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Obesity and Overweightness Among African-American Adolescent Population and Health-Related Quality of Life

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Walden University
2020

Abstract

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by

Emmanuel C. Anene

MS, University of North Texas, 1987

BS, Emporia State University, 1983

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Public Health

Walden University

August 2020

Abstract

Obesity and overweightness are a significant public health problem and a risk factor for many chronic diseases. The purpose of this study was to find the associations between gender, race, physical activity, and health-related quality of life (HRQOL) among obese and overweight African American adolescents aged 12 to 19 years. An improved understanding of the health issues could help this population live a longer quality life and prevent serious health implications in adulthood. A quantitative approach with a sample size of 331 was used. The control variables were age and household income, the dependent variable was HRQOL, and the independent variables were race, physical activity, and gender. The findings indicated that physical activity and annual household income were predictors of HRQOL in obese and overweight African American adolescents. There was a marginal main effect of income, such that a higher income level predicted less healthy days (B = -.02, SE = .01, t = -1.84, p = .07). There was a main effect of ethnicity, such that African American adolescents were more likely to report a lower number of days of physical health as not being good (B = -1.35, SE = .63, t = -2.14, p = .03) than their White counterparts. There was a marginal main effect of income, such that a higher income level predicted fewer days of physical health not being good (B = -.14, SE = .07, t = -1.94, p = .05). The findings from this study indicated a need for future research with a larger sample size. This study could potentially add to social change through relating obesity and HRQOL among African American adolescents by providing policymakers information for informed intervention. .

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Dedication

I am excited at the completion of this project, and to God be the glory for being with me all along. His grace, favor, love, and wisdom helped me to remain committed and focused, and I will be forever grateful to Him. I will like to thank my wife, Dr. Veronica Anene, for her support, sacrifice, encouragement, and understanding propelled me through this academic journey.

My children Mr. Emmanuel Anene Jr., Dr. Alvin Anene, Lt. Derrick Anene (Retired), and Mr. Willis Anene, deserve a shoutout and a commitment of this achievement. I also give out a shout out of dedication to my grandchildren Taylor, Jacob, Olivia, Emily, and Sophia. I will be forever grateful for your show of support and understanding. May God Almighty bless and reward all of you in your life endeavors.

Acknowledgments

In my quest for academic laurels, I undertook this daunting and arduous journey. I am delighted and honored that my hard work was not in vain. This academic achievement has been well-deserved, and I thank everyone that had, in many ways, helped to make it a success. Like other rewarding achievements, this started with baby steps little at a time.

I am grateful to the Almighty God for the opportunity and strength given me to accomplish my goal. I am very thankful to my family (my wife, children, and grandchildren) without whose support and encouragement this milestone would not have been achieved.

I want to sincerely thank my Chair, Dr. Srikanta Banerjee, for his supportive guidance, direction, and providing the necessary reviews and corrections that helped shape this work. I am also very grateful to my committee member, Dr. Kai Stewart, for her commendable role in helping to accomplish this project. My gratitude also goes to Dr. Namgyal Kyulo (Research Reviewer), for the remarkable role she played in this project. I am also grateful to Meghan A. Irving, Dissertation Editor, for ensuring the form and style of my dissertation conformed to standards. To the contractor at Sage Publishing Michelle Binur, I say “Thank you” for permitting me to use a resource material that helped enrich the content of my work.

Finally, I am forever, indebted to my late parents, Samuel and Bridget Anene, who instilled in me the utmost desire for education and taught me the value of hard work and that the fear of God, humility, and respect for others are requisites for great success in life.

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Section 1: Foundation of the Study and Literature Review

Introduction

Obesity is a significant public health problem and a risk factor for many chronic diseases. According to the National Health and Nutrition Examination Study (NHANES), there is a 15% higher incidence rate of obesity and overweight among African American children and adolescents than their white counterparts (Centers for Disease Control and Prevention [CDC], 2017). According to the CDC (2012, 2013), obesity is defined as the adolescent's body mass index-for-age is categorized by a percentile on a growth chart based on weight and height, as well as gender when at the 95th percentile or greater. Overweight is defined as a body mass index (BMI) that is above the 85th percentile and below the 95th percentile (CDC, 2013).

The purpose of this study was to examine obesity and overweight among African-American adolescent population and their health-related quality of life. An improved understanding of the health issues would help this population live a longer quality life and prevent serious health implications in adulthood.

Schwarz and Peterson (2010) noted that childhood obesity and overweight are present in all demographics as well as socioeconomic levels. However, other observations have shown that African-American adolescents are exposed to greater television food advertising than their other ethnic counterparts (Bauer, Neumark-Sztainer, Fulkerson, Hanna, & Story, 2011). Bauer et al. (2011) noted that a considerable number of studies exploring the conditions have emerged, and significant factors have been identified that correlate with or contribute to the increasing prevalence of obesity

and overweight among African-American youths in the 12 to 19 years old age group. They also noted that there is limited research regarding the determinants of overweight and obesity.

Understanding Obesity and Overweight

Overweight and obesity can be further understood by studying the various contributing factors. Schwarz and Peterson (2010) noted that obesity and overweightness are complex entities and scholars have not entirely understood their ramifications. The authors posited, however, that by addressing the known contributing factors in adolescent youth overweight and obesity, could help explain ways of adequately addressing the issues of obesity and overweight among the African American adolescent population. According to Schwarz and Peterson, policymakers could apply those types of investigation outcomes and generate reports to formulate public health policies that would be beneficial to adolescents and children in addressing the conditions. It is likely that this epidemic-crisis is negatively affecting the health-related quality of life (HRQOL-4) of many adolescents all over the country and is expected to continue into adulthood, causing long-term chronic health issues (Coreil, 2009).

Using an ordinal logistic regression, I examined the relationship or association between obesity and overweight and selected variables, physical activity, gender, and health-related quality of life among African-American adolescents aged 12 to 19 years. It was predicted that study results would be useful in understanding the complexities of the relationship between, (a) HRQOL 4 (dependent variable) and race (independent variable) among African American adolescents aged 12 to 19 years after controlling for poverty

level and annual household income, (b) independent variable (physical activity: daily sedentary lifestyle- television screen time) and HRQOL-4 (dependent variable), after controlling for poverty level and annual household income, (c) HRQOL-4 among obese and overweight African-American adolescents aged 12 to 19 years by gender (independent variable) after controlling for poverty level and annual household income. The analysis included household income as a control variable.

Problem Statement

According to Schneider (2011) and Samani-Radia and McCarthy (2011), there is a growing obesity and overweight epidemic and crisis in African American communities in the United States. Authors noted that the epidemic-crisis is threatening the HRQOL and lives of African American adolescents across the country. The income and socioeconomic status (SES) of individuals determine the type of food they eat and the kind of lifestyle they live (Coreil, 2009). Schneider maintained that, to a great extent, poverty has a direct correlation with health status, including the impacts of obesity and overweightness. Samani-Radia and McCarthy conducted a cross-sectional study that examined the influence of income among children who were obese and overweight. The researchers determined that children from lower-income families were significantly shorter in height, more obese and overweight, and had higher body mass index (BMI) than children of the same age from families with higher incomes. However, some ethnic or racial groups are at increased risk, particularly African American preadolescents and adolescents (Samani-Radia & McCarthy (2011).

As more studies are conducted in this research area, it is anticipated that study findings will elucidate the multitude of challenges with preventing and treating these conditions. However, less information has surfaced regarding the determinants of overweightness and obesity. Schneider (2011) posited that African American girls, compared to African American boys, as well as adolescents from other ethnicities, have significantly higher BMI. Schneider also noted that African American adolescents had a higher average BMI than White adolescents. This disparity in the prevalence of obesity and overweight demonstrates the connection with cultural differences among the different ethnic and racial groups. Body satisfaction and self-esteem vary by demographic variables like gender and ethnicity (Schneider, 2011).

According to CDC (2014), adolescent obesity and overweightness rates among African-Americans have been higher than they were in the past 3 decades. Evidence revealed that 35.9 % of African American youths are either obese or overweight (citation). Over the past 3 decades, the prevalence of obesity increased from 10.5% to 18.1% among adolescents ages 12 to 19 in the general population (citation). For African American youths, the prevalence of obesity rose from 13.4% to 24.4% (Robert Wood Johnson Foundation, 2010).

The prevalence of overweightness and obesity among adolescents aged 12 to 19 years in the United States in the last 30 years has been on a steady increase. The National Health and Nutritional Examination Survey (NHANES) 2007-2012 data using height and weight measurements estimated that approximately 17.2% of the children and adolescents aged 2-19 were obese, and 16.2% were overweight. According to the survey

findings, the prevalence of obesity and overweight among African American adolescents was significantly more at 20.9%. NHANES (2007-2012) estimated that one in six children and adolescents aged 2-19 were considered either overweight or obese. Ogden, Carroll, Kit, and Flegal, (2014) noted that 42.5% of African-American adolescents aged 12 to 19 years are considered obese with a BMI at or above the 95th age-and-sex specific percentile.

Fenner, Howie, Davis, and Straker (2016) noted that the prevalence of obesity and overweightness among young African-Americans has caused great concern and brought the crisis to the public's attention. However, obesity rates have not increased uniformly across all racial groups during this period; the African-American adolescent population has reported higher rates of obesity compared to any other demographic (CDC, 2015). The epidemiology of obesity and overweight is a vast and dynamic field, and there is a complicated relationship between physical activity, diet, age-related childhood and adolescent obesity, overweightness, and Health Related Quality of Life. Childhood and adolescent obesity and overweight in general often extend to adulthood. There is increasing evidence of adverse health consequences (e.g., Type 2 diabetes, hypertension, asthma, joint problem, and gallstones) among adults who reported higher BMI during childhood (CDC, 2015; Ogden, Lamb, Carroll, & Flegal, 2010).

Available literature on overweightness and obesity among African-American adolescents revealed that some gap in literature does exist. Kramer et al. (2011) noted that some gaps do exist and that obesity and overweightness rates among African-American adolescents might not be reducible to socioeconomic factors alone. Some

researchers have advocated for further studies to explore other potential factors contributing to obesity and overweight, such as age, gender, food choices (diet), and physical activity (Baskin et al., 2013). In this study, I explored these overlooked sociodemographic variables or factors and assessed their impact on African-American adolescent population's obesity and overweightness rates.

Purpose of Study

The purpose of this quantitative study was to determine if there was a relationship between selected independent and dependent variables related to overweight and obese African-American adolescents. An independent (experimental or predictor) variable is manipulated to observe the effect in a dependent variable (citation). A dependent variable is an outcome variable, and a control or intervening variable(s) represents the relationship between an independent and dependent variable (Creswell, 2003). I examined a potential association between race and quality of life in the general population and assess if there is an association between physical activity and gender and quality of life among African Americans. Potential confounders like poverty level, income level, and age were adjusted for in these models. I presented the most recent national estimates of adolescent overweightness and obesity and analyzed trends and relationships between the target sociodemographic variables in the NHANES 2013-2014 dataset. I selected this population because African American adolescents have demonstrated a higher risk of overweight and obesity across the socioeconomic spectrum (see CDC, 2015).

Research Question(s) and Hypotheses

RQ1: Is there an association between health-related quality of life (HRQOL- 4) and race after controlling for poverty level, annual household income, and age among obese and overweight adolescents between aged 12 to 19 years?

$H_0$1: There is no association between health-related quality of life (HRQOL- 4) and race after controlling for poverty level, annual household income, and age among obese and overweight adolescents between aged 12 to 19 years.

$H_1$1: There is an association between health-related quality of life (HRQOL- 4) and race after controlling for poverty level, annual household income, and age among obese and overweight adolescents between aged 12 to 19 years.

RQ2: Is there an association between health-related quality of life (HRQOL 4) and physical activity, after controlling for poverty level, annual household income, and age among overweight and obese African-American adolescent population aged 12 to 19 years?

$H_0$2: There is no association between health-related quality of life (HRQOL-4) and physical activity, after controlling for poverty level, annual household income, and age among overweight and obese African-American adolescent population aged12 to 19 years.

$H_1$2: There is an association between health-related quality of life (HRQOL-4) and physical activity after controlling for poverty level, annual household income, and age among overweight and obese African-American adolescent population aged 12 to 19 years.

RQ3: Is there an association between health-related quality of life (HRQOL-4) and gender after controlling for poverty level, annual household income, and age among obese and overweight African-American adolescents aged 12 to 19 years?

$H_0$3: There is no association between health-related quality of life (HRQOL-4) and gender after controlling for poverty level, annual household income, and age among obese and overweight African-American adolescents aged 12 to 19 years.

$H_1$3: There is an association between health-related quality of life (HRQOL-4) and gender after controlling for poverty level, annual household income, and age among obese and overweight African-American adolescents aged 12 to 19 years.

Foundation of the Study

The theoretical framework for this research study was guided by the health belief model (HBM). This model's creators posited that five factors drive the decision of an individual to act in a certain way and are considered to protect the individual's health (citation). According to Rosenstock (1974) and Glanz, Rimer, and Viswanath (2015), the construct included

- Perceived susceptibility whether the individual considered being susceptible to the condition of obesity and overweightness.
- Perceived severity whether the individual considered the conditions overweightness and obesity to be of a severe consequence concerning HRQOL-4 (general and mental health).
- Perceived benefits referred to the related benefit of positive action to prevent overweight and obesity to enhance HRQOL from reducing the risk.

- Perceived barriers whether taking necessary or required action outweighed the cost of obesity and overweightness and HRQOL.
- Cues to take action triggers to make healthy eating and lifestyle changes; healthy eating and positive lifestyle was the benefit minus barriers that cues to action for the desired behavior to take place.
- Self-efficacy implies an individual's capacity and ability to perform.

According to Creswell (2009), the philosophical worldview which is related to social constructivism assumes that people have the desire to search for knowledge of the world and the environment in which they live and thrive. Creswell also noted that individuals would lean toward finding subjective meaning and experience that are directly associated with specific objects. This behavior displayed by individuals implies that they are likely not to have control over their obesity and so search for solutions or cure.

As stated earlier, the appropriate theoretical framework is HBM. The HBM was preferred based on its ability to explain different health problems. Mckenzie, Neiger, and Thackeray (2009) noted that the HBM is one of the most frequently used theories in the explanation of health behaviors. The HBM was developed in the 1950s to explain the widespread failure of people to participate in a program to prevent and detect diseases (Glanz et al., 2015). According to Glanz et al. (2015), the HBM's overall premise is the individuals are more than likely to engage in a health behavior if they

- Believe that they are susceptible to the disease or condition.
- 2. Believe that the condition could have potential consequence.

- 3. Believe that a particular behavior available to them could be beneficial in averting or reducing their susceptibility to the condition.
- 4. Believe that there are benefits to taking action.
- 5. Believe that the benefits outweigh their perceived barriers.

By incorporating the concepts provided by Glanz et al. (2015) and that of Mckenzie et al. (2009), I identified behavioral sources in response to the research questions that underlined this study. The key factors relating to the association between obesity and overweightness and demographic variables like physical activity, gender, and health-related quality of life among Africa-American adolescents aged 12 to 19 years (target population). It was presumed that the study results would be useful in the understanding complex nature of the relationship between (a) selected demographic variable health-related quality of life (HRQOL-4), among overweight and obese African-American adolescent population age 12 to 19 years, (b) demographic variable (physical activity: daily sedentary lifestyle- television screen time) and health-related quality of life (HRQOL-4), among overweight and obese African-American adolescent population age 12 to 19 years, and (c) health-related quality of life (HRQOL-4) among obese and overweight African-American adolescents age 12 to 19 years by gender. This study applies the HBM to explain how the development of human consciousness and changing health behaviors may influence HRQOL, obesity and overweightness in the target population. Below is a diagrammatic representation of the conceptual framework for this study.

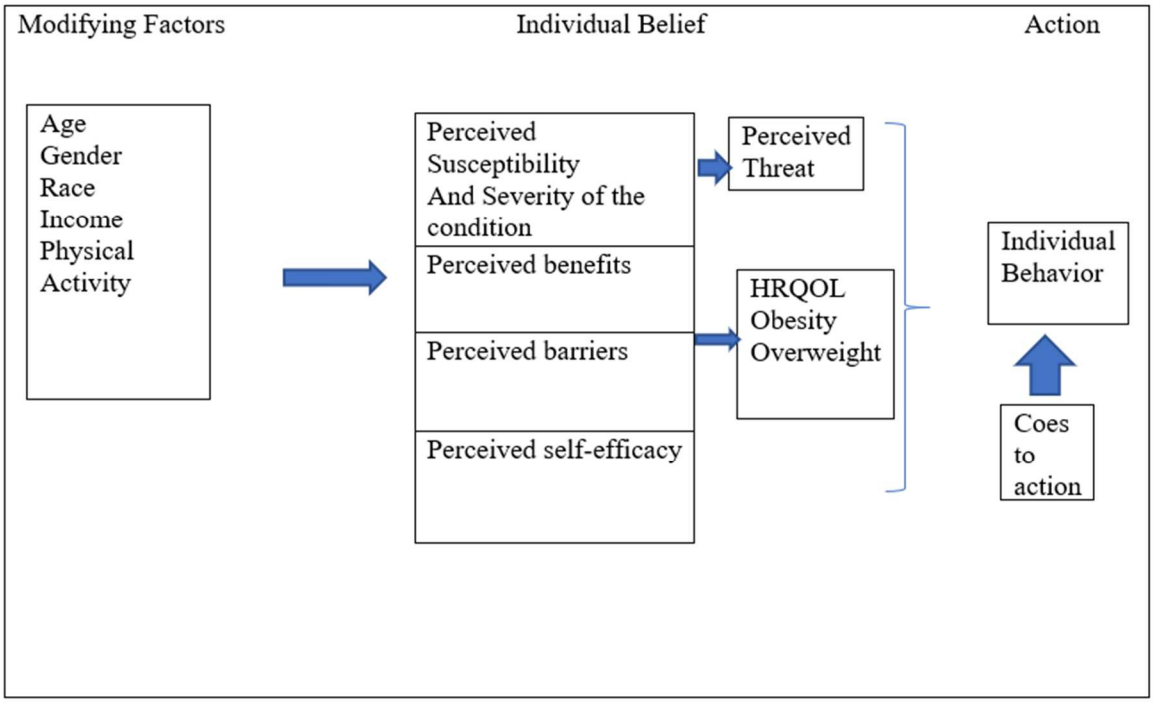

Figure 1. A conceptual framework for this study

Nature of the Study

Mckenzie et al. (2009), pointed out that the HBM is one of the most frequently used theories in the explanation of health behaviors. The HBM was developed in the 1950s to explain the widespread failure of people to participate in a program to prevent and detect diseases (Glanz et al., 2015). For the current study, I conducted a secondary analysis of NHANES survey data collected from 2007-2012. The study analysis included physical activity, gender, and race as independent variables; age, income level, and poverty level as control variables; and HRQOL-4 as the dependent variable.

I explored the dynamic relationships between these variables to understand and advance a positive social change. Adolescent obesity is a complex condition due to the fact that peer interactions and social elements play such a critical role (Kleinert &

Horton, 2015). Addressing the contributing factors that have caused the elevated rates of obesity among African-American adolescents is a crucial step towards addressing health problems in the adult population because the behavioral issues resulting in unhealthy weight take root between the ages of 12 to 19 (Schwarz & Peterson, 2010).

There are few certainties in any quantitative research project; however, systematic errors must be taken into consideration when conducting analysis. Thus, it was necessary to employ the basic statistical tools that assess the role of chance that could bias the results. Unfortunately, there is little consensus about what these tools are and whether they are effective at dealing with a statistical probability in a dataset (Creswell, 2009).

Operational Definitions

African-American: any Black racial groups of African origin. The exclusion applies to Blacks of Hispanic origin (U.S. Census Bureau, 2014).

Adolescents: For this study, this included individuals in the group aged 12 to 19 years. Adolescents are young people who are going through the period of human psychological and physical development that occurs between the onset of puberty and adulthood. (Dahl, 2004).

Body Mass Index (BMI): This is a measurement of weight in relation to height, used to determine overweight and obesity. It is measured by weight in kilograms divided by height in meters (kg/m2; CDC, 2013).

Health-Related Quality of Life (HRQOL): The HRQOL is a subjective interpretation of an individual's state of well-being, which relates to how satisfied the individual is with life in general (CDC, 2015; Wilson and Cleary, 1995).

Household Income: A total of the household annual earnings from works and other financial sources which included compensations from salaries, wages, social security, child support, food stamps, pensions, capital gains, and dividends (CDC, 2013).

Obesity: Referred to the adolescent's body mass index-for-age is categorized by a percentile on a growth chart based on weight and height, as well as gender when at the 95th percentile or greater (CDC, 2013; CDC, 2012)

Overweight: This is defined as a BMI that is above the 85th percentile and below the 95th percentile (CDC, 2013).

Physical Activity: This referred to a body movement involving the skeletal muscles resulting in energy exertion measured using perceived benefits and barriers (CDC, 2014). For this study, physical activity was measured using the Perceived Benefits and Barriers of Physical Activity Scale in the adolescent questionnaire (CDC, 2014). In the NHANES MEC interviews, two files were created. In the one file information such as the daily, sedentary activities information such as detailed information on the activity for participants aged 12 years which will be used in the data presented for this study.

Poverty: The official poverty measure is used to create income thresholds that determine how many people are in poverty (citation). Income thresholds measures are established by tripling the inflation-adjusted cost of a minimum food diet in 1963 and adjusted for family size, composition, and the age of the householder (citation). Household incomes at or below 100% are considered to be in poverty, while household incomes below 50% of the poverty threshold are considered to be in severe poverty (United States Census Bureau, 2014).

Literature Review Search Strategy

Literature on topics related to overweight and obesity among African-American adolescents-aged 12 to 19 years and HRQOL were found in journals, articles, books, and from various databases, including the Walden University Library. The Academic Search Premier research database was used to narrow the search to scholarly and peer-reviewed journals and data sources such as Obesity Research, the New England Journal of Medicine, International Journal of Obesity, PubMed, Medline, and Google Scholar. The search strategy included the following keywords: *obesity, overweight, physical activity, African Americans, adolescent, diet, Body Mass Index,* and *socioeconomic status*. The words and terms were entered individually and in different forms of combinations to get related articles for this literature review.

Literature Review Related to Key Variables and Concept

The purpose of the study is to determine if there is an association between obesity and overweightness among African-American adolescent population and health-related quality of life. The CDC (2013) and Assari and Caldwell (2017) findings suggested that that higher-income African-American families are also more likely to be obese and overweight.

According to the CDC (2014), African-American adolescents may be overweight or obese as an extension of their eating habits and physical activity levels, and also because of their sociocultural beliefs. African-American eating behaviors are associated with their cultural practices. Researchers have noted that socioeconomic status, geographical

location, and gender play a role in the increase of obesity and overweight among African-American adolescents (see Assari & Caldwell, 2017).

Health Implications

The consequences of adolescent obesity and overweight are evidenced by the fact that individuals with obesity are more predisposed to serious, long-term chronic diseases than the general population (Blazquez, Cottini, & Herrarte, 2013). Reports from the Robert Wood Johnson Foundation (2010) noted that those who suffer from obesity and overweightness have a higher risk of developing chronic diseases that include asthma, Type 2 diabetes, cardiovascular disease, sleep apnea, hypertension, depression, and social stigmatizing. In 2000, African American boys had a 40.2 % lifetime risk of diabetes compared to their White peers who had only about 26.7 % risk of diabetes (citation). African American girls had approximately a 49% lifetime risk of diabetes compared to the White peers who had 31.2% risk of diabetes (Robert Wood Johnson Foundation, 2010).

Socioeconomic Factors

Some of the noted causes and determinants of overweightness and obesity among African American children and adolescents are complex social, economic, and environmental factors (Assari & Caldwell, 2017). African American neighborhoods lack access to healthy foods (citation). In a study of over 200 communities, it was found that the supermarkets in the predominantly White communities were over four times more varieties than those in the African American communities, depriving the African Americans of quality foods, including fruits and vegetables (CDC, 2010). An increase in

access to supermarkets is associated with the prevalence of decreased obesity and adolescent BMI, particularly in African Americans (Moreland, Wing, & Diez, 2002). African American middle schoolers have considerably limited access to healthy foods than their White peers. Approximately 47% of African American eighth graders have access to fruits and vegetables in their schools compared to 61.7% for their White counterparts (Robert Wood Johnson Foundation, 2010).

Obesity and overweightness in adolescents, according to some studies, have suggested a correlation with the low-income population than in the higher income population and has an ethnic and racial undertone (see Heerman, Taylor, Wallston, & Barkin, 2017). Poverty is one of the most profound barriers that can impact health negatively. Because income is a determinant of socioeconomic status (SES), people who lack money are said to live in poverty. People who live in poverty cannot afford healthy food, and the convenience of access to a healthy food store. According to Blazquez et al. (2012), there is a strong negative correlation between good health and poverty. The absolute income hypothesis reflects that an increase in income increases investments in health enriching goods. Blazquez et al. also noted that educational attainment is an essential element of overall SES and health outcomes. In turn, money or income can improve access to education, which can shape an individual's health, well-being, health behaviors, and health outcomes.

Dietary Behavior

The media influence poses a significant impact among African American youths healthy eating habits and choice behavior (Blazquez et al., 2012). The lack of physical

activities is a challenge as more African American youths spend more time than White teens on screen time. African American adolescents spend approximately six hours daily watching the television, while their White peers spend about three and a half hours. Sedentary television watching hours are positively associated with increased caloric intake, overweightness, and obesity (Powell, Szczypka, & Chaloupka, 2007). Research shows that African American adolescents have more exposure to food advertising than white adolescents. Powell et al., 2007, found that African American adolescents ages12 to 19 viewed 14% more food and food product advertising compared to their White counterparts. This exposure is believed to lead viewers to increased consumption of unhealthy foods and neglect to participate in physical activity by children and adolescent indulgence in prolonged television watching (citation).

Additionally, the study by Powell at al., revealed that among a total nonprogram content time of television shows, food-related products accounted for approximately one-fifth of advertising exposures (citation). As a proportion of all products and goods advertising, total food-associated advertising consisted of 20% of the advertised products viewed by adolescents (citation). By race and ethnicity, the proportion of advertising exposure to food products was 14% greater for the African American adolescent populations as opposed to White adolescents. This could be explained by the fact that African American adolescents, on average, watch more television (citation). It was noted by the researchers that fast food was the most frequently viewed food product by category, making up 23% of all food-related advertisements among adolescents (citation). The researchers noted that television food

advertising made up over one-quarter of the program viewed by the audience, specifically the adolescent population, with the most frequently viewed products being fast food, sweets, and sweetened beverages (citation). Add summary and synthesis throughout the paragraph to balance out the use of information from the literature with your own analysis. Be sure to develop a conclusion for the section.

Environment

The built environment factor involves transportation, infrastructure, and safety, which limit this target population option to engage in physical activities (citation). African American communities are less likely to have parks, green spaces, pools, beaches, bicycle and walk-run trail, and activity centers (citation). This factor is crucial in accelerating African American youths weight gain (CDC, 2010). Approximately 31% of women have complained that the presence of these barriers is a significant deterrent to African American adolescents participating in physical activities in their neighborhoods, compared with 13.4% of their White counterparts (Powel et al., 2007). It is noted that in general African American residents have fewer options for physical activity, due to infrastructure and safety factors (citation). Parents of African American youths are more likely than their White counterparts to report barriers to their children's physical activity or presence of inadequate physical activity infrastructure (Robert Wood Johnson Foundation, 2010).

The transition from childhood to adolescents is characterized by a series of biological, social, cognitive, and emotional changes. In defining the transition stages, Coreil (2009) acknowledged that researchers on adolescents typically divide this

period of the life stage into three distinct phases: early adolescents (ages 11-14), midadolescent (ages15-18), and emerging adulthood. As these changes occur, adolescents perceive themselves as invisible and think that they are not responsible for their actions (citation). Recent research on adolescent brain development reveals that part of the vulnerability and opportunity of this life stage is a set of biologically based changes in neural systems of emotion and motivation (citation). After the onset of puberty, changes in the brain contribute to an increase in sensation seeking and risk taking (Coreil, 2009). In the casual continuum model, which is a method of assessing behavior and disease based on the degree of direct or indirect relationship causes, the negative outcome of the indulgence can be referred to as having a proximate effect (citation). Proximate variables have the most direct impact on the biological processes or situational events that precipitate ill health or other undesirable outcomes (Coreil, 2009). In the categories of the model (intrapersonal, interpersonal, institutional, community, and public policy), the intrapersonal and the interpersonal would have a strong influence on eating behavior (citation). The intrapersonal factors may suggest that the individual is cognitively aware of the behavior expectancy and the intention to perform the act. The underlying analysis within a socioecological framework is the intrapersonal level, which includes characteristics of the individual, such as knowledge, attitudes, behavior, perceptions of risk, and self-concept (McLeroy et al., 1988). The social cognitive theory (SCT) holds that social relationships influence cognition (citation). Within the SCT, the concept of modeling refers to the process of imitating others in a social environment, outcome expectation refers to consequences that may follow the action taken by an individual,

self-efficacy refers to one's perceived ability to carry out behavior, and behavioral capability refers to one's actual ability to perform the behavior (citation). These are all factors related to behavior that may contribute to obesity and overweight in children and adolescents (Coreil, 2009). Add summary and synthesis; be sure to connect back to your own study.

The interpersonal model may include the individual's ability to network and interact with the environment that could result in either negative or positive outcomes (citation). The ability to associate with friends, peers, and neighborhood acquaintances could help with the capability to learn and indulge in eating behaviors that may negatively impact health. Adolescent peer culture plays a significant role in the development and maintenance of health risk behaviors (citation). On the community level, and the school environment could be an important variable influencing unhealthy eating habits (McLeroy et al., 1988).

On the public policy level, the health and food administration department agency can initiate enforcement policies in the food markets, communities, supermarkets, media advertising of fattening foods as well as continue to enforce the laws (citation). At the same time, the goal of the strategy to intervene may be changed in the individuals; the proximal targets are social norms and social influences. Signs of engagement in poor eating habits must be observed and monitored in schools and at homes to seek prompt intervention and treatment that would be directed at (a) changing the norms about eating habits, (b) increase accessibility to healthy food outlets, (c) creating alternative networks,

and (d) decreasing the advertising of unhealthy foods directed at this target audience (McLeroy et al., 1988).

From a developmental standpoint, adolescence is a period during which individuals aged 11 to 24 seek to gain independence and autonomy (citation). This period also marks a time in adolescent life behavior changes and autonomy. It is important for healthcare providers and counselors who work with this population to understand the scope of the problem and ways to effectively counsel and treat this population (Burrow-Sanchez, 2006). Add summary and synthesis.

The SEM levels of influence suggest that health promotion interventions are based on beliefs, attitudes, understanding, and theories of the health determinants of behavior (citation). The five levels of influence include the intrapersonal, interpersonal, organizational, community, and societal levels (citation). According to McLeroy, Bibeau, Steckler, and Glanz (1988), factors associated with the individual level include

- The individual's knowledge of the health behavior and possible health outcome.
- The individual's attitude towards the health outcome or health condition.
- The individual's perception of the condition or health outcome regarding the benefit/consequence.
- Consideration of the individual's gender to make a prompt decision based on the seriousness of the condition.

- SES/Race affects behavior as access to healthcare is likely to depend on these two factors.
- The higher the educational level the more likely the individual is willing to act.
- Age plays a role based on perceived benefit of the required action or behavior,
- The individual's skills/intentions to perform the required behavior for the desired health outcome.

Interventions at the intrapersonal level include techniques to modify the extent of social influences and peer-pressure (citation). Using teaching methods of resisting peer pressure and environmental influences by applying intervention strategies such as educational programs, mass media, support groups, organizational incentives, and peer-counseling, potential public health problems can be addressed (McLeroy et al., 1988).

Researchers have documented the enormous positive effects of social support over the years (Coreil, 2009). The help of significant others is more likely to encourage food choices and behavior modification changes. Social relationships affect the ability to cope with stress and adolescent's risk of negative behaviors, and the risk of morbidity and mortality (McLeroy et al., 1988). Social relationships are important aspects of social identity. They provide social resources, such as emotional support, access to information, and new social contacts (McLeroy et al., 1988).

The activities at the community level are conducted within the geographic locale where the individual lives and functions. The individuals share the same norms, beliefs,

and culture. Culture is learned through time, and this becomes what the individual and his community commonly practice (Coreil, 2009). An essential component of the community is the *mediating structure* which includes the family, informal social networks, churches, voluntary associations, and neighborhoods, and health promotion activities, and programs that can be carried out with the help of the mediating structure (McLeroy et al., 1988). A relationship with community members is essential when implementing interventions at the community level. Neglecting key variables may diminish the acceptability of the interventions within specific subgroups by neglecting the variations that exist within geographical areas (McLeroy et al., 1988). Tailoring interventions towards specific subcultures is imperative. Use of a tailored approach can mitigate resistance. Add summary and synthesis to connect back to your own study.

At the societal or public policy level, addressing social structures, policies, and socioeconomic influence on health is the focus because it is at this level that changes can be addressed through policies (citation). It is at this level that social inequality and health disparities can be addressed with positive policy changes (Coreil, 2009). One of the defining characteristics of public health is the ability to use laws, regulatory policies, and procedures to protect the health of the community and not limited to individuals. For example, the decline in mortality in the United States from 1900 to 1973 occurred as a result of the improvement in the quality of water supply, sanitation, housing, and food, including laws governing the pasteurization of milk (McLeroy et al., 1988). Add summary and synthesis.

Psychosocial Aspects

There appears to be a relationship between HRQOL and psychosocial influence. A study conducted by Nieman & LeBlanc (2012) supported the relationships between obesity, overweight, physical activity, and the African American adolescent population and the effect on HRQOL. The CDC (2010), Swallen, Reither, & Haas Meier (2005) and Healthy People 2020 (2016) provided information on the HRQOL data and general publications, which validate and analyze measures. The measurement of HRQOL is an important aspect of understanding psychosocial competence about the physical, social, and emotional functioning of adolescents before transitioning to adulthood. However, studies have not assessed the mechanisms through which different aspects of psychosocial competence improve HRQOL among African-American adolescent racial populations. The study carried out by Swallen et al. (2005), a cross-sectional analysis was conducted using the 1996 National Longitudinal Study of Adolescent Health (NLSAH), a nationally representative sample of youths in 7 to 12-grade levels. Four dimensions of health-related quality of life- general health (self-reported), physical health, emotional health, and a school and social functioning scale were measured. The researchers found that there is a remarkable association between BMI and physical health with no psychosocial outcomes. It was noted that overweight adolescents had significantly negative self-reported health (odds ratios {OR]: 2.17; 95% confidence interval [CI]: 1.34-3.51), same with obese adolescents (OR: 4.49; 95% CI: 2.87-7.03). Overweight (OR: 1.81; 95% CI: 1.22-2.68) and obese (OR: 1.91; 95% CI: 1.24-1.95) adolescents were noted to more likely to present with functional limitation. It was in the ages of 12-14

years that there was a serious negative health impact of overweight and obesity on depression, self-esteem, and social functioning.

Existing studies could further explain the relationship between psychosocial wellbeing and HRQOL. Some studies have shown that monitoring HRQOL in a population has a significant contribution relative to psychosocial wellbeing. Nieman & LeBlanc (2012), Trandafier, Anton-Paduraru, Miron, & Indrei (2015), and Fenner, Howie, Davis, & Straker (2016) provided information on the psychosocial aspects of childhood and adolescents obesity and overweight and incorporated the effects of genetics and the sociocultural, and environmental interaction. Fenner et al. (2016) conducted a multi-disciplinary family-based healthy lifestyle intervention with a one-year follow-up of a waitlist-controlled trial obese adolescents and their parents. The researchers found that psychosocial outcomes had a significant correlation between adolescents and parents across the one-year follow-up studies. It was observed that adolescent depression, psychosocial, and physical quality of life outcome improved significantly before the next intervention. The study was conducted with enrolled adolescents (n=56, ages 11-16) and parents over eight weeks. This study found changes in adolescent psychosocial outcomes that were partially associated with behavioral changes and independent of physical changes. The statistical analyses included the use of histograms and q-q plots of dependent variables that were examined for normality. Independent samples t-tests or ANOVAs were used to compare differences in the baseline variables between waves, sites, and completer against those who dropped out.

Sapienza, Schoen, & Fisberg (2017) provided information on social competence and obesity in adolescents, noting that socially competent individuals can develop and use strategies for solving interpersonal problems that prove to be easily accepted by peers and valued by others. Studies have demonstrated that obese adolescents have a knowledge deficit in areas of social skills which could interfere negatively with relationships and self-esteem. The social competence of obese individuals leads to the ability to direct their behaviors to achieve positive outcomes in social interactions. The ideological concept of competence brings focus on social skills, self-assessment skills and the nature of relationships with the environment, which could be one of rejection or acceptance. Data for the study was collected from 2005 to 2015, producing 329 articles, of which 303 did not meet the criteria, and were excluded. The resulting analysis was from observational studies (n = 13). The study investigated how the literature of the previous decade correlates with the components of social competence to obesity in adolescents and found a negative association between the elements of social competence with obesity. As a result of the study mentioned above Social competence was marked as important for interventions aimed at reducing overweight.

Gender Implications

Sherwood, Story & Obarzanek (2004) provided information on the correlate of obesity in African-American girls noting that even when obesity and overweight are indicated across all demographic and social classes, African-Americans are in the subgroup that is most at risk, particularly African American adolescent girls compared with their White counterparts. In assessing the race effects and factors likely to be more

predictive of why African-American adolescent girls are more than twice as likely to be obese and overweight than their white counterparts include a combination of many factors. Despite having studied the epidemics of obesity with a focus on targeting preventions and treatments, adequate information is not readily available regarding the determinants of overweight and obesity among African-American girls specifically. Data from the National Heart, Lung, and Blood Institute (NHLBI) National Growth and Health Study (NGHS) (1987 to 1997) on African-American and White girls revealed that African-American girls have relatively higher Body Mass Index (BMI) than their White counterparts. Over one-half of the African-American girls aged 10-19 years in the NGHS cohort study were obese or overweight. The attributable cause for the increasing prevalence included genetic, familial, socioeconomic, psychosocial, behavioral, and environmental factors. Another factor identified was the ethnic disparities in the prevalence of overweight examines the cultural differences among adolescents from different racial and ethnic backgrounds as African-American girls are less likely to experience social pressure about their weight and, as a result, tend to be more satisfied with their appearance compared to white girls. Sherwood et al., further noted that though African American adolescent girls have a higher rate of obesity and overweight than their White counterparts, however, many studies have shown that they feel satisfied with their appearance than do Caucasian girls. Some studies concluded that African American males prefer larger body shapes and sizes because they are more attractive than the ultrathin girls who some may believe are suffering from diseases such as Acquired Immune Deficiency Syndrome (AIDS) (Ogden et al., 2010).

Racial Comparison

Lutfiyya, Garcia, Dankwa, Young, and Lipsky (2008) investigated the prevalence rate of overweight and obesity in African American and Hispanic children compared with White children. This study utilized data from the 2003-2004 National Survey of Children's Health (NSCH). The researchers applied multivariate analyses on cross-sectional data from the NSCH 2003-2004. The reports indicate that obese and overweight children were more likely to be African American and Hispanic than their White counterparts. African American and Hispanic populations were overwhelmingly male, from a household with income below the poverty level (150% Federal poverty level), watched television three or more hours a day, and may not have received preventive care in the last one year. The researchers also noted that children from these families were less likely to get adequate or not physical activity participation. Lutfiyya et al. concluded that poverty has a negative impact on the childhood body mass index based on where they live (built environment) and lack of easy access to healthy food in low-income communities.

SPSS software version 15.0 was used to complete all statistical analyses conducted for this study. Univariate descriptions and bivariate comparisons were performed using an unadjusted odds ratio to test for differences between and within groups. Multivariate logistic regression was used to determine adjusted ORs, while Logistic regression to predict characteristics of overweight and obese participants compared with healthy weights participants. It was noted that though White children had 32.2% of overweight

outcomes, 49.2% of African American children and 44.0% of Hispanic children were overweight or obese.

Predictors of HRQOL

Zeller and Modi (2012) investigated the predictors of health-related quality of life in obese youths. They observed a relationship between obesity and a negative consequence on health-related quality of life. However, this was only conducted in a restricted area and not a nationally representative dataset, as is being proposed in the current study. They noted that the greater consequence of obese youth and adolescents is psychosocial. The research concluded that the risk does exist of a considerable negative psychosocial impact, including a poor developmental adaptation. As a result, there is a need for early weight management intervention that is geared towards support mechanisms within the child and adolescent environment. According to Zeller and Modi, HRQOL measurement is one way of assessing global psychosocial functioning. HRQOL is a multidimensional construct with many several dimensions that include physical, emotional, and social functioning, which reflects an individual's subjective evaluation of their wellbeing.

In their study, they purposed to investigate the predictors of health-related quality of life in obese youth. The study participants consisted of 166 obese children (mean =12.7 years, 70% females, 57% African American. mean BMI = 37.0) tagged pediatric weight management program. Demographic forms were required to be completed by participant's parents, and the parents-proxy Pediatric Quality of Life Inventory (PedsQL) while youths completed the depression questionnaires, and the Perceived Social Support

Scale for Children. The study's result revealed that HRQOL scores impaired relative to published norms on healthy youth ($p<0.001$). It was observed that about 11% of the sample met the criteria for clinically significant depressive symptoms or disorder, on similar token regression analyses revealed that depressive symptoms, perceived social support from classmates, the degree of overweight, and the socioeconomic status appeared to be remarkable predictors of HRQOL.

Assumptions, Scope, and Delimitations

Assumptions

Some participants during interviews likely exaggerated some information. Unless further verification is made (which is beyond the scope of this study), it is possible that income, weight, activity levels, and other demographic variables might be incorrectly reported. Therefore, based on the limitations and focus of this study, the following assumptions were made:

1) The sample population lifestyle generally may affect their overall quality of life (Wilson & Clearly, 1995).

2) Sociodemographic variables such as age, gender, race, and family income may affect weight and obesity, which, in turn, trigger negative HRQOL (CDC, 2013).

3) Physical inactivity is significantly related to adolescent overweight and obesity, especially for African-Americans (Lutfiyya et al. 2008).

4) Poor nutrition and a sedentary lifestyle are contributors to overweight and obesity among African-American adolescents (Boyington et al. (2008).

Scope and Delimitation

Although this study may have some strengths, there could be some potential limitations. The study data was derived from the CDC's NHANES cross-dataset. Because of this study's cross-sectional nature, it may not allow for the establishment of causation, though it provides for the establishment of a foundation for future research (Creswell, 2009). Those participants that were excluded from the survey for whatever reason might have additional contribution different from those included. It is difficult to know how their input might have helped to create positive social change.

There may be a potential bias regarding data reporting mechanism due to possible racial misclassification. Some bi-racial participants are likely not to be identified with African-American adolescents, while others would. As a result, the generalization of the outcome of this study should be made with caution. Another limitation of this study may be that the research questions are unique to this study as they have not been previously used in other studies. The weakness of using secondary data arose from the need to adjust the research questions to limitations inherent in this study. It may be likely that the targeted age (12 to 19 years old) of the sample may impact the responses to the interview questions.

Significance, Summary, and Conclusion

The prevalence of obesity among African American youths has been increasing for decades, becoming a major concern for public health in the United States. According to Cowart, Biro, Wasserman, Stein, and Reider (2010), obesity raises the risk of many chronic illnesses and poor health outcomes. According to the Centers for Disease Control

and Prevention (CDC, 2013), African American adolescents have the highest rates of excess weight in the United States, and they are at increased risk for obesity and becoming overweight, which persists into adulthood, resulting in chronic and debilitating health conditions.

MacDonell, Ellis, Naar-King, and Cunningham (2010) acknowledged that African-American adolescents had rates of obesity, increasing from 19 percent at age five to 33 percent at age 17. Currently, policies aimed at intervening in childhood obesity have included only children under 12 years of age. The problem of childhood obesity among African Americans exacerbates during adolescents, but there has been little research into the factors leading to the increase in obesity rates during this period. This lack of research and pointed policy reform will result in a dramatic rise in chronic diseases associated with obesity among this population into adulthood (CDC, 2012). The CDC also noted that obesity causes an increased risk of chronic illnesses such as diabetes, hypertension, arthritis, asthma, stroke, and sleep apnea. A community-designed partnership intervention can reduce obesity, promote a healthy lifestyle, and sustain positive health practices across the lifespan (Cowart et al., 2010).

Social isolation and social exclusion are negative factors that could prevent access to available amenities in the community. However, Coreil (2009) found that social networks, capital, and support are crucial factors that can optimize health. Additionally, collective efficacy—the means of a group of people to successfully push for social change—would benefit everyone. The obesity rates among African American youths

between the aged of 12 to 19 are alarming, witnessing a dramatic increase between the 1970s and 2002, a trend that has not slowed until today (Lewis et al., 2006).

Social change in this study could be elicited by bringing about a better understanding and more awareness of the negative impact of obesity and overweight among African-American adolescent population as it relates to their health-related quality of life. Knowledge of the negative effects of overweight and obesity could also lead to a better understanding of the role of the selected demographic variables relationships, which could help in the prevention and management of obesity and overweight among the target population. Bowen, Lee, McCaskill, Bryant, Hess, Ivey (2018) argue that a better understanding of obesity by primary care physicians (PCPs) could promote the understanding of the disease in the community and help with obesity reduction by providing patients and their families educational information to encourage healthier lifestyle choices. CDC (2017), noted that individuals who are obese or overweight are more likely to suffer from high blood pressure, diabetes and high-risk factors for cardiovascular disease and stroke and that death rates from heart disease and stroke are higher for African-Americans as compared to whites. Lastly, the overall benefit of this study may be to contribute to a healthier African-American adolescent population that could have the potential of being obese or overweight, thereby preventing chronic debilitating deceases such as type 2 diabetes hypertension asthma, and a decrease in mortality.

Because of the complexity and multifactorial nature of obesity and overweight, specifically among the African-American adolescent population, it is imperative to

approach the solution and intervention with an equal or greater sophistication. It is believed that public health policies effectively implemented can combat or reduce the impact of obesity and overweight in this target population from a preventive standpoint (Schwarz & Peterson, 2010).

As noted earlier, many studies have confirmed that there is growing obesity and overweight epidemic and crises in the African-American communities in the United States. This epidemic-crisis is threatening the life and HRQOL of many children and adolescents all over the country. The National Health and Nutrition Examination Study (NHANES) has uncovered as much as 15% higher incidence of obesity and overweight among African American children and adolescent youths 12 to 19 years old. Available evidence reveals that childhood obesity and overweight are more prevalent in some ethnic or racial groups, and those groups are at increased risk, particularly African-American preadolescents and adolescents (Sherwood, Story, & Obarzanek, 2004).

The primary source of information for this study is secondary data retrieved from the National Health and Nutrition Examination Survey (NHANES) 2007 – 2012. There could be some potential limitations to this study because of the study's cross-sectional nature may not allow for the establishment of causations. However, it provides for the establishment of a foundation for future research (Creswell, 2009).

The purpose of this study is to determine if gender has an association with quality of life of African American adolescents who are obese or overweight. Additionally, the purpose is to determine if gender or physical activity has an effect on quality of life.

Section 2: Research Design and Data Collection

Introduction

This section describes the methods and procedures that were applied to examine the relationship or association between obesity and overweight and the selected variables like physical activity, gender, and health-related quality of life among African American adolescents age 12 to 19 years. The purpose of this study was to find the associations between gender, physical activity, race, and HRQOL-4 among African-American adolescents. More specifically, the purpose was to determine the association between HRQOL and physical activity among African American adolescents. Finally, another objective was to determine HRQOL and gender among African American adolescents.

Research Design and Rationale

A research design is a guide used to plan, implement, and analyze the study and aids in the answering of the research questions and hypothesis (citation). These include the study's structure and procedures, ethical considerations, and a possible threat to its validity (World Health Organization, 2014). The researcher uses the research design as a method for answering the research question in a study (Babbie, 2017). Research questions serve to direct the type of design that the researcher chooses to use (citation). A researcher should specify in research design as clearly as possible what the research is to accomplish and then identify the best approach to go about it. As noted in the introduction above, my research was to examine the relationship or association between obesity and overweightness and demographic variables, race, physical activity, gender, and health-related quality of life among Africa-American adolescents age 12 to 19 years.

The three components involved in a research design includes philosophical assumptions. Philosophical ideas influence research and need to be identified (Creswell, 2009). Quantitative research analysis is deeply entrenched in the tradition of positivism. The research methods include theory, data collection that supports or rejects the theory followed by scientific tests (Creswell, 2009).

I used a descriptive cross-sectional design to examine the relationships among the selected demographic variables, overweight and obese, physical activity, gender, and HRQOL-4 among African-American adolescents aged 12 to 19 years using NHANES 2007-2012 dataset. Descriptive statistics are appropriate for this study because it allows for a description while examining relationships among variables (see Babbie, 2017).

As noted in Section 1, the independent variables or predictor variables were physical activity, gender, and race. The dependent variables or outcome variable was HRQOL-4. The control variable was age. Also noted was that the independent (experimental or predictor) variables were generally defined as the variables that are being manipulated to observe the dependent variables. The dependent variables are generally defined as outcome variables, and the control or intervening variable(s) defined the relationship between the independent and dependent variables (Creswell, 2009). The diagram below reflects the framework of design, views, a strategy of inquiry and method.

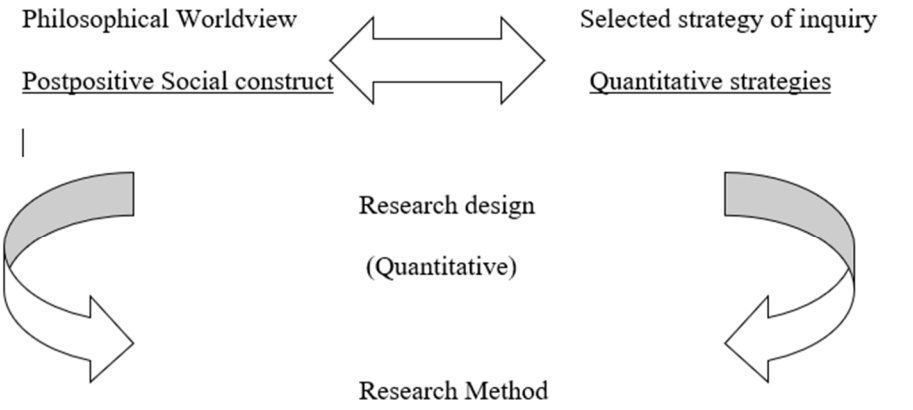

Figure 2. The framework of design, views, a strategy of inquiry, and method. An extract from Creswell (2009).

Factual observations and data collection is premised by theory (Creswell, 2009). Each observation and measurement that are known are used to determine and understand more complex phenomena.

Methodology

The methodological approach for this study as stated above was that of postpositivist worldview which holds a deterministic philosophy that causes likely affect outcomes (see Creswell, 2009). The postpositivist assumptions have been used traditionally more in quantitative research than in qualitative (Creswell, 2009). The three research questions were answered by applying an ordinal logistic regression. As further discussed under data analysis, descriptive statistics using regression analysis were used to predict the values of the dependent variables from the information about the independent variables. The multicollinearity test was carried out due to the presence or indications that

the predictor variable was linearly predicted the other variables with a substantial degree of accuracy to determine the strength of the relationship.

The primary source of information for this study is secondary data retrieved from the NHANES 2007 – 2012. The data include the frequencies obese/overweight, food consumption, television advertising influence on food choices, age, and television screen time. NHANES is a cross-sectional survey designed to monitor the health and nutritional status of non-institutional individuals and civilians of the United States population (citation). The survey consisted of interviews conducted in the participant's home, standardized physical examinations administered in mobile examination centers, and laboratory tests using blood and urine specimens provided by participants during the physical examination (citation).

The use of secondary data in research has a long history in the social sciences and public health, and it has been found by social scientists to have immerse usefulness, such as easy accessibility for data used in social research (Creswell, 2009). The advantages of secondary data included that it was time and cost effective, it provided quality information, and it offered a comparison among social trend analysis as a change agent (see Babbie, 2017).

Population

The target population was the African American adolescent population that were classified as obese and overweight aged 12 to 19 years. The sample size was $N = 331$ of the target sample population. This population was targeted due to reported disproportionate health outcomes related to obesity and overweight (CDC, 2015). In

2007-2012, 14,332 persons were selected for NHANES from 30 different survey locations. Of those selected, 10,175 completed the interview, and 9,813 were examined. The sample size of 331 is deemed reasonable, according to Creswell (2009) to obtain a stable estimate because a sample size less than 100 should be avoided.

Sampling and Sampling Procedures Used to Collect Data

A unique feature of the NHANES was the collection of health examination data for a nationally representative sample of the resident, civilian noninstitutionalized population of the United States. The survey consisted of questionnaires administered in the home, followed by a standardized health examination in specially equipped mobile examination centers (MECs).

The data are from 2007-2012 NHANES datasets. Because NHANES data are derived by using a complex, multistage, probability sampling design to select participants that are representative of the civilians and noninstitutionalized U.S. population and to avoid a biased estimate and overstate significant levels, sampling parameters must be accounted for (CDC, 2013). By this method, NHANES produced reliable, nationally representative data.

The NHANES 2007-2012 sample is set to satisfy two conditions: (a) An estimate prevalence statistic of approximately 10% in a sex-age domain should have a standard error of 30% or less and (b) estimated (absolute) differences between domains of at least 10% should be detectable with a Type I error rate (α) of 0.05 or less, and a Type II error rate (β) of 0.01 or less. To satisfy the first condition, a sample size of 331 examined individuals was needed, which assumed a design effect of 1.5 resulting from the

variability in sampling rates across density strata needed to accommodate oversampling. The sample size needed for the second condition is approximately 331 examined persons.

To calculate sampling rates, an expectation for response rate was set. The response rates used in the calculations range from 50% to 91%. It was necessary to reduce nonresponse and encourage increased response rate (see Babbie, 2017). Several data sources were used to obtain national estimates for the noninstitutionalized civilian population by the rate for the NHANES period. Sampling rates were calculated using the screening amount and sampling rates to achieve a self-weighted domain. All screened persons in the subdomain having the maximum rate were to be retained in the sample.

In this study using the NHANES sample, the PC Sample software base weight for each participant, a randomized sample was selected. The sample was self-weighted because each sampled participant selected by the PC Sample had the same weight (see CDC, 2009). With randomization, a representative sample from a population provides the ability to generalize to a population (Creswell, 2009).

Sampling Framework (Inclusion and Exclusion Criteria)

The inclusion criteria for this study were (a) African American adolescents (males and females) ages 12 to 19 years, and (b) categorized as obese and overweight according to BMI The exclusion criteria for this study were (a) other race/ethnicity other than African American, (b) African Americans younger than 12 years of age or older than 19 years of age, (c) categorized as underweight, and (d) categorized as pregnant.

NHANES Recruitment, Participation, and Data Collection

The NHANES 2007-2012 survey includes design and demographic variables in the demographic file in the release. I linked a standard survey participant identification number (variable name: SEQN) to the NHANES public-use data files to ensure the proper storage of each survey participant's information. Like the 2007-2012 datasets, there was an additional race-ethnicity variable (RIDRETH3) in the NHANES 2007-2012 cycle demographic dataset to reflect the change in the sample design. The main objectives of the 2007-2012 survey were to oversample subgroups in the 2007-2012 survey cycle that were Hispanic persons, Non-Hispanic Black persons, Non-Hispanic Asian persons, Non-Hispanic White, and other persons at or below 130% of the poverty level. Non-Hispanic White and other, including persons aged 80 years and older, and others such as Non-Hispanic persons reported races other than Black, Asian, or White.

The major objectives of NHANES are as follows: (a) to estimate the number and percentage of persons in the U.S. population and designated subgroups with selected diseases and risk factors; (b) monitor trends in the prevalence, awareness, treatment, and control of selected diseases; (c) monitor trends in risk behaviors and environmental exposures; (d) study the relationship between diet, nutrition, and health; (e) explore emerging public health issues and new technologies; and (f) provide baseline health characteristics that can be linked to mortality data from the National Death Index or other administrative records (citation). These included the enrollment and claims data from the Centers for Medicare & Medicaid Services.

Sample selection for NHANES follows these stages: (a) selection of primary sampling units (PSUs), which are counties or small groups of contiguous counties; (b) selection of segments within PSUs that constituted a block or group of blocks containing a cluster of households; (c) Selection of specific households within segments; and (d) Selection of individuals within a household (citation). In 2007-2012, 14,332 persons were selected for NHANES from 30 different survey locations. Of those selected, 10,175 completed the interview, and 9,813 results were examined.

Data Collection Procedure

The data for this study was obtained from a nationally representative database of the NHANES. The public-use data in NHANES was downloaded in a comma-delimited format and analyzed in SPSS syntax after converting from SAS, and institutional review board (IRB) approval. Data was retrieved, cleaned, and analyzed during the quarter following IRB approval before commencing with the analysis.

Data Preparation

The data preparation process included the random selection of participants adolescents age 12 to 19 years based on exclusion criteria. Before the analysis, some modifications were made using Excel. The inclusion criteria for this study were (a) African American adolescents (males and females) ages 12 to 19 years and (b) categorized as obese and overweight according to BMI

The exclusion criteria for this study were (a) other race/ethnicity other than African American, (b) African Americans younger than 12 years of age or older than 19 years of

age, (c) categorized as underweight, and (d) categorized as pregnant. Missing data were left as blank cells,

Changes were made in the data files of all information and called Total_Data file. African American adolescent information that was obtained from the primary data file and called (African American_Adolescent_Data) file. I conducted a thorough data exploration using both the Total Data file and the African American Adolescent Data file. In this step, I incorporated univariate, bivariate, and residual analysis for assessing model validity. In my final report, the statistical data were the African American Adolescent data file, which were discussed under data analysis.

Demographic Data

The selected variables, such as gender, age, and race, were used in this study.

Table 1

Unweighted Sample Size and Percentage by Race/Hispanic Origin

	Hispanic		Non-Hispanic				Total
	Mexican American	Other Hispanic	White, single race	Black, single race	Asian, single race	Other, including multiracial persons	
2007-2010 n (%)	4,369 (21.8)	2,250 (11.2)	8,286 (41.4)	4,044 (20.2)	n/a[1]	1,066 (5.3)	20,015 (100.0)
2011-2014 n (%)	3,001 (15.7)	1,941 (10.1)	6,379 (33.3)	4,780 (25.0)	2,234 (11.7)	816 (4.3)	19,151 (100.0)

Note. Data from NHANES 2007-2010 and 2011-2014 for examined participants

Similar to previous release cycles, the 2007-2012 demographics file includes a variable for age in years at screening (RIDAGEYR) for all participants. Interviews were

conducted in-person in the mobile examination centers (MEC). The family and sample person demographics questionnaires were asked by trained interviewers using the Computer-Assisted Personal Interview (CAPI) system. The respondent selected the language of interview, and hand cards showing response choices or information that survey participants needed to answer the questions, were used for some items. The interviewer directed the respondent to the appropriate hand card during the interview. When necessary, the interviewer assisted the respondent by reading the response choices listed on the hand cards. Persons 16 years of age and older and emancipated minors were interviewed directly. A proxy provided information for survey participants who were under 16 and for participants who could not answer the questions themselves.

Physical Activity

The physical activity questionnaire was administered in person during the household interview for participants of the target age groups., and intensity of activities engaged were recorded, while the other file contained in and above. The MEC interviews are arranged in two files. In one file information such as the daily, sedentary activities information such as detailed information on the activities for participants aged 12 years are included. These files had to be compiled to get complete information.

Obesity and Overweight

The body measures data were collected in the MEC by trained health technicians. The participant's age at the time of the screening interview determined the body measures examination protocol. The demographic data file includes variables for age in years for participants aged 12 to 19 years at the examination (RIDEXAGY). The

anthropometry procedure details descriptions of the quality assurance and quality control measures that are used in the NHANES anthropometry body measures component.

Body Mass Index (BMI) was calculated as weight in kilograms divided by height in meters squared, and then rounded up to one decimal place. This variable was created for children and adolescents aged 12 to 19 years at the examination. The cutoff criteria are based on the CDC sex-specific 2000 BMI-for-age growth chart for the United States. The codes include an overweight BMI 85th to <95th percentile and obese BMI ≥ 95th percentile.

Health-Related Quality of Life

The CDC HRQOL-4 using a 4-item set of core questions that are maintained in the State-based Behavioral Risk Factor Surveillance System (BRFSS) for approximately 25 years and has been in the NHANES database for adolescents to adulthood (CDC, 2015). The HRQOL is a subjective interpretation of an individual's state of well-being, which relates to how satisfied the individual is with life in general (Wilson and Cleary, 1995). As a result, a disease condition may make life difficult for one person and grossly dissatisfying to another. For years researchers have found the Healthy Days Measures to be helpful at the national level for identifying health disparities, tracking population trends, and for building a coalition around a population health compatibility ("Health-related quality of life (HRQOL): Methods of Measures," 2016; CDC, 2015).

According to the CDC (2016), a set of questions referred to as the "Healthy Days Measures" are used to measure population health-related quality of life. The collection of items include 1) general health (excellent, very good, fair or poor), 2) Physical health

which includes physical injury or illness recorded as how many days during the last 30 days the individual's physical health was not good, 3) mental health which includes stress, depression, and emotional recorded as how many days in the past 30 days the individual's mental health was not good, and 4) recorded as during the past 30 days how many days the individual was in poor physical or mental keep that kept the individual from participating in his or her usual daily activities.

To calculate these responses and obtain estimate responses to questions two and three are combined to get a summary index of total unhealthy days. The estimate of the healthy days is the positive complementary of the unhealthy days. This is achieved by estimating the number of recent days when the individual's physical and mental health was good in the last 30 days (CDC, 2015). Well-being is a positive outcome the indicates good living conditions such as housing, employment, feeding, and medical care. Tracking these conditions is crucial for people from many sectors of society, as well as policymakers. Well-being could equally be associated with the determination of an individual or population life satisfaction and of feelings that could be assessed from depression to happiness (CDC, 2015).

Race

The RIDRETH3 variable was the race-ethnicity variable included in the demographics file 2007-2012 NHANES. The self-identified non-Hispanic participants were categorized as non-Hispanic white (RIDRETH3=3), non-Hispanic black (RIDRETH3=4.) The coding procedures for previous year survey circles were compatible with RIDRETH3.

Data Analysis

The data was analyzed quantitatively using the Statistical Package for Social Sciences (SPSS) version 25. Though the NHANES data are made available to researchers in the Statistical Analysis System (SAS) format, the data were converted to the SPSS format. SPSS software is designed to analyze sophisticated datasets such as the NHANES datasets. The choice of logistic regression was necessary because of its suitability to examine the predictor variables of interest simultaneously (Creswell, 2009) in the prediction of obesity and overweight and the association with HRQOL. The use of logistic regression enabled the projected hypothesis that sociodemographic variables such as age, gender, race, and family income may affect weight and obesity, which in turn, triggered a negative HRQOL. The behavioral construct includes physical activity, a number of times per week exercise occurred, hours of television time, the intensity of exercise performed. The three research questions were answered by applying Ordinal Logistic regression.

Relative weights were applied while analyzing demographic characteristics of the sample, which included frequencies and percentages. As earlier discussed, the data did undergo a cleaning process and recoding was be carried out before the analysis. The basic parametric assumptions were evaluated for normality, linearity, homoscedasticity, and examination of model residuals, using univariate and bivariate analysis of both the categorical and continuous variables.

Controlling for age and poverty level, ordinal logistic regression was used to test the association of the dependent and independent variables.

RQ 1-Quantitative:

Is there an association between health-related quality of life (HRQOL- 4) and race after controlling for poverty level, annual household income, and age among obese and overweight adolescents between ages 12 to 19 years?

H_o1: There is no association between health-related quality of life (HRQOL- 4) and race after controlling for poverty level, annual household income, and age among obese and overweight adolescents between ages 12 to 19 years.

$H_1 1$: There is an association between health-related quality of life (HRQOL- 4) and race after controlling for poverty level, annual household income, and age among obese and overweight adolescents between ages 12 to 19 years.

RQ 2-Quantitative:

Is there an association between health-related quality of life (HRQOL 4) and physical activity, after controlling for poverty level and age among overweight and obese African-American adolescent population age 12 to 19 years?

H_o2: There is no association between health-related quality of life (HRQOL-4) and physical activity, after controlling for poverty level and age among overweight and obese African-American adolescent population age 12 to 19 years.

$H_1 2$: There is an association between health-related quality of life (HRQOL-4) and physical activity, after controlling for poverty level and age among overweight and obese African-American adolescent population age 12 to 19 years.

RQ 3-Quantitative:

Is there an association between health-related quality of life (HRQOL-4) and gender after controlling for poverty level and age among obese and overweight African-American adolescents age 12 to 19 years?

H_o3: There is no association between health-related quality of life (HRQOL-4) and gender after controlling for poverty level and age among obese and overweight African-American adolescents age 12 to 19 years.

$H_1 3$: There is an association between health-related quality of life (HRQOL-4) and gender after controlling for poverty level and age among obese and overweight African-American adolescents aged 12 to 19 years.

A bivariate analysis was conducted to analyze the relationships between each of the independent variables using Statistical Package for Social Sciences (SPSS) for RQ 1, RQ 2, and RQ 3. Descriptive statistics using regression analysis was used to predict the values of the dependent variables from the information about the independent variables. The multicollinearity test was carried as there were indications that the predictor variable is linearly predicted by the other variables with a substantial degree of accuracy to determine the strength of the relationship and if correction is needed, Variance Inflation Factor (VIF) test was carried out. If a VIF (moderate association), no further action was required. However, if the VIF is >5 (critical level), then a correction would be required (Wagner, 2016).

Threats to Validity

In conducting the current research study, I was aware that there were several threats that could render the study findings either partially or entirely invalid. Validity and

reliability are crucial factors in quantitative research. Validity is the ability of the research to test what was purposed to be tested, and reliability is the measure of dependability, truthfulness, and consistency of the test (Creswell, 2009).

I attempted to identify the internal validity threats and eliminate or minimize them, with the understanding that validity might be threatened at any stage of the study. There are two types of validity: internal and external. Internal validity refers to how accurate the study results are based on a rational assessment that the results did not happen by chance, bias, confounding, or unproven methods (Babbie, 2017). External validity refers to the extent to which the conclusion of the study can be generalized. The scientific goal of the study is threatened if the sample selected, or the respondents are the kinds of people that willingly participate in research (Babbie, 2017). As stated earlier, NHANES used a complex, multistage probability design to sample the
civilian, noninstitutionalized population residing in the 50 states and D.C. Sample selection for NHANES followed particular stages and in a particular order as noted above.

Section 3: Presentation of the Results and Findings

Introduction

The (HRQOL-4 measure provided a framework to study the effects of obesity and overweightness. One of the areas of an individual's quality of life to be considered is that of how poverty, race, gender, and physical activity play some role in contributing to those health conditions, thereby adversely affecting an individual's HRQOL-4 (citation). This section explores the data of 331 randomly selected participants in the NHANES granary to answer the three research questions. The Statistical Package for Social Science (SPSS 25) software was used to organize their information into themes that are coded for analysis.

As noted in Sections 1 and 2, the three research questions that guided this study were: RQ1: Is there an association between health-related quality of life (HRQOL- 4) and race after controlling for poverty level and age among obese and overweight adolescents between ages 12 to 19 years?

RQ2: Is there an association between health-related quality of life (HRQOL 4) and physical activity, after controlling for poverty level and age among overweight and obese African American adolescent population age 12 to 19 years?

RQ3: Is there an association between health-related quality of life (HRQOL-4) and gender after controlling for poverty level and age among obese and overweight African American adolescents age 12 to 19 years?

Overall, my hypothesis was that while controlling for age and poverty level that physical activity, race, and gender would predict individuals HRQOL among obese and

overweight African American adolescents ages 12 to 19 years. In this chapter, I present a complete breakdown of the research methods and the analytic approach that I used to evaluate the data obtained from NHANES 2007-2012.

Data Collection of Secondary Data Set

In 2007-2012, 42,996 persons were selected for NHANES from 30 different survey locations. Of those selected, 30,525 completed the interview, and 29,439 were examined. The sample size of 331 was deemed reasonable to obtain a stable estimate. The standards for weight were based on BMI categories defined by the CDC (2010,2016) as shown in Table 1 below.

It is likely that some participants, during interviews, exaggerated some information. Unless further verification is made (which is beyond the scope of this study), it is possible that income, weight, activity levels, and other demographic variables might be incorrectly reported. Therefore, based on the limitations and focus of this study, the following assumptions were made:

- The sample population lifestyle generally may affect their overall quality of life (Wilson & Clearly, 1995).
- Sociodemographic variables such as age, gender, race, and family income may affect weight and obesity, which in turn, trigger negative HRQOL (CDC, 2013).
- Physical inactivity is significantly related to adolescent overweight and obesity, especially for African Americans (Lutfiyya et al. 2008).

- Poor nutrition and a sedentary lifestyle are contributors to overweight and obesity among African American adolescents (Boyington et al. (2008).

Characteristics of the Sample

A convenience sample size of 331 overweight, (*n*=189) obese, (142) male (*n*=175) which accounts for 52.9%, and female (*n*=156) which accounts for 47.1%. Non-Hispanic blacks (171), Non-Hispanic White (160), Mexican American (0), and other race, including multiracial (0) individuals for this study. The sample size was deemed adequate, according to Creswell (2009), to obtain a stable estimate because a sample size less than 100 should be avoided. The sample of adolescents was 12 to 19 years of age and was classified as normal weight, overweight, or obese, according to their BMI. Non-Hispanic Blacks (Blacks) and Non-Hispanic Whites (Whites). The demographic data profile included BMI, weight, height, age, and household income. Descriptive statistics frequency was used to examine these variables. Having met all requirements, the Walden (IRB approved the submitted application for this study (IRB # 11-20-19-0418851).

Descriptive Statistics

Descriptive statistics are furnished for the covariates identified in the study: gender, weight, race, and physical activity. The results from the correlation conducted were provided and addressed, as well as the summary of the study findings was presented.

Age of participants. The participants' range in ages 12 to 19 years with a mean age of 15.82 (*SD*=2.274).

BMI of participants. The participants' BMI ranged from 12.61 to 66.32, with a mean value of 30.7595 (*SD*=5.53685).

HRQOL-4 participants. The total participants were 331. The general health condition mean was 2.66 (*SD*=.951), Number of days physical health was not good has a mean of 2.72 (*SD*=5.789), Number of days mental health was not good has a mean of 4.43 (*SD*=7.876), and Inactive days due to physical/mental health was 1.66 (*SD*=4.723).

Physical activity. The days of vigorous recreational activities mean was 3.83 (*SD*=1.125), and the days of moderate recreational activities mean was 2.92 (*SD*=.968).

The actions taken in data preparation for analysis included converting ordinary data to complex data followed by data cleaning. I looked for outliers, missing data, possible violations of statistical assumptions, and other anomalies that could confound the data, reduce or eliminate potential problems, and prevent problems of bias and irregularities that could influence the statistical outcomes. I proceeded to run descriptive statistics on the study variables, as explained following this paragraph.

For RQ1, I performed a set of four linear regressions with ethnicity as the independent variable, age, and income level as the control variables. A separate regression was run for each of the four dependent variables (HSD010, HSQ470, HSQ480, HSQ490) for a total of four regression models.

I also performed an ordinal logistic regression with ethnicity as the independent variable, age, and income level as the control variables, and HSD010 as a categorical dependent variable.

I performed an additional set of 8 logistic regressions: One set of four was to obtain the crude *OR* that did not control for age and income level, with one model for each of the following dichotomized DVs: HSD010, HSQ470, HSQ480, HSQ490. One set of four regression models was to obtain adjusted *OR* that did control for age and income level, with one model for each of the following dichotomized DVs: HSD010, HSQ470, HSQ480, HSQ490.

For RQ2, I performed a set of four linear regressions with African American participants examining vigorous physical activity as the independent variable, age, and income level as the control variables. A separate regression was run for each of the four dependent variables (HSD010, HSQ470, HSQ480, HSQ490), for a total of four regression models. I then performed an ordinal logistic regression with African American participants examining vigorous physical activity as the independent variable, age, and income level as the control variables, and HSD010 as a categorical dependent variable.

For RQ3, I performed a set of four linear regressions with African American participants examining gender as the independent variable, age, and income level as the control variables. A separate regression was run for each of the four dependent variables (HSD010, HSQ470, HSQ480, HSQ490), for a total of four regression models. I further performed an ordinal logistic regression with African American participants examining gender as the independent variable, age, and income level as the control variables predicting HSD010 as a categorical variable.

Descriptive Statistics

Of the 331 responses, 48.3% reported themselves as Non-Hispanic White, while 51.7% reported to be Non-Hispanic African American, 47.1% of the sample was female, while 52.9% of the sample was male (see Table 2). All continuous variables were within the acceptable ranges for skewness and kurtosis (see Table 3).

Table 2

Frequencies for Ethnicity and Gender

Variable		*N*	%
Ethnicity	White	160	48.3
	Black	171	51.7
Gender	Female	156	47.1
	Male	175	52.9

Table 3

Descriptive for Study Variables

Variable	*N*	Min	Max	Mean	Std. Dev	Skew		Kurtosis	
						Stat	Std. Error	Stat	Std. Error
HSD010	331	1	5	2.66	0.95	0.07	0.13	-0.42	0.27
HSQ470	331	0	30	2.72	5.79	3.21	0.13	11.05	0.27
HSQ480	331	0	30	4.43	7.88	2.17	0.13	3.94	0.27
HSQ490	331	0	30	1.66	4.72	3.73	0.13	14.99	0.27
RIDAGEYR	331	12	19	15.82	2.27	-0.19	0.13	-1.15	0.27
INDHHIN2	331	1	15	7.90	4.56	0.30	0.13	-1.23	0.27
PAQ655	331	1	7	3.83	1.13	-0.41	0.13	0.09	0.27

The test assumptions for ordinal regression and linear regression were conducted, and depending on the results, I ran relevant assumption testing that included linear regression. The linear relationship between the variables are shown with scatterplots and histograms (Figure 3-Figure 14, see Appendix C). The continuous IVs did not show a strong preliminary linear relationship to the DV health.

Table 4

Normality: Tested using the Kolmogorov-Smirnov Test

Variable	Kolmogorov-Smirnov	*p*-value
Age	.14	<.001
Income Level	.15	<.001
Vigorous Activity	.23	<.001
HSD010	.21	<.001
HSQ470	.32	<.001
HSQ480	.29	<.001
HSQ490	.42	<.001

In summary, the multicollinearity shows that all tolerance scores are above 0.1, and all VIF scores are below 10. Therefore, there is no multicollinearity between the variables, so the assumption is not violated. See individual linear regression tables. In the ordinal regression, the proportional odds show the models passed the parallel lines test. The write up for the individual ordinal regression for each of the models as addressed in the analysis.

RQ1: Is there an association between health-related quality of life and race after controlling for poverty-level and age among African-American adolescents between 12 to 19 years?

$H_0$1: There is no association between race and HRQOL.

H_a1: There is an association between race and HRQOL.

Analysis Set 1 Results:

Regression 1. For the Regression Analysis 1, I conducted a linear regression with ethnicity (Two levels: non-Hispanic Whites and African American) as the IV, age and income level as the control variables, and HSD010 as the DV. The overall model was not

significant $F(3, 327) = 1.69$, $p = .17$). The predictor and control variables accounted for 1% of the variance in HSD010 (*Adj.* $R^2 = .01$). There was a marginal main effect of income, such that a higher income level predicted less health ($B = -.02$, $SE = .01$, $t = -1.84$, $p = .07$). There were no effects of age or ethnicity in predicting HSD010 (see Table 5).

Table 5

Parameter Estimates from Linear Regression Predicting HSD010 from Ethnicity

	Unstandardized B	Std. Error	*t*	*p*	Tolerance	VIF
Constant	3.32	0.38	8.66	0.00		
Age	-0.03	0.02	-1.36	0.17	1.00	1.00
Income	-0.02	0.01	-1.84	0.07	1.00	1.00
Ethnicity	0.00	0.10	-0.03	0.98	1.00	1.00

Regression 2. For the Regression Analysis 2, I conducted a linear regression with ethnicity (Two levels: non-Hispanic Whites, and African American) as the IV; age and income level as the control variables; and HSQ470 as the DV. The overall model was significant $F(3, 327) = 2.85$, $p = .04$). The predictor and control variables accounted for 2% of the variance in HSQ470 (*Adj.* $R^2 = .02$). There was a main effect of ethnicity, such that African American adolescents were more likely to report a lower number of days of physical health not being good ($B = -1.35$, $SE = .63$, $t = -2.14$, $p = .03$). There was a marginal main effect of income, such that a higher income level predicted fewer days of physical health not being good ($B = -.14$, $SE = .07$, $t = -1.94$, $p = .05$). There was no effect of age (see Table 6).

Table 6

Parameter Estimates from Linear Regression Predicting HSQ470 from Ethnicity

	Unstandardized B	Std. Error	*t*	*p*	Tolerance	VIF
Constant	5.41	2.32	2.33	0.02		
Age	-0.06	0.14	-0.42	0.67	1.00	1.00
Income	-0.14	0.07	-1.94	0.05	1.00	1.00
Ethnicity	-1.35	0.63	-2.14	0.03	1.00	1.00

Regression 3. For Regression Analysis 3, I conducted a linear regression with ethnicity (Two levels: non-Hispanic Whites, and African American) as the IV; age and income level as the control variables; and HSQ480 as the DV. The overall model was significant $F(3, 327) = 2.73$, $p = .04$). The predictor and control variables accounted for less than 1% of the variance in HSQ480 (*Adj.* $R^2 = .001$). There was a marginal main effect of ethnicity, such that African American adolescents were directionally more likely to report a lower number of days of mental health not being good ($B = -1.60$, $SE = .86$, $t = -1.86$, $p = .06$). There was a marginal main effect of income, such that a higher income level, predicted reporting fewer days of mental health not being good ($B = -.02$, $SE = .01$, $t = -1.84$, $p = .07$). There were no effects of age (see Table 7).

Table 7

Parameter Estimates from Linear Regression Predicting HSQ480 from Ethnicity

	Unstandardized B	Std. Error	*t*	*p*	Tolerance	VIF
Constant	3.26	3.16	1.03	0.30		
Age	0.21	0.19	1.13	0.26	1.00	1.00
Income	-0.18	0.09	-1.86	0.06	1.00	1.00
Ethnicity	-1.60	0.86	-1.86	0.06	1.00	1.00

Regression 4. For Regression Analysis 4, I conducted a linear regression with ethnicity (two levels: non-Hispanic Whites, and African American) as the IV; age and

income level as the control variables; and HSQ490 as the DV. The overall model was not significant $F(3, 327) = 1.14$, $p = .33$). The predictor and control variables accounted for 1% of the variance in HSQ490 (*Adj.* $R^2 = .01$). The predictor and control variables accounted for 1% of the variance in HSQ480 (*Adj.* $R^2 = .01$). There were no effects of ethnicity, income, or age (see Table 8).

Table 8

Parameter Estimates from Linear Regression Predicting HSQ490 from Ethnicity

	Unstandardized B	Std. Error	*t*	*p*	Tolerance	VIF
Constant	-0.35	1.91	-0.18	0.86		
Age	0.16	0.11	1.36	0.17	1.00	1.00
Income	-0.02	0.06	-0.27	0.79	1.00	1.00
Ethnicity	-0.65	0.52	-1.25	0.21	1.00	1.00

Analysis 2. Results

Ordinal Regression for HSD010. The general health condition (HSD010) was addressed using an ordinal logistic regression predicting HSD010 from ethnicity as the predictor and age and income level as covariates. The model passed the test of parallel lines ($\chi2(9) = 6.08$, $p = .73$).While the overall model was a good fit for the data (Pearson $\chi2(645) = 666.727$, $p = .27$), the full model did not provide a significant change in predicting HSD010 compared to a model containing only the intercepts ($\chi2(3) = 5.24$, $p = .16$). The full model predicted a small proportion of the variation in HSD010 (see Nagelkerke $R^2 = .02$). There was no significant change in the log odds of reporting a higher HSD010 level based on ethnicity (Estimate = -.001, *SE* = .20, $p = .99$; see Table 9).

Table 9

Parameter Estimates from Ordinal Regression Predicting HSD010 from Ethnicity

	Log Odds Estimate	*SE*	Wald	*df*	*p*	Lower Bound Confidence	Upper Bound Confidence
[HSD010 = 1]	-3.49	0.77	20.48	1.00	0.00	-5.00	-1.98
[HSD010 = 2]	-1.72	0.75	5.21	1.00	0.02	-3.19	-0.24
[HSD010 = 3]	0.10	0.75	0.02	1.00	0.89	-1.36	1.56
[HSD010 = 4]	2.44	0.82	8.79	1.00	0.00	0.83	4.05
Age	-0.07	0.04	2.55	1.00	0.11	-0.16	0.02
Income Level	-0.04	0.02	3.01	1.00	0.08	-0.08	0.01
Ethnicity =0	0.00	0.20	0.00	1.00	1.00	-0.39	0.39

There was just as likely a chance of reporting a high health level whether a participant was White or Black (*B* = .999). There was a marginal effect of income level, such that those with a higher income level are less likely than those with a lower income level to report a high health level (Estimate of log odds = -.038, *B* = .962, *SE* = .02, *p* = .08). This means that those with a higher income level are more likely to have better health level.

Analysis 3 Results (Dichotomized)

Regression 1 (HSD010). To address this, a binary logistic regression with ethnicity (two levels: non-Hispanic White (0), and African American (1)) as the IV and HSD010 as the DV (0 corresponding to 1,2,3; 1 corresponding to 4, 5). See Table 10.

Table 10

Summary of RQ 1, Analysis Set 3 Binary Logistic Regression Results for Ethnicity

Characteristic		Health Status (Fair/Poor)	≥ 14 Physically Unhealthy Days	≥ 14 Mentally Unhealthy Days	≥ 14 Activity-Limited Days
Crude OR		*OR* (95% CI)	*OR* (95% CI)	*OR* (95% CI)	*OR* (95% CI)
	Non-Hispanic White	1	1	1	1

Adjusted *OR*	Non-Hispanic Black	.93 (.60-1.45)	.48 (.19-1.24)	.57 (.30-1.09)	.74 (.28-1.92)
	Non-Hispanic White	1	1	1	1
	Non-Hispanic Black	.94(.61-1.46)	.47 (.18-1.23)	.56 (.29-1.09)	.72 (.27-1.70)

Note: There were no significant effects of ethnicity (i.e., $p < .05$), so no results are bolded; Adjusted reflects adjustment for age and income level.

The model was not significant ($\chi2(1) = .09$, $p = .76$), and accounted for less than 1% of the variance in HSD010 (Nagelkerke $R^2 < .01$). There was no effect of ethnicity (see Table 11).

Table 11

Parameter Estimates Predicting HSD010 from Ethnicity (Crude)

	B	Std. Error	Wald	*df*	*p*	*OR*	95% CI for OR Lower	Upper
Ethnicity	-0.07	0.22	0.09	1.00	0.76	0.93	0.60	1.45
Constant	0.28	0.16	3.08	1.00	0.08	1.33		

Regression 2 (HSQ470). In this regression analysis I conducted a binary logistic regression with ethnicity a two-level approach was applied depicting non-Hispanic White (0), and African American (1)) as the IV; and HSQ470 as the DV (0 corresponding to <14 days; 1 corresponding to ≥ 14 days). The model was not significant ($\chi2(1) = 62.39$, $p = .12$), and accounted for 2% of the variance in HSQ470 (Nagelkerke $R^2 = .02$). There was no effect of ethnicity (see Table 12).

Table 12

Parameter Estimates Predicting HSQ490 from Ethnicity (Crude)

	B	Std. Error	Wald	*df*	*p*	Odds Ratio	95% CI for OR Lower	Upper
Ethnicity	-0.73	0.48	2.28	1.00	0.13	0.48	0.19	1.24
Constant	-2.43	0.29	70.27	1.00	0.00	0.09		

Regression 3 (HSQ480). For regression analysis 3, that addressed the number of days mental health was not good, I conducted the analysis using a binary logistic regression with ethnicity dichotomized as non-Hispanic white (0), and African American (1)) as the IV; and HSQ480 as the DV (0 corresponding to <14 days; 1 corresponding to ≥ 14 days). The model was marginally significant ($\chi 2(1) = 2.92$, $p = .09$), and accounted for 2% of the variance in HSQ480 (Nagelkerke $R^2 = .02$). There was a moderate effect of ethnicity, such that African Americans were marginally less likely than whites to experience 14 or more days of being mentally unhealthy (see Table 13).

Table 13: *Parameter Estimates Predicting HSQ480 from Ethnicity (Crude*)

	B	Std. Error	Wald	df	p	Odds Ratio	95% CI for OR Lower	Upper
Ethnicity	-0.56	0.33	2.86	1.00	0.09	0.57	0.30	1.09
Constant	-1.64	0.21	58.55	1.00	0.00	0.19		

Regression 4 (HSQ490). For this analysis, I conducted a binary logistic regression with ethnicity (2 levels: non-Hispanic white (0), and African American (1)) as the IV; and HSQ490 as the DV (0 corresponding to <14 days; 1 corresponding to ≥ 14 days). The model was not significant ($\chi 2(1) = .40$, $p = .53$), and accounted for less than 1% of the variance in HSQ490 (Nagelkerke $R^2 < .01$). There was no effect of ethnicity (see Table 14).

Table 14: *Parameter Estimates Predicting HSQ490 from Ethnicity (Crude)*

	B	Std. Error	Wald	df	p	Odds Ratio	95% CI for OR Lower	Upper
Ethnicity	-0.31	0.49	0.39	1.00	0.53	0.74	0.28	1.92
Constant	-2.71	0.33	68.75	1.00	0.00	0.07		

Regression 5 (HSD010). For this analysis, I conducted a binary logistic regression with ethnicity (2 levels: non-Hispanic white (0), and African American (1)) as the IV; age and income level as the control variables; and HSD010 as the DV (0 corresponding to 1,2,3; 1 corresponding to 4, 5). The model was not significant ($\chi 2(1) = 3.93$, $p = .27$), and accounted for 2% of the variance in HSD010 (Nagelkerke $R^2 = .02$). There was no effect of ethnicity (see Table 15).

Table 15: *Parameter Estimates Predicting HSD010 from Ethnicity (Adjusted)*

	B	Std. Error	Wald	df	p	Odds Ratio	95% CI for OR Lower	Upper
Age	-0.08	0.05	2.66	1.00	0.10	0.92	0.84	1.02
Income	-0.03	0.03	1.29	1.00	0.26	0.97	0.93	1.02
Ethnicity	-0.06	0.23	0.07	1.00	0.79	0.94	0.61	1.46
Constant	1.80	0.84	4.56	1.00	0.03	6.07		

Regression 6 (HSQ470). For this analysis, I conducted a binary logistic regression with ethnicity on a two-level such that non-Hispanic white (0), and African American (1)) as the IV; age and income level as the control variables; and HSQ470 as the DV (0 corresponding to <14 days; 1 corresponding to $\geq$ 14 days). The model was marginally significant ($\chi 2(3) = 6.70$, $p = .08$), and accounted for 6% of the variance in HSQ470 (Nagelkerke $R^2 = .06$). Of the predictors, there was a marginal effect of income level, but no effect of ethnicity (see Table 16).

Table 16: Parameter Estimates Predicting HSQ470 from Ethnicity

	B	Std. Error	Wald	df	p	Odds Ratio	95% CI for OR Lower	Upper
Age	0.08	0.10	0.56	1.00	0.45	1.08	0.88	1.32
Income	-0.10	0.06	3.25	1.00	0.07	0.90	0.81	1.01
Ethnicity	-0.75	0.49	2.37	1.00	0.12	0.47	0.18	1.23
Constant	-2.93	1.74	2.84	1.00	0.09	0.05		

Regression 7 (HSQ480). For this analysis, I conducted a binary logistic regression with ethnicity (2 levels: non-Hispanic white (0), and African American (1)) as the IV; age and income level as the control variables; and HSQ480 as the DV (0 corresponding to <14 days; 1 corresponding to ≥ 14 days). The model was statistically significant ($\chi 2(3) = 8.87$, $p = .03$), and accounted for 5% of the variance in HSQ480 (Nagelkerke $R^2 = .05$). Of the predictors, there was a significant effect of income level, and a marginal effect of ethnicity, such that African Americans were marginally less likely than whites to experience 14 or more days of being mentally unhealthy (see Table 17).

Table 17: *Parameter Estimates Predicting HSQ480 from Ethnicity (Adjusted)*

	B	Std. Error	Wald	df	p	Odds Ratio	95% CI for OR Lower	Upper
Age	0.04	0.07	0.27	1.00	0.60	1.04	0.90	1.20
Income	-0.09	0.04	5.17	1.00	0.02	0.92	0.85	0.99
Ethnicity	-0.58	0.34	2.94	1.00	0.09	0.56	0.29	1.09
Constant	-1.59	1.21	1.72	1.00	0.19	0.20		

Regression 8 (HSQ490). In addressing regression analysis eight I conducted a binary logistic regression with ethnicity (2 levels: non-Hispanic white (0), and African American (1)) as the IV; age and income level as the control variables; and HSQ490 as the DV (0 corresponding to <14 days; 1 corresponding to ≥ 14 days). The model was not

significant ($\chi 2(3) = 2.21$, $p = .53$), and accounted for 2% of the variance in HSQ490 (Nagelkerke $R^2 = .02$). There were no effects of any of the predictors (see Table 18).

Table 18: *Parameter Estimates Predicting HSQ490 from Ethnicity (Adjusted)*

	B	Std. Error	Wald	df	p	Odds Ratio	95% CI for OR Lower	Upper
Age	0.15	0.11	1.72	1.00	0.19	1.16	0.93	1.45
Income	0.01	0.05	0.01	1.00	0.92	1.01	0.91	1.12
Ethnicity	-0.33	0.49	0.47	1.00	0.50	0.72	0.27	1.87
Constant	-5.16	1.97	6.86	1.00	0.01	0.01		

RQ2: Are physical activity and general health-related in African American adolescents ages 12 to 19 after controlling for age and income level?

Null Hypothesis: There is no relationship between physical activity and general health.

Alternative Hypothesis: There is a relationship between physical activity and general health.

Analysis 1 Results

Regression 1. I conducted a linear regression with physical activity (continuous) as the IV; age and income level as the control variables; and HSD010 as the DV; selecting only African Americans. The overall model was not significant $F(3, 167) = 0.68$, $p = .57$). The predictor and control variables accounted for less than 1% of the variance in HSD010 ($Adj.\ R^2 < .01$). There were no main effects of any of the predictors (see Table 19).

Table 19: *Parameter Estimates from Linear Regression Predicting HSD010 from Activity*

	Unstandardized B	Std. Error	t	p	Tolerance	VIF
Constant	3.46	0.61	5.64	0.00		
Age	-0.03	0.03	-1.00	0.32	0.99	1.01
Income	-0.02	0.02	-0.86	0.39	0.99	1.01
Activity	-0.04	0.06	-0.74	0.46	0.99	1.01

Regression 2. I conducted a linear regression with physical activity (continuous) as the IV; age and income level as the control variables; and HSQ470 as the DV; selecting only African Americans. The overall model was marginally significant $F(3, 167) = 2.22$, $p = .09$). The predictor and control variables accounted for 2% of the variance in HSQ470 (*Adj.* $R^2 = .02$). There was a main effect of income, such that a higher income level predicted fewer days of physical health not being good ($B = -.18$, $SE = .08$, $t = -2.15$, $p = .03$). There was no effect of activity or age (see Table 20).

Table 20: *Parameter Estimates from Linear Regression Predicting HSQ470 from Activity*

	Unstandardized B	Std. Error	t	p	Tolerance	VIF
Constant	6.32	2.99	2.12	0.04		
Age	-0.22	0.16	-1.35	0.18	0.99	1.01
Income	-0.18	0.08	-2.15	0.03	0.99	1.01
Activity	0.15	0.29	0.54	0.59	0.99	1.01

Regression 3. I conducted a linear regression with physical activity (continuous) as the IV; age and income level as the control variables; and HSQ480 as the DV; selecting only African Americans. The overall model was significant $F(3, 167) = 2.69$, $p < .05$). The predictor and control variables accounted for 3% of the variance in HSQ480 (*Adj.* $R^2 = .03$). There was a main effect of activity, such that more activity predicted fewer number of days of not feeling mentally well ($B = -.93$, $SE = .42$, $t = -2.19$, $p = .03$). There were no effects of age or income (see Table 21).

Table 21: *Parameter Estimates from Linear Regression Predicting HSQ480 from Activity*

	Unstandardized B	Std. Error	t	p	Tolerance	VIF
Constant	4.25	4.40	0.97	0.34		
Age	0.27	0.24	1.13	0.26	0.99	1.01
Income	-0.16	0.12	-1.33	0.19	0.99	1.01
Activity	-0.93	0.42	-2.19	0.03	0.99	1.01

Regression 4. I conducted a linear regression with physical activity (continuous) as the IV; age and income level as the control variables; and HSQ490 as the DV; selecting only African Americans. The overall model was not significant $F(3, 167) = 1.54$, $p = .21$). The predictor and control variables accounted for 1% of the variance in HSQ490 (*Adj.* $R^2 = .01$). There was a marginal main effect of activity, such that more activity predicted fewer number of days of inactivity ($B = -.48$, $SE = .24$, $t = -1.98$, $p = .05$). There were no effects of age or income (see Table 22).

Table 22: *Parameter Estimates from Linear Regression Predicting HSQ490 from Activity*

	Unstandardized B	Std. Error	t	p	Tolerance	VIF
Constant	2.94	2.54	1.16	0.25		
Age	0.04	0.14	0.32	0.75	0.99	1.01
Income	-0.06	0.07	-0.79	0.43	0.99	1.01
Activity	-0.48	0.24	-1.98	0.05	0.99	1.01

Analysis 2 Results

Ordinal Regression for HSD010. I conducted an ordinal logistic regression predicting HSD010 from vigorous activity as the predictor, and age and income level as covariates for Black participants only. The model passed the test of parallel lines ($\chi2(9) = 8.80$, $p = .46$). While the overall model was a good fit for the data (Pearson $\chi2(553) = 556.061$, $p = .46$), the full model did not provide a significant change in predicting

HSD010 compared to a model containing only the intercepts ($\chi 2(3) = 2.52$, $p = .47$). The full model predicted a small proportion of the variation in HSD010 (Nagelkerke $R^2 = .02$). There was no significant change in the log odds of reporting a higher HSD010 level based on ethnicity (Estimate = -.001, *SE* = .20, *p* = .99l; see Table 23).

Table 23: *Parameter Estimates from Ordinal Regression Predicting HSD010 from Activity*

	Log Odds Estimate	SE	Wald	df	p	Lower Bound Confidence	Upper Bound Confidence
[HSD010 = 1]	-3.67	1.16	9.95	1.00	0.00	-5.96	-1.39
[HSD010 = 2]	-1.99	1.14	3.04	1.00	0.08	-4.22	0.25
[HSD010 = 3]	-0.36	1.13	0.10	1.00	0.75	-2.58	1.85
[HSD010 = 4]	2.31	1.25	3.43	1.00	0.06	-0.14	4.76
Age	-0.07	0.06	1.43	1.00	0.23	-0.19	0.05
Income Level	-0.03	0.03	0.99	1.00	0.32	-0.09	0.03
Activity	-0.09	0.11	0.66	1.00	0.42	-0.30	0.13

RQ3: Do gender and general health related in African American adolescents ages 12 to 19 after controlling for age and income level?

Null Hypothesis: There is no association between gender and general health.

Alternative Hypothesis: There is an association between gender activity and general health.

Analysis 1 Results

Regression 1: I conducted a linear regression with gender (dichotomous: male and female) as the IV; age and income level as the control variables; and general health as the

DV; selecting only African Americans. The overall model was significant $F(3, 167) = 6.59$, $p < .001$). The predictor and control variables accounted for 9% of the variance in health (*Adj.* $R^2 = .09$). After controlling for gender and income level, there was a main effect of gender, such that males reported less health than females ($B = -.63$, $SE = .15$, $t = -4.26$, $p < .001$). There were no effects of age or income level in this model predicting health (see Table 24).

Table 24: *Parameter Estimates from Linear Regression Predicting HSD010 from Gender*

	Unstandardized B	Std. Error	t	p	Tolerance	VIF
Constant	3.12	0.53	5.91	0.00		
Age	0.00	0.03	-0.01	1.00	0.95	1.06
Income	-0.02	0.02	-0.96	0.34	1.00	1.00
Gender	-0.63	0.15	-4.26	0.00	0.95	1.06

Regression 2. I conducted a linear regression with gender as the IV; age and income level as the control variables; and HSQ470 as the DV; selecting only African Americans. The overall model was marginally significant $F(3, 167) = 2.37$, $p = .07$). The predictor and control variables accounted for 2% of the variance in HSQ470 (*Adj.* $R^2 = .02$). There was a main effect of income, such that a higher income level predicted fewer days of physical health not being good ($B = -.18$, $SE = .08$, $t = -2.15$, $p = .03$). There was no effect of gender or age (see Table 25).

Table 25: *Parameter Estimates from Linear Regression Predicting HSQ470 from Gender*

	Unstandardized B	Std. Error	t	p	Tolerance	VIF
Constant	6.87	2.69	2.55	0.01		
Age	-0.19	0.16	-1.16	0.25	0.95	1.06
Income	-0.18	0.08	-2.21	0.03	1.00	1.00
Gender	-0.64	0.76	-0.85	0.40	0.95	1.06

Regression 3. I conducted a linear regression with gender as the IV; age and income level as the control variables; and HSQ480 as the DV; selecting only African Americans. The overall model was significant $F(3, 167) = 2.99$, $p < .05$). The predictor and control variables accounted for 3% of the variance in HSQ480 (*Adj.* $R^2 = .03$). There was a main effect of gender, such that males reported fewer number of days of not feeling mentally well ($B = -.93$, $SE = .42$, $t = -2.19$, $p = .03$). There was a marginal effect of gender, such older adolescents were more likely to report more days of not feeling mentally well ($B = .43$, $SE = .12$, $t = 1.79$, $p = .08$). There was no effect of income (see Table 26).

Table 26: *Parameter Estimates from Linear Regression Predicting HSQ480 from Gender*

	Unstandardized B	Std. Error	t	p	Tolerance	VIF
Constant	-0.57	3.96	-0.14	0.89		
Age	0.43	0.24	1.79	0.08	0.95	1.06
Income	-0.15	0.12	-1.25	0.21	1.00	1.00
Gender	-2.65	1.11	-2.39	0.02	0.95	1.06

Regression 4. I conducted a linear regression with gender as the IV; age and income level as the control variables; and HSQ490 as the DV; selecting only African Americans. The overall model was not significant $F(3, 167) = .23$, $p = .88$). The predictor and control variables accounted for less than 1% of the variance in HSQ490 (*Adj.* $R^2 < .001$). There were no effects of gender, age, or income (see Table 27).

Table 27: *Parameter Estimates from Linear Regression Predicting HSQ490 from Gender*

	Unstandardized B	Std. Error	t	p	Tolerance	VIF
Constant	3.12	0.53	5.91	0.00		
Age	0.00	0.03	-0.01	1.00	0.95	1.06
Income	-0.02	0.02	-0.96	0.34	1.00	1.00
Gender	-0.63	0.15	-4.26	0.00	0.95	1.06

Analysis 2 Results:

Ordinal Regression for HSD010. I conducted an ordinal logistic regression predicting HSD010 from gender as the predictor, and age and income level as covariates for Black participants only. The model passed the test of parallel lines ($\chi2(9) = 4.06$, $p = .91$). The overall model was a good fit for the data (Pearson $\chi2(473) = 455.81$, $p = .71$). The full model provided a significant change in predicting HSD010 compared to a model containing only the intercepts ($\chi2(3) = 18.23$, $p < .001$). The full model predicted a medium proportion of the variation in HSD010 (Nagelkerke $R^2 = .11$). There was a significant change in the log odds of reporting a higher HSD010 level based on gender (Estimate = -1.18, $SE = .30$, $p < .001$; see Table 28). Men were significantly less likely to report high HSD010 compared to women ($B = .31$). This means that men were significantly more likely to have better health than women.

Table 28: *Parameter Estimates from Ordinal Regression Predicting HSD010 from Gender*

	Log Odds Estimate	SE	Wald	df	p	Lower Bound Confidence	Upper Bound Confidence
[HSD010 = 1]	-3.16	1.06	8.93	1.00	0.00	-5.23	-1.09
[HSD010 = 2]	-1.37	1.03	1.77	1.00	0.18	-3.40	0.65
[HSD010 = 3]	0.35	1.03	0.12	1.00	0.73	-1.66	2.37
[HSD010 = 4]	3.08	1.16	7.02	1.00	0.01	0.80	5.35
Age	-0.02	0.06	0.06	1.00	0.81	-0.14	0.11
Income Level	-0.03	0.03	1.00	1.00	0.32	-0.09	0.03
Activity	-1.18	0.30	15.56	1.00	0.00	-1.77	-0.59

Table 29: *Weight Status/Percentile Range*

Weight Status Classification	Percentile Range
Weight Status Classification	5th Percentile Range
Underweight	5th Percentile to 85th Percentile
Healthy Weight	5th Percentile to 95th Percentile
Overweight	85th Percentile to 95th Percentile
Obese	Equal or greater than 95th Percentile

Note. Data from the Centers for Disease Control and Prevention (2010).

Table 30: *BMI Classification*

Classification	BMI
Normal Weight	18.5-24.9
Overweight	25.0-29.9
Obese	30 and above

CDC Classification (2016)

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

In this section, I discuss the results of the study, the need for the study, and how the study was conducted to address the research questions and the hypothesis. I present the application to professional practice and the implications for social change. I explain the purpose of the research study and how I applied the study design to answer the research questions, I provide an overview of the result findings including the foundational theories that was used to support the research outcomes. I also provide recommendations for future research.

Interpretation of the Findings

In addressing ReRQ1, eight regression analyses were conducted to focus on HRQOL-4 between non-Hispanic Blacks and non-Hispanic Whites in adolescents ages 12 to 19 years after controlling for age and income levels. In Regression 1, a linear regression analysis that was performed revealed a marginal main effect of income, such that a higher income level predicted less health (B = -.02, SE = .01, t = -1.84, p = .07). There were no effects of age or ethnicity in predicting HSD010 (see Table 3).

In the second regression analysis with ethnicity using two levels: non-Hispanic White, and African American) as the IV; age and income level as the control variables; and HSQ470 as the DV, there was a main effect of ethnicity, such that African American adolescents were more likely to report a lower number of days of physical health not being good (B = -1.35, SE = .63, t = -2.14, p = .03). There was a marginal main effect of

income, such that a higher income level predicted fewer days of physical health not being good (B = -.14, SE = .07, t = -1.94, p = .05). There was no effect of age (see Table 4).

Regression 3 used linear regression with ethnicity on two levels: non-Hispanic White, and African American) as the IV, age and income level as the control variables, and HSQ480 as the DV. There was a marginal main effect of ethnicity, such that African American adolescents were directionally more likely to report a lower number of days of mental health not being good, and also a marginal main effect of income, such that a higher income level, predicted reporting fewer days of mental health not being good. There were no effects of age (see Table 5).

In Regression 4, using linear regression model with ethnicity dichotomized in two levels as non-Hispanic White, and African- American as the IV, age and income level as the control variables, and HSQ490 as the DV. There were no effects of ethnicity, income, or age (see Table 6).

Ordinal regression was used to analyze for general health condition (HSD010) predicting HSD010 from ethnicity as the predictor, and age and income level as covariates. There was just as likely a chance of reporting high health level whether a participant was White or Black (B = .999). There was a marginal effect of income level, such that those with a higher income level are less likely than those with a lower income level to report a high health level. This means that those with a higher income level are more likely to have better health level.

A binary logistic regression with ethnicity on two levels was run with non-Hispanic white (0), and African-American (1) as the IV and HSD010 as the DV (0

corresponding to 1,2,3; 1 corresponding to 4, 5). There was no effect of ethnicity (see Table 10).

A binary logistic regression was also used with ethnicity (two levels: non-Hispanic White [0], and African-American [1]) as the IV and HSQ470 as the DV (0 corresponding to <14 days; 1 corresponding to ≥ 14 days). The model was not significant ($\chi 2(1) = 62.39$, $p = .12$), and accounted for 2% of the variance in HSQ470 (Nagelkerke $R^2 = .02$). There was no effect of ethnicity (see Table 10).

A binary logistic regression with ethnicity using two levels, non-Hispanic White (0), and African American (1), as the IV and HSQ480 as the DV (0 corresponding to <14 days; 1 corresponding to ≥ 14 days). There was a moderate effect of ethnicity, such that African Americans were marginally less likely than Whites to experience 14 or more days of being mentally unhealthy (see Table 11).

I conducted a binary logistic regression with ethnicity on two levels, non-Hispanic White (0), and African American (1), as the IV and HSQ490 as the DV (0 corresponding to <14 days; 1 corresponding to ≥ 14 days). The model was not significant ($\chi 2(1) = .40$, $p = .53$), and accounted for less than 1% of the variance in HSQ490 (Nagelkerke $R^2 < .01$). There was no effect of ethnicity (see Table 12).

In conducting a binary regression for Regression 5 (HSD010) with ethnicity on two levels, non-Hispanic White (0) and African American (1), as the IV; age and income level as the control variables; and HSD010 as the DV (0 corresponding to 1,2,3; 1 corresponding to 4, 5). The model was not significant ($\chi 2(1) = 3.93$, $p = .27$), and

accounted for 2% of the variance in HSD010 (Nagelkerke R^2 = .02). There was no effect of ethnicity (see Table 13).

Regression 6 (HSQ470) was addressed by conducting a binary logistic regression with ethnicity dichotomized as non-Hispanic White (0) and African-American (1) as the IV; age and income level as the control variables; and HSQ470 as the DV (0 corresponding to <14 days; 1 corresponding to ≥ 14 days). The model was marginally significant ($\chi 2(3) = 6.70$, $p = .08$), and accounted for 6% of the variance in HSQ470 (Nagelkerke R^2 = .06). Of the predictors, there was a marginal effect of income level, but no effect of ethnicity (see Table 14).

Regression 7 (HSQ480) analysis used a binary logistic regression with ethnicity on two levels: non-Hispanic White (0), and African-American (1) as the IV, age and income level as the control variables, and HSQ480 as the DV (0 corresponding to <14 days; 1 corresponding to ≥ 14 days). Of the predictors, there was a significant effect of income level, and a marginal effect of ethnicity, such that African Americans were marginally less likely than Whites to experience 14 or more days of being mentally unhealthy (see Table 15).

For Regression 8 (HSQ490), I conducted a binary logistic regression with ethnicity on two levels: non-Hispanic White (0), and African American (1) as the IV; age and income level as the control variables; and HSQ490 as the DV (0 corresponding to <14 days; 1 corresponding to ≥ 14 days) and found that there were no effects of any of the predictors (see Table 16).

Swallen et al. (2005), in a cross-sectional study, analyzed the relationship between BMI and some measures of HRQOL to investigate the association between the variables. The results reflected adolescents who were overweight and obese were more likely to report poor general health than those with normal BMI. Non-Hispanic Blacks were less likely than non-Hispanic Whites to report low self -esteem (depression) and social functioning, indicating poor HRQOL (citation).

Lutfiyya et al. (2008) conducted a cross-sectional study in which they found that obese and overweight adolescents were more likely to be African Americans than Whites, and the African-Americans were likely to be males from a household of income below the poverty level (150% Federal poverty level), live a sedentary lifestyle, and may not have received preventive health care in the last 1 year.

Baskin et al. (2013) conducted a cross-sectional study in which they found that most adolescents fail to meet recommended amounts of physical activity. They also found that African American youths were still less physically active than their White counterparts and are more likely to report poor health. This finding supported my study results, though marginal in some respects, observing that income and ethnicity were significant in predicting general health where African American adolescents were more likely to report a lower number of days of physical health, not being good health, and a higher income level predicted fewer days of physical health not being good.

RQ2 asked - Are physical activity and general health related in African American adolescents ages 12 to 19 after controlling for age and income level?

In the Analysis 1, I conducted a linear regression with physical activity (continuous) as the IV, age and income level as the control variables, and HSD010 as the DV, selecting only African Americans. The overall model was not significant $F(3, 167) = 0.68$, $p = .57$). The result yielded no main effects of any of the predictors (see Table 17).

For Regression 2, I conducted a linear regression with physical activity (continuous) as the IV, age and income level as the control variables, and HSQ470 as the DV, selecting only African Americans. The overall model was marginally significant $F(3, 167) = 2.22$, $p = .09$). The predictor and control variables accounted for 2% of the variance in HSQ470 (*Adj.* $R^2 = .02$). There was a main effect of income, such that a higher income level predicted fewer days of physical health not being good ($B = -.18$, $SE = .08$, $t = -2.15$, $p = .03$). There was no effect of activity or age (see Table 18).

Regression 3 was conducted a linear regression with physical activity (continuous) as the IV, age and income level as the control variables, and HSQ480 as the DV, selecting only African Americans. The overall model was significant $F(3, 167) = 2.69$, $p < .05$). The predictor and control variables accounted for 3% of the variance in HSQ480 (*Adj.* $R^2 = .03$). There was a main effect of activity, such that more activity predicted fewer number of days of not feeling mentally well ($B = -.93$, $SE = .42$, $t = -2.19$, $p = .03$). There were no effects of age or income (see Table 19).

Regression 4 analysis was performed using a linear regression with physical activity (continuous) as the IV, age and income level as the control variables, and HSQ490 as the DV, selecting only African Americans. The result revealed a marginal main effect of activity, such that more activity predicted fewer number of days of

inactivity (B = -.48, SE = .24, t = -1.98, p = .05). There were no effects of age or income (see Table 20).

I performed ordinal regression for HSD010 in predicting HSD010 from vigorous activity as the predictor, and age and income level as covariates for Black participants only. The model passed the test of parallel lines ($\chi 2(9) = 8.80$, p = .46). While the overall model was a good fit for the data (Pearson $\chi 2(553) = 556.061$, p = .46), the full model did not provide a significant change in predicting HSD010 compared to a model containing only the intercepts ($\chi 2(3) = 2.52$, p = .47). The full model predicted a small proportion of the variation in HSD010 (Nagelkerke R^2 = .02). There was no significant change in the log odds of reporting a higher HSD010 level based on ethnicity (Estimate = -.001, SE = .20, p = .99l; see Table 21).

Physical activity has been documented by some studies to have positive effect in eliminating or controlling overweight and obesity thereby improving health. The Framingham study (Schneider, 2011) noted the likelihood of dying from heart disease was highest for individuals who had fewer physical activity than those who had more. The study also revealed that a major cause of overweight and obesity lie primarily in a lack of physical activity or inadequate physical activity.

There was a main effect of income such that a higher income level predicted fewer days of physical health not being good. These observations agree with previous studies that individuals with less income are most likely to be deprived of amenities that promote physical activities such as swimming pools, parks, exercise rooms, and bicycle trails that could encourage physical activity (CDC, 2013).

My findings matched reports that with physical activity there are more healthy days thus enhancing better HRQOL. Considering the CDC report, my study is supported that low income lack adequate means of engaging in physical activity that could in turn improve HRQOL.

In addressing RQ3 which asked - Do gender and general health related in African American adolescents ages 12 to 19 after controlling for age and income level? I performed linear regression to answer the research question.

For Analysis 1, Regression 1 was conducted using a linear regression with gender (dichotomous: male and female) as the IV, age and income level as the control variables; and general health as the DV, selecting only African Americans. Controlling for gender and income level, there was a main effect of gender, such that males reported less health than females (B = -.63, SE = .15, t = -4.26, $p < .001$). There were no effects of age or income level in this model predicting health (see Table 22).

Regression 2 was conducted using a linear regression with gender as the IV, age and income level as the control variables, and HSQ470 as the DV, selecting only African Americans. The result revealed a main effect of income, such that a higher income level predicted fewer days of physical health not being good (B = -.18, SE = .08, t = -2.15, p = .03). There was no effect of gender or age (see Table 23).

Regression 3 was conducted with a linear regression with gender as the IV, age and income level as the control variables, and HSQ480 as the DV, selecting only African Americans. The overall model was significant $F(3, 167) = 2.99$, $p < .05$). The predictor and control variables accounted for 3% of the variance in HSQ480 ($Adj.\ R^2$ = .03). There

was a main effect of gender, such that males reported fewer number of days of not feeling mentally well (B = -.93, SE = .42, t = -2.19, p = .03). There was a marginal effect of gender, such older adolescents were more likely to report more days of not feeling mentally well (B = .43, SE = .12, t = 1.79, p = .08). There was no effect of income (see Table 24).

Regression 4 was addressed by conducting a linear regression with gender as the IV, age and income level as the control variables, and HSQ490 as the DV, selecting only African Americans. The overall model was not significant $F(3, 167) = .23$, p =.88). The predictor and control variables accounted for less than 1% of the variance in HSQ490 (*Adj.* $R^2 < .001$). There were no effects of gender, age, or income (see Table 25).

Ordinal regression was used to answer HSD010 in Analysis 2. An ordinal logistic regression predicting HSD010 from gender as the predictor, and age and income level as covariates for Black participants only. The model passed the test of parallel lines ($\chi2(9) = 4.06$, p = .91). The overall model was a good fit for the data (Pearson $\chi2(473) = 455.81$, p = .71). The full model provided a significant change in predicting HSD010 compared to a model containing only the intercepts ($\chi2(3) = 18.23$, $p < .001$). The full model predicted a medium proportion of the variation in HSD010 (Nagelkerke R^2 = .11). There was a significant change in the log odds of reporting a higher HSD010 level based on gender (Estimate = -1.18, SE = .30, $p < .001$; see Table 26). Men were significantly less likely to report high HSD010 compared to women (B = .31). This means that men were significantly more likely to have better health than women.

According to CDC (2013), gender and other sociodemographic variables such as age, race and household income may affect weight and obesity which in turn trigger negative HRQOL. Sherwood, Story & Obarzanek (2004) provided information on the correlate of obesity and overweight across all demographic and social classes, noting that African-American adolescent females are in the subgroup that are mostly at risk of poor HRQOL.

Cowart, Biro, Wasserman, Stein, and Reider (2010) noted in a cross-sectional study, that obesity and overweight impact individuals' HRQOL negatively by raising the risk of many chronic diseases such as diabetes and heart disease more in African-American females than in African-American males. This study supports other similar studies that African American females that report poor general health than the male counterparts were significantly more likely to present with diminished HRQOL.

Cui, Zack, and Wethington (2014) conducted a cross-sectional study and found that significant differences in some domain of HRQOL and that the relationship between BMI and HRQOL is robust and observed among boys and girls. Their findings support those of previous studies that have shown boys generally report better health than girls. They also found that boys reported better self-rated health, mental health, and fewer activity limitation days than girls. Findings from my study, therefore, might be particularly useful for policy makers and health professionals who utilize national estimates in monitoring adolescent health and to develop interventions for addressing obesity and overweight and HRQOL.

Health belief Model (HBM)

The HRQOL-4 set of Healthy Days core questions has been in the State-based Behavioral Risk Factor Surveillance System (BRFSS) since 1993. From 2000 to 2012, it has been in NHANES for persons aged 12 and above (CDC, 2015). As the population ages and life expectancy increases in the USA, living a longer high-quality life is becoming increasingly valued in the public health community (Sondik, Huang, Klein and Satcher, 2010). Some health problems such as diabetes, hypertension, and obesity are associated with unhealthy lifestyles, and much higher for low income minority population especially African-Americans (CDC, 2010).

The Health Belief Model (HBM) helps practitioner in explaining and predicting health behave within the population, and the awareness of some types of health consequence will cause an individual to engage measures to avoid a specific outcome. This study demonstrates that conditions of poverty, as a result of self-efficacy, would to some extent limit the change-response attitude in the African American adolescent community (Assari & Caldwell, 2017).

The results demonstrated that despite the knowledge and awareness of the problems associated with obesity and overweight, the African-American adolescent population, with a disadvantaged status as basically lower income earners compared to their white counterparts, face a great challenge in their ability to make the needed approach towards positive life style changes considering the their overall limitations (Babbie, 2017).

Limitations of the Study

In this cross-sectional study, the limitations that apply to similar studies do apply to this study. As a cross-sectional study, one of the limitations include that it is difficult to be used in analyzing behavior and establish cause and effect over a time period (Creswell, 2009). However, it is likely the results of this study could significantly help to bring about more awareness the composite elements affecting health related quality of life (HRQOL-4) association with obesity and overweight among African-Americans adolescents, there are some limitations that could be considered.

It is likely that some participants during interviews exaggerated some information and unless further verification is made (which is beyond the scope of this study), it is possible that income, weight, activity levels, and other demographic variables might be incorrectly reported. Therefore, based on the limitations and focus of this study, the following assumptions were made:

1) The sample population lifestyle generally may affect their overall quality of life (Wilson & Clearly, 1995).

2) Sociodemographic variables such as age, gender, race and family income may affect weight and obesity which in turn trigger negative HRQOL (CDC, 2013).

3) Physical inactivity is significantly related to adolescent overweight and obesity especially for African-Americans (Lutfiyya et al. 2008).

4) Poor nutrition and a sedentary lifestyle are contributors to overweight and obesity among African-American adolescents (Boyington et al. (2008).

Recommendations

Professional Practice

The prevalence of obesity among African American youths has been increasing for decades, becoming a major concern for public health in the United States. According to Cowart, Biro, Wasserman, Stein, and Reider (2010), obesity raises the risk of many chronic illnesses and poor health outcomes. According to the Centers for Disease Control and Prevention (CDC, 2013), African American adolescents have the highest rates of excess weight in the United States, and they are at increased risk for obesity and becoming overweight, which persists into adulthood resulting in chronic and debilitating health conditions.

MacDonell, Ellis, Naar-King, and Cunningham (2010) acknowledged that African-American adolescents had rates of obesity increasing from 19 percent at age five to 33 percent at age 17. Currently, policies aimed at intervening in childhood obesity have included only children under 12 years of age. The problem of childhood obesity among African Americans exacerbates during adolescents, but there has been little research into the factors leading to the increase in obesity rates during this period. This lack of research and pointed policy reform will result in a dramatic increase in chronic diseases associated with obesity among this population into adulthood (CDC, 2012). The CDC also noted that obesity causes an increased risk for chronic diseases such as diabetes, hypertension, arthritis, asthma, stroke, and sleep apnea. A community-designed partnership intervention can reduce obesity, promote a healthy lifestyle, and sustain positive health practices across the lifespan (Cowart et al., 2010).

Social isolation and social exclusion are negative factors that could prevent access to available amenities in the community. However, Coreil (2009) found that social networks, capital, and support are crucial factors that can optimize health. Additionally, collective efficacy—the means of a group of people to successfully push for social change—would benefit everyone. The obesity rates among African American youths between the ages of 12 to 19 is alarming, witnessing a dramatic increase between the 1970s and 2002, a trend that has not slowed until today (Lewis et al., 2006).

Social Change Implications

Social change in this study will help in bringing about a better understanding and more awareness of the negative impact of obesity and overweight among African-American adolescent population as it relates to their health-related quality of life. Understanding of the negative impact of overweight and obesity could also lead to a better understanding of the role of the selected demographic variables relationships which could help in the prevention and management of obesity and overweight among the target population. Bowen, Lee, McCaskill, Bryant, Hess, Ivey (2018) argue that a better understanding rest on the hands of primary care physicians (PCPs) who could promote the understanding of the disease and help with the reduction by providing patients and their families educational information to encourage healthier lifestyle choices. The CDC, 2017, noted that individuals who are obese or overweight are more likely to suffer from high blood pressure, diabetes and high-risk factors for cardiovascular disease and stroke and that death rates from heart disease and stroke are higher for African-Americans as compared to whites. Lastly, the overall benefit of this study may be to contribute to a

healthier African-American adolescent population that could have the potential of being obese or overweight, thereby preventing chronic debilitating deceases such as type 2 diabetes, hypertension asthma, and a decrease in mortality.

Because of the complexity and multifactorial nature of obesity and overweight specifically among the African-American adolescent population, it is imperative to approach the solution and intervention with an equal or greater sophistication. It is believed that public health policies effectively implemented can combat or reduce the impact of obesity and overweight in this target population from a preventive standpoint (Schwarz & Peterson, 2010).

As noted earlier, many studies have confirmed that there is growing obesity and overweight epidemic and crises in the African-American communities in the United States. This epidemic-crisis is threatening the life and HRQOL of many children and adolescents all over the country. The National Health and Nutrition Examination Study (NHANES) has uncovered as much as 15% higher incidence of obesity and overweight among African American children and adolescent youths 12 to 19 years old. Available evidence reveals that childhood obesity and overweight is more prevalent in some ethnic or racial groups and those groups are at increased risk, particularly the African American preadolescents and adolescents (Sherwood, Story, & Obarzanek, 2004).

Evidence suggests that interventions developed through research and explicit theoretical foundations are more effective than those that lack a theoretical or scientific base. Consequently, the public health burden of overweight and obesity among African American adolescents and the adverse effect that may result in adulthood remain a factor

of an ongoing campaign and research, and the public health professionals should make research results and recommendations available to policy-makers to help direct more attention, focus, awareness, and help to obtain funding for the improvement of human lives.

Recommendation for Further Studies

It is my suggestion that a similar research to this using a larger population sample would be of value for future research. The analysis of a logistic regression in this study demonstrated a significant predictor of adolescent obesity and overweight to HRQOL. The use of a larger sample size could likely yield significance for other variables because logit models use maximum likelihood estimation techniques to determine significant results. Listed below is a tabulation of my recommendations for potential future research:

1. Replicate this study using larger sample size
2. Replicate this study using other ethnic such as the Hispanic American population
3. Incorporate triangulation study design and longitudinal study design to further explore physical activity and HRQOL among adolescent males and females
4. Explore a triangulation study HRQOL, obesity and overweight amongst African American Adolescent males and females
5. Replicate this study using the NHANES datasets 2007-2008; 2009-2010; and 2011-2012
6. Explore the problem of adolescent the influence of family and community life dynamics

7. Future research should review this research and other related works to find gaps that exist and structure their research to answer the yet unanswered questions

Summary

This study examined obesity and overweight among African-American adolescent population age 12 to 19 years, and their health-related quality of life (HRQOL). The dependent variable used for this study was the HRQOL and independent variables were race, physical activity and gender. The control variables were age and poverty level. An improved understanding of the health issues would help this population live a longer quality life and prevent serious health implications in adulthood. The findings from this predictive correlation study of 331 individuals have added to the body of knowledge in some ways. The findings indicated that (a) physical activity and annual household income were predictors of HRQOL in obese and overweight African American adolescents age 12 to 19 years. However, variables such as race and gender had marginal or moderate correlation on HRQOL. The findings from this study indicated a need for future research with a larger sample inclusive of other ethnic groups.

It is noted that gender had the most impact, showing that males were significantly less likely to report high health compared to females. There were no effects of age or ethnicity in predicting health while income has a marginal main effect such that a higher income level predicted less health. Also, there was no significant change in the log odds of reporting a higher health level based on ethnicity. The linear regression results and the ordinal logistic results were similar. The other variable failed to show any correlation.

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Appendix A: Sample Request Letter for Permission

11/5/2018

Permission@sagepub.com

Hello,

I am writing to seek permission to use Figure 1.1 on page 5 in the John W. Creswell book "Research Design" 3rd edition, 2009. I am a doctoral student at Walden University working on my capstone project. Your permission will be greatly appreciated.

Sincerely

Emmanuel Anene

Appendix B: Sample Permission Letter

11/05/2018

XXXXXXXX@yahoo.com

Dear XXXXXXXXXXX

Thank you for your request. You can consider this email as permission to use the material as detailed below in your upcoming capstone project. Please note that this permission does not cover any third-party material that may be found within the work. You must properly credit the original source, Research Design, 3rd Edition. Please contact us for any further usage of the material.

Best Regards,

Emmanuel Anene

Appendix C: Scatterplots and Histograms

Figure C1

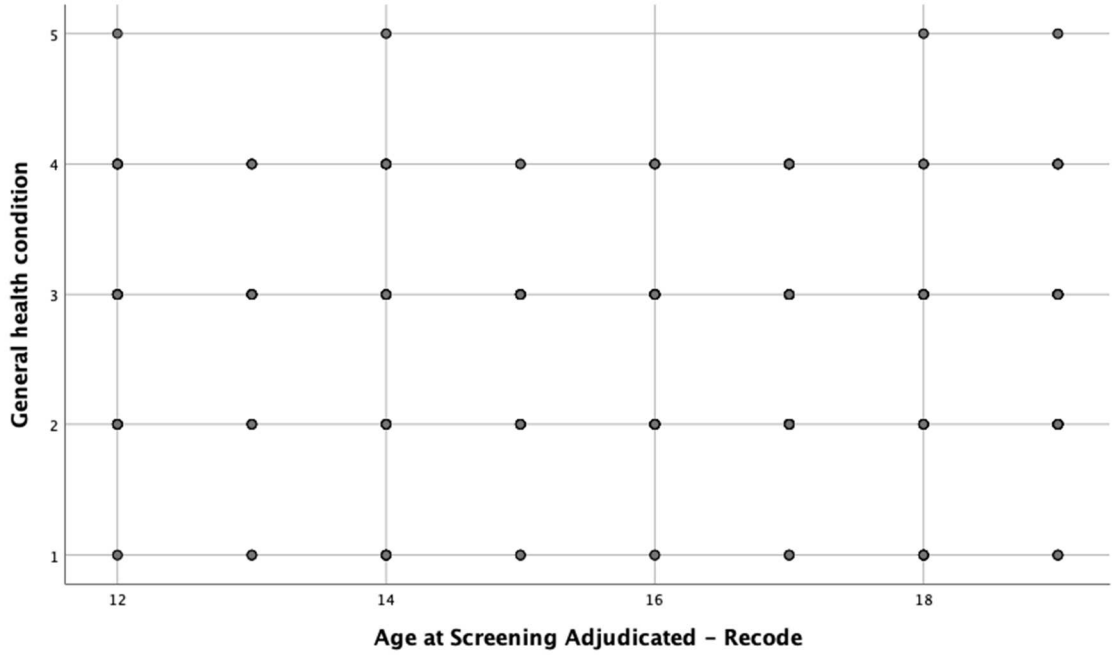
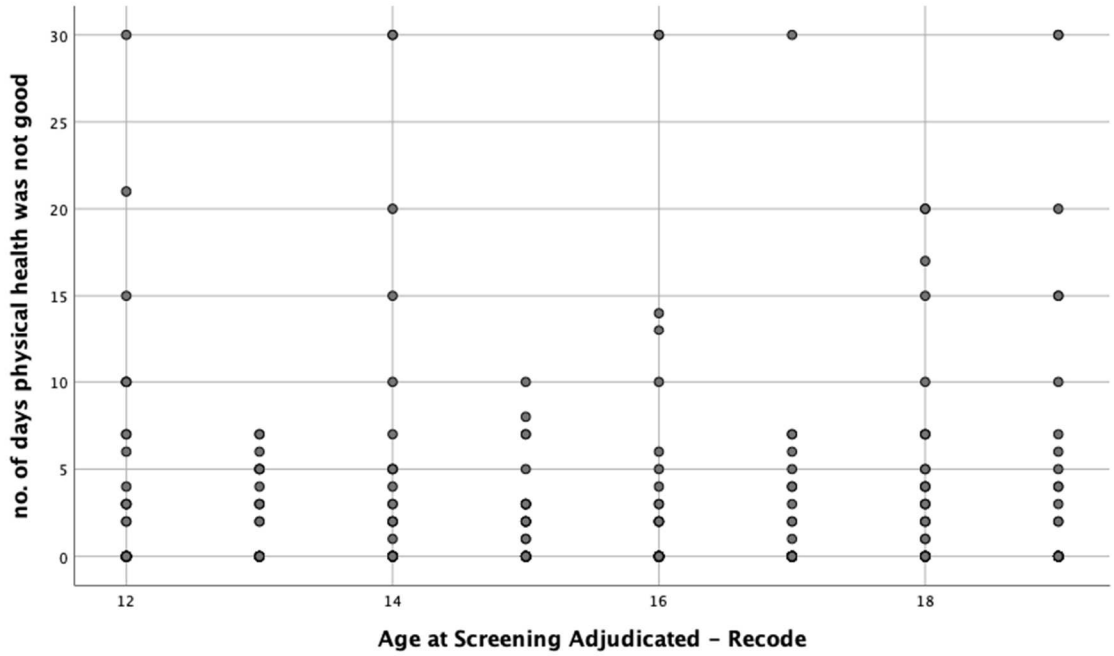


Figure C2



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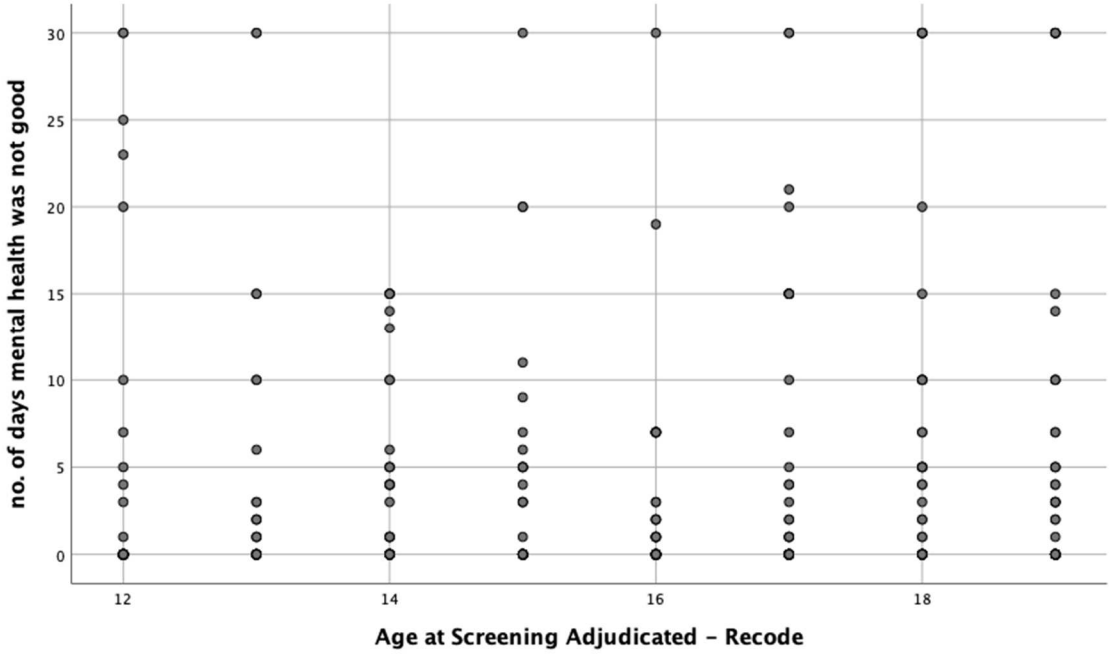

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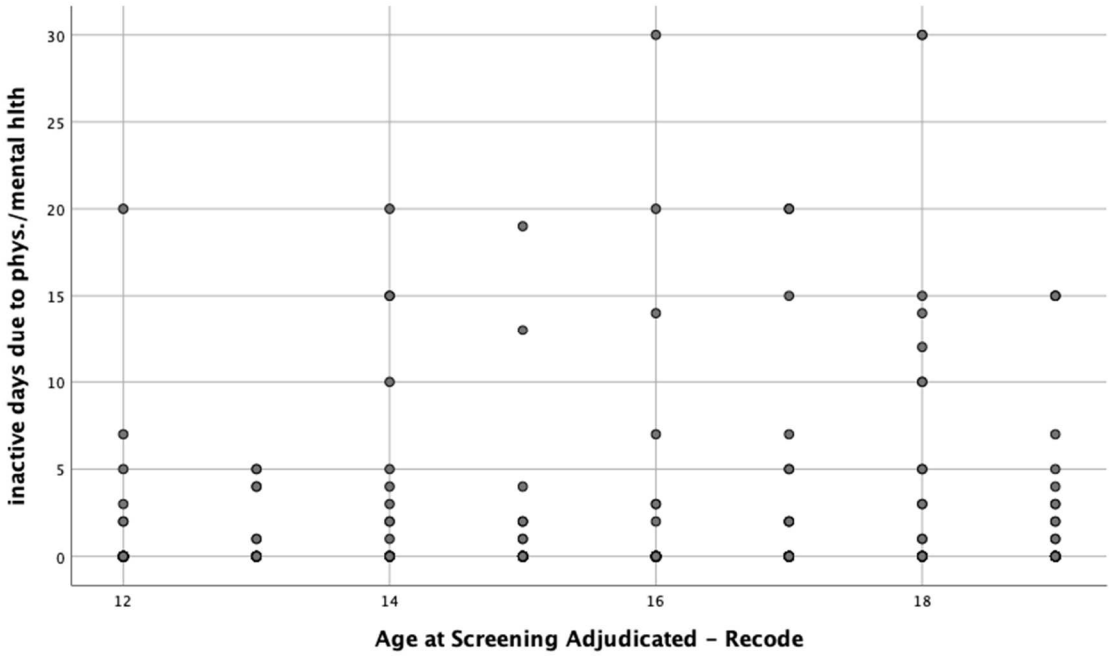

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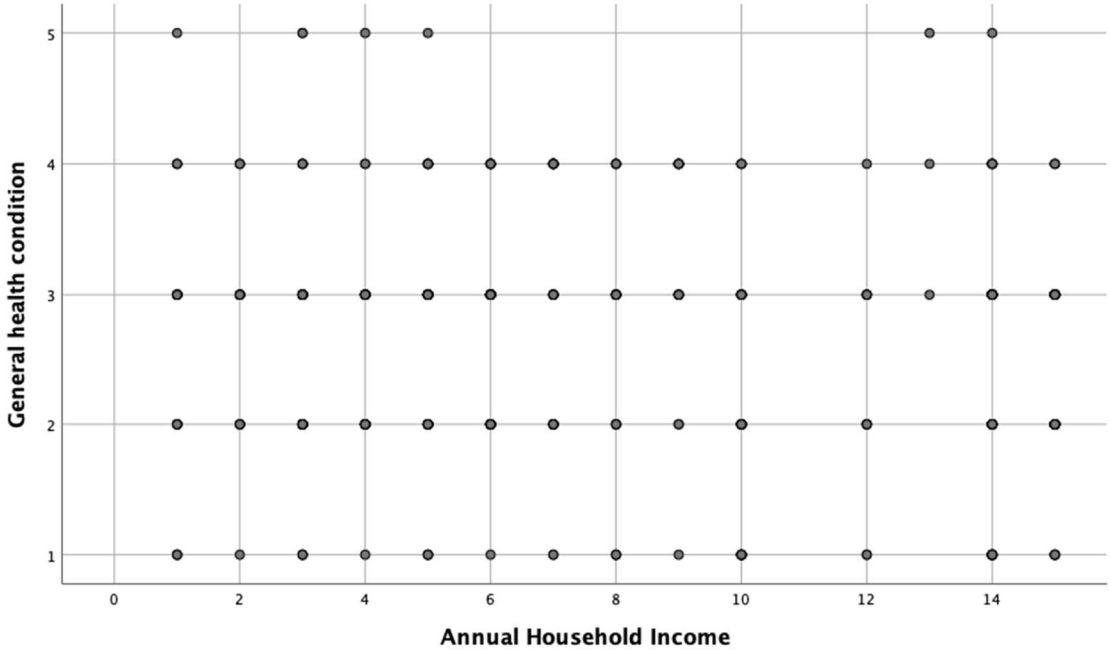
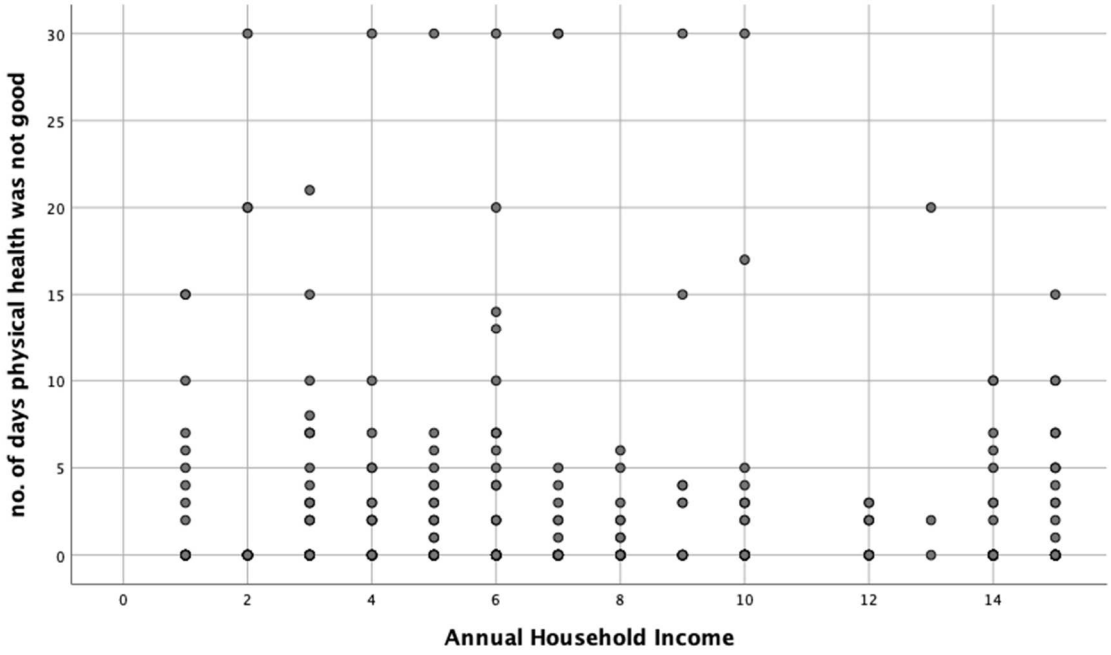


Figure C6



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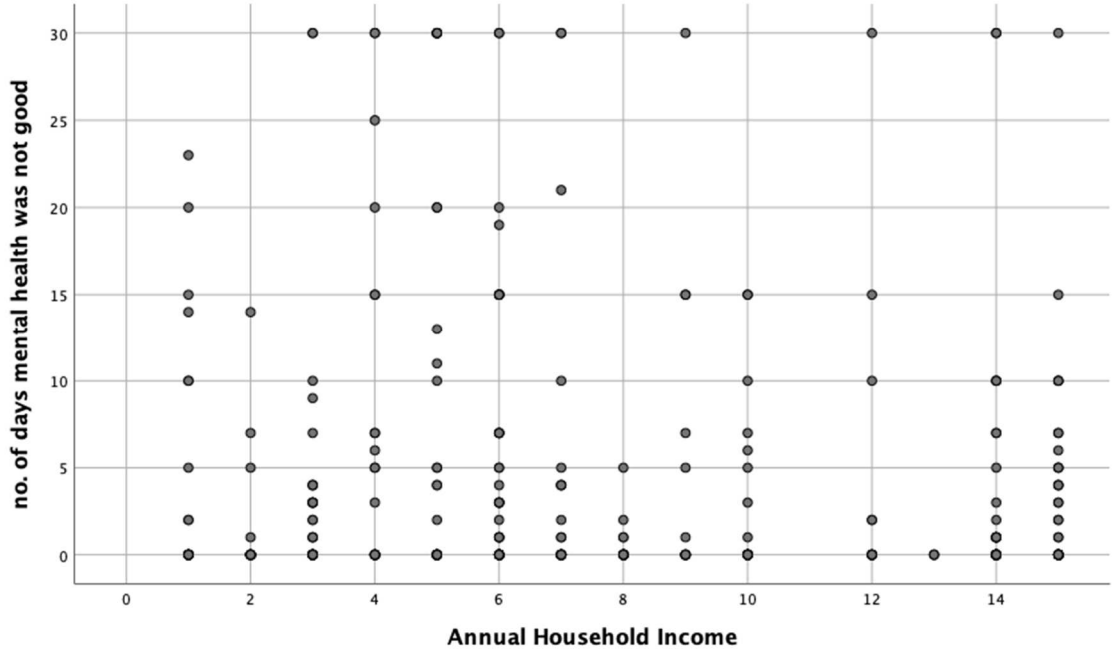

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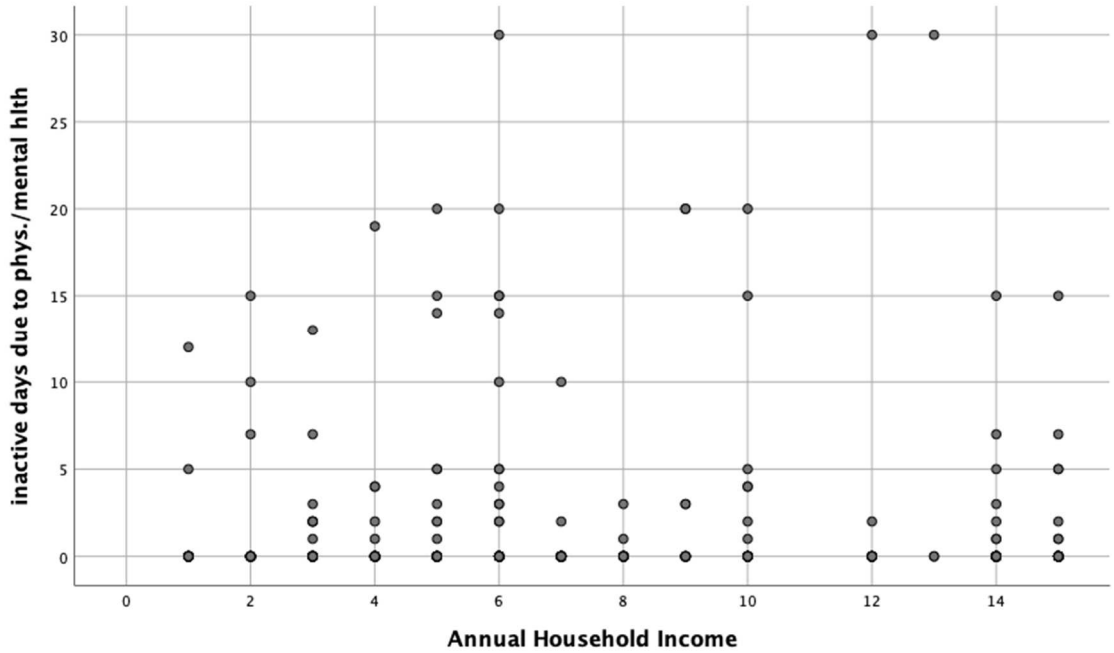

FigureC9

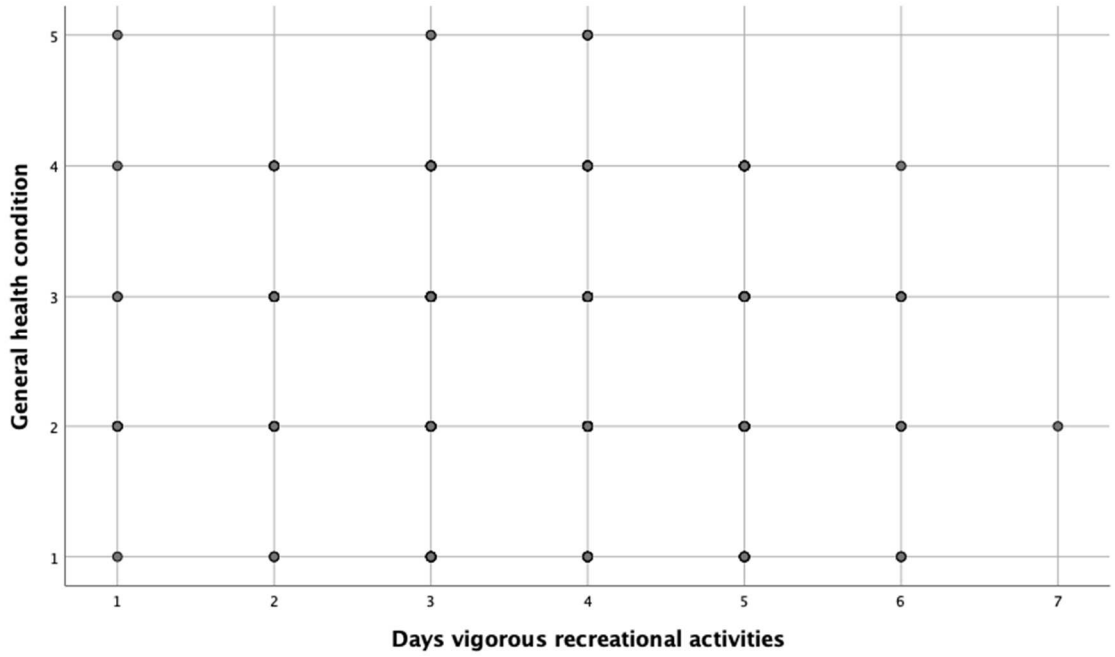

Figure C10

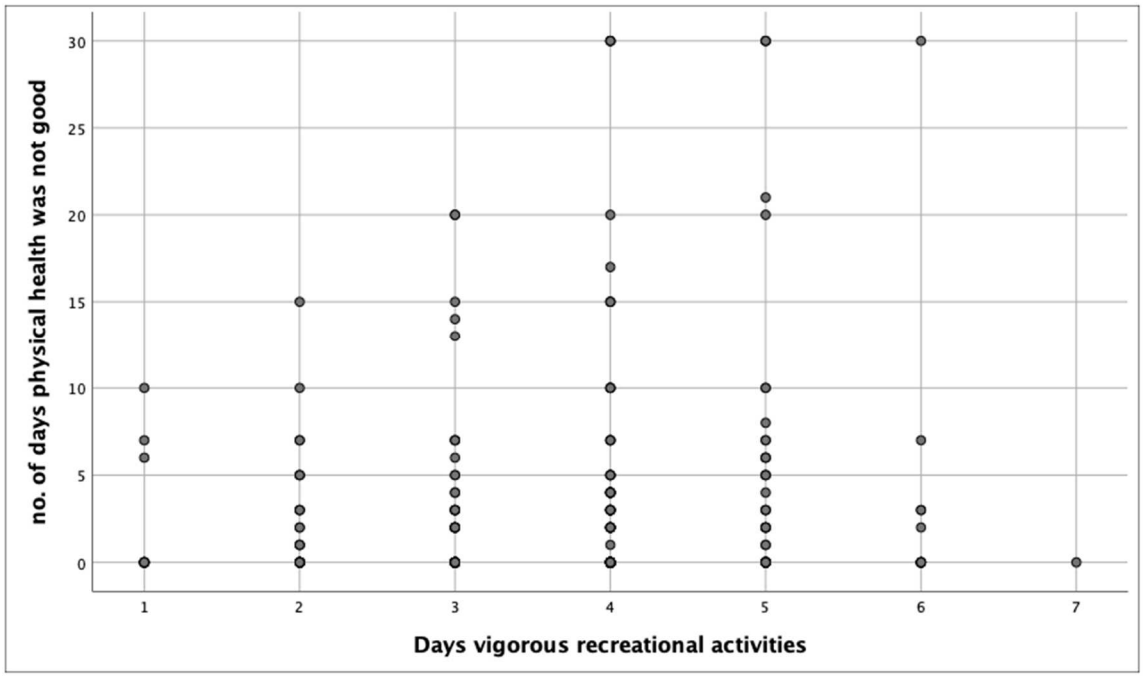

Figure C11

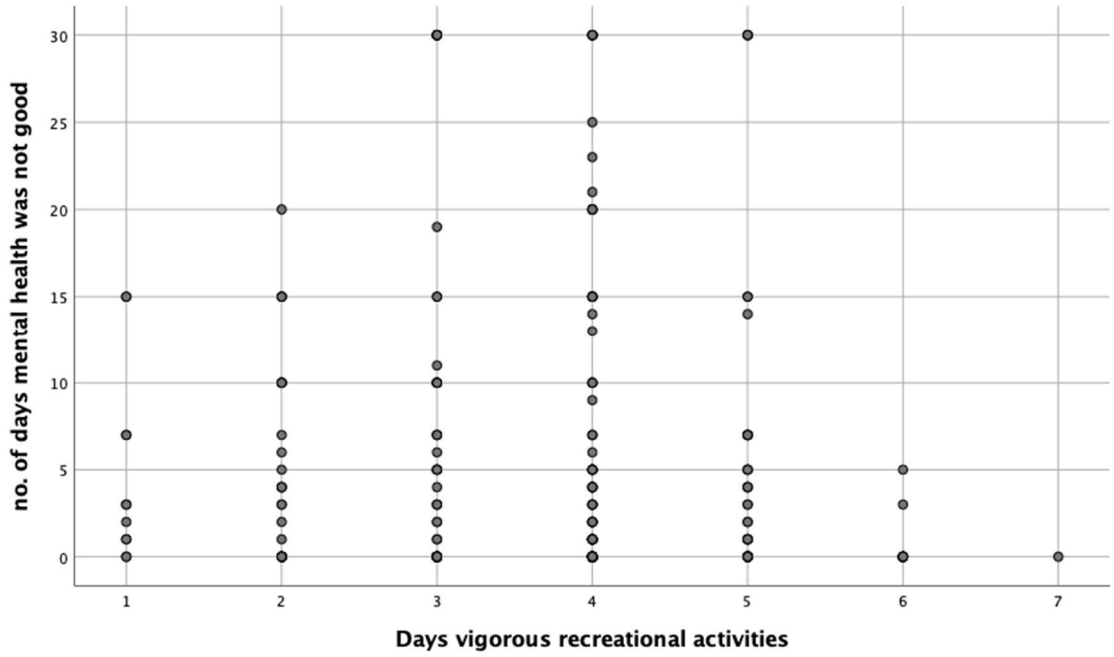

Figure C12