

protein, and dairy products based on the most common food recommendations. The variables of interest included gender, age, race/ethnicity, food availability, and food choices from different types of stores such as supermarkets, large stores, small stores, and convenience stores. Understanding the correlates of dietary intake is necessary to effectively promote healthy dietary behavior (McClain, Nguyen-Rodriquez, Yaroch, & Spruijt-Metz, 2009).

Gaps in the Literature

Based on the literature I reviewed, the gaps remain in the understanding of what is needed to foster major changes in the weight-related eating activities of AA adolescents, especially regarding economic and social contexts (Kumanyika, 2005). For example, there are gaps and limitations in data regarding food choices from small neighborhood stores where adolescents purchase high volumes of unhealthy food products on a daily basis. Powell, Han, and Chaloupka (2010) examined relative changes in availability of various food stores by race and SES from 1997 to 2008. The authors found that African American neighborhoods had the smallest increase in food store availability and the largest decrease in grocery store availability. Their data suggest an increasing gap in access to supermarkets, particularity between AA and White neighborhoods and lower compared to higher income areas. There remains a need to determine the extent to which food choices, and weight-related behaviors of AA adolescents are influenced by targeted marketing, and local availability and access of foods, and how the perception of buying power and lack thereof shape food choice decisions (Kumanyika et al., 2005).

Of particular importance to the proposed study is the lack of evidence relating to behavior modification among AA adolescents. There was little scientific information to guide current policy directed at changing eating behaviors which decreases the effectiveness of diet related interventions or their availability for use. Also, there have been few national studies published about racial and ethnic differences on the prevalence of overweight among adolescents for socioeconomic status, acculturation, and behavioral and environmental factors (Ahn, Juon, & Gittelson, 2003).While public health initiatives such as Healthy People 2010 and now 2020 have moderate success in addressing childhood obesity related issues, without closing the gap in food availability prevention such efforts could be compromised.

The message of inequality must be addressed at all levels of government because the failure to act now compromises the future of America. Previous research and intervention efforts mainly involved either highly selected populations or relatively affluent Whites engaged in costly, individually targeted education or behavioral intervention efforts (Yancy et al., 2004). Yancey et al., (2004) further noted this perspective limits the ability to generalize population based public health approaches targeting lower socioeconomic status groups or communities of color. Centers for Disease Prevention and Control (2008) suggested that effective public health interventions to reduce obesity and related health risks have increased in recent decades in response to the obesity epidemic. However, there is a continuing need for a standardized comprehensive plan to build on previous efforts and effectively address the problem in the 21st century.

In general terms, race is at the heart of public policy debates across the United States especially regarding the increasing rate of childhood obesity. According to the CDC (2008) the problem of childhood obesity is a public health concern, especially with underserved populations such as AA adolescents. This means it is important to understand the association between health disparities and unhealthy eating which can lead to the most dangerous disease among human beings on the planet. Healthy People 2020 objectives and goals include decreasing health disparities among all populations (Healthypeople.gov, 2011). In addition, culturally sensitive interventions and targeted educational efforts are needed to effectively address the issue of unhealthy food consumption among at risk populations. The goal of Healthy people 2020 is to improve health, safety, and well-being of adolescents and young people for diverse populations (Healthpeople.gov, 2011).

Incremental changes in food choices will not be effective without culturally sensitive interventions. Research is needed to test effective ways of integrating culturally appropriate interventions at group and individual levels for reducing obesity in minority youth. The determinates of obesity are not incompletely understood, which makes this proposed study important to public health obesity initiatives targeted at AA adolescents (Office of Minority Health, 2010).

The Purpose of this Study

The purpose of this study was to examine the impact of neighborhood stores on food choices made by low income AA adolescents. Brown and Landry-Meyer (2007) noted the examination of the factors that account for the variance in food choice is critical

for adolescents living in disadvantaged communities. Longacre et al., (2012) observed

positive associations with fast food restaurant use and nutrient intake, among 1547

adolescents and their parents. The results were about 52.1% of adolescents and 34.7% of

parents consumed fast-food at least once a week. Adolescents and parents who lived in

towns with five or more fast-food outlets were about 30 % more likely to eat fast food

compared to those in towns with no fast-food outlets. The completed study was

conducted with the intent to understand and describe adolescent's food choices as a way

to prevent disease among this population.

Research Questions and Hypothesis

Research Question 1: To what extent does grade level affects food choices and

physical activity among African American adolescents?

$H_0$1**:** There is no statistically significant difference in food choices or physical

activity between African-American adolescents of various grade levels.

H_1 1**:** There is a statistically significant difference in food choices or physical

activity between African-American adolescents of various grade levels.

2._____What is the relationship between participant's food choices or physical activity

levels and age group for New Jersey youths?

$H_0$2: There is no statistically significant relationship between a participant's age

and their food choice or physical activity.

$H_1$2**:** There is a statistically significant relationship between a participant's age

and their food choice or physical activity.

3._____What is the variety of food from different types of stores in a low income Essex County neighborhood?

H_03**:** There is no difference in the variety of food from different types of stores in a low income Essex County neighborhood.

H_13: There is a difference in the variety of food from different types of stores in a low income Essex County neighborhood.

4._____Are there gender differences regarding food consumed and physical inactivities among African American adolescents?

H_04**:** There is no statistically significant relationship between gender and food choice or physical inactivity.

H_14**:** There is a significant relationship between gender and food choice or physical inactivity.

5.____What are the average prices per unit for each of the MyPlate food categories from different type of food stores.

H_05**:** The average price of food choice per unit of each of the MyPlate food categories do not differ by type of food store.

H_15**:** The average price of food choice per unit of each of the MyPlate food categories differ by type of food store.

Nature of the Study

This is an ecological approach on food choices in low income AA adolescent neighborhoods. The ecological framework is based on evidence that no single factor can explain why some people or groups are at higher risk for outcomes of interaction among

many factors at four levels the individual, the relationship, the community and the societal (World Health Organization, 2010). The rationale for using secondary data is permission to acquire primary data from AA adolescent high school students was not given by The Newark Department of Education. Secondary data and primary data were required to examine selected environmental socioeconomic and other behaviors of the population. The 2011 New Jersey Student Health Survey was used to access data to answer research questions on high school students to examine the impact of neighborhood stores on food choices that determine health conditions that are embedded in the social cultural processes of the population. The survey was administered to a sample of public high school students during the spring of 2011 by The New Jersey Department of Education. In a quantitative research study design with cross sectional primary and, secondary data variables of interest were race/ethnicity, age, gender, grade, physical activity, and food choices from different types of store merchants who completed the Hmong Food Store Survey. The research focused on the availability of healthy food products from two different zip codes areas to explain the cause and effect of health behaviors of AA adolescent's high school student living in a disadvantaged low income neighborhood.

Definition of Key Terms

For the purpose of understanding the overall perspective of this continuing research inquiry the following definition of terms has been provided which are directly related to the scope of this public health research problem.

Behavior modification: The use of empirically demonstrated behavior change techniques to improve behavior, such as altering an individual's behavior and reactions to stimuli through positive and negative reinforcement of adaptive behavior, and the reduction of maladaptive behavior through its extinction, punishment, and therapy (Bartholomew et al., 2006)

Body Mass Index (BMI): The ratio of weight (in kilograms) to height in meters (World Health Organization, 2010).

Calorie: A unit of energy supplied by food. A calorie is a calorie regardless of its source whether you are eating carbohydrates, fats, sugars, or proteins, all of them contain calories. (CDC, 2007)

Calorie balance: To remain in balance and maintain your body weight, the calories consumed (from foods) must be balanced by the calories used in normal body functions, daily activities, and exercise (CDC, 2008).

Community health: The health status of a defined group of people and the actions and conditions, both private and public (government), to promote, protect and preserve their health. (McKenzie et al, 2005)

Demographics: Statistics data relating to the population and particular groups within it. Demographics apply to many different kinds of demographic analysis and research. (H.G. Daugherty & K.C.W. Kammeyer, 1995)

Disease: A harmful departure from the normal state of a person or other organism. (Green & Ottoson, 1999).

Ecology: The study of the interaction of life-forms with their environment. (Green & Ottoson, 1999)

Environment: The natural world as a whole in a particular geographical area. (EPA, 2009).

Epidemic: Widely and rapidly spreading disease, more that an outbreak but less than a pandemic. (Green & Ottoson, 1999).

Public health: The status of a defined group of people and the government actions and conditions to promote, protects, and preserves their health. (McKenzie et al., 2005)

Public health paradigm: A complex process involving various stack holders, various sectors and public policies for improved population health and well-being (Awofeso, 2004)

Prevention: The planning for taking of action to forestall the onset of a diseases or other health problem before the occurrence of undesirable health events. (Mc Kenzie et al., 2005)

Life expectancy: The average number of years a person from a specific cohort is projected to live from a given point in time. (McKenzie et al., 2005)

Marketing advocacy: Bringing about policy changes by using the media to put pressure on policy makers. (Siegel & Lotenberg, 2007)

Metabolism: The totality of an organism's chemical processes, consisting of catabolic and anabolic pathways. (Campbell, Reece, & Mitchell, 1999)

Obesity: Is defined as a BMI at or above the 95th percentile for children of the same age and sex (CDC, 2012)

Primary research|: Studies that are designed and conducted specifically to answer a current research question (as compared with secondary research (Siegel & Lotenberg, 2008)

Social ecological model: is a social ecological perspective that acknowledges multiple levels of behavioral determinants, including individual, interpersonal or organizations and communities as well as both social and physical environments at various levels (McLeroy et al.,1998).

*Social cognitive theory: D*escribes human behavior as being reciprocally determined by internal personal factors and the environment in which a person live. Moreover, SCT elucidates mechanisms for enhancing social cognitive factors to promote appropriate health behavioral changes (Mailbach & Parrott, 1995)

Assumptions and Limitations of Neighborhood Environments

The study used surveys to determine the characteristics that influence food choices from neighborhood food stores among 176 AA adolescent high school students as well as 42 store merchants included in this study. The use of secondary data was a limitation that decreased the quality of the sampled population. Limitations to this study include the underreporting of food choices from different store types among the AA adolescents living in an Essex County neighborhood. Store merchants did not answer survey questions on ethnic/specialty food and food quality. Store merchants lacked the expertise to determine food quality data which could have been collected.

Primary data could have helped to identify certain consumption patterns that need to be addressed such as soda consumption. Soft drink consumption has become a highly visible and controversial public health and public policy issue. Soft drinks are viewed by many as a major contributor to obesity and related health problems and have consequently been targeted as a means to help curtail the rising prevalence of obesity, particularly among children in low income neighborhoods (Vartanian, Schwartz, & Brownell, 2007).

I am assuming that the specific neighborhood characteristics that influence nutritional behavior among populations such as access, availability, and cost of foods were effectively addressed in this study. The impact of access, availability and prices of foods

across neighborhoods and stores has become an important consideration that can increase

our understanding of the characteristics which influence behavior among low income

populations (Andreyev, Blumenthal, Schwartz, Long, & Browell, 2008).

Generalized findings from this study may be applied to other populations living in

low income neighborhoods where food options based on access, availability and cost are

limited. Singleton and Straits (2005) observed that accurate generalizations about

populations of interest depend on the quality of the sample. However, no matter how

carefully the sample is selected, a sample survey is only as good as the design of the

questionnaire or interview schedule. Singleton and Straits (2005) stated although surveys

are quite flexible with respect to the topics and purposes of research, they also tend to be

highly standardized. That is, once the survey instrument is in the field it is too late to make

changes. They are susceptible to reactivity, which introduces systematic measurement

error. As a consequence, measurements error may be produced by respondents' lack of

truthfulness, misunderstanding of questions, and inability to recall past events accurately

and by the instability of their opinions and attitudes.

Lupton (2001) noted theorists of neighborhood generally agree that neighborhood

is both physical and social spaces. Galster (2002) defines them as 'bundles' of spatially

based attributes including environment, proximity, infrastructure, class, politics and

characteristics. They highly correlate with one another, making it difficult to untangle

causality. Lupton and Power (2002) describes neighborhoods as having 'intrinsic'

characteristics that are well established. The nature of these characteristics in relation to

those of the neighborhood determines who come to live there. The problem is often

referred to in the quantitative literature as selection bias (Harding, 2002).The nature of social relations may itself impact on individual decisions to stay or move, and on individual outcomes, such as employment or health (Lupton, 2001).

Glanz et al., (2005) emphasized the built environment is multidemsional, and thus presents significant challenges for measurements. Moreover, although it is possible to collect survey reports of features of an adolescent's environment and of their perceptions of their neighborhod the most objective assessments are likely included observation of the actual features environments. This presents challenges: For example, in addition to being valid, the measures must have a high degree of inter-rater reliability: and if the assumption that environments influence behavior over long-term is to be supported then the measures should have good test-retest reliability (or stability) as well. This study was implemented but not validated in a predominantly AA adolescent population. The concept of external validity is important because we want to be able to say all conclusions can be generalized to across populations, settings, times, outcomes and treatment variations within low income neighborhoods across New Jersey (Babbie, 2007).

This type of research design has been applied to similar characteristics that could be generalized to individuals within urban settings and intervention programs within New Jersey designed to improve access and availability of healthier foods among people considered to be AA. A landmark 2002 study by Morland et al., (2002) based on more than 10,000 residents in 221 census tracts (from Maryland, North Carolina, Mississippi and Minnesota) revealed a link between where people live and what they eat. Ebel,

Gamfyi and Kersh (2011) conducted a study comparing AA adolescent's food choice and the influence of calorie labels in low income communities in New York City and New Jersey restaurants. The authors found the links between access, diet, health outcome, and social norms in urban areas had similar results in regard to food labeling. Understanding the market conditions that contribute to differences in access to food is critical to the design of policy intervention that may be effective in reducing access limitations (USDA, 2010).

Significance of the study

Although childhood obesity is increasing in all ethnic racial groups, its prevalence is high in non-White populations (Caprio et. al., 2008).The behaviors that determine weight status are embedded in the core social cultural processes and environment of day-to-day life in these populations. Therefore, identifying effective sustainable solutions to obesity required an ecological model that included relevant contextual variables such as food choices as well as types of food stores (Kumanyika et.al, 2007). For decades, low income communities of color have endured a lack of access to healthier food choices as grocery stores and fresh, affordable food disappeared from their neighborhoods.

Unfortunately, it often takes years of research to catch up with pressing needs in historically underserved communities (Treuhaft & Karpyn, 2009). Findings from the study indicated 176 AA high school students in New Jersey made healthier food choices and engaged in more physical fitness activities as their grade level increased. Food choices as reported by 42 store merchants were limited in variety at small and convenience stores when compared to larger stores and supermarkets. More likely, the

results will inform policy makers at the local and community levels and they will encourage supermarkets to develop in these communities.

According to Yale Rudd Center (2010) the law has proven an integral part of major public health victories over the past century. Bans of smoking in public buildings, the removal of lead from paint and gasoline, and the requirement of school vaccinations are the results of legislation and legal efforts. Today, many experts consider obesity to be the next frontier of public health law. The optimal environment to combat obesity affordable and healthful food, especially fruit and vegetables would be easily accessible to people in low income neighborhoods and every community would have safe side walks to encourage physical activity. These changes and others can be addressed through good public policy.

Public health's increased understanding of food access can foster collaboration with stakeholders to develop sustainable solutions to health disparities in disadvantaged communities. Flournoy (2006) emphasized some communities have struggled for years to bring a grocery store to their neighborhood. Obtaining funding, convincing retailers to invest and securing land in densely populated areas are a few of the challenges they face, but there are increasingly more examples of how states and communities across the country have overcome them. For millions of Americans especially among low income communities of color finding a fresh apple is not so easy. Full service grocery stores, farmers markets and other vendors that sell fresh fruit, vegetables, and other healthy foods cannot be found in their neighborhoods. Without access to healthy foods, a nutritious diet and good health are out of reach (Treuhaft & Karpyn, 2009).Therefore, the

results of this study may provide evidence to increasing understanding of the complexity of food choices at neighborhood stores and eating establishments.

Summary

This is an exceptional opportunity to build on previous studies which have addressed the issue of food consumption among AA adolescents. Within, the 21st century healthy food choices are important to understand, because of the increasing rate of preventable diseases and social conditions associated with food intake. The neighborhood environment has changed dramatically within recent years and there are several characteristic that influence eating patterns among this population which require further investigation. According to the CDC (2009) AA adolescents are disproportionately more affected by unhealthy food choices from neighborhood stores. Story, Kaphingst, Obrien, and Glanz (2008) emphasized that improving dietary and lifestyle patterns and reducing obesity will require a sustained public health effort that addresses not only individual behaviors but also the environmental context and conditions in which adolescents make choices. This study included Chapters 1 to 5. Chapter 1 includes a background narrative citing literature as needed to enlighten the reader about the research problem and its significance.

Chapter 2: Review of Literature

Overview

The United States is experiencing an epidemic of obesity. A majority of adults are overweight and increasingly, children are becoming the same, with corresponding decrements in health status which decreases life expectancy (Daniels et al., 2005). Daniel et al., (2005) further noted while the underlying basis for obesity is a state of positive energy balance (energy intake is greater than energy expenditure); the contributing factors to this phenomenon are not entirely known. There is some clarity about the relative importance of possible causative factors such as changes in dietary patterns, including increases in fast food and soft drink consumption and portion size, decrease in physical activity, increase in television viewing and computer use, or combination of these (Oelschlaeger, 2007).

The prevalence of obesity in the past three decades has been associated with social ecological implications, especially among underserved populations (U.S. Department of Health and Human Services, 2010). For African Americans, this extends beyond geographical boundaries of other minorities (Daniels et al., 2005). Public health professionals and community leaders now recognize the need for community involvement and support in preventing disease and promoting healthier lifestyles. Consequently, they have attempted to capitalize on the naturally occurring strengths, capacities, and social structure of local communities to institute health promotion and social change (Perdue, Stone, & Gostin, 2003). Public health advocates suggest that by the year 2050 more than 50% of the total population in the United States will be either

overweight or obese. A significant portion of these individuals will be African American adults who were influenced as adolescents to consume an insurmountable amount of unhealthy food purchased from neighborhood stores in disadvantaged communities of color (Wyatt, Winters, & Dubbert, 2006). One might think that someone who is food insecure could not be overweight yet in the United States food insecurity; poverty and obesity are concerns with low income people facing more negative health outcomes (Bhattacharya, Currie, & Haider, 2004). The Farm Bill provides a unique opportunity to create integrated legislation to address US diet related problems and food security. Public health and nutritional advocates can stand behind the argument that all Americans regardless of income deserve healthier food options (Farm Food Policy Project, 2007).

Healthy options, like farmers markets, are studied in the African American population. Perdue et al further noted the importance of community support regarding the lack of farmers markets in low income neighborhoods. Access to healthier food choices found in farmers markets are important because obesity or unhealthy lifestyle behaviors are frequently set in children and continue into adulthood. While there have been significant improvements in health policy implementation addressing unhealthy food consumption, disparities affecting diverse racial/ethnic minority populations across the spectrum of health outcomes reveal that structured factors are also involved such as the links between ecological factors (e.g. access to quality food and onset of medical conditions). There is a general consensus that this problem deserves further investigation in the African American community (Kumanyika et al. 2008; Lumen, Appugliese, Cabral, Bradley, & Zuckerman, 2006). Therefore, the study of social ecological factors

related to obesity in African Americans was included in my research with the hope of strengthening scientific findings which may impact policies and social changes to African American communities.

Formal Search Strategy

The purpose of this review was to identify scientific evidence to support the need for continuing research of behavioral patterns associated with unhealthy food consumption among AA adolescents. A highly sensitive search strategy was used to find scientific evidence and information applicable to this research topic. A formal search of the literature includes a range of 1987-2015 from Walden University's database library, dissertation searches, scientific journals, text books, reports and scholarly research websites such as ERIC, Medline, Cochrane Library, and PsycINFO. The Google Scholar search engine was used to narrow down sources that were similar to the topic being studied. The literature resources that yielded the most information were the Pro quest and Medline databases, the Centers for Disease Prevention and Control and the publication, The American Journal of Public Health. Topic, title and keywords searched included *access, availability, food choices, cost, nutrition, fruits and vegetables, environment, family, parents, peers, stress, quality, location, African-American, adolescents, minorities, low income, at risk groups, young male, young female, feeding behavior, diets and behavior* combined with terms for determinates of healthy promotion and behavioral modification for at risk populations.

The search yielded over 300 articles and books in the area of food consumption. After reviewing relevant articles, the scope was narrowed to a total of 250 articles and

books applicable to this research. The next largest search yielded 60 scholarly articles on unhealthy food consumption among AA adolescents. This study utilized efforts in support of obesity prevention efforts and promotion of healthy food behaviors applying relevant behavioral and environmental perspectives on food choices and relevant gaps and limitations and summary.

The History and Impact of Neighborhood Characteristics

The definition of *neighborhood* or geographical area characteristics may be relevant to the specific health outcome of the obesity issue (Diez-Roux, 2001). Although investigating health behavior within the context of the community is a complex phenomenon, it is necessary to understand the contributing factors to good health of individuals living in communities across the nation. While, physical and social environments of neighborhoods may be important in understanding health outcomes, the identification of neighborhood differences may be relevant in the context of the spatial analysis of poverty rates when looking at the geographic clustering of poverty and disadvantaged populations. Currently, those who are susceptible to poor nutritional habits include AA adolescents and their families (Diez-Roux, 2001).

Eisenhauser (2002) showed that minorities and the poor have become increasingly concentrated and isolated in low-income urban neighborhoods and this is associated with decreased food options at the level of the community, due to such activities as violent crimes and cultural perceptions in the inner cities. For instance, the low point for urban retailing was in the 1980s, when cities experienced a net loss of supermarkets in the urban areas even as national, stores openings exceeded closings. Understanding the

reasons for decreases in food availability is a key component to acquiring access to good nutrition in communities of color (Kumanyika, et al., 2005). In addition, reversing this unhealthy trend will require appropriate intervention programs needed to address this issue.

Many neighborhood stores are located proximal to neighborhood schools allowing children and adolescents to purchase unhealthy food before and after schools. Lucan, Karpyn, and Sherman (2010) indicated corner stores are part of the urban food environment that may contribute to obesity and diet related disease particularity for low-income and minority children. There are few data on about what snack foods corner stores stock, or where these foods are obtained. This study included 2 survey instruments designed to collect data from 42 store merchants' as well secondary data to answer research questions regarding this pattern of behavior among 176 AA adolescents.

Lopez and Hynes (2006) stated that the overall burden of poverty, crime and discriminating practices within these communities will substantially decrease life expectancy for future generations. Effective research efforts must involve people within the communities because they represent the element of change that could decrease food insecurities. Lopez and Hynes further emphasized individuals in inner cities living within low income areas are at risk for food insecurity. For example, many older inner-city neighborhoods no longer have a local supply of fresh, healthy food and they often lack transportation access to supermarkets. Supermarkets are less likely to locate in inner cities and small stores are most likely to sell low quality, non-fresh food and have higher prices, a situation that would contribute to poorer nutrition and lower health status. Also,

poor nutrition and lower health status are significantly correlated with price and location (Lopez & Hynes, 2006).

Few studies are found about the effect of independent small stores on food choices within low-income African American communities where children purchase foods. This is important because, over 23 million Americans including 6.8 million children live in low-income urban and rural neighborhoods more than a mile from a supermarket (USDA, 2008). The USDA report to congress on access to affordable and nutritious food, measuring and understanding food deserts and their consequences defined areas with limited access to affordable nutritious foods as food desserts such as low income underserved communities. There are other channels where adolescents purchase foods that should be considered in the definition such as street vendors and stop and shop establishments.

The results of this report indicated access to a supermarket or large grocery store is a problem for a small percentage of households. Supermarkets and large grocery stores have lower prices than smaller stores, and low-income households shop where food prices are lower, when they can. Also, easy access to all foods, rather than lack of access to specific healthy foods may be a more important factor in explaining the increase in obesity; and understanding the market conditions that contribute to differences in access to food is critical to the design of policy interventions that may be effective in reducing access limitations (USDA, 2008).

Currently, there are many public health prevention efforts under debate as to the most effective approach to improve eating patterns of children and adolescents. For

example, Kumanyika et al., (2008) reported that evidence-based experience for population-wide approaches to obesity prevention has changed from individual to community intervention. The increasing emphasis on population approaches that go upstream to focus on environmental and policy change required a shift in thinking for those trained in clinical or individual oriented intervention.

Public health promotion programs have been moderately effective in regard to unhealthy food choices made by adolescents. For example, Yancey et al., (2004) conducted a cohort study engaging communities of color to provide an estimate of the population impact of small changes in body mass index, dietary intake and energy expenditure. Study results suggested that smaller more focused studies with high risk groups are needed. In support of this perspective, Neumark-Sztainer, Story, Hannan, Perry, and Irving (2002) found environmental and policy intervention may be among the most effective strategies for creating population wide improvements in healthy food consumption. Nonetheless, what is known from previous studies in urban areas is that unhealthy food consumption patterns among the target group are significantly associated with lack of food access and availability, poor food quality and high cost.

Twenty- First Century Intervention and Issues

Karr (2000) stated that success of public health in the 21st century depends on a movement that strengthens public health systems and understands that human health is a subset of ecological public health and societal well-being. This is an exciting time for public health nutrition, especially regarding modifying unhealthy eating patterns among adolescents. To create successful interventions involving people of color researchers

must not consider communities of color as homogenous groups with uniform

characteristics. Researchers instead must develop strategies which consider a host of

factors that contribute to the nuanced differences between various members of those

communities such as race, ethnicity, class, gender, and immigrants. Diversity among

people considered to be Black in the United States is growing at an increasing rate. What

is known and understood about the Black population in the United States will be different

by the middle of this century, if not by the end of this decade (African American

Collaborative Obesity Research Network, 2008).

Successful interventions are dependent on trusting that the outcome of the study

will lead to a significant benefit to the African American community (Kumanyika et al.

2008). Kumanyika et al., further noted researchers should go far beyond the philosophical

perspectives of trust in human relations to fully understand the concepts of trust and

distrust in the setting of health disparities. In addition, it is important to establish, gain

and maintain trust when working in African American communities. However, what the

author did not address is that this mistrust within the African American community is

associated with unethical medical experimentation from colonial times to present

(Washington, 2006). This issue may be less of a concern today because there are ethnical

guidelines researchers have to follow such as acquiring an informed consent prior to

conducting an experiment that would prevent harm to any individual group or

community. Nonetheless, all efforts should be a considered within communities.

Dangerous, involuntary, and non therapeutic experimentation upon African

Americans had been practiced widely and documented extensively at least since the 18th

century. The experimental exploration of African Americans is not an issue of the last decade or even the past few decades. Attempts to understand the distrust generated by this history are often confused and distorted because there are few known facts beyond a few oft-cited experimental outrages, notably, the Tuskegee Syphilis Study (Washington, 2006). Today church based interventions are designed to promote health in African American populations. According to the National Institute of Health (2009) church-based intervention have the potential to positively influence the health habits and behavior of a large percentage of African Americans. However, few programs have been developed that have specifically examined the effects of a church-based physical activity and dietary intervention.

According to Keller, Strohschein, Schaffer, and Lia-Hoagberg (2004) the intervention wheel is a population-based practice model that encompasses three levels of practice (community, systems, and individual/family) and 17 public health interventions. Each intervention and practice level contributes to improving population health. The intervention wheel previously known as the Public Health Intervention model was originally introduced in 1998 by the Minnesota Department of Health, Section of Public Health (PHN).Yancey et al., (2004) noted that individually targeted intervention population approaches are characterized by a greater emphasis on the following: *formative marketing, and promotion of a broad spectrum of physical activity that includes transport, household maintenance and other routine actions and supplementing the use of health and/or fitness professionals.*

There are recent scientific advances on the individual biological level for genetic determinants of human obesity (Schneiderman, Speer, & Silva, 2001). The single strongest predisposing factor to the development of obesity in a given individual is family history. According to the U.S. Department of Health and Human Services (2008).There is an abundance of evidence which supports genetic susceptibility as an important risk factor for obesity. Goran, Ball, and Cruz (2003) indicated the development of Type 2 diabetes and cardiovascular risk in children and adolescents include familial characteristics extending into the environment such as food preferences and behaviors.

This public health debate regarding different intervention approaches has been well documented within the scientific community. For example, Gibbs, Waters, St Leger, Green, Gold, and Swinburn (2011) noted there is no single correct or universal theoretical framework. In a complex endeavor such as obesity prevention it is likely several theoretical frameworks will need to be used to guide the intervention, understanding and results. The more important consideration is that the choice of theory or theories is driven by the research question or problem. In intervention or program-oriented research there will be several theories that could make up a framework so researchers have some flexibility in selecting the 'best fit' with the context and the outcomes sought such as encouraging a supportive and healthy lifestyle.

According to Kunkel, McKinley, and Wright (2009) this could be accomplished by improving the quality of the food supply, enhancing accessibility of physical activity, increasing advertising for healthy food options initiating mass-media campaigns supporting healthy lifestyles and providing economic incentives for healthy eating by

selective taxation (e g. taxing sugar and some fats). Recently, there has been some adverse public opinion in regard to taxation as a method of decreasing consumption of unhealthy food.

Parenting is of increased interest to obesity control. The establishment of healthy behaviors in children and the impact of parents actively supervising meal plans are expected to help adolescents make better food choices. Johnson-Taylor, Wendy, and Everhart (2006) emphasized that environment often defines subsistence demands for families and how families make their living. They also stated a child who has internalized parental values might not eat junk food because of guilt. Thus, the relationship between adolescents and their parents can significantly affect their health outcomes. In addition, the role of neighborhood and family structures have changed dramatically in recent years with many children being reared by single-parents who need to work long hours to make ends meet in an unstable economy or grandparents with limited resources. For example, Chen and Paterson (2006) in a descriptive study of 315 adolescents investigated the role of neighborhood, family and individual socioeconomic status (SES) and found that influences of family are important to reach optimum levels of health and targeting intervention to reduce health disparities early in life is necessary.

Ranjit, Evans, Byrd-Williams, Evans, and Hoelscher (2010) noted adolescents derive 10% to 14% of their total caloric intake from the consumption of sugar-sweetened beverages (SSB). Of particular interest is that an increase in SSB occurred concomitantly with rising levels of overweightness and obesity across the population, and several scholars have theorized that SSB consumption may be an important driver of the obesity

epidemic. Additionally, the 2009 Youth Risk Behavior Survey (YRBS) showed that 77%

of students within the middle and high school environment could purchase soda pop or

fruit drink that was not 100% juice. This is helpful information because it provides a

comprehensive view of food consumption patterns among children and adolescents. The

Youth Risk Behavior Surveillance System monitors unhealthy dietary behavior

conducted by CDC (2009) monitors unhealthy dietary behavior working with state and

local school-based education and health agencies. The 2009 YRBS also revealed 77% of

high school students had not eaten fruits and vegetables five or more times a day, 29.2%

had drunk soda at least once a day, 8.6% were not physically active for at least 60

minutes per day and 12.0% were obese.

The results of these reports make important contributions to existing evidence

required to improve health outcomes among the populations. Ard et al., (2007) conducted

a descriptive study of 1355 children (32% African American) in the Birmingham

Alabama area to determine whether cost is a presumed barrier to intake of fruit and

vegetables in homes of school children. The authors found, fruit and vegetable cost does

impact availability and has the greatest impact at high cost. However, this study did not

address whether food costs impacted food quality among AA adolescents. In other words,

food quality often differs between lower SES neighborhoods and more affluent

communities.

Previous researchers have showed that lower SES neighborhoods had fewer

parks and grocery stores with fewer and more expensive healthy food options (Williams,

& Collins, 2001). Pawlak and Colby (2009) in a study of 57 African American adults

found most participants believed that they do not eat enough of healthy foods. The results of this study revealed high self-efficacy of eating and purchasing healthy foods and high awareness of knowledge regarding food associated with disease prevention. However, the participants indicated low self-awareness of the importance of consuming fruits and vegetables which indicates the need for continued exploration about individual characteristics and biological characteristics that contribute to unhealthy eating such as genetics.

The role of genetics is complex and not always well understood. A case-controlled study was done to examine the association between variations in genotype, obesity and cultural influences to advance the "understanding of physiological and genetic determinants of body weight and eating patterns to establish appropriate treatment and prevention" (Fisberg, et al., p.S687, 2004). This is important because it is not known what social, environmental, behavioral, and biological factors might have contributed to the secular trends in obesity. Interventions designed for AA adolescents need to consider all physiological and genetic determinants associated with dietary patterns among children and adolescents.

Kumanyika et al., (2007) suggested, the entire approach to adapting obesity prevention intervention to the "culture" of African Americans should be reexamined and reframed to be consistent with the social ecological model that considers environmental and policy approaches relevant to the scope of this proposed study. More importantly, no consensus exists on how to improve obesity research in communities of color. Vlaho et al., (2007) stated, "ensuring interventions have sustainability is an important task for

addressing unhealthy eating behavior" However, because most cities are characterized by high levels of inequality, interventions, even beneficial ones-run the risk of reinforcing or even widening disparities. For these reasons, to avoid these unintended effects, public health researcher's educators and promoters are expanding knowledge of casual mechanisms that contribute to the problem of unhealthy foods purchased from neighborhood stores.

To address key issues about social policy and distributive justice, we must better understand the mechanisms underlying the correlations between health outcomes and social inequalities in income, education, and other factors. Unless we know something about these underlying causal mechanisms we cannot focus properly on the socially controllable factors that a just policy must regulate (Daniels et al., 2008). There are plausible and researchable pathways through which social inequalities, produce inequalities in health. In addition, to social economic inequalities, there is extensive evidence about patterns of racial and ethnic health disparities. For example, whenever, there is overt racism among providers or subconscious stereotyping that has no malicious intent, the effect is an inequality of access to crucial, even lifesaving interventions for improving the nutritional environment.

Community Nutrition Environment

The increasing number and type of health issues associated within the nutritional environment are cause for concern and important to the proposed research. For example, neighborhoods have a high volume of adolescents who frequently purchase unhealthy foods, from local stores which are especially concentrated in communities of color

Yancey et al., (2004). Researchers Franco et al., (2009) conducted a cross-sectional study of 759 participants in Baltimore and found 24 % of the African shown that disparities are seen in minority neighborhoods which have increased risks of obesity and diabetes. Galvez et al. conducted a cross sectional study utilizing a walking survey to reflect the availability of food stores not physical activity. For this purpose, participants walked to supermarkets, grocery stores, convenience stores, specialty stores, full services restaurants and fast food stores.

Galvez et al., found that inequalities in food store availability exist by race/ethnicity in East Harlem, New York. African American participants lived in neighborhoods with a low availability of healthy food compared with 5% of White participants ($P<0.01$) after adjustments for age, sex, income, and education. The overall quality of food purchased in low income communities is often of substandard value which further impedes efforts to improve the nutritional environment. Patrick and Nickolas (2005) noted with regard to the physical environment, children are more likely to eat foods that are available and to eat them in greater quantities, when larger portions are provided. Characteristics of the social environment, including various socioeconomic and sociocultural factors such as parents, education, time constraints, and ethnicity influence the types of food children eat. Also, unhealthy food consumption could be considered normal behavior for adolescents in these communities. Therefore, improving the food environment through access of healthy food and food nutrition policies are critical to address unhealthy food choices among AA adolescents.

In regard to the location and distribution of fast food restaurants in communities, the practice apparently goes back to the early days of the industry, when Ray Kroc of Mc Donald's fame wrote of identifying locations for new Mc Donald's restaurant by flying over neighborhoods in a single-engine aircraft looking for schools (Schlosser, 2000). Today, Mc Donald's is one the largest fast-food organizations in the world, making substantial donations to charities and providing employment opportunities for many local residents in the community. Ray Kroc has transformed this establishment into a quintessential fast food organization which employees many local residents. However, the success of Mc Donald's has led to an increase of fast food establishments such as Wendy's Kentucky Fried Chicken, Dunkin Donuts, and White Castle Hamburgers just to name a few selling unhealthy foods in urban and suburban neighborhoods. The location of these organizations is significantly associated with neighborhood food store disparities. Sturm (2008) noted disparities in the type and density of food retail outlets have been hypothesized as a possible cause of differential rates of obesity associated with low income groups such as AA adolescent.

Neighborhood Food Store and Eating Establishments Disparities

In support of obesity concerns Diez-Roux (2001) revealed, the past few years have witnessed an explosion of interest in the effects on neighborhood environments. Specifically, relating social ecological studies to community characteristics and morbidity and mortality rates, to contextual and multilevel analyses to health outcomes and to studies comparing small numbers of low income neighborhoods. Galvez et al., (2007) indicated a growing body of research has shown that disparities are seen in minority

neighborhoods which have increased risks of obesity and diabetes. Galvez et al., conducted a cross sectional study utilizing a walking survey to reflect the availability of food stores and physical activity. For this purpose, participants walked to supermarkets, grocery stores, convenience stores, specialty stores, full services restaurants and fast food stores. Galvez et al., found that inequalities in food store availability exist by race/ethnicity in East Harlem, New York.

Today, it is imperative for public health researchers, especially those in health promotion to understand just what income and poverty have to do with unhealthy food eating patterns in communities. In an assessment of the prevalence of supermarkets by neighborhood wealth and race, Morland, Diez-Roux, and Wing (2006) found that there are four times fewer supermarkets in African American neighborhoods than in Caucasian neighborhoods. Taylor, Poston, Jones, and Kraft (2006) emphasized significant disparities in children and adolescents by ethnicity, and (SES) with respect to prevalence of obesity and overweight and co-morbidities in the United States For example, 18.5% of equal on exceeding the 95th percentile compared to only 12.9% of White adolescents. Glanz, Sallis, Saelens, and Frank (2005) stated that the nutrition environment might explain some of the racial/ethnic and socioeconomic disparities in nutrition and health outcomes. Unfortunately, the restaurants, grocery stores and convenience stores in the study all sold foods of poorer quality when compared to foods purchase in more affluent neighborhood.

Foods purchased at local stores are often sold at a much higher price than what is available at the local supermarket. Therefore, increasing access to healthier food options

could prove to be cost effective to some adolescents. This ecological study observed that access to supermarkets and grocery stores is constrained for those who live in low-income or African-American neighborhoods and that price and food choice might help to explain higher rates of poor diet and of obesity (Cummins & Macintyre, 2006). Moreover, (USDA) reported minority households are forced to purchase their groceries at inflated prices. Thus, it is a contradiction that poor Americans pay more for basic nourishments compared with their better off counterparts and emphasizes the need for further study especially among the adolescent African American population (USDA, 2008).

Improving Access to Quality Healthy Foods

Food quality and availability vary seasonally and access to quality food, especially during the winter months when the scarcity of fruits and vegetables is obvious in low-income communities. A few studies have examined the dynamic patterns of dietary intake of African American adolescents living in urban low-income communities (Ji Li & Wang, 2003). Public health efforts to modify the food environment follows one of two paths: to try and remove the offending low cost foods from the consumers reach which takes legal action, and further complicates the situation, and to improve access to healthier foods including vegetables and fruits. However, the fundamental and still controversial question is whether healthy diets, costs more (Drewnowski & Darmon, 2005a).

Currently, the evidence indicates research to inform environmental and policy changes should be a priority in order to reverse the trend of unhealthy diets at the level of

the community (Powell, Slater, Mirtcheva, Bao, & Chaloupka, 2007a). Fundamentally, these changes should embrace the interest of all stakeholders including public health representatives to act as a voice for children. In line with the best alternative, it is difficult to measure intervention programs without a standard overall perspective regarding an effective solution to this problem. Although a number of studies have reported on neighborhood access to food stores, these studies have not applied a standard set of definitions or measures, and there is no consensus regarding best practice (Ball, Timperio, & Crawford, 2001).

In comparison, several studies show access to healthy foods is positively associated with improved food consumption at the community level. For example, in a cross sectional study (Zenk, et al., 2005) used a geographic information system (GIS) to measure block distance to the nearest supermarket in 869 neighborhoods in metropolitan Detroit, and found the distance to the nearest supermarket was similar among the least impoverished neighborhoods, regardless of racial composition. Furthermore, among the most impoverished neighborhoods many were where African Americans resided and were on average 1.1.miles further from the nearest supermarkets than White neighborhoods.

The Institution of Medicine Report *Preventing Childhood Obesity Health in the Balance* identified that an immediate step is for local and state governments to work with communities to support partnerships that expand access to healthier foods through zoning (Koplan, Liverman, & Kraak, 2005).The authors also indicated by limiting the prevalence of fast food outlets and encouraging the development of healthier alternatives, such as

supermarkets, zoning laws could help increase people's access to healthy foods and, in turn, could help reduce the prevalence of obesity in urban areas. Ashe, Jernigan, Kline and Galaz (2003) indicated the same land use tools that control the location and operation of alcohol outlets, tobacco outlets and firearm dealers logically can be extended to issues related to nutrition. However, even when these tools are in place in urban areas, liquor stores, firearm dealers and tobacco outlets still exits. Thus, this conflict within the neighborhood environment would need to be resolved thru negotiations and compromise from all interested parties.

In the early 2000s, eastern shore cities in, New Jersey increased the amount of neighborhood food stores ranging from popular fast food establishments, corner stores and franchisees such as Dunkin Donuts. Ashe et al., (2003) noted the prevalence of "fast food" outlets offering menus filled with nutritionally deficient food and promoting "super-sized portions, in combination with a scarcity of healthy alternatives became an important public health issue. While some establishments already offer alternative meal plans children and adolescents continue to purchase large amounts of unhealthy food products. Nonetheless, empowering community leaders, parents and other stakeholders to become public advocates of change could encourage healthier food retailers to improve the quality of food in urban areas. According to U. S. Department of Health and Human Services (2010) there is now available $400 million for the, Healthy Food Financing Initiative which will promote a range of interventions to expand access to nutritious foods including developing and equipping stores and other small businesses and retailers selling healthy food in communities that currently lack options.

Organizational Environment Influences on Healthy Eating

The quality of food continues to be addressed by researchers because children and adolescents purchase high concentrations of fried foods and sugar laden products. For example, Taveras et al., (2005) conducted a cross-sectional study of 7,745 girls and 6,610 boys aged 9- 14 and found, associations between fried foods, BMI and diet quality. The researchers showed that for virtually any ethnic group in the United States, lifestyle behaviors such as food and exercise habits are embedded in the web of societal cultural, family, environmental and peer-group influences.

The organizational environment has many influences that can increase the risk of preventable diseases among AA adolescent and other minority groups living in low-income areas. According to Lewis et al., (2005) the nutritional environment makes it challenging for residents to eat healthy away from home. Thus, the bottom line is healthier food options will cost more, which is not a reasonable option for people struggling to feed their families. When nutritional resources are limited, researchers have term effort to eat a healthier diet especially among children and adolescents (Wrigley, Warm, & Margetts, 2003). Even more of a concern, those adolescents living in lower-income communities has limited resources to purchase healthier food products due to organizational limitations and supports within the community.

The ecological approach to food choices was necessary to examine behaviors affecting the health status of AA adolescents living in low income neighborhoods who have less access to food varieties which could help to reduce their susceptibility to totally preventable disease. Sallis and Glanz (2009) noted environmental, policy, and societal

changes are important contributors to the rapid rise in obesity over the past few decades. There has been substantial progress toward identifying environmental and policy factors related to eating and physical activity that can point toward solutions. Several levels of the food environment have been identified. The community environment refers to the places where food can be obtained, like grocery stores, convenience stores, specialty stores, restaurants, and farmers' markets that are generally open to the public. Microenvironments accessible to limited groups include homes, workplace and school cafeterias, and churches. The consumer environment describes what a person is exposed to inside the food sources, especially in regard to the availability of different types of foods, promotions, and prices (Glanz, et al., 2005).

This conceptual framework draws on economic, ecological, and social cognitive theories to understand the complex relationship between and across multiple factors and behaviors related to health conditions such as increased BMI and childhood obesity Powell, Han, & Chaloupka (2010)noted successful interventions are dependent on trusting that the outcome of the study will significantly improve access to a variety of foods that could help decrease totally preventable disease among AA adolescents living in a low income neighborhoods (Kumanyika et al., 2008).The key variables of interest all continuous and observed at the student level included: race, age, gender, grade level, food choice, physical activity. Store merchant variables included: store type, food items, and different food varieties from neighborhood stores. A selected amount of socioeconomic, environmental and other behaviors were examined to help improve access to a variety of foods such as fruits and vegetables.

Carroll-Scott, Hayden, Rosenthal, and Peters et al.,(2013)noted in order to better understand the role of neighborhood enviornments on adolescents obesity we need to disentangle the role of distinct domains of neighborhood social-spatial context that interact with AA adolescents living in an low income neighborhood. Upon consideration of the prevalence of childhood obesity and behavioral correlates of environmental characteristics, research provides the support for supermarket development instead of smaller grocery and convenience stores, and safe places to exercise as a potential influential solution for disadvantaged groups Lovasi, Hutson, Guerra, & Neckerman (2009).

Review: Methods for Research Projects on Unhealthy Food Consumption

Public health researchers have conducted several different types of studies to examine the association between unhealthy food consumption and obesity among AA adolescents and other minority groups and provide important considerations for continuing research inquiry. Baker, et al., (2006) noted geographic assessments indicate the selection of produce in local supermarkets varies by both area-level income and racial composition. These differences make it particularly difficult for low-income African American families to make healthy dietary choice. Food assessments and food store surveys were used to explore cultural and racial/ethnic associations with unhealthy food choices in urban environments in the completed study.

In practice most social scientists and virtually all studies of neighborhood assessed rely on geographic boundaries defined by the Census Bureau other administrative agencies (e.g. school districts, police districts) or other sources. Although

administratively defined units such as census tracts and block groups are reasonably consistent with the notion of overlapping and nested ecological structures, they offer imperfect operational definitions of neighborhoods for research and policy Grannis (1998). The good news is this decade has marked a period of major advances in neighborhood level research, as researchers began to explore new methods and ideas for understanding what places more or less healthy, particularly for young people (Sampson, Morenoff, & Thomas-Gannon-Rowley, 2002).

Austin et al., (2005) showed a novel application regarding the importance of spatial statistics and the clustering of fast food establishments located in disadvantage communities. For example, Austin and colleagues found restaurants were significantly clustered within a short walking distance from schools, with an estimated 3 to 4 as times many fast food restaurants within 1.5 kilometer from schools than would be expected if the restaurants were distributed throughout the city in a way unrelated to schools. Understanding these boundaries has the potential to improve scientific knowledge of eating pattern at the level of the community.

For this research surveys were used to determine some characteristics of the local food environment that can be effective in health promotion efforts. The type of data collected will help direct analysis and interpretation of information that can be shared with the public health community. This research presented an opportunity to improve the health status of adolescents who are susceptible to childhood obesity and other health problems. By integrating environmental measurements with demographic information, including race, ethnicity and socioeconomic status, inequalities can be identified, and

interaction can be directed to improve the health of disenfranchised populations. This is important because adolescents are making poor food choices partially because of geographical locations of the restaurants.

The rationale of this research approach has been investigated by previous studies designed to provide insight and analysis of problems associated with unhealthy food consumption among the population. The physical environment in which adolescents reside and their access to food stores may influence their consumption of fruit and vegetables (Jago, Baranowski, Baranowski, Cullen, & Thompson, 2007). Other studies have linked associations between alternate ways of characterizing the local environment to diet quality, cost and types of stores with the same 1 mile radius of where residents live (Moore, Diez-Roux, & Brines, 2008).Therefore, the contribution of the proposed research could effectively increase awareness of the importance of making healthy food choices.

This contribution can be measured through improved health status of children and adolescents in the population under study and has the potential to give rise to different types of data that will be useful in future health initiatives addressing this issue. Charreire et al., (2010) indicated GIS methods combining availability and proximity, such as spatial interaction models, have not yet been applied to obesity. Moreover, future research would also benefit from a combination of GIS methods and survey questionnaires to describe both spatial and social food outlet accessibility as important determinates of individual food behaviors.

There is increasing evidence which suggest the GIS methodological approach can potentially improve public health intervention programs because of its innovation

application. For example, Jago, et al., (2007) hypothesized the relationship between environment and adolescent fruit and vegetable consumption is mediated by psychosocial variables or home availability and found among 204 boy scouts using questionnaires and geo-coded differences of types of foods that distances to small food store and fast food restaurants were associated with fruit and vegetable consumption among male adolescents (Jago et al., 2007).With this knowledge public health organizations can continue to close the gap between treatment and prevention among this population. To address the evidence base and gaps in knowledge in this area future research will need to document the real lifetime costs of childhood obesity and to demonstrate the cost effectiveness of intervention on multiple outcomes including disease and quality of life (Caprio et al. 2008).

The perception of authors of previous research already discussed indicates adolescents living in close proximity to food environment are more likely to have unhealthy eating behavior. For example, Chen, Florax, and Snyder (2009) using a quantitative approach hypothesized, whether close proximity to fast food restaurants makes people obese, whether lack of access to retail groceries contribute to obesity or whether a combination of these factors were at work. One could argue, the problem with using arbitrarily neighborhoods and larger area units is that samples may lead to biased results because of ecological inference fallacy and the assumption that people do not shop outside of their census tract. Chen et al., found that having one more fast food restaurant increased BMI by 0.06 points while having one larger grocery store decreases BMI by 0.34 points (2009). In an observation study of 349 adolescents GIS was used to examine

the availability and proximity of food outlets around participant's homes and schools

(Laska et al., 2010).

The authors found many factors were likely to adolescent dietary intake and

weight status. In particular, the results indicated individual-level factors, such as energy,

fruit and vegetable intake as well as convenience store and fast food purchasing were not

significantly associated with features of the residential neighborhood food environment.

Many factors are likely to have an important role in influencing adolescent dietary intake

and weight status. Therefore, intervention aimed at increasing neighborhood access to

healthy foods as well as other approaches are needed. In an empirical study of 902 12th

grade adolescents of diverse racial and geographical background to determine the

perception of easy walking distance and convenience to neighborhood and the perception

of affordable food is a critical element, however White participants were more likely to

travel further distances to acquire healthier foods (Colubianchi et al., 2007).

Information/Media Advertising/Food Industry

The overall buying power of African Americans is substantial, and projected to

rise from $761 billion in 2005 to 1.1 trillion in 2015, accounting for 61% of combined

socioeconomic trends, demographic growth, and re assertion of ethnic identity (The Rudd

Report, 2008). With a current buying power of $1trillion that is forecasted to reach $1.3

trillion by the year 2017, the importance of connecting with African American consumers

is more important than ever (National Publishers Association, 2015).The Rudd report

also found in the last 20 years advertising efforts have led to an increase in racial and

ethnic target marketing, and exposure to all food advertising increased by 9% from 2002

to 2008. Grier and Kumanyika, (2008) noted there is overwhelming evidence, that marketing to adolescents has increased the consumption of unhealthy foods in many communities. Although there have been some individual improvements the unhealthy food consumption of children and adolescent still decreases the effectiveness of interventions when addressing this issue at the level at the community. In addition, there is a need to justify why certain groups are exposed to unhealthy marketing strategies designed to seduce at risk populations.

Previous research indicates, at risk groups are those most susceptible based on contributing factors such as environment, culture, (SES), and unhealthy food consumption. Drewnowski and Darmon, (2005)noted the social injustice claim is based on alleged predatory marketing practices, placement of fast food outlets in low-income neighborhoods, and lack of access to fresh fruits and vegetables in inner city. This means a tremendous effort must be given to helping these individuals' adopt adoption healthier eating patterns. While consumers are free to choose and are capable of saying no, advertising and marketing schemes make it difficult for some children and adolescents to exercise self-control. Indeed, the food industry has taken the position that providing a wide range of affordable foods and services are beneficial to the public. In support of this a prospective a longitudinal study by Mac Ready (2010) on the relationship between self-control and obesity among 844 children with BMI with z scores above the 85th percentile were considered. By this standard approximately one third (262) of the children were overweight by age 15. Behavioral factors such as self-control are risk factors that have the potential for social change among at risk groups.

In support of this perspective, individuals do have freedom to choose. Food advertisements have significant influence on the minds of adolescents thereby contributing to unhealthy eating behaviors. For example, as society searches for solutions, food marketing practices have come under fire and are part of the broader social controversy over marketing to children (Grier et al., 2007). However, at one time, numerous advertisements portrayed the fast food environment as a culturally acceptable experience which influenced unhealthy food consumption among adolescent, children and adults consumers. Grier et al, further wrote, the fast-food industry has responded to the public health concerns by altering marketing strategies and product offerings to help consumers make healthier choices Institute of Medicine(2006)(Seider & Petty, 2004).

The rates of childhood obesity and adult obesity, diabetes, and cardiovascular disease are significantly higher in the United States (Daniels et al., 2005). In light of the high rates of childhood and adolescent obesity, Powell, Schermberk, Szcypka, Caloupka, and Braunschweig (2011) conducted a study using ratings from top rated television shows. The authors indicated no substantial differences were found in the content of advertisements seen by Black and White children. However, there were a slightly higher proportion of food advertisements in general and across all food-product categories seen by Black versus White adolescents especially with high-sugar products. The results of such studies convey a powerful and persuasive message that certain populations are perhaps more influenced by certain food marketing strategies than others. Further investigation is warranted to determine the most effective marketing solutions that will improve eating behavior among AA adolescents and other groups.

The Yale Rudd Center Report (2008) identified restaurant advertising to both children and adolescents increased from 2001 through 2008 (by 28% and 40% respectively) to offset any positive change in food and beverage product advertising. African American youth experienced a 95% increase in total food advertising exposure during the same period and viewed 37% more food advertisements in 2008 as compared to all youth. This report demonstrates how marketing practices may compromise intervention efforts to modify poor eating patterns among this population. Some public health experts remain skeptical that food marketing will make the substantial changes in foods marketed to youth that are required. This skeptical point of view includes the knowledge that food industries are more interested in profits rather than enforcing policies to help decrease the rate of childhood obesity in our nation (The Rudd Center Report, 2008).

Modern environments exert significant influences on behavior, despite cultural differences at the level of the community Fisberg et al., (2006); Schneiderman (2001). Conversely, if consumers can be educated or otherwise encouraged to increase their demand for healthier diets, market forces will support a reverse trend. Furthermore, researchers must consider the political environment prior to an effective nutrition-based intervention program. The role of media is a valuable medium that could deliver a persuasive message to its youthful audience that could challenge them to modify unhealthy food consumption behaviors. The technological revolution has created an enormous opportunity for health promotion and education.

According to CDC (2010) communities are responding to the obesity epidemic in the United States by working to create environments that support healthy eating by giving public health practitioners and policy makers an opportunity to learn from community based efforts to prevent obesity. However, the absence of measurements to assess policy and environmental changes at the level of the community has impeded efforts to assess the implementation of these types of population level initiatives for preventing obesity. To address this issue CDC initiated the Common Measures for Obesity Prevention Project. This report identified recommendations and strategies for obesity including promoting the availability of affordable healthy foods and beverages and encourage communities to organize for change (2010). According to the *Community Assessment Guide (2010)* reversing the U.S. obesity epidemic requires a comprehensive and coordinated approach that uses policy and environmental change to transform communities into places that support and promote healthy lifestyle choices for all residents (The Institute of Medicine, 2010).

Challenges, Gaps and Limitations of Cited Research

When exploring the impact of the built environment on public health, researchers indicate that the burden of illness is greater among minorities and low income communities (Srinivasan, Liam, Fallon, & Dearry, 2003).The built environment poses many challenges that involve physical and social environments. In spite of research indicating that chronic diseases of the 21th century such as heart disease, obesity, asthma and other health conditions are affected by how we design intervention programs. Many communities still do not fully understand the health consequences or environmental

factors. Understanding the complex environmental factors that influence unhealthy food consumptions among at risk populations is perhaps the most difficult to address. For example, some researchers focused on food and physical activity environments have not taken into account the variety and range of environments to which a person is exposed (Srinivasan et al., 2003). Because people of different ages have different interactions with their environments, efforts to address adolescents and children have produced findings that do not translate to all age groups (Powell & Chaloupka, 2009).Therefore, there are many challenges regarding effective intervention to modify unhealthy eating behavior among AA adolescents. Adair and Popin, (2005) reported measuring the extent to which children's dietary patterns and trends are changing globally. Adair and Popin revealed U.S. and Cebu youth consume more than one third of their daily calories and a higher proportion of snack calories from food prepared away from home.

Adair and Popin (2005) sought to identify causal effects that need to be understood prior to changing the food environment among this population. Adair and Popin noted the expansion of global fast food proliferation establishments is a well-recognized phenomenon among low-income individuals who are disproportionately affected. (Moore, Diez-Roux, Nettleton, & Jacobs, 2008) stated several studies have linked local food environments to diet quality, although the extent to which these associations reflect causal processes remain a topic of research. A major challenge in this work has been developing valid and reliable measures of the local food environment. Moreover, many studies have characterized food environments by county and the number of certain types of stores (usually supermarkets) in the census tract or zip codes in which

participants live. This approach relies on the assumption that only supermarkets offer an array of healthy foods and that and that any quality of healthy foods offered by supermarkets are invariant over space (Moore et al., 2008).

Specifically the proposed research sought to increase the understanding of the characteristics of AA adolescents related to dietary and health behaviors and contribute to effective public health intervention. Vlahov and Galae (2002) stated reconciling the global population that lives in urban centers with the goal of creating healthy communities is the major public health challenges of the 21st century. In this century, urban change is predicted in three directions. First, more people will move into urban centers, a process called urbanization that will result in an ever-growing proportion of the global population living in urban areas. Second, slums will become the norm, a higher proportion of the world poor, with profound implication for population health. Third, cities will spread spatially with dramatic effects on the environment and human healthy. Therefore, there is an urgent need to increase knowledge of the characteristics which influence unhealthy food consumption among this population.

Theoretical Foundation

The socio-ecological framework was used to provide a theoretical rationale and demonstrate the importance of identifying neighborhood characteristic to increase our understanding of selected environmental, socioeconomic, and other behaviors. The social-ecological health promotion framework proposed by Mc Leory and colleagues is based on ecological systems theory(EST) which espouses that human development is shaped by number of systems or contexts Mc Leory, Bibeau, Steckler et al., (1998). More

than 30 years of intervening primarily at the individual level without sustainable results points to the need for a different model to address obesity. The SEM stresses that society is composed of interconnected elements-individual, interpersonal, organizational, community and social and these elements affect one another (Koplan, Liverman, & Kraak, 2005).

Moore, Sanigorski, and Moore (2013) noted the Mc Leory framework identifies multiple interdependent leverage or evaluative points at policy, community, organizational, interpersonal, and intrapersonal levels. The framework has been recommended as a theoretical methodological and evaluative tool capable of supporting a consistent, holistic approach during the design implementation and evaluation of health promotion interventions. The social-ecological framework encourages both whole-system interventions, such as promoted by settings approach to health promotion. Also, the explicit understanding of how more focused intervention might depend on factors at other levels for their effectiveness, acceptability or sustainability to be achieved.

Summary

The overarching problem is the increasing rate of childhood obesity in our nation. Unfortunately, the largest percentage of adolescents associated with unhealthy food consumption and lack of physical activity are AA adolescents and other minority groups within geographical boundaries of disadvantaged communities. According to the CDC, (2008) the cause of the problem is significantly associated with the lack of access to healthy food options because of cost, availability and food quality. The scope of the problem directly and indirectly decreases life expectancy, and increases the rate of

preventable diseases such as obesity and other related diseases. Fortunately, public health experts have been making recommendations for more than a decade.

The study demonstrated the need for positive change at the community that will benefit disadvantaged AA adolescents in low income neighborhoods and improve access to a variety of food choices for purchase that are nutritious and affordable. Thus, unhealthy food consumption is a public health concern which affects AA adolescents and other disenfranchised populations. Sallis and Glanz (2006) noted that recent changes in the nutrition environment including greater reliance on convenience stores and fast foods results in a lack of access to fruits and vegetables and expanding portion sizes that are widely believed to contribution to the epidemic of childhood obesity. But again, conclusive evidence that changes in the nutrition environment will reduce rates does not exist. This research effort will help expand the public health paradigm by increasing understanding of unhealthy eating patterns.

Chapter 3: Research Design and Methodology

Introduction

The overall purpose of this study was to examine the impact of neighborhood stores on food choices made by low income AA adolescents. The research questions and hypothesis considered personal, environmental and socioeconomic factors and their relationship to healthy food choices, regular physical activity and selected health outcomes associated with the significant rise of obesity in children and adolescents (Caprio et al., 2008). The research design includes secondary data from 176 AA adolescents and primary data from 42 store merchants in a low income neighborhood. Statistical analysis included bivariate, multivariate, variance of analysis and Spearmen's t test. The research design was based on an ecological approach to behavior change which recognized there is a dynamic interaction between the individual and the environment. Story (2008) noted an ecological approach was useful to guide research and intervention efforts to identify gaps in the understanding of characteristics which influence food choices in low income neighborhoods.

There has been a consistent positive association found between proximity to supermarkets/health food stores, diet patterns and weight status among AA adolescents living in a low income neighborhood (Treuhaft & Karpyn, 2009). Popkin, Duffey, and Gordon-Larsen (2005) noted that there are major gaps in the understanding of how the physical and social environment affect changes in dietary intake, physical activity patterns and weight change. Therefore, a number of complex challenges remain in assessing neighborhood effects. Also, methodological issues such as the differential

selection of individuals into communities, indirect pathways of neighborhood effects, measurement errors, and simultaneous bias are of concern as they represent serious obstacles to drawing definite conclusion (Duncan & Raudenbush, 1999). I used both descriptive and explorative research methods to conduct the study. Descriptive research was a method used to obtain information relating to the current status primarily to describe what is going on with the issue or phenomenon described in chapter 2.

Research Questions and Hypothesis

Research Question 1: To what extent does grade level affects food choices and physical activity among African-American adolescents?

$H_0$1: There is no statistically significant difference in food choices or physical activity between African-American adolescents of various grade levels.

$H_1$1: There is a statistically significant difference in food choices or physical activity between African-American adolescents of various grade levels.

2._____What is the relationship between participant's food choices or physical activity levels and age group for New Jersey youths?

$H_0$2: There is no statistically significant relationship between a participant's age and their food choice or physical activity.

$H_1$2: There is a statistically significant relationship between a participant's age and their food choice or physical activity.

3._____What is the variety of food from different types of stores in a low income Essex County neighborhood?

H_03**:** There is no difference in the variety of food from different types of stores in a low income Essex County neighborhood.

H_13: There is a difference in the variety of food from different types of stores in a low income Essex County neighborhood.

4.＿＿＿＿Are there gender differences regarding food consumed and physical inactivities among African-American adolescents?

H_04**:** There is no statistically significant relationship between gender and food choice or physical inactivity.

H_14**:** There is a significant relationship between gender and food choice or physical inactivity.

5.＿＿＿What are the average prices per unit for each of the MyPlate food categories from different type of food stores.

H_05**:** The average price of food choice per unit of each of the MyPlate food categories do not differ by type of food store.

H_15**:** The average price of food choice per unit of each of the MyPlate food categories differ by type of food store.

Research Design

A quantitative research design with cross sectional primary and secondary surveys were used to examine the impact of selected environmental, socio-economic, and personal factors. Food selection included a separate list of nutritional information and other behaviors such as physical activity, time spent watching television or movies and playing video games in a population of AA adolescents. Understanding the influence of

neighborhood characteristics that lead to obesity will be critical to developing public polices and effective clinical interventions to protect and treat childhood obesity (Caprio et al., 2008).

<div align="center">**Setting and Sample**</div>

High School Students

The study sample includes 176 AA high school students from the 2011 New Jersey Health Survey and 42 stores merchants living and working in Essex County, New Jersey. The New Jersey Health Survey uses core questions from the Youth Risk Behavior Survey (YRSB) but also has some distinct questions it has added and in 2011 had 83 total items. The YRBS uses a three-stage clusters sample design to produce a representation sample of 9th through 12th grade students. The target population consisted of all regular public high school in grades 9 through 12, in New Jersey. Secondary data consisted of a sample of African American male and female adolescents, 13-18 years of age, who participated in the 2011 New Jersey Department of Education conducted YRBS Survey. In order to consider the survey findings representation of the New Jersey high school student population, the CDC established a threshold of 60% combined participation rate as the minimum rate required to apply weights to data collected from the YRBS.

A weighting factor was applied to each student's record to adjust for nonresponse and oversampling of Black and Hispanic student's in the sample. This factor is the same as used by the Centers for Disease Control and Prevention (CDC) in the YRBS and the weighting procedure includes two components; one adjustment that is associated with school/student probability of selection, and one adjustment to insure demographic

comparability. Because of the complexity of the cluster sampling design used, a statistical

software package that calculated sampling variance appropriately was used (CDC, 2011;

NJSHS, 2011). A weight has been associated with each questionnaire to reflect the

likelihood of sampling each student and to reduce bias by compensating for patterns of

non-response. The sample is weighted by the probability of selection at the school and

classroom level and by state student population parameters (CDC, 2011). The number

63,840 reflects the sample size after applying the CDC weights (described in Table 2) or

more accurately a sample adjusted to represent the population from which the sample was

drawn. When the CDC weighting factors were applied to the sample of 176, the

frequency distribution or data count 63,840 was used for data analysis.

Between1993 to 2011, the final sample size of the NJ Student Health Survey

ranged from 1,399 to 2,805 students. In 2011, the NJ Student Health Survey set the

number of students in all sampled schools that were selected for participation to about 80

students per school with a goal of obtaining 1,700 completed surveys. Overall, 1,657

students in 31 public high schools completed the NJ Student Health Survey during the

spring of 2011.The school response rate was 82% (31 of the 38 sampled schools

participated) and the student response rate was 73% (1,657 of the 2,265 sampled students

completed usable questionnaires, yielding an overall response rate of 60% (82%+73%)

=60%). Seventy nine percent (1,784 of 2, 265) of sampled students returned a consent

form, and of those, 97% (1,737 of 1,784) of parents consented for their child to

participate (CDC, 2011; NJSHS, 2011).

The variable codes and labels, weighted percentages for data from students in the 2011 NJ Student Health Survey used in this study are in Table 2. A bivariate analysis was used to determine the relationship between two variables of interest gender and food choices and the independent variables, age, grade level and race/ethnicity to answer the study research questions. See Appendix: A 2011 NJ Survey Health Q72-Q83 for related questions asked of the student and optional responses.

Neighborhood and Stores

The neighborhoods are saturated with corner and conveniences stores where adolescents often make unhealthy food choices. Neighborhood crime makes the environment unsafe to engage in physical exercise (Gebel, Bauman, Owen, Foster, & Giles-Corti, 2008). Essex County is a stark contrast to one of the wealthiest states in the country per capita income. With just 10% of the total state wide population, the county bears a disproportionate share of New Jersey's most vulnerable cities. Essex is a county where more than 15% of its residence lives in poverty and thousands of residents are in need of service to maintain family stability and address health and physical activity concerns (The County of Essex, 2008). Low income residents are trapped in an unhealthy cycle. Conditions in the neighborhoods, such as access to quality food and affordable healthcare, have a direct impact on the health of those residents (Newark Change.org). In order to explore AA adolescents and neighborhood stores both primary and secondary data were used.

Primary data consisted of choosing a sample of 42 stores from two different neighborhoods. Neighborhood was determined by using data from the food desert locator

and the U.S. food Atlas for communities (The Department of Agriculture, 2010). For the year 2008 a total of 1,522 food stores located in Essex County includes the following store types: 323 Grocery stores, 113 Convenience stores, 520 Restaurants, 463 Fast food restaurants and 103 Specialty stores 103 located in Essex County. A combined total of stores was entered into the sampling calculator with a confidence level at 95% confidence interval 20 and a significance level of 0.05.(Creative Research Systems, 1982).

Data Collection

The NJ 2011 Student Health Survey

The 2011 New Jersey Student Health Survey was used to access data to answer the following research questions, RQ1: To what extent does grade level affects food choices and physical activity among African American adolescents? RQ2: What is the relationship between participant's food choices or physical activity levels and age group for New Jersey youths? RQ4: Are there gender differences regarding food consumed and physical inactivity among African American adolescents? The 2011 NJ Student Survey was administered to a sample of public high school students during the spring of 2011 by the New Jersey Department of Education (NJDOE).The study was conducted under contract with the Bloustein Center for Survey Research (BCSR) at the Edward J. Bloustein School of Planning and Public Policy, Rutgers University. The NJDOC has conducted a similar survey biennially since 1983. From 1993 to 2001, the NJDOE conducted the 2011 NJ Health Survey to answer questions as promulgated by the Centers for Disease Control and Prevention (CDC) without additions or deletions.

The Hmong Food Survey

The Hmong Food Survey (Franzen & Smith, 2010) was completed by 42 store merchants to report information about cost and independent variables food availability, food variety, and food quality from the following store types: supermarkets, large grocery stores, small grocery stores, farmers markets, convenience stores, gas/grocery store, ethnic/specialty and others located within school environments. The survey uses an interval scale rating of 1 to 4 points for all items related to the following question, RQ5: What are the average prices per unit for each of the MyPlate food categories from different type of food stores? The next step was to use descriptive statistics to determine food variety and food costs by store type and MyPlate food group. The contents of the survey include food selections based on USDA's thrifty food pan market basket list for U.S. city average as well as Midwest urban and or types of foods or common themes found among commonly visited grocery stores or ethnically specific food.

Validity and Reliability of the 2011 NJ Health Survey

CDC has conducted two-test- re test reliability studies for using the 2011 NJ Health Survey. In the first study, the 1991 version of the questionnaire was administered to a convenience sample of 1, 679 students in grades 7-12. The questionnaire was administered on two occasions, 14 days apart. Approximately three fourths of the questions were rated as having a substantial or higher reliability (kappa=61% -100%), and no statistically significant differences were observed between the prevalence estimates for the first and second time that the questionnaire was administered. Ten questions (14%) had both kappa< 61% and significantly different time 1 and time -2

prevalence estimates, indicating that the reliability of these questions was questionable. These problematic questions were revised or deleted from later versions of the questionnaire. No study has been conducted to assess the validity of all self-reported behaviors that are included on the YRBSS questionnaire. However, in 2003, CDC reviewed existing empiric literature to assess cognitive and situational factors that might affect the validity of self-reports of each type of behavior equally. In addition, each type of behavior differs in the extent to which its self-report can be validated by an objective measure. Understanding the different types of behavior can assist policy makers in interpreting validity and researchers in designing measures that do not compromise survey results (CDC, 2011).

Validity and Reliability of the Hmong Food Store Survey

The development of the food survey tool was done by Franzen and Smith (2007) to collect data on the shopping and eating behavior of Hmong adults in St. Paul/Minneapolis, Minnesota. The process included a mapping project using geographical information systems for 15 grocery stores that were surveyed. Food prices were compared with the consumer price index (CPI) pattern. Also, focus group transcripts were evaluated for themes such as determinates of store types and coded with subjective food quality measurements for all responses leading us to believe that this instrument is reliable to use. Therefore, data collected will help create a profile of food availability and costs (Franzen & Smith, 2007).

Above all, there was evidence which supported the use of food store survey instruments to measure food choices in low income neighborhoods. For example,

Ghirardelli, Quinn, and Sugerman (2011) noted the reliability of a retail food store survey instrument with weighted scoring can be used as an indicator of the food environment. Measures of availability and price of fruits and vegetables performed well in reliability testing (k=0.681-0.800). Items for vegetable quality were better than fruit (ICC 0.708 vs. 0.528). Kappa scores indicated how to moderate agreement (0.3.372-0.674) on external store marketing measures and higher scores for internal store marketing. The reliability of the measures among the research pairs shows the need to bring in resources to provide access to fruit and vegetables and other healthful food to the target population. Also, Gustafson, et al., (2011) conducted a study aimed to highlight similarities and differences between perceived and objectives measures of the food enviornments among low-income populations. The results indicated individuals who lived in census tract with a convenience store had higher odds of perceiving their neighborhood high in availability of healthier foods (Gr=6.87) (95% CI 2.61, 18.01) than individuals with no store. Overall, as the number of healthy foods available in the store decreased the probability of perceiving that store high in availability of healthy foods increased. The study contributes to a growing body of research aiming to understand how food stores are associated with weight and diet.

Data Collection Procedures

The participants who received surveys included 42 store merchants, and secondary data from the NJ Student Health survey were used to answer questions on 176 AA adolescents. The data were collected from the online databases of The 2011 N.J. Health Survey. A sample of 176 high school students were re-examined for further

utilization within this study to answer the following research questions. Primary data was collected from 42 store merchants who completed the Hmong Food store survey which was published by the National Cancer Institute. Data collected was from two different zip code areas in an Essex County neighborhood. Data was specific to AA adolescents living near schools on availability of food items and their prices. Foods selected for this survey looked at store type, location, and food items (brand, weight, prices, and origin, fresh/frozen and quality). The information collected helped to create a profile of food availability and costs. The primary and secondary data were scrutinized closely since the origins of the information may be questionable to produce results on the specific issue that is being investigated and will use the SPSS statistical computer program for data analysis. Sufficient steps were used to critically evaluate the validity and reliability of the information in regard to availability, relevance, accuracy and sufficiency (Bryman & Bell, 2007).

Once a school agreed to participate, a list of all classes was provided to Bloustein Center for Survey Research. Classes were then randomly selected in a manner which assured that all students were eligible for selection into the sample. Participating schools were provided with parental consent letters and survey fact sheets to send home with students. The survey procedures called for the consent letter and fast sheet to also be mailed to the home address of students in sampled classes. Some of the participating schools provided addresses to BCRS to complete this mailing. Most schools elected to do the mailing themselves using postage-paid envelopes which were stuffed with the survey, fact sheet and a parental consent form (CDC, 2011).

In all cases, documented parental consent was required for a student to participate, consistent with New Jersey Statute. Any student who did not want to participate was also excused. Schools serving primarily special populations were excluded. Schools were selected systematically with probability proportional to enrollment in grades 9 through 12 using a random start date. Weststat Incorporated, a national firm hired by CDC to provide technical assistance to states. At the school level thirty-nine high schools were selected of these; one school was deemed ineligible to participate leaving 38 eligible schools. At the grade level all classes in a required subject or depending on the school's choice and all classes meeting during a particular period of the day were included in the sampling frame. Weststat Incorporated generated random numbers that were used to select the sample classes.

The random numbers were based on the total enrollment of the school and an assured number of student's in each class, for class selection. The number of classes selected per school ranged from one to four, with most schools having class enrollment average 25 students per class (NJDOE, 2011). In terms of the information collected from secondary data questions 1 thru 5 & 72 thru 83 items on the See Appendix: A 2011 Health Survey was used to answer questions about what students were actually eating and how they could eat better and exercise more in the environment.

Store merchants received introduction letters that explain the study, the purpose of data collection, and to assure them that in no way will this study evaluate their store or its policies. Store names, policies and prices were not published or publicized and findings from stores are completely confidential. Information gathered from individual

stores were combined with other stores and the final results was reported in statistical

form only (i.e. percentages and totals). For stores that are members of a regional or

national grocery chain. I called the chain's headquarters to find the appropriate person to

contact. Also, a store visit was conducted to invite participants to help public health

advocates understand the complexity of neighborhood food retail environments and the

association with AA adolescents in low income neighborhoods (Public Health Law and

Policy, 2009). Store merchants were asked to complete 1 survey that was used to answer

the following research questions, RQ2: What is the relationship between participant's

food choices or physical activity levels and age group for New Jersey youths? RQ4: Are

there gender differences regarding food consumed and physical inactivities among

African-American adolescents? And RQ5: What are the average prices per unit for each

of MyPlate food categories from different type of food stores? For the protection of store

merchants or their employees this study informed consent forms were signed by all

participates as a measure to protect the rights of the participants in this study.

The first mail-out included a short advance notice letter to all potential

participants, and the second mail-out was the actual mail survey. The Hmong Food Store

Survey with instructions distributed about 1 week after the advance-notice letter. The

third mail out consisted of a postcard follow-up sent to all members of the sample 4 to 8

days after the initial questionnaire. The fourth mail-out, sent to all non-respondents,

consisted of a personalized cover letter with postage. For these purposes, the fourth mail-

out took place 3 weeks after the second mail-out. In total, the survey period was 4 weeks

after its start, providing the returns meet project objectives with the length of this 10

week study. The data collection procedures included recording information about stores

that have agreed to participate as follows: store type, store ID numbers 1-5 assigned,

letter of introduction mailed date, follow up phone call and data collected (USDA, gov).

Data Analysis and Interpretation

Analysis of variance and t tests were used to compare the continuous availability

of fruit, vegetables, proteins, dairy and grains between store types and neighborhood

characteristics as which influence food choices. To answer research question, RQ1: To

what extent does grade level affects food choices and physical activity among African

American adolescents?A multivariate analysis was used to measure physical inactivity

and health behaviors associated with diet and exercise or leisure activity(watching

television, movies, playing video games and computer usage. To answer research

question, RQ2: What is the relationship between a participant's food choices or physical

activity levels and age group for New Jersey youths? A multivariate analysis was used to

factors related to food choices such as food quality, brand variety, organic, sustainable

and food costs. This analysis showed a relationship between the dependent variable, food

choices and the independent variable store types: supermarkets, large store, small store,

and specialty/ethnic. To answer research question, RQ3: What is the variety of foods

from different types of stores in a low income Essex County neighborhood? I described

the differences for the variety of foods available in a low income Essex County

neighborhood. I collected data from supermarkets, large groceries, small grocery stores,

and convenience stores. Much of the information which I expected to collect (i.e.

specialty/ethnic food variety and brand variety was not available. The variety of food was

determined using MyPlate categories as a guide for five food groups from different type of stores.

Also, a bivariate analysis was used to determine the relationship between two variables of interest gender and food choices and the independent variables, age, grade level and race/ethnicity to answer research question, RQ 4, Are there gender differences regarding food consumed and physical inactivity among African American adolescents? A Chi square analysis was used to interpret the association of food availability, and store locations, store types with and food choices. Food choices were classified as fruits, vegetables, grains, proteins and diary respectively. The dependent variable was food choices and independent variables were food availability, and location of food to answer research question, RQ5, What are the average prices per unit for each of the MyPlate food categories from different types of food stores? A description analysis was used to provide the means and standard deviation for the average food cost by store type.

Collected data were coded using abbreviations for variables, placed on Excel spreadsheets and imported into SPSS statistical software v19.0 for analysis. Once the data were coded and data analysis was under way, it is easy to combine code categories for purposes of analysis, but it is impossible to recover lost detail. For closed ended questions this study assigned a different code to each category. Data are represented by graphical displays such as pie charts, line graphs and tables. Data that were statistically significant at $p \leq 0.05$ are shown on graphs. To account for non response rate and bias, this study provided a detailed explanation of those who do not return the survey. For example, a

table with numbers and percentages describing respondents and non-respondents was used to display information regarding bias. An alternative check for response if necessary was to contact 10% of the sample of non respondents by phone and determine if their responses differ substantially from respondents. This constitutes a respondent non-respondent check for bias (Creswell, 2009). A description of numerical codes from 01-10 will be assigned to non-participants of surveys including reasons for non-participation.

Measures for Ethical Protection of Participants

All the measures were taken for the protection of research subjects in this study. All data collected from participants was being kept on file only for the duration of this study in the secured private office of the researcher. The researcher was the only person with direct access to data collected from the participants. For the protection of human participants, Walden Institutional Review Board approved was obtained to ensure all research complies with the university's ethical standards as well as U.S. federal regulations any applicable international guidelines. In their book titled Nursing Ethics across the curriculum and into practice (Butts & Rich, 2005) indicated from an ethical standpoint, confidentiality, privacy and trust are tightly woven with respect for autonomy, the adolescent's right to privacy, and the rights of service. Therefore, any breach of confidentiality, privacy and trust while conducting research is viewed as a violation of autonomy. Moreover, the Clinton administration passed a law called the Health Insurance Portability and Accountability Act (HIPAA) of 1996, which outlined requirements for protection and privacy of medical records and the confidential information of minors (CDC) (2003).

Specific measures to fully explain the reasons for this study were taken to protect the participants. These measure prevent exposing participants to substantial risk of physical or psychological harm, informing them that their participation is voluntary telling about any aspects of the research that might influence their willingness to participants and using all possible means to protect the confidentially of information provided by research participants. The overall guiding principle is that the potential benefits of research must be weighed against the potential costs. Many ethical issues arise during this stage of the research. This research proposal containing the procedures and information about the participants was filed with the IRB committee so that the board can review the extent to which the research being proposed subjects individuals to risk.

Summary

The main purpose for this research design and methodology chapter was too provide a clear and concise plan for examining the environmental, personal and behavioral factors associated with the effects of neighborhood environments on food choices among AA adolescents. I used descriptive statistical analysis to increase understanding of the characteristics which influence unhealthy food consumption among AA adolescents living in a low-income urban area. The 2011 New Jersey Food survey and the Hmong Food Store survey instruments were used in this research design to measure access and availability of healthier food options that help modify behavior among the target population.

In Chapter 3 the methodological aspects of the study as well as ethics protocol were presented. In chapter 4 the results are presented.

Chapter 4: Results

Introduction

The purpose of this study was to examine the impact of neighborhood stores on food choices made by low income AA adolescents. Franco, Diez-Roux, Glass, Caballero, and Brancati (2008) examined the associations among the availability of healthy foods and racial and income neighborhood compositions. The authors' found predominantly African American and low income neighborhoods have a lower availability of healthy foods than White and higher income due to the differential placement of types of stores as well as differential offerings of healthy foods within similar stores. Healthy food retailers include supermarkets, larger grocery stores, supercenters, and produce stores as defined by the North American Classification System (NAICS) (2012). Less healthy food retailers include fast food restaurants small grocery stores, and convenience stores (NAICS, 2012). These differences may contribute to racial and economic health disparities within the population. This chapter contains the facts: tables, figures, transcript summaries, and description of statistical outcomes. The chapter is divided into three sections: a description of the sample, the examination of research questions and testing of hypotheses, and the examinations of additional questions generated by earlier analysis or further exploratory investigation (Rudestam & Newton, 2007).

Demographics

Demographics and size for the sampled participants are presented in Tables 1 and 2. The sample consisted of 97(55%) females and 79 (45%) males. Ages above 18 were not indicated, but rather listed as "18" or older." As such, age was considered a

categorical variable. The sample included grades 9 through 12, with slightly more participants in 12th grade than any other (55, 31%). Twenty two percent ($N = 39$) of the students were in 9th grade, 28% ($N = 50$) were in 10th grade, and 18% ($N = 31$) were in 11th grade. Frequencies and percentages for the aforementioned demographics are presented in Table 1 and Figures 1 through 3.

Table 1

Demographics and Sample of Raw Data

Demographic Variable	Sample (*n*)	Sample (%)
Age		
14 years	17	10
15 years	35	20
16 years	52	30
17 years	26	15
18 years or older	45	26
Gender		
Male	79	45
Female	97	55
Grade		
9th grade	39	22
10th grade	50	28
11th grade	31	18
12th grade	55	31

Note. Due to rounding error, percentages may not sum to 100%.
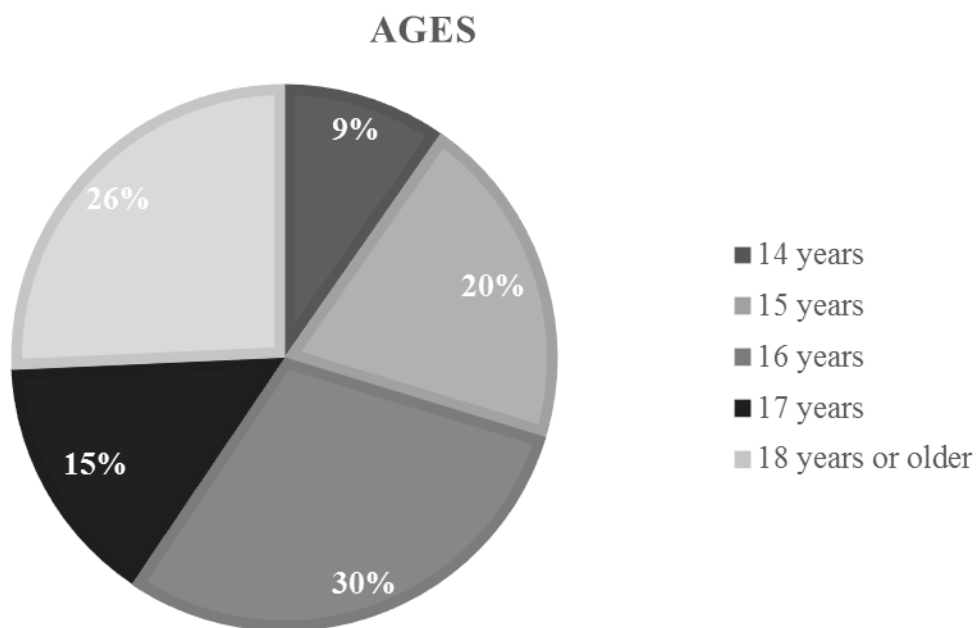
Figure 1.   Representation of ages within the sample
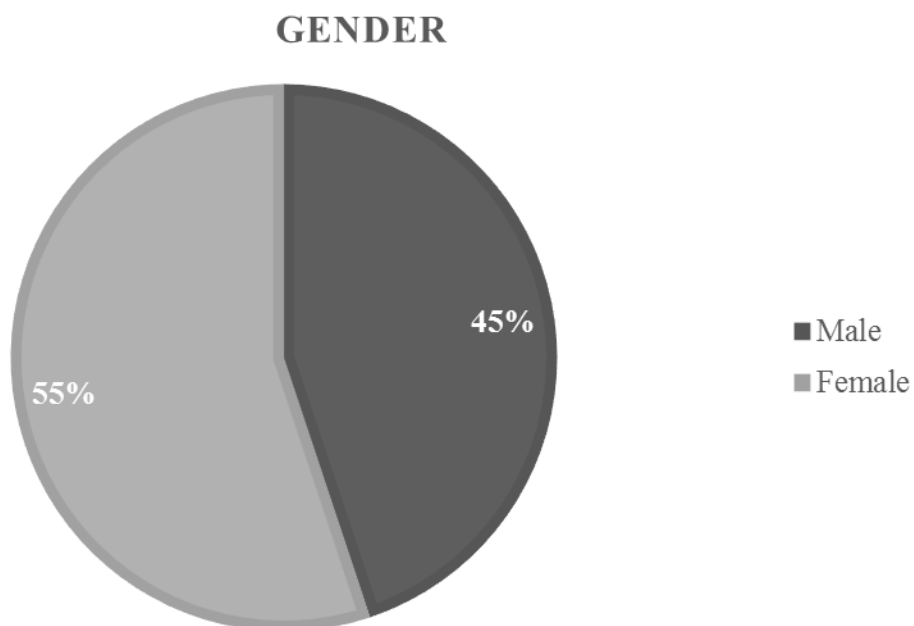
Figure 2.   Proportionality of genders represented within the sample.
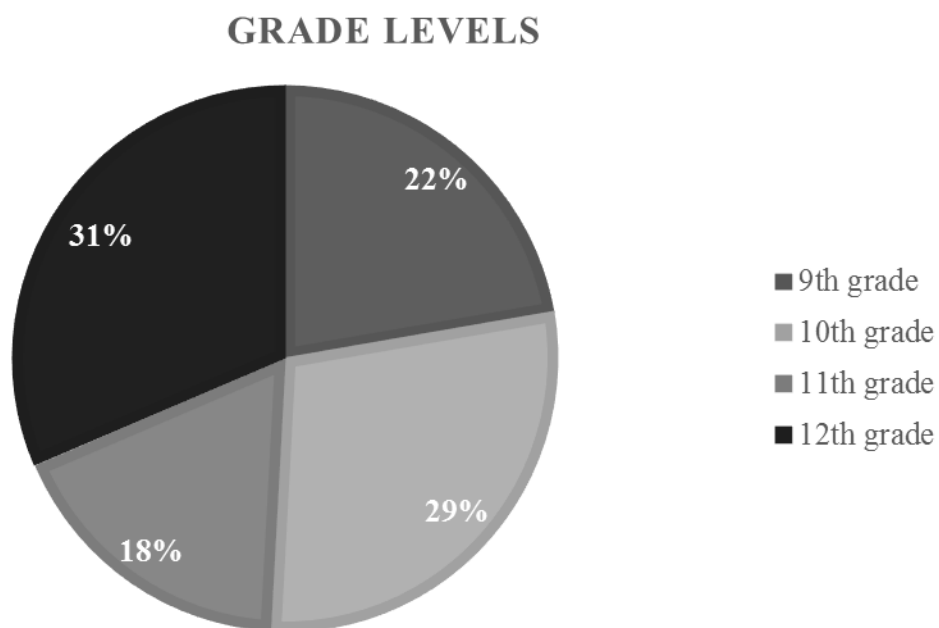
GRADE LEVELS

Figure 3. Proportionality of grade levels represented within the sample

Health Information for Sampled Youths

Participants were between 1.47 and 2.01 meters tall, with an average height of

1.69 meters ($SD = 0.10$). Participants also weighed between 41.73 and 159.67 kilograms,

with an average weight of 70.61 kilograms ($SD = 20.14$). Heights and weights were used

to calculate body mass indices for the sample, where body mass index (BMI) = weight in

kilograms, divided by height in meters squared. BMI ranged from 16.22 to 50.85, with an

average of 24.56 ($SD = 5.76$). The BMIs were then calculated as percentiles. Three

participants were in the 5th or lower percentile (2%), while the majority was at a healthy

weight between the 5th and 84th percentile (106, 60%). There were 32 (18%) participants

who were within the 85th to 95th percentile, and 22 (13%) were calculated to be within the

95th to 99th percentile, or obese. Ten participants (6%) were calculated to be above the

99th percentile, or severely obese. Means and standard deviations for weight height and

body mass indices are presented in Table 2, while frequencies and percentages for

participant BMI percentiles are presented in Table 3.

Table 2

Means and Standard Deviations for Continuous Health Information

Weight, Weight and BMI	*Min.*	*Max.*	*M*	*SD*
Weight (kg)	41.73	159.67	70.61	20.14
Height (meters)	1.47	2.01	1.69	0.10
BMI	16.22	50.85	24.56	5.76

Table 3

Sample distribution by BMI Percentiles

BMI percentile	*N*	%
<5th percentile (Underweight)	3	2
5th ≤ 84th percentile (Healthy weight)	106	60
85th ≤ 94th percentile (Overweight)	32	18
>95th percentile (Obese to Severely obese)	32	19

Note. Due to rounding error, percentages may not sum to 100%.

Multivariate Analysis

Several types of statistical analysis were used to look at the associations between

and among different variables studies. The statistical test and/or analysis used were

conducted based on the particular research question, and were addressed as described.

Research Question 1

To what extent does grade level affects food choices and physical activity among

African American adolescents?

$H_0 1$**:** There is no statistically significant difference in food choices or physical activity

between African American adolescents of various grade levels.

$H_1 1$: There is a statistically significant difference in food choices or physical activity

between African American adolescents of various grade levels.

To assess research question one, the Kruskal Wallis test was used to determine

differences between three or more groups (i.e., grade levels). Eleven Kruskal Wallis

analyses were conducted on the responses to items 72 through 83. However, since none

of the sample responded to item 83, it was not included in the analyses.

Results of the final 10 Kruskal Wallis tests on responses to survey items 72

through 82 indicated no statistically significant difference in responses between

participants from different grade levels ($p > .05$ for all). Thus, no further interpretations

could be made and the null hypothesis could not be rejected. Results of the 10 Kruskal

Wallis analyses are presented in Table 4.

Table 4

Kruskal Wallis Analyses for Differences in Food Choices and Physical Activity by Grade

Level

Source	$K(3)$	P
How many times drank fruit juice past week (item 72)	1.48	.688
How many ate fruit in past week (item 73)	2.13	.547
How many times ate green salad in past week (item 74)	0.63	.890
How many times ate potatoes in past week (item 75)	1.31	.726
How many times ate carrots past week (item 76)	4.38	.223
How many times ate other vegetables past week (item 77)	6.19	.103
How many times drank soda past week (item 78)	0.71	.870
How many days active 60+ min. in past week (item 79)	1.37	.713
How many hours T.V. watched in past week (item 80)	1.04	.791
How many hours/day play video games (item 81)	1.03	.794
How many days go to P.E. class past week (item 82)	1.50	.682
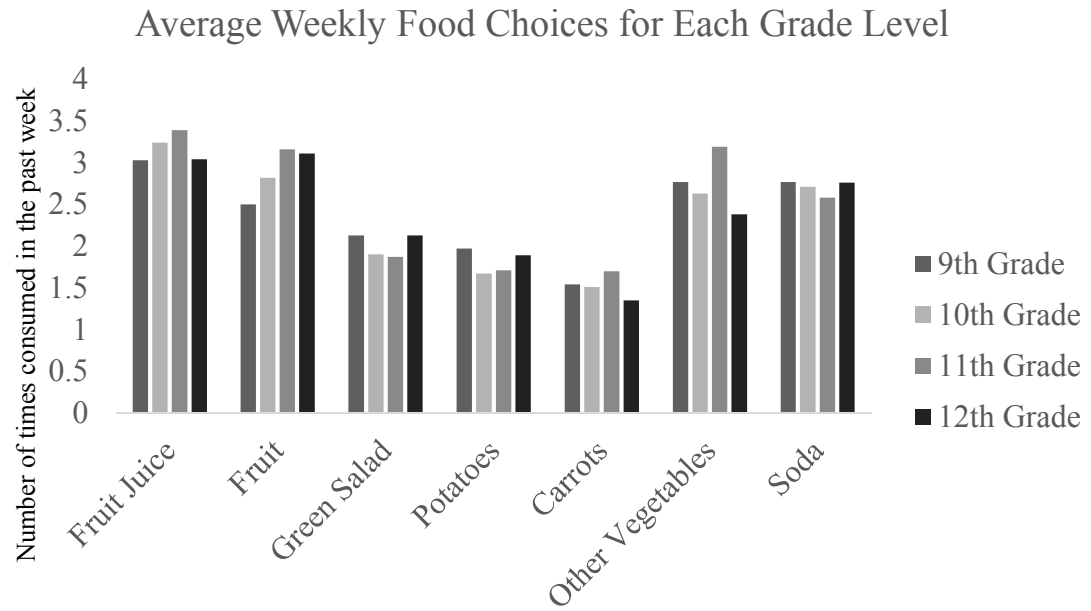
Figure 4. Mean responses for each grade's food and drink consumption in the week prior to response.
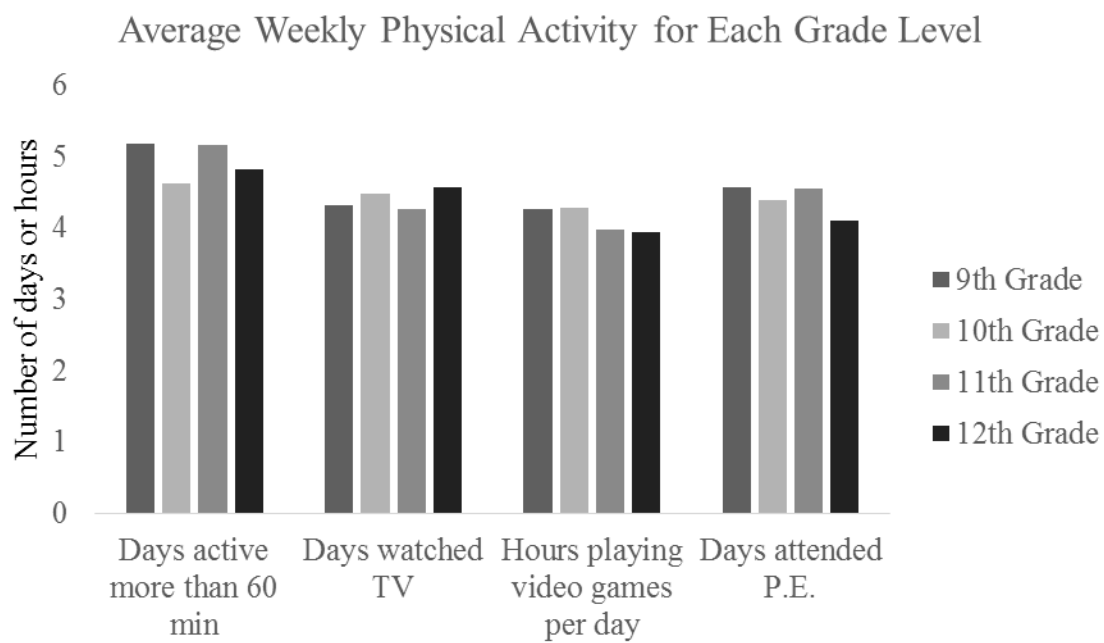
Figure 5. Mean responses for each grade's physical activity in the week prior to response.

Research Question 2

What is the relationship between a participant's food choices or physical activity levels and age group for New Jersey youths?

$H_0 2$**:** There is no statistically significant relationship between a participant's age and their food choice or physical activity.

$H_1 2$**:** There is a statistically significant relationship between a participant's age and their food choice or physical activity.

To address research question two Spearman rho correlations were used. Spearman rho is the appropriate analysis to conduct when the goal is to assess the relationship between two ordinal variables, and due to its non-parametric nature, it bypasses the restrictive assumptions typically associated with a correlation analysis (Pallant, 2010). As previously stated, participants did not respond to survey item 83, and this response could not be examined. In addition, survey items 4 and 5 were to be assessed for relationships with survey responses; however, because the whole sample was African American, all participants had the same responses for these survey items, and no analyses could be conducted. Results of the 10 resulting Spearman rho correlations indicated no statistically significant correlation between age and responses to survey items 72 through 82.Thus, the null hypothesis could not be rejected in favor of the alternative. Statistical outcomes of the 10 Spearman rho correlations are presented in Table 5.

Table 5

Spearman Rho Correlations between Age and Weekly Food Choices or Physical Activity

Survey item	Correlation with age	*P*
How many times drank fruit juice past week (item 72)	.03	.716
How many ate fruit in past week (item 73)	.11	.165
How many times ate green salad in past week (item 74)	.03	.690
How many times ate potatoes in past week (item 75)	.00	.961
How many times ate carrots past week (item 76)	-.01	.889
How many times ate other vegetables past week (item 77)	-.13	.078
How many times drank soda past week (item 78)	.03	.687
How many days active 60+ min. in past week (item 79)	-.07	.339
How many hours T.V. watched in past week (item 80)	.01	.925
How many hours/day play video games (item 81)	-.07	.391
How many days go to P.E. class past week (item 82)	-.06	.433

Note. Significant correlations are indicated as * = significance at *p* < .05, **.

Research Question 3

What is the variety of food choices from different types of stores in a low income Essex County neighborhood?

$H_0$3**:** There is no difference in the variety of food from different types of stores in a low income Essex County neighborhood.

$H_1$3**:** There is a difference in the variety of food from different types of stores in a low income Essex County neighborhood.

There was a difference in the variety of food from different types of stores in a low income Essex County neighborhood. Supermarkets were the only store type with all five food groups available for purchase by African-American adolescents. Fruits found at supermarkets were apples, bananas, grapefruit, grapes, mangoes, oranges, peaches, plums, raisins, and strawberries as well as 100% orange juice. Vegetables varieties included broccoli, romaine lettuce, spinach, corn, potatoes, carrots, sweet potatoes,

tomatoes, tomato juice, black beans, kidney beans, cauliflower, green bean, mushrooms, onion, and zucchini. Also, collard greens, cabbage, broccoli, and corn were sold fresh as well as frozen. Grains, found at these locations included brown rice, oatmeal, popcorn, whole wheat bread, whole wheat crackers, cornbread, flour tortillas, white sandwich buns and rolls, white rice, corn flakes, and whole wheat cereal flakes. Proteins, in terms of low fat, lean beef, pork, chicken, almonds, cashews, peanuts, salmon, shrimp and canned tuna were sold at these locations. For dairy food items, supermarkets sold fat free (skim) milk, puddings, frozen yogurt, and cheddar and Swiss cheese as well as low fat yogurt was available for individuals to make healthier food choices.

In contrast, at convenience stores there were less variety of foods than supermarkets, large stores and small stores available for purchase. Fruits were limited to bananas and 100% orange juice at most locations. For vegetables, potatoes and tomato juice were the only items sold at these stores. Proteins were limited to canned tuna and there was a lack of low fat or lean meat products. Grains included oatmeal, popcorn, white sandwich bread, and corn flakes, whole cereal flakes and other types of cereals. Convenience stores sold some diary such as cheddar cheese but there was no fat free (skim) milk, frozen yogurt or low fat yogurt products. In comparison to convenience stores, small stores had more food variety than convenience stores, but not as many items for purchase as supermarkets. For fruits, bananas, oranges, and 100% orange fruit drinks. Vegetables items included frozen broccoli, potatoes, tomatoes, kidney beans, onions and other frozen vegetables such as green beans. Protein items were not low fat or low sodium and included beef, chicken, and pork. Grains found included, oatmeal, popcorn,

white bread sandwich buns and rolls and white rice, corn flakes and various other brand name cereals. For diary there was no fat free skim milk, frozen yogurt or low fat yogurt found among the surveyed food items.

In comparison, to supermarkets, convenience store and small stores fruits sold at large grocery stores were apples, bananas, grapefruit, grapes, oranges, raisins, strawberries, and 100% orange juice. Vegetables included broccoli, romaine lettuce, spinach, corn, potatoes, carrots, tomatoes, tomato juice, black beans, kidney beans, green beans and onions. Proteins at these stores included beef, pork, chicken and canned tuna. Grains included brown rice, oatmeal, popcorn, whole wheat bread, wheat crackers, cornbread, flour tortillas, white sandwich buns and rolls, white rice, corn flakes, whole cereal flakes and other brand name cereals. Also, dairy products included fat free (skim) milk, puddings, frozen yogurt, cheddar cheese and Swiss cheese as well as low fat yogurt. The varieties of nutritious and affordable food categories available for purchase were similar but they are different for each store type. Food variety using MyPlate food categories for each type of store is presented in Table 6.

Table 6

Food Items Using MyPlate Categorized Foods per Store Type

Store Type	Supermarkets	Large Grocery Stores	Small Grocery	Convenience stores
Food item				
Fruits				
Apple	x	x	x	
Bananas	x	x		x
Grapefruit	x	x		
Grapes	x	x		
Mangoes	x			
Oranges	x	x	x	
Peaches	x			
Plums	x			
Raisins	x	x		
Strawberries	x	x		
100% Fruit Juice	x	x	x	x
Vegetables				
Broccoli	x	x		
Romaine Lettuce	x	x		
Spinach	x	x		
Corn	x	x		
Potatoes	x	x	x	x
Carrots	x	x		
Sweet potatoes	x			
Tomatoes	x	x		

(Table continues)

Store Type	Supermarkets	Large Grocery Stores	Small Grocery	Convenience stores
Tomato Juice	x	x		
Black beans	x	x		
Kidney beans	x	x		
Cauliflower	x			
Green bean	x	x		
Mushrooms	x			
Onions	x	x	x	x
Zucchini	x			
Collard Greens	x			
Cabbage	x			
Grains				
Brown rice	x	x		
Oatmeal	x	x		x
Popcorn	x	x		x
Whole wheat bread	x	x	x	
Whole wheat crackers	x	x		
Corn bread	x	x		
Flour tortillas	x	x		
White sandwich buns	x	x	x	
White rice	x	x		x
Corn flakes	x	x	x	
Whole cereal flakes	x	x	x	x
Proteins				
Lean beef	x			
Pork	x	x		
Chicken	x	x	x	
Almonds	x			
Peanuts	x			
Salmon	x			
Shrimp	x			
Canned tuna	x	x	x	x
Diary				
Fat free (skim milk)	x	x		
Pudding	x			

Store Type	Supermarkets	Large Grocery Stores	Small Grocery	Convenience stores
Frozen yogurt	X			
Cheddar and Swiss	X	X		X
Low fat yogurt	X	X		

Note. X Indicates availability of food items in each store types

Research Question 4

Are there gender differences regarding food consumed and physical inactivity among African American adolescents?

$H_0 4$: There is no statistically significant relationship between gender and food choice or physical activity.

$H_1 4$: There is a statistically significant relationship between gender and food choice or physical activity.

To address research question four, ten chi squares were conducted. Results of the chi-squares indicated a statistically significant relationship between gender and the amount of times a participant drank soda within the past 7 days (χ^2 (6) = 12.65, p = .049), and the number of hours / day a participant played video games (χ^2 (6) = 13.07, p = .042). For both significant chi square analyses, observed values were compared with the expected values as calculated in the analysis based on a random distribution of responses.

First, responses to survey item 78 (How many times have you drank soda in the past week?) were examined. (How many times have you drank soda in the past week?) were examined. Deviations from the calculated expected values indicated that more females responded that they did not drink any soda in the past 7 days than expected

(observed = 30, expected = 25), while less males responded that they drank no soda than

expected (observed = 15, expected = 20).

Next, responses to survey item 81(How many hours/day did you play video

games in the past week?) were examined. Deviations from the calculated expected values

indicated that less males responded that they did not play video games than expected

(observed = 5, expected = 11), and more than expected responded that they played 3

hours per day (observed = 18, expected = 13). More females responded that they did not

play any video games than expected (observed = 19, expected = 13). The results of the

chi-squares on remaining survey item results are presented in Table 7 and 7 (continued).

Results of chi-square analyses on survey item 79 are presented in Table 8, while the chi-

square analysis on survey item 82 is presented in Table 9.

Table 7

Chi Square Analysis of Food Choices and Physical Activity for Males versus Females

| Survey item | Gender | Frequency of Behavior | | | | | | | χ^2 | P |
		1	2	3	4	5	6	7		
Drank fruit juice	Female	18 [14]	33 [34]	19 [19]	4 [7]	8 [8]	6 [6]	9 [9]	5.34	.501
	Male	7 [11]	29 [28]	15 [15]	8 [5]	6 [6]	5 [5]	8 [8]		
Ate fruit	Female	17 [17]	37 [34]	17 [22]	6 [5]	10 [8]	2 [3]	7 [7]	6.28	.393
	Male	13 [13]	25 [28]	23 [18]	3 [4]	4 [6]	4 [3]	6 [6]		
Ate green salad	Female	35 [41]	41 [37]	9 [7]	7 [7]	3 [3]	1 [1]	1 [3]	8.47	.206
	Male	39 [33]	25 [29]	3 [5]	5 [5]	2 [2]	0 [0]	4 [2]		

103

Note. 1) None, 2) 1-3 times in past 7 days, 3) 4-6 times, 4) Once per day, 5) Twice per day, 6) Three times per day, 7) Four or more times per day. Bracketed values indicate expected counts.

Table 7 (*Chi Square Analysis of Food Choices and Physical Activity of Males versus Females*
(Table Continued)

Survey item	Gender	Frequency of Behavior							χ^2	*P*
		1	2	3	4	5	6	7		
Ate potatoes	Female	44 [45]	35 [35]	13 [11]	4 [4]	0 [1]	N/A	1 [1]	3.86	.570
	Male	37 [36]	28 [28]	6 [8]	3 [3]	2 [1]	N/A	1 [1]		
Ate carrots	Female	69 [67]	18 [19]	5 [6]	1 [2]	1 [1]	1 [1]	1 [1]	3.01	.807
	Male	52 [54]	17 [16]	6 [5]	2 [1]	0 [0]	1 [1]	0 [0]		
Ate other vegetables	Female	15 [17]	42 [40]	18 [20]	11 [10]	5 [4]	3 [2]	3 [4]	3.66	.723
	Male	15 [13]	30 [32]	18 [16]	7 [8]	2 [3]	1 [2]	5 [4]		
Drank soda	Female	30 [25]	32 [31]	15 [22]	0 [2]	10 [9]	3 [3]	7 [6]	12.65	.049
	Male	15 [20]	23 [25]	24 [17]	4 [2]	6 [7]	2 [2]	4 [5]		
Watched TV	Female	13 [10]	8 [10]	7 [8]	15 [17]	21 [19]	11 [12]	19 [18]	3.30	.770
	Male	6 [9]	10 [8]	7 [6]	15 [14]	14 [16]	11 [10]	14 [15]		
Played video games	Female	19 [13]	10 [13]	10 [16]	14 [13]	11 [13]	9 [9]	23 [20]	13.07	.042
	Male	5 [11]	13 [10]	18 [13]	9 [10]	12 [10]	7 [7]	13 [16]		

Note. 1) None, 2) 1-3 times in past 7 days, 3) 4-6 times, 4) Once per day, 5) Twice per day, 6) Three times per day, 7) Four or more times per day. Bracketed values indicate expected counts.

Table 8

Chi-Square for Days Physically Active by Gender (Item 79)

Gender	Days Active								χ^2	*P*
	0 days	1 day	2 days	3 days	4 days	5 days	6 days	7 days		
Female	16	14	13	10	6	8	8	19	13.04	.071
	[13]	[10]	[12]	[10]	[8]	[10]	[7]	[26]		
Male	7	4	8	8	8	10	4	29		
	[10]	[8]	[10]	[8]	[6]	[8]	[5]	[22]		

Note. Bracketed values indicate expected counts.

Table 9

Chi-Square for P.E. Class Attendance by Gender (Item 82)

Gender	P.E. Class Attendance						χ^2	*P*
	0 days	1 day	2 days	3 days	4 days	5 days		
Female	21	1	9	11	5	48	5.05	.410
	[18]	[2]	[9]	[11]	[8]	[47]		
Male	11	2	8	9	10	36		
	[14]	[1]	[8]	[9]	[7]	[37]		

Note. Bracketed values indicate expected counts

Research Question 5

What are the average prices per unit for each of the MyPlate food categories from different types of food stores?

$H_0 5$**:** The average prices of food choice per unit of each of the MyPlate food categories do not differ by type of food store.

$H_1 5$**:** The average prices of food choices per unit of each of the MyPlate food categories do differ by type of food store. For research question five, food types were classified as one of the five MyPlate categories. These categories include fruits, vegetables, proteins,

grains, and dairy. Average costs were calculated per sales unit, which was standardized within the Hmong Food Survey. First, average cost per sale unit were calculated for each food group overall. Average cost per unit for fruits was $2.15 ($SD$ = 1.30), for vegetable $1.64 ($SD$ = 0.78), for proteins $3.35(SD=1.81), for grains $1.78(SD=1.50) and for dairy $2.30(SD=1.33).

Next, unit prices were examined for each type of store individually. Supermarket pricing data were gathered from 5 supermarkets in the 07112 zip code area, and included 19 types of fruit, 25 types of vegetables, 65 types of protein, 16 types of grains, and 12 types of dairy. Fruits were priced at an average of $2.06 ($SD$ = 1.04) per unit. Average vegetable prices were $1.66 ($SD$ = 0.81), while average protein prices were $3.23 ($SD$ = 1.93) per unit. Grains cost an average of $1.77 ($SD$ = 1.44) per unit, and average dairy prices were $2.08 ($SD$ = 1.00) per unit (Table 10.).

Convenience store pricing data were gathered from 7 convenience stores; four convenience stores were located in the 07112 zip code, while three were located in 07108. Information was collected for 3 types of fruit, 3 types of vegetables, 5 types of protein, 16 types of grains, and 3 types of dairy. Fruits were priced at an average of $0.75 ($SD$ = 0.43) per unit due to limited availability of higher priced items and cheaper cost. Average vegetable prices were $1.67 ($SD$ = 0.95), while proteins prices averaged $2.90 ($SD$ = 1.57) per unit. Grains cost an average of $1.46 ($SD$ = 0.80) per unit, and dairy prices averaged $4.17 ($SD$ = 1.44) per unit.

Small grocery store pricing data were gathered from 18 small stores; 10 small grocery stores were located in the 07112 zip code, while 8 were located in 07108.

Information was collected for 3 types of fruit, 12 types of vegetables, 8 types of protein, 15 types of grains, and 9 types of dairy. Fruits were priced at an average of $1.00 ($SD =$ 0.00) per unit. Average vegetable prices were $1.44 ($SD = 0.44$), while proteins prices averaged to $4.24 ($SD = 1.28$) per unit. Grains cost an average of $2.05 ($SD = 2.04$) per unit, and dairy prices averaged $1.83 ($SD = 1.22$) per unit.

Large grocery store pricing data were gathered from 12 large stores; 10 large grocery stores were located in the 07112 zip code, while 2 were located in 07108. Information was collected for 16 types of fruit, 30 types of vegetables, 32 types of protein, 16 types of grains, and 13 types of dairy. Fruits were priced at $2.75 ($SD =$ 1.45). Average vegetable prices were $1.71 ($SD = 0.86$), while protein prices averaged $3.45 ($SD = 1.67$) per unit. Grains cost an average of $1.86 ($SD = 1.59$) per unit, and dairy prices averaged $2.40 ($SD = 1.40$) per unit. Average prices for each type of store surveyed, as well as overall, are presented in Table 10. Means and standard deviation for average food cost food by store type in Table 11. Food type distribution offered sampled in supermarkets, large groceries, small groceries and convenience stores are presented for each store in Figure 6.

Table 10

Means and Standard Deviations for Average Food Costs for MyPlate Categorized Foods

	Fruits		Vegetables		Protein		Grains		Dairy	
Store	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
All stores	2.15	1.30	1.64	0.78	3.35	1.81	1.78	1.50	2.30	1.33
Super market	2.06	1.04	1.66	0.81	3.22	1.93	1.77	1.44	2.08	1.00
Convenience	0.75	0.43	1.67	0.95	2.90	1.57	1.46	0.80	4.17	1.44
Small grocery	1.00	0.00	1.44	0.44	4.24	1.78	2.05	2.04	1.83	1.22
Large grocery	2.75	1.45	1.71	0.86	3.45	1.67	1.86	1.59	2.40	1.40

Table 11

Means and Standard Deviations for Average Food Costs by Store Type

Store	*Min.*	*Max.*	*M*	*SD*
Supermarket	0.50	7.99	2.56	1.73
Convenience store	0.50	5.00	1.92	1.36
Small grocery store	1.00	5.99	2.24	1.70
Large grocery store	1.00	7.00	2.49	1.55

Figure 6

Food Type Distribution Offered in Supermarkets, Small Groceries, and

Convenience Stores
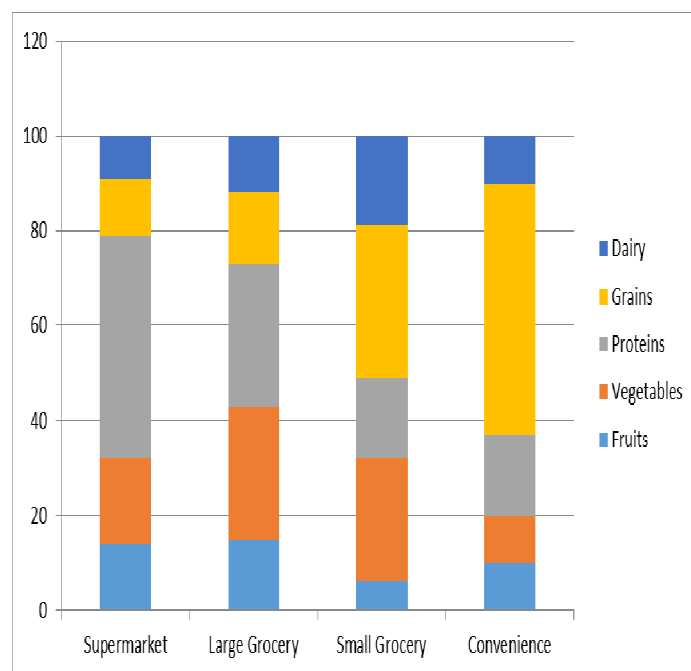
Summary

Kruskal Wallis analyses for research question indicated that there was no relationship between food choices or physical activity and grade level. Further analysis using correlations to examine research question two did not indicate any statistically significant relationship between gender and soda drinking, and gender and video game habits. Females tended to drink less soda than would be expected if there were no relationship, while males tended to drink more. In addition, males tended to play video games for longer amounts of time per day than females. AA adolescents made healthier food choices and engaged in more physical fitness activities as grade level increased in grades 9-12. Food choice as reported by 42 store merchant was limited in variety at small and convenience stores when compared to larger stores and supermarkets. The absence of high price items as well as variety of foods in a convenience store may have attributed to this difference. In this study the average cost food types per unit for fruit was \$2.15 ($SD = 1.30$), for vegetables \$1.64 on average ($SD = 0.78$), for protein \$3.35($SD = 1.81$), for grains \$1.78(SD = 1.50) and for diary \$2.30(SD= 1.33) with prices of food items differing according to the type of food store in a low income neighborhood.

In comparison to the literature, the results of this study demonstrated the need for policy change at the community that will benefit disadvantaged AA adolescents in low income neighborhoods. This is important because policy change is required to help public health professionals extend their understanding of the mechanisms underlying the correlations between health outcomes, social inequalities, income, education, and other

factors such as access to nutritious and affordable food choices and physical activities among this population (Daniels et al., 2008). However, there is likely to be many barriers toward strategies based on polices alone. The prevention and reduction of overweightness and obesity depends ultimately on individual lifestyle change and research on motivation for behavior change would be important in combating obesity (Chan & Woo, 2010).

Many factors contribute to an individual's overall diet, body weight, and the risk of developing diet related diseases such as diabetes or cardiovascular disease. Individual factors can explain some but not all of the differences in the rates in which different groups experience these problems. Attention on the relationship between retail food access and obesity has increased as researchers obtain a better understanding of the factors besides individual behaviors that may lead to differences in diet and health outcomes (Let's move.org).

This study confirmed that there are food store and eating disparities as well as limited food variety from neighborhood stores in a low income neighborhood. Food variety, reported as number of MyPlate variety items, was low at small grocery stores. Average cost differed by MyPlate food groups and store type. Convenience stores had the lowest cost for fruits, grains and proteins and highest for diary, the reflecting lack of variety in the mix of foods used to calculate costs. The results disconfirmed that all food sold in convenience and small stores are more expensive than large stores and supermarkets. Previous research has indicated public health knowledge of the characteristics which influence these groups can help to increase the effectiveness of

current programs addressing the issue of childhood obesity (African American

collaboration Obesity-Research Network, 2008).

In Chapter 4 the data analysis and results was presented. Included were

collection and response rate, analysis of non response bias, sample characteristics,

threats instrumentation, counter measures instrumentation, information system security

measures, limitation to the study, findings, consistencies and inconsistencies and

possible alternative interpretation were presented. In Chapter 5 key findings,

interpretations and limitations are provided.

Chapter 5: Key Findings, Interpretations and Limitations

Introduction

The purpose of this study was to examine the impact of neighborhood stores on food choices made by low income AA adolescents. Brown and Landry-Meyer (2007) noted the examination of the factors that account for the variance in food choice is critical for adolescents living in disadvantaged communities. French, Neumark-Sztainer, Fulkerson, and Hannan (2001) observed associations between fast food restaurant use and nutrient intake, food choice, body weight, and personal, behavioral and environmental variables in a community based sample of AA adolescents living within geographical boundaries of schools and neighborhood stores where unhealthy food purchases are made on a daily basis. The nature of the study was an ecologically approach on food choices in low income AA adolescent neighborhoods. The research focused on the availability of healthy food products from two different zip codes areas to explain the cause and effect of health behaviors of AA adolescent's high school student living in a disadvantaged low income neighborhood.

While studies frequently report the inventory of grocery stores, few specifically focus on the role of convenience stores in the food environment. It should be of no surprise that grocery stores stock a large variety of foods to meet the purchasing demands of the population. However, in rural and economically underserved communities grocery store locations are fewer and more dispersed, which make the reliance on convenience stores for obtaining food greater in these areas. While convenience stores offer an alternative to grocery stores, the products may be priced higher and of lesser quality.

Therefore, access to healthy and affordable foods is likely related to the type of food outlets in a particular community, not solely the number of outlets (Smith, Sunil, Salazar, Rafigue, & Ory, 2013).

Recently reviewed literature on neighborhood disparities in access to fast-food outlets and convenience stores revealed neighborhoods offered greater access to food outlets that promote unhealthy eating. Furthermore, the distribution of fast food outlets and convenience stores differed by the racial/ethnic characteristics of the neighborhood (Hilmers, Hilmers, & Dave, 2012). According to (Smith, Sunil, Salazar, Rafigue, and Ory, 2013) convenience stores can play an important role to positively shape a community food environment by stocking healthy food at affordable prices. Mc Dermott & Stephens (2010) conducted a study to examine the financial burden of shopping for foods to meet national dietary recommendations in a supermarket compared to eating primarily in a fast food restaurant. The authors found several factors contribute to disparities in healthy eating habits in at risk populations. One significant barrier is the relative lack of availability of healthy food choice in low income and urban neighborhoods. The study was completed with the intent to understand and describe adolescent food choices as a way to prevent obesity among this population.

Interpretation of the Findings

One hundred seventy six AA high school students in New Jersey made healthier food choices and engaged in more physical activity as the grade level increased in grades 9 thru 12. For example, 27.8% of African American students reported they had consumed five or more servings of fruit and vegetables per day over the past seven days. Also, 64.2% and 49% of New Jersey high school students engaged in aerobic exercise and muscle toning, respectively for at least 60 minutes on 3 or more days per week and 44.1% engaged in general physical activity for at least 60 minutes on 5 days per week. Comparable findings for sedentary behaviors revealed that 48.3% of this population watched television played video games and/ or used computers/internet for at least 3 hours per day and 53.4% watched television for at least 3 hours per day. Out of the 176 AA adolescents surveyed 18% were overweight and 19% obese. Food choices as reported by 42 merchants were limited in variety at small and convenience stores when compared to larger stores and supermarkets; however, fruits at supermarkets cost more than at convenience stores and vegetables only slightly less. The average prices of commonly purchased food groups were not found to be higher at convenience stores except diary items.

However, some authors suggested that residents of these low income urban areas had less access to high quality produce, lean meat, and low fat dairy products. Residents necessarily rely on small markets that primarily sell foods with a long shelf life instead of fresh fruits, fresh produce, and low fat foods. These foods, when available, are also likely to be more expensive (Cannuscio, Weiss, & Asch, 2010). For decades, low income

communities of color have experienced grocery stores and fresh, affordable food disappearing from their neighborhoods. Unfortunately, it often takes years for the research to catch up with pressing needs in historically underserved communities. Sometimes information is not available and policy changes require solid data about the issue and its consequences (Treuhaft & Karpyn, 2009).

The key findings from this study confirmed that the food choices from various store types in a low income neighborhood were limited for African American students living within a 5 block radius of local high schools but food items were not cheaper in supermarkets. For this study, the food choices were categorized as: fruit and fruit juices, vegetables, fats, sweetened beverages, and sugar. Associated with food choices were dietary habits/patterns and consumption of snacks, sweetened beverages, and the nutrients from the food consumed: total energy (calories), total fat (fat in diet). Understanding the correlates of dietary intake as represented by these variables is necessary in order to effectively promote healthy dietary behavior (Mc Clain, Nguyen Rodriquez, Yaroch, & Spruijt-Metz, 2009).

Research question 1

To what extent does grade level affects food choices and physical activities among African American adolescents?

$H_0 1$: There is no statistically significant difference in food choices or physical activities between African American adolescents of various grade levels.

$H_1 1$: There is a statistically significant difference in food choices or physical activities between African American adolescents of various grade levels.

There were no significant differences between participants from different grade levels. Thus, no further interpretation could be made and the null hypothesis could not be rejected in food choices or physical activities by grade level. In comparison, Swinburn, Caterson, Seidell, & James, (2004) suggested, a diet high in fruits and vegetables is associated with a decreased risk for many chronic diseases and aids in weight management. The Centers of Disease Control and Prevention(CDC), (2010) analyzed data from the 2010 National Youth Physical Activity and Nutrition Study and reported that high school students consumed 25 % fewer fruit and vegetables as compared to the recommended levels of 2-1/2 to 6-1/2 cups of fruits and vegetables per day. In the same report, these students reported being less physically active with age, and females were less active than males (CDC, 2010). For example, 48% of 9th grade boys and 30% of 9th grade girls reported being physically active for 60 minutes at least five days per week; the current guideline for physical activity, by 12th grade, 40% of boys and 22% girls reported the same (CDC, 2010).

In the current study, 176 AA adolescents made healthier food choices and engaged in more physical activity as their grade level increased in grades 9-12. Perez, Hoelscher, Brown, and Kelder (2007) conducted a study to examine differences in food choices between 4th, 8th, and 11th grade students. The authors found children in grades 8 and 11 were more likely to consume hamburger and other meats, cheese, breads, buns, and rolls, and sweet rolls compared with 4th-grade students. In contrast, 4th-grade students were more likely to consume peanut butter, yogurt, cereal, fruit, and milk compared to 8th

and 11th-grade students. Eight to eleventh-grade students were more likely to consume snacks than 4th-grade students.

The high prevalence of adolescent obesity in the United States has been attributed to population changes in physical activity, sedentary behaviors, and dietary behaviors. Researchers (Iannotti & Wang, 2013) examined 8-year trends in these behaviors in US adolescents ages 11 to 16. The authors identified significant increases in number of days with at least 60 minutes of recommended PA, daily consumption of fruits and vegetables, eating breakfast on weekdays and weekends, and in BMI. These trends suggest that public health efforts to improve the obesity-related behaviors of United States adolescents may be having some success. However, Neumark-Sztaniner, French, Hannan, Story, and Fulkerson (2005) clearly showed that adolescents' dietary intakes as well as physical activity levels were not consistent with national recommendations. More recently, McGee, Richardson, Johnson, and Johnson (2014) conducted a study to enable a research team to culturally tailor an intervention to increase adherence to Dietary Guidelines for Americans (DGA) in African American parents and their children living in Lower Mississippi's Delta communities. The authors found there were challenges to adhering to healthy food choices and physical activity guidelines particularly for diverse sub populations in the United States. For example participants indicated that quality, availability and cost of fruits and vegetables were obstacles in meeting for fruits and vegetables. Also, challenges to meeting physical activity included lack of time, safety, tired of work, weather, and no facility in the community to work out (McGee et al., 2014).

To better understand the obesity epidemic and related racial/ethnic disparities more must be learned about community-level risk factors especially how the built environment and social norms operate within communities across racial/ethnic groups (Kirby, Liang, Wang, & Jen Chen, 2012). Ogden, Carroll, Kit, and Flegal (2014) provide the most recent national estimates of childhood obesity and analyzed trends in childhood obesity during the years 2003-2012. The authors found in 2011-2012, the prevalence of obesity in the United States was 16.9% in youth and 34.9% in adults. The overall prevalence of obesity among youth remained unchanged compared with that in 2009-2010 (16.9%), and there was no significant change since 2003-2004. Similarly, there was no significant change in obesity prevalence among adults between 2003-2004 and 2011-2012. In subgroup analyses, the prevalence of obesity among children 2 to 5 years decreased from 14% in 2003-2004 to just over 8% in 2011-2012(Ogden et al. 2014).

In the past two decades, rates of obesity in the United States rose among children aged 6 to 11 years from 11.3% to 19.6%, as well as from 10.5% to 18.1% among adolescents aged 12 to 19 years (Leung, Agaronov, Grytsenko, & Yeh, 2012).The statistics are even more alarming for AA adolescent girls ages 12 to 19, as by 2007-08, 29.2% were obese the highest prevalence of any age group by gender, race or ethnicity (Robert Wood Johnson Foundation, 2010). Davis, Cook, and Cohen (2005) noted childhood obesity is an important issue because racial/ethnic groups in the United States experience poorer health outcomes than do Whites. Such health disparities are not only persistent, but also increasing. Health disparities are generally not the result of people experiencing a different set of illnesses from those affecting the general population.

Rather, they are the same diseases and injuries that affect the population as a whole, only they affect people of color more frequently.

Therefore, eliminating racial/ethnic disparities in health and healthcare is a national priority, and obesity is an area of concern. Researchers have found substantial racial/ethnic differences in many of these life risk factors for childhood obesity including higher levels of television viewing, more televisions in bedrooms, higher consumption of sugar sweetened beverages, increased fast food consumption and lower levels of physical activity. Understanding these differences may help inform the design of clinical and public health interventions and polices to reduce the prevalence of childhood obesity and eliminate disparities among racial/ethnic communities of color (Pena, Dixon, & Taveras, 2012).

Research question 2

What is the relationship between a participant's food choices or physical activity levels and age group for New Jersey youths?

$H_0 2$: There is no statistically significant relationship between a participant's age and their food choice or physical activities.

$H_1 2$: There is a statistically significant relationship between a participant's age and their food choice or physical activities.

In regards to the relationship between a participant's age and their food choice or physical activities, there were no significant differences. Thus, the null hypothesis could not be rejected in favor of the alternative. African American high school students in New Jersey reported healthier food choices and less physical activity with increasing

grade level. According to the CDC, (2009) most children and adolescents do not follow dietary guidelines or engage in the suggested amount of physical activity. The current study revealed a correlation between age and weekly food choices and physical activities of African-American high school students. This is important because the prevalence of overweightness among children and adolescents ages 6-19 years is generally caused by a lack of physical activity and unhealthy food choices. Available research shows that there are a number of root causes of obesity in children.

In contrast, to these findings selecting one or two main causes or essential factors is next to impossible given the current data, because the potential influences of obesity are multiple and intertwined (U.S. Department of Health & Human Services, 2005). Schwartz and Peterson (2010) noted adolescent obesity in the United States has many important implications for both individual and society. For example, specific negative impacts of obesity on health include increased susceptibility to chronic health disorders, psychological disorders and premature death. Although obesity is a complex problem not yet fully understood by researchers, by addressing the known factors that contribute to obesity in adolescent's policy makers can help ensure a healthy and productive adulthood for our nation youth.

Even more alarming is most U.S. youth do not meet the recommendations for eating 2-1/2 cups of fruits and vegetables each day. Adolescents drink more full-calorie soda per day than milk. Males 12-19 years drink an average of 22 ounces of full-calorie soda per day, more than twice their intake of fluid milk (10 ounces), and females drink an average of 14 ounces of full-calorie soda and 6 ounces of fluid milk (CDC, 2009). Story

and Stang (2005) found the number of servings of the major food groups increases with age for males, but not necessarily for females. Among females 14-18 years of age, fruit intake and dairy intake decreases, and soda consumption increases compared to female age groups 9-13. The authors also found several studies have shown that dietary quality decreases throughout childhood and adolescents had poorer quality overall diet compared to younger children (Story & Stang, 2005).

Research question 3

What is the variety of food from different types of stores in a low income Essex County neighborhood?

$H_0$3: There is no difference in the variety of food from different types of stores in a low income Essex County neighborhood.

$H_1$3: There is a difference in the variety of food from different types of stores in a low Essex County neighborhood.

This researcher accepts the hypothesis that there is a difference in the variety of food from different types of stores in a low income Essex County neighborhood. Food availability from neighborhood stores differed based on the type of store. For example, convenience stores when compared with small stores and supermarkets had a smaller selection of fruits and vegetables, both of which are recommended to improve health outcomes. In contrast, supermarkets and large groceries had more food choices that are nutritious and affordable for purchase by AA adolescents living in disadvantaged communities.

Food choices are influenced by many factors, including, taste, and knowledge of the healthy values of certain foods, cost, availability and cultural norms (The Robert Wood Johnson Foundation, 2007). For example Wieting (2008) noted many social and environmental factors such as socioeconomic status have negatively influenced the physical activity and eating behaviors of US children and adolescents. Also, financial and time pressures force many families to control food costs and meal preparation time, resulting in increased consumption of prepackaged convenience foods that are high in calories and fat. In fact, fast food restaurants are often concentrated in neighborhoods containing schools and younger customers (Austin, Melly, Sanchez, Patel, Buka, & Gortmaker, 2008). Also, children are targets of junk food advertisements (The Institute of Medicine, 2004).

Researchers examining food pricing indicate that price reduction maybe an effective way to increase the purchase of healthy food, particularly fruits and vegetables (Guthrie, & Newman, 2013). The results of this study compare favorably to other studies (French, 2003). Deva, Malley, and Johnston, 2007 and Boyington et al., (2008) established that food choices are influenced by food cost and availability. They suggest that reduced pricing maybe especially important for low income residents making food choices and who are more concerned about cost and value for their dollar than about the nutritional quality of foods (The Robert Wood Foundation, 2007). Convenience stores sold mostly prepared, high calorie foods and little fresh produce at higher prices. Supermarkets had highest food cost followed by large stores, small stores and convenience stores in a low income neighborhood in Essex County.

The majority of authors that have examined the relationship between store access and dietary intake found that better access to a supermarket or large grocery store was associated with healthier food intakes (Larson, Story, & Nelson, 2009).While researchers frequently report the inventory of grocery stores, few specifically focus on the role of convenience stores in the food environment. It should be of no surprise that grocery stores stock a large variety of healthy and unhealthy foods because of their size and need to meet the purchasing demands of the population. However, in rural and economically underserved communities grocery store locations are fewer and more dispersed, which make the reliance on convenience stores the only alternative to a grocery store, and the products may be priced higher and of lesser quality. Therefore, access to healthy and affordable food is likely related to the type of food outlets in a particular community, not solely the number of outlets (Smith, Sunal, Salazar, Rafique, & Ory, 2013).

Research question 4

Are there gender differences regarding food consumed and physical inactivities among African American adolescents?

$H_0$4**:** There is no statistically significant relationship between gender and food choice or physical inactivity.

$H_1$4**:** There is a statistically significant relationship between gender and food choice or physical inactivity.

This researcher accepts the hypothesis that there is a significant relationship between gender and food choices as well as amount of physical inactivity. For example, fewer males than females responded that they did not drink any soda in the past 7 days

than expected. In response to sedentary behavior questions, females responded that they did not play any video games more than males. Physical activity levels as well as food choices for both female and male adolescents did not meet the current physical activity recommendation for 60 minutes of moderate activity and the minimum intake of grains, fruits, and vegetables were below Myplate.gov recommendations (United States Department of Agriculture, 2014). Food choice in general is a complex process that depends on culture and can be influenced by different factors that are personal, social, economic and emotional. As girls enter adolescence, they tend to engage in less physical activity then they did in late childhood (Beech, al., 2003). A lot is unknown about why physical activity declines among adolescent girls but, researchers have identified several factors that seem to contribute. For example, in adolescent girls, researchers have identified that they may be more likely than they were as younger children to view sports as a "male activity". Despite increasing trends in our culture towards celebrating women and girls, there is a strong pervasive stereotype that sports are not "feminine". Even though the United States sent more female athletes than male athletes to the 2012 Olympics, teenage boys are still significantly more likely than teenage girls to be involved in sports (Terzian, Andrews, & Moore, 2011).

Boyington, et al., (2008) conducted a study to explore cultural attitudes and perceptions toward body image, food, and physical activity among a sample of overweight African American girls. The authors found weight and body size preferences were primarily determined by the individual and her immediate circle and were less influenced by opinions of those outside of the social circle; food choices depended on

texture, taste, appearance, and context more than on nutritional value; engagement in recreational physical activity was influences by time constraints from school; and extracurricular activities and by neighborhood safety. The growing epidemic of childhood obesity has led to an increasing focus on strategies for prevention. However, little is known about attitudes and perceptions toward diet, and physical activity among American youth, and particularly among African American females and even less information on African American males. Savoca, et al., (2011) explored the activities of young African American men including high school athletes and non-athletes, meal patterns, and food choices during the course of a typical weekday. The authors found common elements emerged among all groups providing a contextual view of the participant's meal patterns and food choices such as sports team participation, college employment, school as a food source, non-student status, and eating dinner at home. The findings suggest dietary interventions for young African American males should take into consideration how these elements influence food choices. In comparison with this study, common elements include schools as a food source, sports team participation as well having dinner at home,

Research question 5

What are the average prices per unit for each of the MyPlate food categories from different types of food stores?

$H_0 5$: The average price of food choice per unit of each of the MyPlate food categories do not differ by type of food store.

*H*₁5**:** The average price of food choices per unit of each of the MyPlate food categories

do differ by type of food store.

There were different prices per unit for each of the MyPlate food categories from

different type of food stores. The store type with the lowest average price for MyPlate

categories except for the cost of diary was the convenience store. Average costs for all

stores from MyPlate food categories were fruits$ 2.15(SD= 1.30), vegetables costs were

$1.64 on average (SD= 0.78), for proteins $ 3.35(SD= 1.81), for grains $1.78(SD= 1.50)

and for diary $2.30(SD= 1.33). These five groups are suggested to improve health

outcomes for Americans. The results indicated average prices of food items were

different according to the type of food store in a low income neighborhood.

Food choices as reported by 42 store merchants were limited in variety at small

and convenience stores when compared to larger stores and supermarkets. While, fruits at

supermarkets costs more than at convenience stores and vegetables only slightly less than

large and small grocery stores. The absence of high price items as well as variety of foods

in a convenience store may have attributed to this difference. The recommended food

categories required to improve the health outcome of AA adolescent living in low income

neighborhoods usually are more expensive food items located in large stores and

supermarkets. McDermott and Stephens (2010) noted food cost represent a significant

proportion of annual income. Diets based heavily on convenience sources are less healthy

and more expensive than a well-planned menu from budget foods available from large

supermarket chains. Rising food cost in low income neighborhoods are problematic due

to price disparities between low nutrient high calorie food items and more expensive food choices such as fruits and vegetables.

The Myplate food guidance system recommends that people fill half their plate with fruits and vegetables. Specific serving recommendations vary by age, sex, and activity levels (My plate.Gov) (Dietary Guidelines for Americans, 2015). This study observed access to the most commonly eaten food types such as fresh produce, as well as whole grains, low-fat dairy and lean meat proteins are limited in small and convenience stores when compared to large stores or supermarkets. For example, apples, bananas, grapes, broccoli, spinach, brown rice, beans, fat-free milk and frozen fat-free yogurt were not available in these types of stores. Furthermore, I observed that store shelves for convenience stores as well as those in small stores were well stocked with high fat, high sugar, and high sodium and combination food items such as soda, candy, processed foods and salty snacks. Public health experts have identified sugar-sweetened beverages (SSB) as a major contributor to poor diet and rising obesity rates when compared to fruits and vegetables which improve health outcomes. Morenga, Mallard, and Mann (2012) examined associations between intake of dietary sugars and body weight in adults and children. The authors found the intake of sugar sweetened beverage is a determinant of body weight. Also, Kimmons, Gillespie, Seymour, Serdula, and Blanch (2009) found, that few American adolescents or adults reported consuming the recommended amounts of fruits and vegetables. This is important because the presence of grocery stores and fresh food retailers are associated with increased fruit and vegetable intake and healthier diets (Larson, Story, & Nelson, 2009).

Access to supermarkets, grocery stores, and specialty markets is important, in part, because they give consumers access to a variety of fruits and vegetables. Diets rich in fruits and vegetables offer a number of health benefits and have been linked to a lower prevalence of obesity or reduced weight gain. Lakkakula, Zanovec, Murphy, Silverman, and Tuuri (2011) examined the relationship between African American children's preference for fruits and vegetables and their weight status. The authors found, that children who reported a very low preference for fruits and vegetables were 5.5 times more likely to be categorized as at risk for being overweight than those who reported a high preference for fruits and vegetables. In this study, fruits prices were an average of $2.06 per unit. This is higher than prices for vegetables and grains, and fruits may not be affordable for some individuals living in low income neighborhood.

Most Americans, especially those with low income, consume far fewer fruits and vegetables than recommended by current dietary guidance. Lack of easy accessibility may be one reason for this level of consumption as fruits are somewhat expensive costing more than vegetables and grains. Residents with more access to supermarkets or a greater abundance of healthy foods in neighborhood food stores consume more fresh produce and other healthful items. Many nutritional professionals believe that all Americans regardless of income have access to a nutritious diet of healthful food items such as whole grains, lean meats, and fresh vegetables. In reality, food prices pose a barrier for many consumers who are trying to balance good nutrition with affordability Drewnowksi & Eichelsdoerfer, (2010). Without nearby access to healthy ingredients, families have a harder time meeting recommended dietary guidelines Let's move.gov. (2013).

Supermarket prices were found to be highest, while convenience stores had the lowest average price. However, the absence of a variety of items in a convenience store may have attributed to the difference.

Understanding the distribution of different food types available from neighborhood stores is essential to improving health outcome associated with childhood obesity among American-adolescents living in low income communities. A recent study by, Tuso, Ismail, Ha, and Bartoolotto (2013) explored the risk of overweight, and food groups and dietary patterns that indicate a plant-based diet seems to be a sensible approach for the prevention of obesity in children and adolescents. Healthy eating may be best achieved with a plant-based diet which we define as a regime that encourages whole, planet-based foods and discourages meats, dairy products and eggs as well as processed foods.

Average cost of all food types for supermarkets, convenience stores, small grocery stores, and large grocery stores at the surveyed supermarkets were $2.56 per unit with $0.50 as the lowest price, and $7.99 the highest price per unit of any surveyed food items. The recommended food types from each of the plate's five food groups were found at larger grocery stores as well as supermarkets. Food within the groups included fruits, fresh vegetables, whole grains, lean meats, fish, low-fat dairy products, which are more likely to be consumed by groups of higher socioeconomic status (SES) Darmon, & Drewnowski, (2008). Matthews, Wein, and Sabate (2011) explored the risk of child and adolescents overweight in relation to the type of food consumed. The authors found, the frequency of consumption of grains, nuts, and vegetables were inversely related to the

risk of being overweight and dairy increased the risk. The 2010 Dietary Guidelines for Americans and MyPlate emphasize the inclusion of a higher proportion of plant-based versus animal-based foods for optimal health. In addition the preliminary report of the Advisory Committee for the Dietary Guidelines for Americans 2015 encourages Americans to focus on eating a healthy diet one that focuses on foods and beverages that help prevent disease (DGA, 2015).

Unfortunately, this study found a neighborhood where AA adolescents living near school zones are without access to healthier food purveyors such as farmers markets or health food stores. Authors of a recent comprehensive review found that community residents who have better access to grocery stores and limited access to convenience stores tend to have lower levels of obesity (Larson, Story, & Nelson, 2009).This study is supported by Morland, Dies-Roux, & Wings, 2009) who found that the presence of supermarkets was associated with a lower prevalence of obesity and overweightness.

Limitations of the Study

The purpose of this study was to examine the impact of neighborhood stores on food choices made by low income AA adolescents. Limitations to this study include store merchants not answering survey questions on ethnic/specialty food and food quality as well as a lack of expertise to determine food quality. Also, there was some information on brand name given but not enough to complete statistical analysis. Therefore, descriptive analysis was used to analyze these data. Also, some research questions were modified to align with the data available for collection. For example primary data could not be collected from AA adolescents due to the reluctance of the school system to

approve this study on the population in a northern shore city in Essex County, New Jersey.

<div align="center">**Recommendation for Action**</div>

Beginning in year 2000, the New Jersey Department of Education began exploring means to expand the scope of the 2011 N.J. Student Survey. This survey was designed to monitor the impact of large-scale state on national initiatives to improve adolescent health, establish benchmarks for reducing adolescent risks and increasing pro social behavior, recognize program successes in influencing adolescent behaviors and provide teachers with a basis for allocating instrumental time in the health and physical education curriculum (NJDOE, 2011). This is important because most adolescents fall short of the 2008 Physical Activity Guidelines for Americans recommendation of aerobic physical activity each day, as only 18% of students 9-12 met this recommendation in 2007 (CDC, 2011). Also, in 2009, only 33% attended physical education classes (CDC, 2011). Kimmons, Gillespie, Seumour, Serdula, and Blanck (2009) conducted a study to determine the median fruit and vegetable consumption from all dietary sources among adolescents and adults meeting individual recommendations intake levels based on caloric requirements and consumption levels among various demographics. The authors found the largest contributors to overall fruit intake were orange juice. Potatoes dominated vegetable consumption particularly among adolescents in fried potatoes increase the median vegetable intake from 0.72 cup to 1.21 cups per day. Therefore, increasing consumption of nutritious foods will probably require multifaceted approaches that argument educational campaigns with policy and environmental strategies aimed at

the food system at large from farm to plate, including schools, worksites, and retail establishments.

This was important because according to the 2009 National Youth Risk Behavior Survey (YRBS), only 22% of students in grades 9-12 reported consuming fruits and vegetables five or more times per day (CDC, 2011). With the 2008 Physical Activity Guidelines for Americans, the U.S. Department of Health and Human Services (HHS) recommended that children and adolescents engage in at least 60 minutes of physical activity daily (U.S. Department of Health and Human Services, 2008). Despite national guidelines for physical activity, many young persons are not regularly physically active. Preventing the obesity epidemic requires a coordinated approach that uses policy and environmental change to transform communities into places that support and promote healthy lifestyle choices for all residents. To help communities in this effort, CDC initiated the Common Community Measures for Obesity Project (the Measures Project) (CDC, 2009). This report describes the expert panel process used to identify strategies to promote the availability of affordable healthy food and beverage choice, to encourage physical activity or limit sedentary activity among youth and adolescents and to encourage communities to organize for change (CDC, 2009).

Many healthy food retail interventions should focus on urban environments about how to increase food access in low income communities. A number of policy interventions can lead to improved access to healthy, affordable foods. Communities can bring supermarkets to underserved neighborhoods, help smaller groceries or corner store expand their stock of healthy and affordable food, and develop other retail outlets such as

farmers markets, public markets, community-supported agriculture, and mobile vendors. Such actions include helping grocery stores, small businesses, and other retailers provide healthy food options in lower income communities. Interventions should also include helping to improve supply chains to bring fruits, vegetables, and other healthy foods from agricultural areas to urban stores and markets (Let's move.org, 2013).

The study demonstrated the need for positive change at the community that can increase awareness of the problem of limited access to a food variety among AA adolescents living in a low income Essex County neighborhood. The findings will be disseminated at community meetings where newsletters will be distributed to share valuable information with stakeholders including, political leaders, local public health officials and residents. Presentations will be given at local public high schools as well as Walden University's graduate poster sessions at the Research Symposium as well as annual American Public Health Association meetings to learn and share information with other public health professionals.

<div align="center">

Recommendations for Further Research

</div>

Reducing childhood obesity remains a public health priority given its high prevalence and its association with increased risk of adult obesity and chronic diseases (CDC, 2014). Many adolescents fail to meet diet and physical activity recommendations, highlighting that physical activity and dietary behaviors do not occur in isolation. Future research should investigate how best to achieve positive health behaviors in adolescent boys and girls (Pearson, Charlotte, & Edwards, 2009).

Pratt, Stevens, and Daniels (2008) reviewed recommendations intended to assist investigators in the development of research agendas to advance the knowledge of effective childhood obesity prevention and treatment. The authors found that priorities for future research include (1) obesity- prevention intervention in young children that targets high-risk populations such as AA adolescents in low come neighborhoods (2) obesity treatment interventions including those that use behavioral approaches and (3) studies that test new models for delivering obesity prevention and treatment in the health system and primary care practices to change behavior of health practitioners and to translate/or disseminate evidence based therapies to primary care practices. These recommendations are intended to be useful to investigators and funding agencies in setting research agendas for childhood obesity prevention and treatment. A limited number of studies have been conducted that target obesity- related behaviors and health outcomes of AA adolescents. The most successful interventions for communities of color have been incorporated culturally targeted and culturally tailored intervention components using multi-systematic approaches. Further research is needed that focus on testing the efficacy of theoretically based approaches that integrate culturally appropriate program elements for improving obesity-related behavior and the health outcome of AA adolescents in low income neighborhoods (Wilson, 2009).

Implications for Social Change

This study demonstrated the need for policy change at the community that will benefit disadvantaged AA adolescents in low income neighborhoods and improve access to a variety of food choices for purchase that are nutritious and affordable. The causes of childhood obesity are multi-factorial including a lack of physical activity, unhealthy eating patterns that result in excess energy intake or a combination of the two. Also, genetics and socio-economic status, race/ethnicity, media marketing and energy consumption and the physical environments influence food choices and physical activity levels among high school students (Bishop, Middendorf, Babin, & Tilson, 2005). Currently, the high prevalence of adolescent obesity in the United States is attributed to population changes in physical activity, sedentary behaviors, and dietary behaviors.

Thus, unhealthy food consumption is a public health concern which affects AA adolescents and other disenfranchised populations. Sallis and Glanz (2006) noted that recent changes in the nutrition environment including greater reliance on convenience stores and fast foods results in a lack of access to fruits and vegetables and expanding portion sizes are widely believed to contribution to the epidemic of childhood obesity. But again conclusive evidence that changes in the nutrition environment will reduce rates of obesity does not yet exist. This research effort will help expand the public health paradigm by increasing understanding of food choices among AA adolescents living in low come neighborhoods.

Specifically, understanding how the food environment influences our weight can help policymakers identify ways to change the environment and in turn, reduce obesity

risk for everyone. In addition, it may help researchers address the higher rates of obesity found in low-come and racial/ ethnic minority groups in the U.S. environment and in turn decrease barriers that are often greater for people who have lower incomes, less education, and language barriers and traditional health diet education campaign often fail to reach them. Low income families face additional barriers to healthy eating that may contribute to the higher rates of obesity seen in low income groups. One road block is that healthy foods, such as vegetables, fruits, and whole grains, are more expensive than less healthful foods such as refined grains and sweets and may be too expensive for low income families. Also, in a fast paced society time can be a consideration within some urban families because it takes longer to prepare healthful meals than to buy convenience foods or fast food. But people in lower-income household's often single parents working full time and taking care of children, may have less time for meal preparation and often other household chores (The Harvard School of Public Health, 2010).

Educators across the United States are facilitating changes at the state, district, and school levels to improve student health. Collaborating in teams as part of the Action for Healthy Kids initiative, they are creating and distributing nutritional guidelines, educating policymakers, helping to develop school wellness policies, instituting changes in vending and other non cafeteria food sales, creating school health councils, and improving health education. The teams are successful because they are inclusive and grassroots, representing administrators, teachers, health professionals, community leaders, parents, and students (Satcher & Higginbotham, 2008).

Conclusion

There have been major public health advances that have effectively addressed the issue of childhood obesity at the level of the community. However, there are still gaps that need to close which give rise to continuing research efforts on food choices among disadvantaged populations. Record levels of obesity in children and adolescents are predictable conditions that promote high consumption of calorie dense, nutrient-poor foods and discourage physical activity. There are some food choices promoted in schools, and a variety of other conditions that undermine personal resources, individual responsibility, and parental authority (Browell, Schwartz, Puhl, Henderson, & Harris (2009).

In America today, millions of people leave their homes in a protracted and often futile search for healthy food for their families. In a low income neighborhood located in Essex County, New Jersey many walk out their front doors and see nothing but fast-food outlets and convenience stores selling high-fat, high-sugar processed foods (Bell & Standish, 2009). Healthy communities depend on food environments that offer all residents access to healthy food choices. Where people live should not dictate how well they can eat, but it often does (The American Public Health Association, 2008). Scientist and health professional agree the crisis of obesity and chronic illness with the dire economic needs of low income communities of color creates a perfect storm that harms public health. This storm threatens the financial viability of our health care system and undermines the future productivity of the nation (Bell, & Standish, 2009).

Without affordable fresh food options, especially fruit and vegetables, children and adolescents face fundamental challenges to making healthy food choices that are essential for nutritious, balanced diets. Currently, healthy versus unhealthy remains a major obstacle in low income neighborhoods due to lack of access, availability and cost. Communities across the country are seeking safe, accessible, and affordable places for children and their families to exercise and play. In low income communities, schools are often the only place to find safe and affordable recreation facilities. Unfortunately, these spaces are often locked due to concerns about resources, maintenance, security, and liability. The good news is that schools and other agencies are embracing shared use as a strategy to create more opportunities for physical activity and improved access to healthier food option for low income neighborhoods (Change Solutions, Organization, 2012).

Although childhood obesity is increasing in all ethnic racial groups, its prevalence is high in non-White populations (Caprio et. al. 2008). For residents living in low income disadvantaged neighborhoods, easy access to all food, rather than lack of access to specific food varieties maybe a more important factor in explaining the prevalence of obesity among AA adolescents. Many studies find a correlation between limited food access and lower intake of MyPlate recommended food groups fruits, vegetables, proteins, grain and diary. Data and methods used are not sufficiently robust to tangible action in the following key areas, well-being, policy promotion, and health equity and research translation (USDA, 2009).

Research has shown that living in an urban environment influences every aspect of health and well-being, including the food choices made by individuals. Mmari et al., (2014) explored the relationship between health and the physical environment. The authors found that while there was uniformity in how characteristics influence adolescents in the physical environment as well as perceived health outcomes. As the world continues to urbanize, there is a strong need to examine how the physical aspects of a living environment contribute to the health of adolescents. The lack of access to a variety of nutritious affordable foods for purchase from different types of stores in low income neighborhoods is believed to be a factor contributing to the obesity epidemic. Laws and polices promoting access to healthy food and limiting access to unhealthy food are critical tools in addressing the obesity epidemic. Federal, state and local legal policy initiatives can play an important role in increasing the availability and affordability of healthy food in a variety of settings, including schools and communities where adolescents make food choices (Public Health Law Center, 2012).

The impact of neighborhood design on residents' health has become a focus of research interest. Results from these studies have led the environmental justice movement to expand its concerns beyond the unequal distribution hazards to issues of public health such as obesity. Low income and racial/ethnic populations have substantial environmental challenges to overcome to make healthy choices and to maintain a healthy body weight through physical activities. The disproportionate distribution of food sources that contributes to the development of unhealthy behaviors in these communities and the consequent disease burden deeply affects not only individuals and families but also

society as a whole (Hilmers, Hilmers, & Dave, 2012).This is important because promising research findings are relevant only when they reach people they are designed to serve. Therefore, key scientific advances must be applied and evaluated, reflected in state and local health policies and widely adopted as community practices across the country (USDA, 2009).

Childhood obesity remains prevalent among AA adolescents with limited access to a variety of foods from stores in a low income neighborhood. The purpose of this study was to examine the impact of neighborhood stores on food choices made by AA adolescents. At the community, health risks, and resources are spatially and socially structured and despite numerous research efforts on economically disadvantaged neighborhoods relatively little is known about the mechanism by which neighborhood enviornments affect health. Health disparities must be decreased in our society so all citizens will have the opportunity to improve their quality of life (Finkelstein, Trogdon, Cohen & Diez, 2009). There is a need for continuing research on the population with the most prevalent rate of obesity who are faced with decreased life expectancy.

The determination of the health related quality of life of an individual is implicitly made against a cultural background that includes a set of values, standards, customs, and traditions associated with a particular society. The ability to measure the quality of life has the practical value of guiding policy makers to improve intervention efforts (National Institute of Dental and Craniofacial Research, 2008). Without converted strategic intervention, chronic disease and their risk factors can be expected to cause more harm and be more costly to society. We cannot effectively address escalating healthcare cost

without addressing the problem of chronic disease such as childhood obesity. To reduce

chronic disease across the nation, we must rethink our health care system. It is essential

to have a coordinated strategic prevention approach that promotes healthy behaviors such

as food choices and physical activities. Early detection and diagnosis of disease, supports

people of every age, and eliminates health disparities. With commonly based public

health effects that embrace prevention as a priority, we can become a healthier nation

(CDC, 2009).

References

Abramowitz, R. (2006) "Disney loses its appetite for happy meal tie- ins."

Los Angeles Times.

Adair, S. & Popkin, B. M. (2005). Are child eating patterns being transformed globally.

Journal Obesity Research, 13, 1281-1299 Retrieved from

http://www.ncbi.nlm.nih.gov/pubmed/16077000

African American Collaboration Research Network. (2008). Retrieved from

http://www.aacorn.org

Agricultural and Community Food Security Coalition. (2007). Retrieved from

http://www.foodsecurity.org/ua_home.html

Ahn, M. Juon, H. & Gittelsohn, J. (2003). Association of race/ethnicity, socioeconomic

status, acculturation and environmental factors with risk of overweight among

adolescents in California, 2003 *Preventing Disease Prevention Journal 5(3),*

A75.

Andreyeva, T., Blumenthal, D. M., Schwartz, M. B., Long, M. W., & Brownell, K.D.

(2008). Availability and prices of foods across stores and neighborhoods: the case

of new Haven, Connecticut. *Journal of Health Affairs 27(5),* 1381-8.

doi:10.1377/hithaff.*27.5.1381*

Ard, J. D., Fitzpatrick, S., Desmond, R. A., Sutton, B. S., Pisu, M. Allison, D. B.,

Baskin, M. L. (2007).The impact of cost on the availability of fruits and

vegetables in the homes of school children in Birmingham, Alabama. *American*

Journal of Public Health, 97(2), 367-372 doi: 10.2105/AJPH.2005.08

Aschengrau, A. & Seage, G. R. (2008). *Essentials of epidemiology in public health*. Sudbury, MA: Jones and Bartlett Publishers.

Ashe, M., Jernigan, D. Kline, R. & Galaz, R. (2003). Planning and the control of alcohol, tobacco, firearms and fast food restaurants. *The American Journal of Public Health, 93(9),* 1403-1408.

Austin, S.B., Melly, S. J., Sanchez, B. N., Patel, A. Buka, S. & Gortmaker, S. L., (2005).Clustering of fast-food-restaurant around schools: a novel application of spatial statistics to the study food environments. *American Journal of Public Health 95(9),* 1575-1581.

Awofeso, N. (2004).What's new about the "New public health." *American Journal of Public Health, 94*(5), 705-709.

Babbie, E. (2007*).The practice of social research* 11th Ed. Belmont, CA: Thomson Wadsworth Publishers.

Bailkey, M. (2007). Food and agriculture related policies and practices to benefit limited resources farmers. 1-24 *Community Food Security Coalition Issue Lab Research Center* Retrieved from www.issuelab.org/permalink/resource/2900

Baker, A. E., Kelly, C. Barnidge, E. Strayhorn, J. Schootman, M. Struthers, ...Griffith, D. (2006).The garden of eden: acknowledging the impact of race and class in efforts to decrease obesity rates. *American Journal of Public Health, 96(7),* 1170-1174. doi: 10.2105/AJPH.2004.049502

Baker, E. A., Schootman, M. Barnidge, E. & Kelly, C. (2006).The role of race and

poverty in access to foods that enable individuals to adhere to dietary guidelines.

Prevention Chronic Disease, 3(3), A76.

Ball, K. Timperio, A. F., & Crawford, D. A. (2006).Understanding environmental

influences nutrition & physical activity behaviors. *International Journal of*

Behavioral Nutrition and Physical Activity 3(33). Doi: 10.1186/1479-5868-3-33

Ball, K., MacFarlane, A., Crawford, D., Savige, G., Andrianopoulos, N., & Worsley,

A. (2009). Can social cognitive theory constructs explain socioeconomic variation

adolescents eating behavior: a mediation analysis? *Health Education Journal*

Review, *24*(3), 496-506. Doi; 10.1093/lerlcyn048.

Baranowski, T., Cullen, K.W., Nickolas, T., Thompson, D., & Baranowski, J. (2003).

Current health behavioral change models helpful in guiding prevention of weight

gain efforts. *Journal of Obesity Research*, *23S-43S.*

Bartholomew, L. K., Parcel, G. S., Kok, G. Gottlieb, N. H. (2006). *Planning Health*

Promotion Programs second edition*:* San Francisco, CA: Jossey-Bass Publishers.

Bates, H. (2006). Daily physical activity for children and youth: a review and synthesis of

the literature. *Alberta Education,* 1-72.

Beech, B. M., Klesges, R. C., Kumanyika, S. K., Murray, D. M., Klesges, L.

McClanahan ... Pree-Cary, J. (2003). Child-and parent targeted interventions: The

Memphis pilot study. *Ethnicity and Disease, 13(1),* S40-53.

Bell, J. & Standish, M., J. (2009) Building healthy communities through equitable food

    access. *Community Development Investment Review, 5(3).*

Bhattacharya, J. Currie, J. & Haider, S. (2004). Poverty, food, insecurity, and nutritional

    outcomes in children and adults. *Journal of Health Economics, 23(4),* 839-862.

Bishop, J. Middendorf, R. Babin, & T. Tilson, W. (2005). *ASPE research brief:*

    Childhood obesity The United States Department of Health. Retrieved from

    www.aspe.hhs.gov

Black, M. M., & Young-Hyman, D. (2006). Introduction to the special issue pediatric

    overweightness. *Journal of Pediatric Psychology, 32(1),* 1-5.

    doi:10.1093/jpepsy/jsl042jpepsy.oxfordjournal.org/content321/1.full

Block, J. P., Scribner, R., & DeSalvo, K. A. (2004).

    Fast food, race/ethnicity, and income. *American Journal of Preventive Medicine*

    27(3), 211-17.

Borradaile, K. E., Sherman, S. Veur, S. S., V. Mc Coy, T. Sandoval, B. & Nachmani, J.

    (2009).Snacking in children the role of urban corner stores *The Journal of*

    Pediatrics.24 (5), 1293-1298 doi 10.1542/peds.2009-0964

Boyington, J.A., Edwards, L. C., Piehl, M. Hutson, J. Langdon, D &

    McManus, S. (2008).Cultural attitudes toward weight, diet, and physical activity

    among overweight African American girls. *Journal Preventing Chronic*

    Disease.5 (2), A36 Retrieved from

    www.ncbi.nlm.nih.gov/pmc/articles/pmc2396970

Braweman, P. (2009).Obesity is a major risk for childhood disease

    Perspectives. *Obesity Research 6(3),* 1-7 Retrieved from

    http://www.cdc.gov/pcd/issues/

Broda, C. Leibtag, E., & Weinstein, D. E. (2009).The role of prices in measuring the

    poor's living standards. *Journal of Economic Perspective. 23(2),* 77-97 Retrieved

    from http://pubs.aeaweb.org/doi:pdfplus/10.1257/Sep.23.2.77

Brown, S.A., & Meyer, L.L. (2007). An ecological approach to high school student's

    school food choice. *Journal of Family and Consumer Sciences Education. Vol.*

    25(1) Spring/Summer Retrieved from

    www.natefacs,org/Pages/v25no1/v25no1/v25no1Brown_Landry-Meyer.pdf

Brownell, K.D., Schwartz, M.D., Puhl, R. M., Henderson, K., E. & Harris J., L. (2009).

    The need for bold action to prevent adolescent's obesity. *Journal of Adolescents*

    Health 45(3), S8-17 doi: hohelth.2009.03.004. Epub 2009 Jun 11 Retrieved from

    http://www.ncbi.nlm.nih.gov/pubmed/

Butts, J. & Rich, K. (2005*). Nursing Ethics across the curriculum and into practice.*

    Sudbury, MA: Jones & Barlett

Campbell, N. A., Reece, J. B., Mitchell, L., & G. (1999). Biology 5th Ed.

    Glenview, Illinois: Addison Longman, Inc. publishers

Cannuscio, C.C. Weiss, E, E., Asch, D. A. (2010).The contribution of urban food

    ways to health disparities. *Journal Urban Health 87(3),* 381-93 do1

    10.1004is11524-010-9441-9 Retrieved from www.ncbi.nlm.nih.gov

Caprio, S. Daniels, S. R., Drewnowski, A. Kaufman, F. R., Palinkas, L.A., &
Rosenbloom, A.L. & Schwimmer, J.B. (2008). Influence of race, ethnicity, and
culture on childhood obesity: implications for prevention and treatment a
consensus statement of shaping America's health and the obesity society.
American Diabetes Care 31(11), 2211-2221doi: 10.2337/dc08-9024 Retrieved
from www.ncbi.nlm.nih.gov/pmc/articles/pmc2571048/

Carroll-Scott, A. Gilstad-Hayden, K. Rosenthal, L. Peters, S. M., Mc Caslin, C. Joyce,
R.& Ickovics, J. C.(2013).Disentangling neighborhood contextual associations
with child body mass index, diet, and physical activity: the role of built,
socioeconomic and social enviornments. *Social Science Med.* 106.14 doi: 10.10
16lj.socscimed.2013.04003.

Cassady, D. Jetter, K. M., &Culp, J. (2007). Is the price a barrier to eating more fruits?
and vegetables for low income families? *Journal American Dietary Association
107(11),* 1909-15.

Centers for Disease Control and Prevention (2003) HIPP privacy rule and public health
Guidance from the U.S. Department of Health and Human Services Retrieved from
http://www.cdc.gov/mmwr/preview/mmwrhtm/m2e411al.htm

Centers for Disease Control and Prevention (2004) Retrieved from
www.cdc.gov/obesity/childhood/index.html

Centers for Disease Control and Prevention (2007) Retrieved from
www.cdc.gov/healthschools/obesity/facts.htm

Centers for Disease Control and Prevention (2008) Retrieved from www.cdc.gov/chronic disease/of-Prevention.pdf

Centers for Disease Control and Prevention (2009) Retrieved from www.cdc.gov/mmwr/pdf/ss/ss5905.pdf/

Centers for Disease Prevention and Control (2010) Nutrition. Retrieved from www.cdc.gov/obesity/childhood/defining.htm

Centers for Disease Prevention and Control (2010) Retrieved www.cdc.gov/mmwr/pdf/ss/ss6/104.pdf

Centers for Disease Prevention and Control (2011) Retrieved from www.cdc.gov/nchs/tutorials/NHANES/Survey/Design/VarianceEstimation/intro.htm

Centers for Disease Prevention and Control (2012) Retrieved from www.cdc.govhealthyschools/obesity/facts.htm

Centers for Disease Prevention and Control (2013) retrieved www.cdc.gov/obesity/data/index.html

Change solutions organization (2012) Retrieved from http://www changelabsolutions.org

Chan, R.S. M., & Woo, J. (2010).Prevention of overweight and obesity: How effective is the current public health approach. *International Journal Environmental Public health 7(3)765-783* do1:10.3390/7030765 Retrieved from www.ncbi.nih.gov/pmc/articlesPMC2872299

Charreire, H. Casey, R. Salize, P. Simon, C. Chaix, B. Banos, A.& Bardoriott..., D.Weber (2010). Measuring the food environment using geographical information systems. *Public Health Nutrition 13(11),* 1773-85 do1:10.101715136898001000753.

Chen, E. & Paterson, L. O. (2006). Neighborhood, family, and subjective socioeconomic Status: how do they relate to adolescent health? American *Psychological Association.25 (6),* 704-714 Retrieved from www.ncbi.nlm.nih.govpubmed17100499

Chen, S. E., R. J., Florax, J.G., M. & S., D. Synder,(2009).Obesity fast food and grocery stores evidence from Geo-referenced Micro data. *National Poverty Center,* 22 doi:10.1002/hec.2863 University of Michigan Retrieved from www.npc.umich/edu/news/events/food

Clarke, K. K., Freeland-Graves, J. Klohe-Lehaman, D. M., Bohman, T. M. (2007). Predictors of weight loss in low income mothers of young children: *Journal of Diet Association.107 (7*), 1146-54 retrieved from www.ncbi.nlm.nih.gov pubmed/17604743

Colabianchi, N. Dowda, M. Pfeiffer, K. A., Porter, D. E., Almeida, M. J.,& Pate, R. R. (2007).Towards an understanding of salient neighborhoods boundaries: adolescent reports of an easy walking distance and convenient driving distance. *International Journal of Behavior Nutrition and Physical Activity. 18(4),* 4-66 Retrieved from http://www.ijbhpa.org

Community food security coalition urban agriculture committee (2007) Retrieved from

http://www.foodsecurity.org/ua_home.html

Community Assessment Guide (2010) Retrieved from

http://www.cdc.gov/healthycommunities program/toolschange/pdf/

County of Essex (2008) Retrieved from http://www-countynj.org/

Creative Research Systems (1982) Sample Calculator Retrieved from

http://www.surveysystems.com/scale.htm

Creswell, J.W. (2009). *Qualitative, Quantitative, and Mixed Methods Approaches*.

Thousand Oaks, CA: Sage Publications

Cummins, S. & Macintyre, S. (2006). Food environments and obesity neighborhoods or

nation. *International journal of epidemiology 35(1*), 100-104.

doi:10.1093/ije/dy1276 Retrieved from www.ijeoxfordjournals.org

Daniels, S. Arnett, D. K., Eckel, R. H., Gidding, S., S. Hayman, L., L. Kumanyika, S. &

Robinson, T. N. (2005).Overweight in children and adolescents

pathophysiology, consequences, prevention and treatment. *Circulation/Journal of

American Heart Association 11(8),* 1999-2012 Retrieved from

http://circ.ahajournals.org/cgi/content/full/111/15/1999/

Darmon, N. & A. Drewnowski (2008). Does social class predict diet quality*? The

Journal of Clinical Nutrition 87(5),* 1107-17 Retrieved from

www.ajcn.nutrition.org

Daugherty, H.G., & Kammeyer, K.C.W. (1995). An Introduction to population 2nd

edition New York, New York: A division of Guilford publication, Inc.

Davis, B. & Carpenter, C. (2009). Proximity of fast-food restaurants to schools and

    adolescent's obesity. *American Public Health Association 99(3),* 505-510

    retrieved from www.ncbo.nlm.nih.gov/pc/articles/pmc2661452

Davis, R. Cook, D. & Cohen, L. (2005). A community resilience approach to reducing

    ethnic and racial disparities in health. *95(12),* 2168-2173 *The National Center for*

    Biotechnology Information. doi:10.2105/AJPH.2004.050146 Retrieved from

    www.ncbi.nlm.nih.govpubmed1449502

Davison, K. K., & Birch, L., L. (2001).Childhood overweight a contextual model and

    recommendation for future research. *Obesity Review.* August *2(31),* 159-171

    Retrieved from http://www.ncbi.nlm.nih,gov/PMC/Articles/PMC253932/7/4/10

Delva, J. P., M. O'Malley, & L. D. Johnson (2007). Availability of more-healthy and

    less healthy food choices in American schools a national study by grade.

    American Journal of Preventive Medicine. 33(4), S26-39 from

    www.nlm.nih.govpubmed17884570

Department of Agriculture (2014). Retrieved from http://www.usda.gov

Department of Agriculture (2015).Dietary Guidelines for Americans, (2015) *Office of*

Disease & Health Promotion

    Retrieved from www.health/gov/dietary guidelines/2015.asp

Diez-Roux, A.V. (2001). Investigating neighborhoods and area effects on health.

    America Journal of Health 91(11), 1783-1789 Retrieved

    from//www.ncbi.nlm.nih.govpubmed1168460

Ding, D. Sallis, J. F., Norman, G. J., Saelens, B. E., Harris, S. K., Kerr, J... Glanz, K.

    (2011). Community food environment, home food environment, and fruit and

    vegetable intake of children and adolescents. *Journal of Education Behavior*

    44(6), 634-8 doi:1016/j.jneb.2010.07.003.

     Retrieved from www.ncbi.nlm.nih.govpubmed21531177

Drewowski, A. & Darmon, N. (2005a). Food choices and diet costs: an economic

    analysis. *The Journal of Nutrition 135(4), 900-904* Retrieved from

    www.ncbi.nlm.nih.pubmed15795456

Drewnowski, A. & Darmon, N. (2005b) The economics of obesity: dietary energy

    density and energy cost. *American Journal Clinical Nutrition 82(1),* 265S-273S

    Retrieved from http://ajcn.org

Drewnowski, A. (2007).The real contribution of added sugars and fats to obesity.

    Epidemiology Review. 29(1), 160-171doi:10.1073/epirelmxm011

    Retrieved from http://www.ncbi.nlm.nih.gov/sites/entrez?db=PubMed&db

Drewnowski, A. & Eichelsdoer, P. (2009).Can low-income Americans afford a healthy

    diet? *Nutrition Today. 44(6*), 246-249 do1.10101097/NT.0b03e3181c29f79

    retrieved from www.ncbi.nlm.nih.pubmed120468762

Duncan, J. G., & Raudenbush, W. S. (1999). Assessing the effects of context in studies of

    child and youth development. *Education Psychology 34(1),* 24-41 doi:

    10.1207/s1532698epep334001_3

Eaton, D. K., Kann, S. Kinchen, S. Shanklin, J. Ross, J. Hawkin,...W. Wechsler

    (2008).Youth Risk Behavior Surveillance United States, 2007. *"Morbidity and*

    Mortality Weekly Report Surveillance 54(4), 1-13 Retrieved from www.cdc.gov

Ebel, B. Kersh, R. Brescoll, V. L., & Dixon, L. B. (2009). Calorie labeling and food

    choices a first look at the effects on low income people in New York City. *Health*

    Affairs 28(6), w1110-w1121 doi: 10.1377/hlthaff.28.6.w1110 Retrieved from

    http://content.healthaffairs.org/content/28/6/w110.abstract

Eisenhauser, E. (2002). In poor health: supermarkets redlining and urban nation. *Geo*

    Journal 53, 125-133 Retrieved from

    http://www.springer.cm/social/popualtion+studies/journals

Elbell, B. Gamfyi, J & Kersh, R. (2011). Child and adolescents fast-food choice and the

    influence of calorie labeling: a natural experiment. *International Journal of*

    Obesity 35(4), 493-500 Retrieved from www.ncbi.nlm.nih.govPMC3719868

Elder, J. P., Lytle, L. Sallis, J. F., Young, D. R., Stecker A. & Simons-Morton, D. (2007).

    A description of social-ecological framework used in the trail of activity for

    adolescents girls*. Health Education Research, 22(2),* 155-165 Retrieved from

    http://www.ncbi.nlm.nlh.gov/PMC/articles/2764407

Environmental Protection Agency (2009).Retrieved from www.epa.org

Farm Food Policy Project (2007) Retrieved from http://www.nemw.org/index.php/

Finkelstein, E. A., Trogdon, J. W., Cohen J.W., & Dietz, W. (2009). Annual medical

    spending attribute to obesity payer-and service-specific estimates. *Health Affairs*

    28(8), w822-w831 Retrieved from http://healthaffairs.org

Fisberg, M. Baur, L. Chen, W. Hoppin, A. Koletzko, B. Moreno, L ...Uary, R. (2004). Obesity in children and adolescents: a working group report of the second world congress of pediatric gastroenterology hematology and nutrition. *Journal of Pediatric Gastroenterology and Nutrition 39*, S678-S687 Retrieved from http://jounral.lww.com

Fisher, L. E., & Zhaohui, F. (2005). The Florida Youth Physical Activity and Nutrition Survey, 2005. *The Florida Department of Health* Retrieved from http://www.doh.state.fl.us/family/hchp/YPAN/S2005.pdf.

Franco, M. Diez-Roux, A.V., Nettleton, J. A., Lazo, M. Brancati, F. Caballero, & B. Glass, T. (2009). Availability of healthy foods and dietary patterns: The multi-ethnic study of atherosclerosis. *The American Journal of Clinical Nutrition* 90, 897- 904 retrieved from http://www.ajcn.org/cgi/content/full/8913/897

Franco, M. A., V. Diez-Rouz, T. A, Glass, B.Caballero, & F., L.Brancati (2008). Neighborhood characteristics and availability of healthy foods in Baltimore *35(6),* 561-567.*Journal of Preventive Medicine* retrieved from www.hsph.edu

Flournoy, R. (2006). Healthy foods, strong communities*. The National Housing Institute* Issue *147* Retrieved fromhttp://www.nhi.org/online/issues/147/healthyfoods.html

Florida Department of Health (2001). Retrieved from http://doh.state.fl.us/disease.ctrllepu/chronic.disease/YRBS.

Franzen, L. Smith, C. (2010). Food system access, shopping behavior, and influences on

purchasing groceries in adult. Hmong living in Minnesota. *American Journal of*

Health Promotion 24(6), 396-4098 doi: 10.4278/ajhp.080710-QUAL-121

Retrieved from www.ncbi.nlm.nih.gov.pubmed20594097

Freedman, A. (2007). Fast food oppression through poor nutrition. *Pediatric*

Medical Journal 95(6), California Law Review, 2221(2007).

Freedman, D. A. (2009). Local food environments: they are all stocked differently.

American Journal Community Psychology 44(3-4), 382-93 Retrieved from

http://riskfactor.cancer.gov/mfe/search-publications

Freedman, D. A., & Bell, B. A. (2009). Access to healthful foods among an urban food

insecure food population: perception versus reality. *Journal of Urban Health*

86(6), 825-38 Retrieved from http://riskfactor.cancer.gov/mfe/search-publications

French, S. A. (2003). Pricing effects on food choices: *National Center of Biotechnology*

Information: Journal of Nutrition 133(3), 841s-843s Retrieved from

www.nlm.hih.govpubmed/12612165

French, S. A., Neumark-Sztainer, J.A., Fulkerson, & P. Hannan, (2001). Fast food

restaurant use among adolescents, associations with nutrient intake, food choices

and   behavioral and psychosocial variables: *International Journal of Obesity*

25(12), 1833-1833. Retrieved from www.nature.com/jo/journal/v25/n12/full

French, S. A., Story, M. & Jeffrey, R.W. (2001). Environmental influences eating and physical activity. *Annual Review of Public Health 1(22),* 309-335 Retrieved from www.ncbi.nlm.nih.govpubmed1127424

Ford, P. B., & Dzewaltowski, D. A. (2008). Disparities in obesity prevalence due to variation in the retail food environments: three testable hypotheses. *Nutrition Review* April *66(4),* 216-218 doi:10.111/j.1753-4887.2008.00026x. Retrieved from www.ncbi.nlm.nih.govpubmed18366535

Galster, G. (2002). An economic efficiency analysis of decentralizing poverty populations. *Journal of Housing Economics. (11),* 303-329 Retrieved from http://www.journals.elsevier.com/

Galvez, M.P., Morland, K. Raines, C. Kobil, J. Siskind, J. Godbold, J.& Brenner, B. (2008). Race and food store availability in an inner-city neighborhood. *Public Health Nutrition. 16(24),* 631- 6, *retrieved from www.ncbi.nlm.nih.gov/pubmed 17935646*

Gebauser, H. & Laska, M. N. (2011). Convenience stores surrounding urban schools: an assessment of healthy food availability, advertising and product placement. *Journal of Urban Health 88(4),* 616-622 *do1:10.1007/s11524 do1:10.1007/s11524-011-9576-3*

Gebel, K. Bauman, A. Owen, N. Foster, S. & B. Giles-Corti (2008). The built environment and walking. *Heart Foundation 27(87)* 1300-36 Retrieved from http://www.fbe.unsw,edu.au/cf/hbep/

Ghirardelli, A. Quinn, V. & Sugerman, S. (2011). Reliability of a retail food store survey and development of an accompanying retail scoring system to communicate survey findings and identify vendors for healthful food and marketing initiatives. *Journal of Nutrition Education and Behavior 43*, S104-112 Retrieved from http://www.neb.org/

Gibbs, L. E.,Waters, L. St Leger, J, Green, L. Gold, & B. Swinburn(2011). Settings-based theoretical framework for obesity prevention community interventions and research Australian *and New Zealand Journal of Public Health 35(2),* 104-106 Retrieved from www.onlinelibrarywiley.com

Glanz, K. Sallis, J. F., Saelens, B. E., & Frank, L. D. (2005). Healthy nutrition environments: concepts and measures. *American Journal Health Promotion 19(5),* 330- 333. Retrieved from http://healthpromotionjournal.com/

Glanz, K. (2009). Measuring food environments a historical perspective. *American Journal of Preventive Medicine 36(4),* S93-S98 Retrieved from http://apma.org

Glanz, K. Sallis, J., F.Sallis, B., E. Saelens, & D., F. Lawrence (2005). Healthy nutrition enviornments: concepts and measures: *American Journal of Health Promotion: 19(5),* 330-333 Retrieved from www.ajhpconents.org

Gordon-Larsen, P. Nelson, M., C. Page, P. Popkin, B. M. (2006). Inequality in the built environment underlies key health disparities in physical activity and obesity: *Pediatrics 117(2),* 417-24 Retrieved from www.ncbi.nlm.nih.gov/pubmed16452361

Goran, M. I., Ball, G., D. Cruz, M., L. (2003).Obesity and risk of Type 2 diabetes and cardiovascular disease in children and adolescents. *Journal Clinical Endocrinol Metabolism 88(4),* 1417-27 Retrieved from www.ncbi.nlm.nih.govpubmed/12679416

Grannis, R. (1998). The importance of trivial streets: residential streets and residential Segregation. *The American Journal of Sociology 103(6),* 1530-64 Retrieved from http://ejournals.ebsco.com/login.asp.cookiesenabled=true

Gray, J. A., (2001). Evidence-based Healthcare: *How to make health policy and management decisi*ons 2nd edition New York: NY. Churchill Livingstone publishers*.*

Green, W. L., & Ottoson, J., M. (1999). *Community and population health* 8th edition Sudbury, MA*:* Mc Graw-Hill publishers

Grier, S. A., Mensinger, J. Kumanyika, S. Huang, S. H., & Stettler, N. (2007). Fast food marketing and children's fast food consumption: exploring parents influence in an ethnically diverse sample: *Journal of Public* Retrieved from www.aacorn.org Policy *26(2),* 221-235

Grier, S. A., Kumanyika, S. K. (2008).The context for choice: health implications. The *American Public Health Journal 98(9),* 1616-1621 Retrieved from www.ncbi.nlm.nih.gov/PMC/articles PMC2509618/

Glanz, K. D., Sallis, J. F., Saelens, B. E., & Frank, L. D. (2005). Healthy nutrition environmental: concepts and measures. *American Journal Health Promotion 19(5),* 330- 330. Retrieved from http://healthpromotionjournal.com/

Glanz, K. D. Sallis, J. F., Saelens, B. E., & Frank, L. D. (2007). Nutrition environment

measures survey in stores *Journal of Preventive Medicine 32(4),* 282-289

Retrieved from www.ncbi.nlm.nih.gov

Gustafson, A. A., Sharkey J, C. D., Samuel-Hodge, J. Jones-Smith, M. C., Folds, J. Cai,

J. & A. S. Ammerman (2011). Perceived and objective measures of the

association with weight and diet among low-income women in North Carolina.

Public Health Nutrition 14(6), 1032.8 Retrieved from

http://www.ncbi.nlm.nih.gov

Guthrie, J. & C. Newman (2013). Eating better at school: can new policies improve

children's food choices? *Economic Research Services:* U. S. Department of

Agriculture Retrieved from www.usda.gov

Haas, S. J., Lee, B. L., Kaplan, C. P., Sonneborn, Phillips, K. A., Liang, S. (2003). The

association of race, socioeconomic status, and health insurance status with the

prevalence of overweight among children and adolescents. *The American Journal*

of Public Health 93(12), 2105-10 from www.ajphpublications.org

Harding, D. J. (2002).Counter factual models of neighborhood effects: the effect of

neighborhood poverty on high school dropout and teenage pregnancy.

Unpublished paper. *Department of Sociology, Harvard University*

Health and Human Services (2007) Retrieved from www.hhs.org

Health communication unit (1999).*The center for health promotion.* Retrieved from

http://thcu.calindex.htm

HealthyPeople.gov (2010). Retrieved from http://www.healthypeople.com

Hilmers, A. Hilmers, D.C., & J. Dave (2012). Neighborhood disparities in access to

   health foods and their effects on environmental justice. *American Journal of*

   Public Health 102(9), 2105-10 Retrieved from www.ajph.publications.org

Hosler, A. D. & Dharssi, A. (2011). Reliability of a survey tool for measuring consumer

   nutrition environment in urban food stores. *Journal Health Management 17(5),*

   E1-8 Retrieved from   http://healthservices.cancer.gov/tools/instruments.html

Huang, T. Drewnowski, A. Kumanyika, S. & Glass, T. A. (2009). A systems-oriented

   Multi-level frameworks for addressing obesity in the 21st century. *Disease Public*

   Health Research 6(3), A82 Retrieved from

   www.ncbi.nlm.nihgovpubmed19527584

Huff, M. R., & Michael V. Kline, (1999). *Promoting health in multicultural populations*

   handbook practitioners. Thousand Oaks, CA: Sage Publications

Iannotti, R. J., & J. Wang (2013).Trends in physical activity sedentary behavior, diet and

   Bmi among US adolescents: *Pediatrics 132(4),* doi: 1542/peds.2013-1488

   Retrieved from www.ncbi.nih.gov

Institute of Medicine Fact sheet (2004). Advertising, marketing and the media: improving

    messages fact sheet. *Institute of Medicine* Retrieved 12/18/14 from

   www.iom.edu

International Food Policy Research Institute (2008) Retrieved from http://www.ifpri.org

Institute of Medicine (IOM) (2006) Retrieved from http://www.iom.org

Jackson, M. Y., Proulx, J.M., & S. Pelican, (1991). Obesity Prevention. *53(6),* 1625S-30: *The American Journal of Clinical Nutrition* Retrieved from www.ncbi.nlm.nihpubmed2031497

Jago, R. Baranowski, T. Baranowski, Baranowski, J. Cullen, K. & Thompson, D. (2007). Distance to food stores and adolescent male fruit and vegetable consumption: mediation effects. *International Journal Behavioral Physical Act. 4(35),* do1:10.1186/1479-5868-4-35

Jencks, C. & Mayer, S. E. (1990). Consequences of growing up in a poor neighborhood. *National Academies Advisers to the Nation on Science, Engineering, and Medicine* 111-186 Retrieved from http://www.nap.org

Jetter, K. & D. Cassady (2006). The availability and cost of healthier food alternatives. *The American Journal of Preventive Medicine (30)1*, 96-7 Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/16414422

Ji Li, A. &Wang Y. (2003). Tracking of dietary intake patterns in association with baseline characteristics of urban low-income adolescent African Americans. *138(1),* 94-100 *The Journal of Nutrition Epidemiology* Retrieved from www.nlm.nih,govpubmed181156410

Johnson-Taylor, Wendy, L., & Everhardt, J. E. (2006). Modifiable environmental behavioral determinants of overweightness an ecological model of behavior. *Obesity Research Journal 14(6),* 929-66 Retrieved from www.ncbi.nlm.nihpubmed16861599

Jones, J. S., & Frongillo, E. A. (2006). Food security and subsequent weight gain in

women. *Public Health Nutrition 10(2*), 145-151 do1:1017/s13689800724673

Retrieved from www.nbci.nlm.nih.govpubmed17261223

Karr, J.R., (2000). Ecological health and societal well-being. *Washington Public Health

Journal. 101(5),* 101 Retrieved from http://www.ajph.org

Kaiser, L. L., Townsend, M. S., Melgar-Quinonez, H. R., M. L., Fujii, & P. B.,

Crawford (2004).Choice of instrument influences relations between food security

and obesity in Latino women. *American Journal of Clinical Nutrition 80(5),*

1372-8 Retrieved from www.ncbi.nlm.nih.gov/pubmed15531689

Kimbro, R.T., Brooks-Gunn, J. & Manahan, S. (2007). Racial & ethnic differentials in

overweight and obesity among 3-Year-old children. *The American Journal of

Public Health 97(2),* 298-305 dol.2105/AJPH.2005.080812 Retrieved from

www.ajph.org

Keller, L. O., Schaffer, M. Strohschein, S. A., & Lia-Hoagberg, B. (2004). Population-

based public health Interventions innovations in practice, teaching and

management. Part II. *Public health Nursing, 21(5),* 469-489 Retrieved from

http://onlinelibarary.willey.com/journal/10.1111/(ISSN)1525-1446/issues

Koplan, J, P., Liverman, C. T., & Kraak, V. A. (2005). Preventing childhood obesity:

Health in the balance. *National Academies Press, Environment Health

Perspectives 113(10)* Retrieved from http://www.ncbi.nlm.nih.gov

Kumanyika, S. K., (2005). Hard questions and hard choices: preventing disease

prevention paradigm *2(4),* 4 1-9 *Preventing chronic disease prevention public*

health research and practice Retrieved www.cdc.gov/pcd/issues/2005

Kumanyika, S. & S., Grier, (2006*).*Targeting interventions and low –income populations.

Future of Children Journal 16(1), 187-207 Retrieved from

www.ncbi.nlm.nih.gov.pubmed16532664

Kumanyika, S. White-Glover, M.C., Gary, T.L., Prewitt, E. P., Odoms-Young, A. M.

Banks-Wallace... Hughes-Halbert, C. (2007). Expanding the obesity research

Paradigm african-american communities *Preventing chronic disease public*

health, research practice and policy (*160),* 25-31 Retrieved from

http://.archpediatrics.com

Kumanyika, S. K., Obarzanek, R. D., Stettler, N. Bell, R. Field, A. E., Fortman, S. P., &

Franklin, B. A. (2008). Population-based prevention of obesity. *Circulation*

118:428-464 do1:101161/ Retrieved from http://circ.ahajournals.org/

Kumcu, A. P. Kaufman, (2011). Food spending adjustments during recessionary times.

United States Department of Agriculture. Retrieved from www.ers.usda.gov

Kunkel, D. McKinley, C. Wright, P. (2003). The impact of industry self-regulation on the

nutritional quality of foods advertised on television for children. 1-41 *Research*

Gate Retrieved from www.researchgate.netpublication/267954457

Laraia, B. A., Siega-Riz, A. M., Kaufman, J.S., & Jones, S. J. (2004). Proximity of

supermarkets is positively associated with diet*. National Library of Medicine*

39(5), 869-75 Retrieved from www.ncbi.nlm.nih.pubmed15475018

Larkin, M. (2003).Can cities be designed to fight obesity? *Lancet Journals 362*(9389)

    Retrieved from www.lancet.comjournals

Larson, N. Story, M. T., & Nelson, M (2009). Neighborhood environments disparities in

    access to healthy foods in the US. *The American Journal of Preventive Medicine*

    36(1), 74-81 Retrieved fromwww.sciencedirect.com/science/So749379708008386

Laska, M. N., O. Hearst, M. Forsyth, A. Pasch, K.E., & Lithe, L. (2010). Neighborhood

    food environments are they associated with adolescent dietary intake, food

    purchases and weight status. *Public Health Journal 13(11),* 1757-1763

    doi: 10.1017/S1368980010001564 Retrieved from

    www.ncbi.nlm.nih.govpubmed20529405

Laska, M. N., Borradaile, K. E., Tester, J. Foster, G. D., & Gittelson, J. (2010).Healthy

    food Availability in small urban food stores: a comparison of four cities. *Public*

    Health Nutrition 13(7), 1031-8 Retrieved from http://riskfactor.cancer.gov/mfe/

Lechner, L. J., Burg, J.,Vries, H. D., Assema, P. V., & Mudde, A. (1998). Stages of

    changes for fruit, vegetable and fat intake: consequences of misconception*.*

    Health Practice Education 13(1), 1-11 Doi:10.1093/her/13.1.1 Retrieved from

    www.her.oxford.org

Let's move.gov. (2011). Retrieved from http://letsmove.gov

Lewis, L.B., Sloane, D. C., Nascimento, L. M., Diamant, A. L., Guinyard, J.J., Yancey,

    ... Flynn, G. (2005). African Americans access to healthy food

    options in south Los Angeles restaurants. *95(4),* 668-673 *American Journal of*

    Public Health Retrieved from http://www.ajph.org

Leung, M. M., Agaronov, A. Grytsenko, & K. M., Yeh, (2012). Intervening to reduce

    sedentary behaviors and childhood obesity among school-age youth: a systematic

    review of randomized trials. *Journal of Obesity* doi:.org/10.1155/2012/685430

    retrieved 11/11/14 from www.hindawi.com/journals/jobe/2012/685430

Liben, L.S., & Bigler, R. S., (2002).The developmental course of gender differentiation

    conceptualizing, measuring and evaluating constructs and pathways. *67(2),* 1-147

    The National Center for Biotechnology Information Retrieved from

    www.ncbi..nlm.nih.govpubmed12465575

Lopez, P. R., & Hynes, H. P. (2006). Obesity physical activity and the urban physical

    Environmental Health. 18(5), 5-25 doi: 10.118611476-069x-5-25 Retrieved from

    http://www.ncbi.nlm.gov/pubmed/16981988

Longacre, M. R., Drake, K. M., Mackenzie, T. A., Gibson, L. Owens, P. Titus, L. J.,

    Dalton, M. A. (2012). Fast food enviornments and family fast-food intake in non

    metropolitan areas. *42(6),* 579-587: *American Journal Preventive Medicine* doi:

    10.10.1016lj.amepre.2012.02.017 Retrieved from

    www.ncbi.nlm.nih.gov/pubmed3369570/

Lovasi, G.S., Neckerman, K. M., Quinn, J. W., Weiss, C.C., Rundle, A. (2009). Effect of

    individual or neighborhood disadvantaged on the association between walkability

    and body mass index. *American Journal of Public Health 99(2),* 279-284 doi:

    10.2105/AJPH.2008.138230 Retrieved from

    www.nbci.nlm.nih.gov.pubmed2622783/

Lucan, S.C., Karpyn A., & Sherman, S. (2010). Storing empty calories and chronic

disease risk: snack-food products, nutritive content, and manufactures in

Philadelphia corner stores. *Journal of Urban Health 87(3),* 394-409 Retrieved

from www.ncbi.nlm.nih.gov/pubmed/20405225

Lumen, J. Appugliese, D. H. J., Cabra, R. H., Bradley, R. H., & Zukerman, B. (2006).

Neighborhood safety and overweight status in children. *Arch Pediatric Adolescent*

Medicine 160(1), 25-31 Retrieved from www.ncbi.nlm.nih.govpubmed16389207

Lupton, R. (2001). Places Apart? The initial report of CASE's area study. CASEreport

14, London, CASE*, London School of Economics.* Retrieved from

http://www.2./se.ac.uk/home.aspx

Lupton, R. & A. Power (2002). Social exclusion and understanding neighborhoods. The

initial report of CASE's area study. CASEreport 23, London, CASE, *London*

School of Economics. Retrieved from http://www.s./se.ac.uk/home.aspx

Maibach, Edward W., & Roxanne Louiselle Parrott, eds. *Designing health messages:*

Approaches from communication theory and public health practice. Thousand

Oaks, CA: Sage Publications, 1995.

Mac Ready, N. (2010).Children with higher lower risk self-control at lower risk for being

overweight teens. *Archives of Pediatrics Adolescents Medicine 164*, 631-635

Retrieved from http://archpediama_assnorg/misc/ford

Mc Clain, A.D., Pentz, M. A., Selena, T. Nsuyen-Rodriquez, H. Shin, N. R., Riggs, & D. Spruijt-Metz (2010). Measuring the meanings of eating in minority youth. *12(4),* 277-283 doi: 101016lj.eatbeh.2011.07.010 Retrieved from www.ncbi.nlm.nih.govpubmed32088231

Mc Comick, M., C. Escobar, G. J., Zheng, Z. Richardson, D. K. (2008). Factors influencing satisfaction with neonatal care among the families of moderately premature infants. *12(6),* 1111-8 Retrieved from www.ncbi.nlm.nih.gov pubmed/176047

Mc Dermott, A. J. & Stephens, M.B. (2010).Cost of eating: whole foods versus convenience foods in a low income model. *Family Medicine 42(4),* 280-4 April 2010 Retrieved from www.stfm.org

Mc Kenzie, J. R., Pinger; J. Kotecki (2005). *An introduction to community health.* 5th edition Sudbury, MA: Jones and Bartlett

Mc Kinnon, R. A., Reedy, J. Morrissette, A. Lytle L., A.& Yaroch, A. L.(2009). Measures of the food environments a compilation of the literature 1990-2007. *American Journal of Public Medicine 36(4),* S182-8 Retrieved fromwww.ncbi.nlm.nih.gov/pubmed

Mc Leory, K., Bibeau, D. Steckler, A., Glanz, K. (1998). An ecological perspective on health promotion programs. *Health Education Quarterly 15(4),* 351-77 Retrieved from www.unboundmedicine/ebm/journal/Health_education_quarterly

Mmari, K., H. Brahmbhatt, S. Delany-Moretlwe, C. Lou, R. Acharga, A. Sangurawa, (2014). How do adolescents perceive their communities: a qualitative study that explores the relationship between health and the physical environment. *BMC Public Health Journal* 14:349. Doi: 10.1186/1471-2458-14-349 retrieved from www.biomedcentral.com

Moore, V. L., Diez-Roux, A. V., Nettleton, J. A., & Jacobs, D. R.(2008). Associations of the local food environment with diet quality comparison of assessments based on surveys and geographic information systems: the multi-ethnic study of atherosclerosis. *American Journal of Epidemiology 81(7),* 917-924 Retrieved from www.ncbi.nlm.nih.gov

Moore, L.Saniorski, A., D. & Moore, S., N. (2013). A socio-ecological perspective on behavioral interventions to influence food choice in schools: alternative, complementary or synergistic. *Public Health Nutrition 16(6),* 1000-1005 Retrieved from www.ncbi.nlm.nih.govPMC/articles/PMC3663083

Morenga, T. Mallard, S. & Mann, J. (2012). Dietary sugars and body weight, systematic review and meta-analyses of randomized controlled trials and cohort studies. 2013:346 doi: http://dx.dol.org/10.1136/bmj.e7492 Published January 15 2013 *The National Library of Medicine* Retrieved fromwww.ncbi.nlm.nih.gov

Morgan, G.A., Leech, N. L., Gloekner, G. W., & Barrett, K. C. (2007). *SPSS for statistics: introductory Use and interpretation (3rd Ed.)* Mahwah, NJ: Lawrence Erlbaum Associates, Publishers

Morland, K., Diez-Roux, A. V., Wing, S. (2006). Supermarkets other food stores and

    obesity. *American Journey of Preventive Medicine 30(4),* 333-339 Retrieved

    http://www.ajpmon/ine.org/

National Heart and Lung Blood Institute (2007).The working group report on future

    research directions in childhood obesity prevention and treatment. Retrieved

    fromwww.nhlbi,nih.gov/meeting/workshops/child_obesity/index.htm

National American Industry Classification System (2012)

    Characteristics and availability of healthy foods in Baltimore*: The American*

    Journal of Public *Health* Retrieved from www.census.gov

National Business Coalition on Health (2010). Retrieved From http://www.nbch.org

National Cancer Institute (2009) Retrieved from http://www.healthservices.cancer.gov

National Institute of Craniofacial Research (2008) Retrieved from www.nldr.nih.gov

National Newspaper Publishing Association (2005) Retrieved from www.nnpa.org

NewarkChange.org (2011) Retrieved from http://newarkchange.org

Neumark-Sztainer, D., M. Story, Hannan P., J. Perry, C. L., & Irving, L. M. (2002).

    Weight-related concerns and behaviors among overweight and non overweight

    adolescents. *Arch Pediatric Adolescents Medicine. 156,* 171-178 Retrieved from

    http://archpedi.ama.org

Nies, M. A., Mc Ewn, M. (2014). *Community Health Nursing 6th Edition*

    St Louis, Missouri: Elsevier Saunders Publishers

Nuss, H. Freeland-Graves, J. Clarke K, Klohe-Lehman, D. Milani, T. J. (2007). Greater

nutrition knowledge is associated with lower 1 year postpartum weight retention

in low income women. *Journal American Diet Association 107(10),* 1801-6

Retrieved from www.ncbi.nlm.nih.gov/pubmed117904941

Office of Minority Health Retrieved from http://www.omh.org

Oelschlaeger, A. (2007). Public policy related to the increased incidence of childhood

obesity –a need for change. 1-5 *Obesity Epidemic Public Policy* Retrieved from

www.researchgate.net/researcher

Ogden, C.L., Carrol, M.D., Kit, B. K., Flegal, K. M. (2014). Prevalence of childhood and

adult obesity in the United States. 2011-2012 *The Journal of the American*

Medical Association 311(8), 806-14 Retrieved from U.S. National Library of

Medicine www.ncbi.nlm.nih.gov/pubmed/ 24570244

Ogden, C. L., Carroll, M. D.,Curtin, L. R.,Mc Dowell, M. A., Tabak, C. J., & Flegal,

K. M. (2006). Prevalence of overweight and obesity in the United States 1999-

2004. The *Journal of the American Medical Association 295(13),* 1549-1555

Retrieved from http://ama.org

Ogden, C. L, Carroll, Curtin, L. R., & Flegal, K. M. (2007). Prevalence of high body

mass index in U.S.-children and adolescents 2007-2008.*JAMA 303(3),* 242-9.

Retrieved from http://jama.org doi:10.2105/AJPH.2004.04215

Ogden, C. L., Carroll, L. R., Curtin, M. M., Lamb K., M. Flegal (2010).Prevalence of

high Body mass index in U.S.children and adolescents 2007-2008. *Journal of the*

American Medical Association 303(3), 242-249 Retrieved from www.//jama.org

Ohri-Vachaspati, & Leviton, L. C. (2010). Measuring food enviornments: a guide to

available instruments. *American Journal of Health Promotion 24(6),* 410-425

Retrieved from http://ajph.contents.org

Oxford Dictionary (2009) Retrieved from

 http://oxforddictionies.com/definitins/enviornments?region=us

Pallant, J. (2010). SPSS Survival Manual (4th Ed.).

New York: New York McGraw-Hill publishers

Park, S. Sappenfield, W. M., Huang, Y. Sherry, B. & Benbsyl, D. M. (2010).The impact

of the availability of school vending machines on eating behavior during lunch:

the youth physical activity and nutrition survey. *Journal American Diet*

Association. 110(10) 1532.6 doi: 10.1016ljada.2010.07.003 Retrieved

www.ncbi.nlm.nih.gov/pubmed/20869493

Park, (2003).The Florida youth survey. Retrieved from

 /www/riskfactor.cancer.gov/mfe/search_publications/search_refs?study

Paschal, A. M., Lewis-Moss, R. K., Sly, J. White, B. J. (2010). Addressing health

disparities among African Americans: using the Stages of change model to

document attitudes and decisions about nutrition and physical activity. *Journal*

Community Health 35(1), 10-7 from www.ncbi.nlm.nih.gov/pubmed/19856086

8/4/11

Patrick, H. & T. Nickolas, (2005). A review of family and social determinates of

children's eating patterns and diet quality. *Journal of the College of Nutrition*

24(2), 83-92 Retrieved from /www.jocn.org

Pawlak, R. & Colby, S. (2009). Benefits, barriers, self-efficacy and knowledge regarding

    healthy foods; perception of African Americans living in eastern North Carolina.

    Nutrition Research Practice. 3(1), 56-63 doi: 10.4162/nrp.2009.3.1.5

Pena, M. M., Dixon, B, & Taveras, E.M. (2012). Are you talking to me? The importance

    of ethnicity and culture in childhood obesity prevention and management.

    Childhood Obesity Journal. 8(1), 23-27 Retrieved 9/3/14 from

    www.ncbi.nlm.nih.gov

Perez, A. D., Hoelscher. H. S., Brown, & S.H., Kelder, (2007). Differences in food

    consumption and meal patterns in Texas school children by grade. *Prevention*

    Chronic Journal 4(2), A32 Retrieved 11/27/14 from

    www.ncbi.nlm.nih.govpubmed17362614

Perdue, W.C., Stone, L. A., L. Gostin, L. G., & LLD (Hon) (2003).The built environment

    and its relationship to the public's health: the legal framework. *American Journal*

    of Public Health 93(9), 1390-1394 Retrieved fromwww.ajph.org

Pickett, K., E. & Pearl, M. (2001). Multilevel analyses of neighborhood socioeconomic

    context and health outcome a critical review. Feb *55(2),* 111-11 *Journal*

    Epidemiology Community Health. Retrieved from www.ncbi.nlm.nih.govpubmed

Popkin, B. M., Duffey, K., & Gordon-Larsen, R. (2005). Environmental influences on

    food choices physical activity and energy balance. *Physiology and Behavior*

    86:603-613 do1:10.1016/j.physbeh.2005.08.051

Poston, II W. S., & Foreyt, J. P. (1999). Obesity is an environmental issue. *The Atherosclerosis Journal 146(2),* 201-9 Retrieved from www.atherosclerosis-jounral.com/article/S0021-9150

Powell, L. M., Auld, M.C., Chaloupka, F. J., O' Malley, P. M., & Johnston, L., D. (2007b).Associations between access to food stores and adolescents body mass index. *American Journal Preventive Medicine 33(4),* S301-7 Retrieved www.ncbi.mlm.nih.gov/pubmed/17884578

Powell, L.M., Han, E. & Chaloupka, F. J. (2010).Economic contextual factors, food consumption, and obesity among U.S. adolescents. *Journal of Nutrition.140*, 1175-1180 doi: 10.39 45/jn.109.11526. Retrieved fromwww.jn.nutrition.org

Powell, L., M. Auld, M. C., Chaloupka, F. J., O'Malley, P.M., & Johnston, L.D. (2007a) Access to fast food and food prices: relationship with fruit and vegetable ` consumption and overweight among adolescents. *Advances in Health Economics and Health Services Research 17*:23-48 Retrieved from www.rti.org/page.cfm/Health_Research

Powell, L. M., & Chaloupka, F. J. (2009). Food prices and obesity: evidence and policy implications for taxes and subsidies. *Arch Journal Pediatrics for adolescents Medicine 7(1),* 229-57 Retrieved from www.ncbi.nlm.nlm.nih.gov/pubmed/19298422

Powell, L.M., Han, E. & Chaloupka F., J. (2010). Economic contextual factors, food consumption, and obesity among U.S. adolescents. *The Journal of Nutrition 140(6),* 1175-1180 Retrieved from www.jn.nutrition.org

Pratt, C. A., Stevens, J. & Daniels, S. (2008). Childhood obesity prevention and treatment

    recommendations for future. *American Journal of Prevention 35(3),* 249-52

    doi; 10.1016lj.amepre.2008.05.025. Retrieved from

    www.ncbi.nlm.nih.govpubmed18617353

Public Health Law Network (2007). Retrieved from

    www.publichealthlawnetwork.org

Public Health Law Network (2011). Retrieved from

    www.publichealthlawnetwork,org

Public Health Law Network (2012). Access to healthy food Retrieved from

    www.publichealthlawcenter.org

Public School Review public, elementary, middle and high schools (2009) Retrieved

    from www.publicschoolreview.com/

Public Health Law and Policy (2009). The healthy corner store: the state of the

    movement Retrieved from www.healthycornerstores.org

Ranjit Evans, M. H., Byrd-Williams, C. Evans, A. E., & Hoelscher, D. M. (2010).

    Dietary and activity correlates of sugar-sweetened beverage consumption among

    adolescents. *Pediatrics, 126(4),* e754-e761 Retrieved

    fromwww.pediatrics.aappublication.org

Riscia, P. M., (2005). Prevention of overweight and obesity: focus on children and

    adolescents. *1(5) Medscape Education*. Retrieved From

    www.medscape.org/viewarticle/498943

Robert Wood Johnson Foundation (2007) retrieved from www.rwjf.org

Robert Wood Johnson Foundation (2010). Retrieved from http://www.rwj.org

Robinson, T. (2008). Applying the socio-ecological model to improving fruit and vegetable intake among low-income African-Americans. *Journal of Community Health 1(33)*6395-406 doi: 10.1007/s10900-008-9109-5

Robinson, N. Thomas, (1998). Does television cause childhood obesity? *JAMA* 279 959-960 March 1998 Retrieved from http://ama.ama-assn.org/cgi/reprint/279/12/

Roux, A. V., & Mair, C. (2010). Neighborhoods and health. *Annals Of The New York Academy Of Sciences. 1186* 125-145 doi: 10.111/j.1749-D6632.2009.05333.x Retrieved from www.ncbi.nlm.nih,govpubmed20201871

Rudestam, K. E., & Newton, R. R. (2007). *Surviving your dissertation: a comprehensive guide to content and process 3rd edition.* Sudbury, Thousand Oaks: Sage publications

Saane, N., V.Sluiter, J. H., Verbeek, A.M., & Frings-Dresen, M. H., W. (2003). Reliability and validity of instruments measurements job satisfaction: a systematic review. *Occupation Medicine* 53*a*: 191-200 do1:10.10.1093/occMed/kqg038

Sallis, J. F., & K. Glanz, (2006).The role of built environment in physical activity eating and obesity in children: *The Future of Children. 16(1),* 89-108 Retrieved from www.http://muse.jhu.edu

Sallis, J. F., & Glanz, K. (2009).Physical activity and food environments: solutions to the obesity epidemic. *United States Library of Medicine, 87(1),* 123-54 Retrieved from www.ncbi.nlm.nih.gov/pubmed/19298418

Salvy S. J., de la Haye, K. Bowker, J., C. Hermans, R., C. J. (2012). Influence of peers

and friends on children's and adolescents eating behaviors. *Journal of*

Physiological Behavior.106 (3), 369-378 Retrieved from

www.ncbi.nlm.nih.gov/pmc/articles/PMC3372499/

Sampson, J., R. Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "neighborhood

effects" social process and new directions in research. *Annual Review* 28*,* 443-78

doi:10.1146/annurev.soc.28.110601.141114

Savoca, R., M. Martine, T., L. Morton, T., B. Johnson, L. T., Bell, R., E. Aronson, & D.

C., Wallace, (2011). Meal patterns and food choices of young African-American

men: understanding eating within the context of daily life. *Journal of the*

American Dietetic Association 111(9) Retrieved from www.andjrnl.org

Schlosser, E. (2001 April). *Fast Food Nation*: *The Dark Side of the All American Meal*

published by Allen Lane the Penguin Press 26, 1-368

Schneiderman, N. Speers, M. A., Silva, & J. M. (2001). *Integrating behavioral and*

social sciences with public health. American Psychological Association*.*

Washington, D.C. 40.405 doi: 10.1037/10388-000

Schwartz, S. & W., J. Peterson (2010). Adolescent Obesity in the United States. Fact

Sheet National *Center for Children in Poverty* 1-4 Retrieved 12/18/14 from

www.nccp.org

Schreiner, B. (2005). Promoting lifestyle and behavioral change in overweight and

adolescents with type 2 diabetes. *Diabetes Spectrum American Diabetes*

Association 19(1), 9-12 doi:10.22337/diaspect.18.1.9

Sebastian, R. S., Wilkinson-Enns, C., & Goldman, J. D. (2009). US adolescents and my pyramid association between fast-food consumption and lower likelihood of meeting recommendation. *Journal of the American Dietetic Association 109(2),* 226-235 Retrieved from http://www.jada.org

Seider, K., Petty, P. D. (2004).Obesity and the role of food marketing: a policy analysis of issues and remedies. *Journal of Public Policy and Marketing 23(2),* 153-169 Retrieved from http://www.marketingpower.com

Sharkey, J. R., Horel, S. Han, D. & Huber, J. C. (2009). Association between neighborhoods need and spatial access to food stores and fast food restaurants in need of colonias. *International* Journal *of Health Geographics 8(9)* Retrieved from http://ij,healthgeograhics.com

Siegel, M. & Lotenberg, C. D. (2007). *Marketing Public Health: strategies to promote social Change 2nd edition* Sudbury, MA: Jones and Bartlett publishers

Singleton, R. A., & Straits, B. C. (2005). *Approaches to social research 4th edition* New York*,* NY: Oxford university press publisher

Skalland, B. (2011). An alternative to the response rate for measuring a survey's realization of the target population. *75(1)* 89-88 *The Oxford Journal Public Opinion* Q doi:10.1093/p09/nfg072 Retrieved from www.poq.oxfordjournals.org

Smith, M. L., T.S., Sunil, C. Salazar, S. Rafique, & M. Ory, (2013). Disparities of food availability and affordability within convenience stores in Bexar County, Texas. *Journal Environ Public Health.* doi:10.10.1155/2013/782756 Retrieved from from www.ncbi.nlm.nih.govpubmed23935645

Smith, L. P., Ng, S.W., & B. M., Popkin (2013).Trends in U.S. home food preparation

and consumption: analysis of national nutrition surveys and time use studies from

1965-1966 to 2007-2008. *Journal Clinical Nutrition* April 11: 12:45

doi:10.11.86/1475-2891-12-45 Retrieved

fromwww.cbi.nlm.nih.gov/PMC3639863

Swinburn, B.A., I. Carerson, J. Seidell, C W.P., & James, T. (2004). Diet, nutrition

and the prevention of excess weight gain and obesity. *Public Health Nutrition:*

7(1A), 123-146 Retrieved 9/1/14 from www.who.org

Small, M.L., & Newman, K. (2001).Urban poverty after the truly disadvantaged the

rediscovery of the family, the neighborhood, and culture. *The Annual Review*

Sociology (27), 23-45 doi: 10.1146/annurev.soc.27.1.20

Srinivasan, S. O,' Fallon, L.R., & Dearry, A. (2003). Creating healthy communities,

healthy homes healthy people: initiating a research agenda on the built

environment and Public health. *The American Journal of Public Health 93(9),*

1448-50 Retrieved from www.ajph.org

St. Onge, M. P., Keller, K. L., & Heymsfield, S. B. (2003). Changes in childhood food

consumption patterns in light of increasing body weights. *American Journal of*

Clinical Nutrition 78(6), 1068-1073 Retrieved from

www.ajch.org/content/78/6/1068

Stokols, D. (2000). Translating social ecological theory into guidelines for community

health promotion. *American Journal of Health Promotion 10(4),* 228-298

Retrieved from http://wwwajhp.org

Story, M. Kaphingst, K. M., Robinson-Obrien, & R. Glanz, K. (2008). Creating healthy

food and eating environments: policy and environmental approaches. *Annual*

Review of Public Health 29, 253-272

Doi: 10.1146/annurev.pubhealth.29.020907.090926

Story, M. D., Neumark, Sztainer, S. French, (2002). Individual and environmental

influences of adolescents eating behavior.*The Journal of American Diabetics*

102(3), S40-S51Retrieved from http://adajournal.org/article/S0002-8223

Story, M. Nanney, M., S. Schwartz, M. B. (2009).Schools and obesity prevention

creating school enviornments and policies to promote healthy eating and

physical activity. *The Milbank Journal 87(1),* 71-100 Retrieved from

www.ncbi.nlm.nih.gov

Strum, R. (2008). Disparities in the food environment surrounding U.S. middle and high

schools. *Public Health Journal 122(7),* 681-991 Retrieved from

http://www.public healthjrnal.com/articles/S0033-3506 (07)00298-31abstract

Taveras, E., M. Berkey, C.S., Rifas-Shiman, S.L., Ludwig, D.S., Rockett, H.R., H.

Field...Gillman, M.W. (2005). Association of consumption of fried food away

from home with body mass index and diet quality in older children and

adolescents. The *Journal of Pediatrics 116(4),* do1:10.1542/pads Retrieved

from http://pediatrics/aappublications.org

Taveras, E. M., Sandora, T., J. Mei-Chiung, S. Ross-Degnan, D. Goldman, D. A., Gillman, M. W. (2006).The association of television and video viewing with fast food intake by preschool-age children. *Obesity a Research Journal 14*, 2034-2041; doi.10.1038/oby.2006.233

Taylor, W. C., Poston, W. S., Jones, L. & Kraft, M. K. (2006). Environmental justice obesity physical activity and health. *Journal of Physical Activity and Health (3)1*, S20-S29 Retrieved from http://journals.humankinetics.com/jpah

Terzian, M.A., Andrews, K.M., & Moore, K.A. (2011). Preventing multiple risky behaviors among adolescents: seven strategies. *Child Trends* Research-to Results publication September 2011 Retrieved from www.childtrends.org

Tester, J. M., Yen, I. H., Pallis, L. & Laraia, C. (2011). Healthy food available and participation in WIC (Special supplemental nutrition program for women, infants, and children) in food stores around lower-and higher income elementary schools. *Public Health Nutrition 14(6),* 960-4 Retrieved from http://riskfactor.cancer.gov

Trochim, W. & Donnelly, J. P, (2007).*The research methods knowledge base 3rd edition*. Mason, OH: Thomson Publishing Co.

Treuhaft, S. & Karpyn, A. (2009).The grocery gap: who has access to healthy food and why it matters. *Policy Link*. Retrieved from www.policylink.org

Tusco, P.J., Ismail, M.H., B. P., & Bartolotto, C. (2013). Nutritional update for Physician's plant-based diets *The Permanente Journal 66(66)* Retrieved from www.ncbi.nlm.nih.gov

The Harvard School of Public Health (2010). Retrieved from

http://http://www.hsph.harvard.edu

The American Public Health Association (2008). Food, Justice and Health Equity a

Healthy *Farms webinar Series*: *Healthy food Action.* Retrieved from

www.apha.org

The New Jersey Department of Education (2011) Retrieved from www.njdoe.org

The National Youth Behavioral System (2009) (2010) Retrieved from

www.cdc.yrbss.org

The Robert Wood Johnson Foundation (2007). Retrieved from www.rwjf.org

The U.S. Department of Health and Human Services (2005). Retrieved from

www.hhs.gov

United States Department of Agriculture (2014) Myplate.gov Retrieved

from www.choosemyplate.gov

United States Department of Agriculture (2007) Retrieved from http://usda.gov.gov

United States Census Bureau Retrieved from http://uscensus.gov

United States Department of Agriculture (2008) Retrieved

fromhttp://www.ers.usda.gov/publications/err-economic-research-

report/err83.aspx

United States Department of Agriculture (2009). Retrieved

fromhttp://www.ers.usda.gov/publications/err-economic-research-

report/err/08.aspx

U.S Department of Health and Human Services a (2005) b (2007) Retrieved from

http://www.hhs.gov

United States Department of Agricultural (USDA) (2010) Retrieved from

www.usda.gov/ups/portal/usda/usdahome

United States Department of Health and Human Services (2010).Retrieved from

http://www.hhs.gov/

Vlahov, D. & S. Galea, (2002). Urbanization, urbanicity, and health. *Journal of Urban*

Health. Dec 79 (4 Suppl 1): S1-S12 Retrieved from

www.ncbi.nlm.nih.gov/pmc/C3456615

Vlahov, D., Freudenberg, N. Proietti, F. Ompad, D. Quinn, A. Nandi, V. & Galea, S.

(2007).Urban as a Determinant of Health. *Journal Urban Health 84*(1), 16-26

doi: 10.1007/s 11524-007-9169-3 Retrieved

Fromwww.ncbi.nlm.nih.gov/pmc/articles/PMC189/649/

Wallack, L. Dorfman, D. Jernigan, Themba, M. (1993): *Media advocacy and public*

*Health.*Thousand Oaks, CA: Sage Publications Inc.

Wallack, L. Woodruff, K. Dorfman L., & Diaz, I. (1999). *News for A change*: An

Advocate's guide to working with the media. Thousand Oaks, CA: Sage

Publications

Washington, H. (2006): *Medical apartheid the dark history of medical experimentation*

on black Americans from colonial times to the present. New York, NY*:*

Doubleday publishers

Wilson, W. J. (1987). The truly disadvantaged the inner city, the underclass, and public policy. *The Black Well City Reader*. Chicago Press printed in the United States

Wrigley, N. Warm, D. & Margettes, B. (2003). Deprivation and food-retail access. *Urban Studies (39),* 2083-2100 Retrieved from http://usj.sagepub.com

Williams, D. & Collins, (2001). Racial residential segregation: a fundamental cause of racial disparities in health: *Public Health Reports 116(5),* 440-416 Retrieved fromhttp://www.ncbi.nlm.nih.gov/PMC1497358

Wieting, J. M. (2008).Cause and effect in childhood obesity solutions for a national epidemic: *The Journal of the American Osteopathic Association 108(10),* 545-552 *Retrieved* from www.jaoa.osteopathic.org

World Health Organization (2005) a (2007) b Retrieved from http://www.who.org

World Health Organization (2010) Retrieved from http://www/who.org

Wyatt, S. B., Winters, K. P., & Dubbert, P. M. (2006).Overweight and obesity prevalence, consequences and causes of a growing public health problem. *American Journal Medicine 33(4),* 166-74 Retrieved from http://ncbi.nlm.nih.gov/pubmed/16617231/

Yancey, A. S., Kumanyika, N. Ponce, W. McCarthy, J. Fielding, J. Leslie, J. Akbar, (2004). Population-based interventions engaging communities of color in healthy eating and active living: *Review 1(1) Prevention Chronic Disease Public Health* Retrieved from *Research and Policy* www.cdc.pcp/issues/2004/Jan/03-

Yale Rudd Center (2010) for *Food Policy and Obesity*: Reports and Briefs Retrieved from www.yaleruddcenter.org

Youth Risk Behavior Surveillance System Retrieved from

http://www.cdc.gov/HealthyYouth/Yrbs

Zenk, S. N., Schultz, A. J., James, S. A., Boa, S. & Wilson, M. L. (2005). Neighborhood

poverty and the spatial accessibility of supermarkets in metropolitan Detroit.

American Journal Health 95(4), 660-667 Retrieved from

www.ncbi.nlm.nih.govpubmed1578127

Appendix A: The Hmong Food Survey

Date: _____   Day of the Week: _____

Store Name**:** _____

Store Address**:** _____

_____

(City/Neighborhood)   (Zip Code)

Store ID No._____   Store Phone

No._____

Store Type: Square Footage of Store: _____

- o Supermarket   Convenience
- o Large Grocery   Gas/Grocery
- o Small Grocery   Ethnic/Specialty
- o Farmers Market   Other

READ THE FOLLOWING TO THE STORE MANAGER PRIOR TO CONDUCTING THE STORE SURVEY:

"Hi my name is Lisa Franzen/Dr. Chery Smith and I am a graduate student/professor at the University of Minnesota. I am doing a market survey of grocery stores in the Minneapolis/St. Paul, Minnesota areas that are frequently visited by Hmong, or it ethnically specific to Hmong, on the availability of food items and their prices. Foods selected for this survey looks at store type, location, and food items (brand, weight, price, origin, fresh/frozen, and quality). The information I am collecting will help create a profile of food availability and costs. The information collected will be linked to any specific store. Participation in this study is voluntary; your decision to grant/deny me permission to collect information from your store will not affect your current or future relations with the University of Minnesota.

To The Data Collector:

Please complete the following tables by walking through the store and recording the price and weight of the least expensive item for each food listed. The table includes the unit of measure that should be selected for each food. For example, potatoes are measured in pounds; eggs are measured by the dozen. It is important that the prices recorded are for specific food item in the table with no substitutions. If a food item is unavailable on the day you visit the store, but are usually in stock, check with the manager for the normal price. If a food is not ever in stock, mark the pricing box with and NA (for "not available"). If a food is on sale, place an "S" next to the price

FRUITS-FRESH NUMBER OF DIFFERENT TYPES OF FRESH FRUITS AVAILABLE_____

                          Apples, any variety

                          Fresh/

                          Fresh

                          Frozen

                          Quality

                          (Bagged or loose) Per pound

                          Avocado Per pound

                          Bananas Per pound

Bananas, Thai Per pound
Choyote Per pound
Cherries Per pound
Coconut Per pound
Durian Per pound
Grapefruit Per pound
Grapes (green or red) per pound
Guava Per pound
Jackfruit Per pound
Kiwi Per pound
Lemons Per pound
Limes Per pound
Longans Per pound
Lychees Per pound

Food Item Brand/ Variety/ Cut Item Weight/ Unit (desired) Item Weight/ Unit (actual) Price (lowest cost) Origin 1=Shipped 2=Local Item 1=Sustainable 2=Organic Fresh/ Fresh Frozen Quality 1=Not ripe 2=Ripe 3=Spoiled

Mango Per pound
Melon, bitter per pound
Melons (cantaloupe) per pound
Melons (watermelon) per pound
Melons (honeydew) per pound
Nectarines Per pound
Oranges, any variety
(Bagged or loose) Per pound
Papaya Per pound
Passion Fruit Per pound
Peaches Per pound
Pears Per pound
Pears, Asian Per pound
Pineapple Per pound
Plantains Per pound
Plums Per pound
Rambutan Per pound
Strawberries per 12 oz.
Tamarind, sweet per pound

VEGETABLES – FRESH NUMBER OF DIFFERENT
Asparagus Per bunch
Bamboo Per pound
Basil Per pound
Bean Sprouts Per pound
Beets Per pound

Bok choy per bunch
Broccoli, bunch per pound
Cabbage, head per pound
Carrots, unpeeled (bagged
Or loose) per pound
Cauliflower, bunch per pound
Celery, bunch per pound
Cilantro Per pound
Cilantro, Hmong Per pound
Collard greens per pound
Corn, cob per pound
Cucumber Each

Food Item Brand/ Variety/ Cut Item Weight/ Unit (desired) Item Weight/ Unit (actual) Price (lowest cost) Origin 1=Shipped 2=Local Item 1=Sustainable 2=Organic Fresh/ Fresh Frozen Quality 1=Not ripe 2=Ripe 3=Spoiled

Eggplant (any variety) per pound
Green Beans Per pound
Green pepper each
Garlic, fresh each
Ginger, fresh each
Lemon Grass Each
Lettuce, leaf
(Green or red) Per pound
Mint Per pound
Mushrooms Per pound
Napa Per pound
Okra Per pound
Onions, yellow
(Bagged or loose) Per pound
Onions, green per pound

Onions, green Hmong Per pound
Peas, snow per pound
Peas, sugar snap per pound
Peppers, Thai chili per pound

Food Item Brand/ Variety/ Cut Item Weight/ Unit (desired) Item Weight/ Unit (actual) Price (lowest cost) Origin 1=Shipped 2=Local Item 1=Sustainable 2=Organic Fresh/ Fresh Frozen Quality 1=Not ripe 2=Ripe 3=Spoiled

Potatoes (any variety) 5 pound bag
Pumpkin Per pound
Radish Per pound
Shallots Per pound
Spinach Per pound
Sweet potatoes per pound
Squash (seasonal) per pound
Taro (all sizes) per pound
Tomatoes (any variety) per pound
Watercress Per pound
Yams (any variety) per pound
Yuca Per pound
Yuchoy Per pound
Zucchini Per pound

DAIRY PRODUCTS, FRESH

Cheese (any variety) per pound
Cheese, cottage (any
Variety)
16 ounce
Carton
Milk, 1% low fat 1 gallon
Milk, 2% 1 gallon
Milk, buttermilk per fluid
Ounce
Milk, coconut 1 gallon
Milk, evaporated per 12
Ounces
Milk, skim 1 gallon
Milk, sweetened
Condensed
Per 12
Ounces
Milk, whole 1 gallon
Milk, Vitamin D 1 gallon
Ice cream, prepackaged per ½ gallon
Soymilk Per ½ gallon
Yogurt, natural, fruit
Flavored

Per 8 ounce individual serving

MEAT AND MEAT ALTERNATIVES, FRESH NUMBER OF DIFFERENT TYPES OF FRESH
MEATS AVAILABLE: _____ Food Item Brand/ Variety/ Cut Item Weight/ Unit (desired) Item

Weight/ Unit (actual) Price (lowest cost) Origin 1=Shipped 2=Local Item 1=Sustainable 2=Organic Fresh/
Fresh Frozen Quality 1=Not ripe 2=Ripe 3=Spoiled Anchovy Per pound
Anchovy Per pound
Beans, dried per pound
Bacon Per pound
Beef, bone per pound
Beef, eye round per pound
Beef, feet per pound
Beef, ground, lean per pound
Beef, knuckle per pound
Beef, liver per pound
Beef, oxtails per pound
Beef, rib eye per pound
Beef, shank per pound
Beef, short rib per pound
Beef, skin per pound
Beef, smoked per pound

Food Item Brand/ Variety/ Cut Item Weight/ Unit (desired) Item Weight/ Unit (actual)
Price (lowest cost) Origin 1=Shipped 2=Local Item 1=Sustainable 2=Organic Fresh/
Fresh Frozen Quality 1=Not ripe 2=Ripe 3=Spoiled

Beef, stomach per pound
Beef, tendon per pound
Beef, tongue per pound
Beef, tripe per pound
Chicken, breasts per pound
Chicken, drumsticks per pound
Chicken, feet per pound
Chicken, fryer, cut-up or
Whole Per pound
Chicken, gizzards per pound
Chicken, thighs per pound
Chicken, wings per pound
Clams Per pound
Cornish game hens per pound
Crab Per pound
Crab, snow per pound
Duck, eggs per pound

Duck, feet per pound
Duck, whole per pound

Food Item Brand/ Variety/ Cut Item Weight/ Unit (desired) Item Weight/ Unit (actual) Price (lowest cost) Origin 1=Shipped 2=Local Item 1=Sustainable 2=Organic Fresh/ Fresh Frozen Quality 1=Not ripe 2=Ripe 3=Spoiled

Duck, wings per pound
Eggs, grade a, large 1 dozen
Eel Per pound
Fish, bass per pound
Fish, broad head per pound
Fish, catfish per pound
Fish, cod per pound
Fish, cuttlefish per pound
Fish, dace per pound
Fish, dried (shrimp,
Anchovies, squid,
Cuttlefish)
Per pound
Fish, goby per pound
Fish, mackerel per pound
Fish, milk per pound
Fish, mud per pound
Fish, perch per pound
Fish, red snapper per pound
Fish, red tail per pound

Food Item Brand/ Variety/ Cut Item Weight/ Unit (desired) Item Weight/ Unit (actual) Price (lowest cost) Origin 1=Shipped 2=Local Item 1=Sustainable 2=Organic Fresh/ Fresh Frozen Quality 1=Not ripe 2=Ripe 3=Spoiled

Fish, salmon per pound
Fish, silver barb per pound
Fish, smelt per pound
Fish, snakehead per pound
Fish, sole per pound
Fish, starfish per pound
Fish, tilapia per pound
Fish, trout per pound
Fish, yellow croaker per pound
Frog Per pound
Lobster Per pound

Meat balls (beef, pork, or
Fish) Per pkg.
Mussels Per pound
Octopus Per pound
Oyster Per pound
Peanuts Per pound
Peanut Butter Per pound
Pheasant Per pound
Pork, bone per pound
Pork, chop per pound
Pork, ears per pound
Pork, feet per pound
Pork, ground per pound
Pork, ham per pound
Pork, hock per pound
Pork, loin per pound
Pork, neck bone per pound
Pork, sausage per pound
Pork, shoulder roast per pound
Pork, skin per pound
Pork, smoked per pound
Pork, snout per pound
Pork, spare ribs per pound
Pork, stomach per pound
Pork, tail per pound
Pork, tenderloin per pound
Pork, tongue per pound
Pork, tripe per pound
Quail Per pound
Quail, eggs per pound
Sardines Per pound
Scallops Per pound
Shrimp Per pound
Snail Per pound
Soybeans Per pound
Squid Per pound
Tofu Per ounce
Tuna Per 6 ounce
Turkey/ham (packaged
Luncheon meat) per pound
Turkey, breast per pound
Turkey, gizzards per pound
Turkey, ground per pound
Turkey, leg per pound
Turkey, whole per pound
Turkey, wings per pound

GRAIN FOODS Different Types of Grains Available

Bean thread per pound
Bread, white per pound
Bread, whole wheat per pound
Cereal, Kix Per ounce
Cereal, Cheerios Per ounce
Cereal, Special K Per ounce
Noodles, Chinese Per pound
Noodles, chow mein per pound
Noodles, dried per pound
Noodles, egg per pound
Noodles, lai fun per pound
Noodles, lo mein per pound
Noodles, macaroni per pound
Noodles, Oriental Per pound
Noodles, spaghetti per pound
Noodles, Vietnamese Per pound
Rice, black glutinous per pound

Rice, brown per pound
Rice, flakes per pound
Rice, long grain per pound
Rice, jasmine per pound
Rice, sticks per pound
Rice, sushi per pound
Rice, sweet per pound
Rice, vermicelli per pound

COMBINATION FOODS NUMBER OF DIFFERENT TYPES OF FOODS AVAILABLE

Buns (leeks, Cha Shu,
Custard, sausage, leek &
Pork)
Per pkg
Cakes (red bean,
Pineapple, banana, rice,
Green tea, pork, taro)
Per pkg
Dumplings Per pkg
Egg rolls per pkg
Packaged Soups per 8 ounce
Potstickers Per pkg

OTHER

Chips (Doritos, Cheetohs) 12.5 oz. bag
Dug Dae per pound
Juicy Juice Per ounce
Mang Da Na Per pound
Sauce, Soy Per ounce
Sauce, Oyster Per ounce
Sauce, Fish Per ounce
Soda, Coke Per 12-pack
Soda, Diet Coke Per 12-pack
Soda, Fanta Per 12-pack
Soda, Pepsi Per 12-pack
Soda, Diet Pepsi Per 12-pack
Soda, Seven Up Per 12-pack
Soda, Sprite Per 12-pack
Silk worms per pound
Sugar, granulated per pound

This survey was developed at the University of Minnesota by Dr. Chery Smith and her graduate student Lisa Franzen-Castle. Dr. Lisa Franzen-Castle is currently an assistant professor at the University of Nebraska-Lincoln.

Appendix B: The New Jersey Student Health Survey 2011
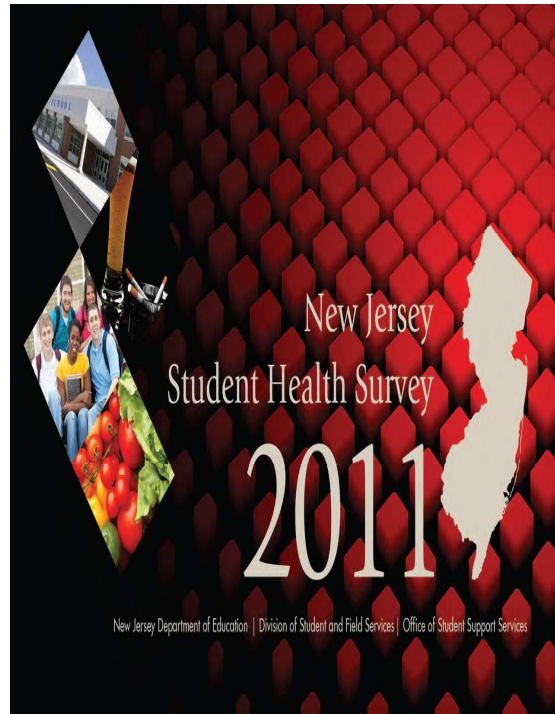
BACKGROUND

This brochure provides a summary of the 2011 New Jersey Student Health Survey of high school students. The New Jersey Department of Education (NJDOE) has conducted this survey among public high school students every other year since 1993. The findings help parents, schools and youth-serving agencies to maintain awareness of current trends among teens and provide feedback on the impact of large-scale programs designed to influence teen behavior. The results are made available through printed and web-based reports. This brochure and the full report can be downloaded at www.state.nj.us/education/students/yrbs/index.html. More information about the CDC survey and tools for comparing results from various locations can be found at http://www.cdc.gov/HealthyYouth/yrbs/index.htm.

In 2011, the survey was administered by the Bloustein Center for Survey Research (BCSR) at Rutgers University. The instrument used for the 2011 New Jersey Student Health Survey drew questions largely from the core

New Jersey Student Health Survey drew questions largely from the core Youth Risk Behavior Survey (YRBS) instrument developed by the CDC. The 88-item high school survey asked students to answer questions about their health-related behavior in six areas that are highly related to preventable illness and injury among young people: unintentional injuries (safety) and violence; use of tobacco; use of alcohol and drugs; sexual behaviors; dietary behaviors; and physical activity.

SAMPLE AND PARTICIPATION

The survey was completed by 1,657 students in 31 New Jersey public high schools in the spring of 2011. Survey procedures were designed to protect the privacy of all students by allowing for anonymous and voluntary participation.

Documented parental consent was required. Overall, 82% of all sampled schools (31 out of 38) agreed to participate in the study and 73% of all sampled students (1,657 of the 2,265) supplied parental consent and completed the survey, yielding an overall response rate of 60% (82% x 73% = 60%). The CDC has established a threshold of 60% combined participation rate as the minimum rate required to apply weights to data collected for the YRBS. This threshold was achieved in 2011 and therefore, the CDC weighting procedure was used on the 2011 high school data. The CDC weighting procedure includes two components: (a) one adjustment that is associated with school/student probability of selection; and (b) one adjustment to insure demographic comparability of the sample to the overall New Jersey student population. The weighted results represent all regular public school students in grades 9 through 12 in New Jersey and permit comparison of findings related to priority health-risk behaviors across points in time. The other years in which a weighable sample was obtained for the New Jersey Student Health Survey were in 1995, 2001, 2005, and 2009. The weighted demographic characteristics of the sample are included in Table 1

2011 NJ. Student Health Survey questions and: High School Frequency distributions

Q1 How old are you?

Frequency Valid Percent Valid 1 12 years old or younger 421 .1 2 13 years old 944 .2 3 14 years old 42638 10.6 4 15 years old 97167 24.2 5 16 years old 108093 26.9 6 17 years old 85452 21.3 7 18 years old or older 66807 16.6 Total 401522 100.0 Missing System 678 Total 402199 Q2 What is your sex? Frequency Valid Percent Valid 1 Female 198786 49.6 2 Male 202341 50.4 Total 401127 100.0 Missing System 1072 Total 402199 Q

Q2 What is your sex?

Frequency Valid Percent Valid 1 Female 198786 49.6 2 Male 202341 50.4 Total 401127 100.0 Missing System 1072 Total 402199

Q3 In what grade are you?

Frequency Valid Percent Valid 1 9th grade 105483 26.3 2 10th grade 101621 25.3 3 11th grade 98245 24.5 4 12th grade 94783 23.6 5 Ungraded or other grade 802 .2 Total 400934 100.0 Missing System 1265 Total 402199 Q4 Are you Hispanic or Latino? Frequency Valid Percent Valid 1 Yes 73031 18.3 2 No 326784 81.7 Total 399815 100.0

Q4 Are you Hispanic or Latino? Frequency Valid Percent Valid 1 Yes 73031 18.3 2 No 326784 81.7 Total 399815 100.0 Missing System 2384 Total 402199

Q5 What is your race? (Select one or more responses.) Frequency Valid Percent Valid 1 Am Indian/Alaska Native 313 .1 2 Asian 31629 8.0 3 Black/African American 63890 16.2 4 Native Hawaiian/Other PI 430 .1 5 White 224945 56.9 6 Hispanic/Latino 30887 7.8 7 Multiple Hispanic 41260 10.4 8 Multiple Non-Hispanic 1853 .5 Total 395206 100.0 Missing System 6993 Total 402199

Q72 During the past 7 days, how many times did you drink 100% fruit juices such as orange juice, apple juice, or grape juice? (Do not count punch, Kool-Aid, sports drinks, or other fruit-flavored drinks.) Frequency Valid Percent Valid 1 Did not drink fruit juice 65928 16.5 2 1 to 3 times 159614 39.9 3 4 to 6 times 65281 16.3 4 1 time per day 40641 10.2 5 2 times per day 33523 8.4 6 3 times per day 15857 4.0 7 4 or more times per day 18721 4.7 Total 399564 100.0 Missing System 2635 Total 402199

Q73 During the past 7 days, how many times did you eat fruit? (Do not count fruit juice.) Frequency Valid Percent Valid 1 Did not eat fruit 49150 12.4 2 1 to 3 times 148313 37.4 3 4 to 6 times 86254 21.8 4 1 time per day 44687 11.3 5 2 times per day 37509 9.5 6 3 times per day 14522 3.7 7 4 or more times per day 15653 4.0 Total 396087 100.0 Missing System 6112

Q74 During the past 7 days, how many times did you eat green salad? Frequency Valid Percent Valid 1 Did not eat green salad 135512 33.9 2 1 to 3 times 167900 42.0 3 4 to 6 times 49814 12.5 4 1 time per day 34183 8.6 5 2 times per day 6134 1.5 6 3 times per day 1857 .5 7 4 or more times per day 4383 1.1 Total 399782 100.0 Missing System 2417 Total 402199

Q75 During the past 7 days, how many times did you eat potatoes? (Do not count French fries, fried potatoes, or potato chips.) Frequency Valid Percent Valid 1 Did not

eat potatoes 122616 30.7 2 1 to 3 times 208242 52.2 3 4 to 6 times 45673 11.4 4 1 time per day 16093 4.0 5 2 times per day 3992 1.0 6 3 times per day 697 .2 7 4 or more times per day 1917 .5 Total 399229 100.0 Missing System 2970 Total 40

Q76 During the past 7 days, how many times did you eat carrots? Frequency Valid Percent Valid 1 Did not eat carrots 209722 52.8 2 1 to 3 times 140119 35.3 3 4 to 6 times 28222 7.1 4 1 time per day 12311 3.1 5 2 times per day 4096 1.0 6 3 times per day 1610 .4 7 4 or more times per day 1404 .4 Total 397484 100.0 Missing System 4715 Total 402199

Q77 During the past 7 days, how many times did you eat other vegetables? (Do not count green salad, potatoes, or carrots.) Frequency Valid Percent Valid 1 Did not eat other vegetables 60496 15.1 2 1 to 3 times 146094 36.6 3 4 to 6 times 99083 24.8 4 1 time per day 51447 12.9 5 2 times per day 25826 6.5 6 3 times per day 9508 2.4 7 4 or more times per day 7187 1.8 Total 399641 100.0 Missing System

Q78 During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not include diet soda or diet pop.) Frequency Valid Percent Valid 1 Did not drink soda or pop 112756 28.2 2 1 to 3 times 145209 36.3 3 4 to 6 times 67562 16.9 4 1 time per day 26504 6.6 5 2 times per day 23720 5.9 6 3 times per day 10463 2.6 7 4 or more times per day 13276 3.3 Total 399490 100.0 Missing System 2710 Total 402199 Q79 During the past 7 days, how many glasses of milk did you drink? (Include the milk you drank in a glass or cup, from a carton

Q79 During the past 7 days, how many glasses of milk did you drink? (Include the milk you drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.) Frequency Valid Percent Valid 1 Did not drink milk 83112 21.0 2 1 to 3 glasses 106821 27.0 3 4 to 6 glasses 65733 16.6 4 1 glass per day 60323 15.3 5 2 glasses per day 48381 12.2 6 3 glasses per day 20535 5.2 7 4 or more glasses per day 10518 2.7 Total 395423 100.0 Missing System 6776

Q82 During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.) Frequency Valid Percent Valid 1 0 days 44792 11.3 2 1 day 30958 7.8 3 2 days 42478 10.7 4 3 days 38396 9.7 5 4 days 42176 10.6 6 5 days 51609 13.0 7 6 days 35090 8.9 8 7 days 110862 28.0 Total 396360 100.0 Missing System 5840 Total 402199

Q83 On how many of the past 7 days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activities? Frequency Valid Percent Valid 1 0 days 45211 11.4 2 1 day 35882 9.0 3 2 days 40764 10.3 4 3 days 47838 12.0 5 4 days 42780 10.8 6 5 days 53148 13.4 7 6 days 31493 7.9 8 7 days 100095 25.2 Total 397212 100.0 Missing System 4988 Total 402199

Q84 On how many of the past 7 did you do exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting? Frequency Valid Percent Valid 1 0 days 88952 22.5 2 1 day 44424 11.2 3 2 days 51480 13.0 4 3 days 52251 13.2 5 4 days 44473 11.2 6 5 days 42064 10.6 7 6 days 20223 5.1 8 7 days 51822 13.1 Total 395689 100.0 Missing System 6510 Total 402199 Q85 On an average school day, how

Q85 On an average school day, how many hours do you watch TV? Frequency Valid Percent Valid 1 No TV on average school day 43711 11.1 2 Less than 1 hour per day 65885 16.7 3 1 hour per day 65131 16.5 4 2 hours per day 89432 22.7 5 3 hours per day 68324 17.4 6 4 hours per day 31370 8.0 7 5 or more hours per day 29920 7.6 Total 393774 100.0 Missing System 8425 Total 402199

Q86 On an average school day, how many hours do you play video or computer games or use a computer for something that is not school work? (Include activities such as Xbox, PlayStation, Nintendo DS, iPod touch, Facebook, and the Internet.) Frequency Valid Percent Valid 1 No playing video/computer game 42873 10.8 2 Less than 1 hour per day 69441 17.6 3 1 hour per day 68389 17.3 4 2 hours per day 66962 16.9 5 3 hours per day 61559 15.6 6 4 hours per day 37915 9.6 7 5 or more hours per day 48080 12.2 Total 395219 100.0 Missing System 6980 Total 402199

Q87 In an average week when you are in school, on how many days do you go to physical education (PE) classes? Frequency Valid Percent Valid 1 0 days 52213 13.3 2 1 day 7902 2.0 3 2 days 12775 3.3 4 3 days 26824 6.8 5 4 days 76091 19.4 6 5 days 217043 55.2 7 6 days 0 .0 8 7 days 0 .0 Total 392848 100.0 Missing System 9352 Total

Appendix C: Adult Consent Form/ Merchants

You are invited to take part in a research study of an ecological approach on food choices among African-American adolescents in low income neighborhoods. The researcher is inviting food store owners or managers of stores located within 5 blocks of schools where African-American adolescents students ages 14 to 17 purchase foods in low income neighborhoods to be in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part. This study is being conducted by a researcher named Clarence McMillan, who is a doctoral student at Walden University.

Background Information:

The purpose of this study is to determine food choices from neighborhood stores in low income neighborhoods and to increase awareness among adolescents, their parents, store merchants and community leaders of the need to improve food behaviors associated with Childhood Obesity in low income communities.

Procedures:

If you agree to be in this study, you will be asked to: complete all questions on the following survey

❖   The survey will take 30 minutes to complete.

❖   Please complete survey using a # 2 pencil.

❖   To change your answer erase completely.

    Mail survey to the address that has been provided on the postage prepaid envelope

Here are some sample questions:

1. What is the number of different fresh fruit and vegetables available?
2. What products at checkout/impulse buys (can be reached while standing at the checkout)?

Voluntary Nature of the Study:

This study is voluntary. Walden University or The Newark School District/ Board of Education will respect your decision whether or not you choose to be in this study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:

This type of study involves some minor discomforts that can be encountered in daily life such as stress, which does not pose risk to your safety or wellbeing. To prevent any conflict of interest in the participation of store employees, such as concerns with the loss of employment and to decrease the magnitude or probability of risks to be greater than the minimal the researcher will have store owners or managers to complete surveys whenever possible.

Payment:

After the completion of this study all participants will be entered into a contest to win gift certificates from Foot Locker. First prize is $100, second prize $50 & third prize $25. There will be 220 adolescents and 42 merchants who will participate in this study. The researcher will put all names in a box and randomly select one winner for each gift certificate amount. The drawing will take place after the completed surveys have been mailed to the researcher. Winners will be notified by mail.

Privacy:

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

Contacts and Questions:

You may ask any questions you have now. Or if you have questions later, you may contact the researcher via 973-223-2993 or clarence.mcmillan@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368, extension 1210. Walden University's approval number for this study is **IRB will enter approval number here** and it expires on **IRB will enter expiration date.** The researcher will give you a copy of this form to keep (for face-to-face research) Please keep this consent form for your records.

Statement of Consent:

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By signing below and returning a completed survey. I consent and understand that I am agreeing to the terms describing above.

Date of consent   ---

Participant's Signature   ---

Researcher's Signature   ---