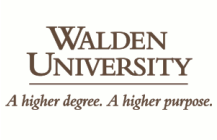

2017

Cardiovascular Disease Risk Factor Assessment and Lifestyle Adjustments in African Americans

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
2016

Abstract

Cardiovascular Disease Risk Factor Assessment and Lifestyle Adjustments in African Americans

by

Biruk Nigatu

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health-Epidemiology

Walden University

December 2016

Abstract

Multiple studies have indicated a higher burden of overweight/obesity and exposure to environmental toxins, such as alcohol and tobacco smoke, in association with higher prevalence of cardiovascular disease (CVD) in the African American population. Thus, the purpose of this research was to determine if there was a significant difference in the use of lifestyle adjustments such as moderating alcohol consumption, weight loss, and smoking cessation on the prevalence of CVD in the African American population. The theoretical foundation was social cognitive theory and the social ecological model that posits the interplay of individual, social, and environmental factors. This cross-sectional quantitative study was designed to assess the effects of lifestyle adjustments of weight loss, moderating alcohol consumption, and smoking cessation in the prevalence of CVD in African Americans between 40 and 60 years of age. Analysis of secondary data from the National Health and Nutrition Examination survey for the years 2013-2014 was conducted using binary logistic regression. The findings showed no significant difference in the use of weight loss, moderating alcohol consumption, and smoking cessation in the prevalence of CVD in African Americans between 40 and 60 years of age. However, the odds of moderate alcohol consumption and weight loss were greater than 1. Thus, this study may have a small potential impact on CVD in African Americans by encouraging lifestyle adjustments, and may contribute to positive social change by increasing life expectancy, improving quality of life, and reducing the burden of certain chronic diseases and reduction of healthcare cost.

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Dedication

I would like to dedicate my dissertation for my mother Asrat Gashu and my second mother-elder sister, Selamawit Nigatu.

Acknowledgments

I would like to thank Dr. Diana Naser and my whole family for supporting me to reach this milestone of completing my dissertation. I am grateful about you all standing with me during this season of my life.

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Chapter 1: Introduction to the Study

Cardiovascular disease (CVD) remains the primary driver of death around the world. In 2008, more than 17 million individuals died of CVD, which constituted 29% of all deaths; almost 80% of deaths occurred in low- and middle income countries (LMIC), frequently in individuals 60 years of age and older (Nordet et al., 2013). CVD was the main reason for mortality around the world in 2010, representing 12.9 million deaths (Vagholkar et al., 2014). CVD deaths were primarily due to myocardial infarction, stroke, and heart failure brought on by one or more major CVD risk factors, including smoking, hypertension, hypercholesterolemia, and diabetes (Nordet et al., 2013). In 2001, the mortality rate associated with CVD was 35.2% in the United States; however, in Europe it was 48% (Jarakovic et al., 2015). Although CVD is believed to be the leading cause of death in all societies, the African American population has been affected disproportionally (Franceschini et al., 2014).

Recent research has indicated that the African American population carries a higher burden of CVD. Franceschini et al. (2014) indicated that due to the higher burden of CVD risk factors in the African American population, the prevalence of coronary heart disease (CHD) was higher as compared to White women as well as men. In 2011, the mortality rate associated with CVD was 229.5 per 100,000 populations in the United States. The rates attributed to White males were 271.1 per 100,000, and 352.4 per 100,000 for African American males; similarly, the mortality rate was 188.1 for White females, and 248.6 for African American females (Mozaffarian et al., 2015). This

evidence of the disproportional burden of CVD among the African American population shows the need to address the issue targeting African American population.

Hence, I conducted this study to test the effects of lifestyle adjustment including weight loss, moderating alcohol consumption and smoking cessation on the prevalence of CVD in African Americans between the ages of 40 and 60. The positive social change that could result from this study might be to improve the risk assessment for CVD in African Americans and encourage lifestyle adjustments that may lead to saving lives, increasing life expectancy, improving quality of life, and reducing the burden of CVD among African Americans that could have a direct impact on healthcare costs. This chapter includes the following sections: background, problem statement, purpose of the study, research questions, theoretical framework, nature of the study, definition of terms, assumptions, limitations, scope of study, and significance of this study.

Background

In a study of CVD prevalence in the United States, Liyun et al. (2014) stated that, based on the U.S. National Health and Nutrition Examination Survey (NHANES III), CVD prevalence was higher in the African Americans than in Whites. The result of the Jolly, Vittinghoff, Chattopadhyay, and Bibbins-Domingo (2010) cross-sectional study also showed that the prevalence of CVD in African Americans was higher compared to Whites during young adulthood. The mortality rate due to CVD for those under the age of 65 was 28% among African Americans, as compared to 13% among Whites, and the leading mediating factors for this disparity were clinical and socioeconomic factors (Jolly

et al., 2010). Hence, the above statistics indicated the disproportionate burden of CVD in the African American population.

CVD has been associated with various risk factors including smoking, being overweight or obese, physical inactivity, hypertension, low socioeconomic status, and low education level (Parks et al., 2003; Brennen & Williams, 2013). Diet, physical activity, and behavioral support have been recommended as lifestyle modifications to intervene with the overweight and obesity problem (Brennen & Williams, 2013). CVD risk factors such as high cholesterol, high blood pressure, diets high in sodium and fat, overweight and obesity, physical inactivity, smoking and hospitalization, and death associated with CVD have are markedly disparate between African Americans and Whites (Holland, Carthron, Duren-Winfield, & Lawrence, 2014). Thus, this disproportional burden indicates the need to target the African American population in order to potentially reduce the burden of CVD and increase quality of life and productivity. This study was needed in order to address a gap in the literature about the effects of lifestyle adjustment such as weight loss, moderating alcohol consumption, and smoking cessation on the prevalence of CVD in the African Americans between the ages of 40 and 60.

Problem Statement

Multiple studies have shown that cardiovascular health disparity persists in society. Mensah (2005) reported that cardiovascular health disparity was one of the most significant public health problems in the United States. Bibbins-Domingo et al. (2009)

noted that the African American population had a disproportionally higher prevalence of heart failure than other racial/ethnic groups.

Researchers have found that the driving force behind this higher prevalence of heart failure in the African American population is the higher burden of hypertension, obesity, depressed systolic function, chronic kidney disease, and exposure to environmental toxins, such as drugs and alcohol (Bibbins-Domingo et al., 2009). The results of a prospective cohort study indicated that 1 in 100 African Americans in their 30s and 40s started to experience heart failure, which was 20 times higher than in Caucasians (Bibbins-Domingo et al., 2009). Flynn et al. (2013) observed that hypertension was not adequately controlled in the African American population, as compared to Caucasians, even though there were medical as well as non-medical management approaches. Cooper et al. (2013) corroborated that hypertension associated cardiovascular disease was responsible for 35% of the overall mortality rate in African Americans. Cooper et al. (2013) also suggested that intervention in hypertension control would result in 5000 less deaths from coronary heart disease, and would save more than 2000 lives from stroke in the African American population each year. Possible intervention/management strategies might include weight loss, moderating alcohol consumption, and smoking cessation. Thus, I focused this research on addressing the effects of moderating alcohol consumption, weight loss, and smoking cessation on the prevalence of CVD in African Americans between the ages of 40 and 60.

Purpose of the Study

The purpose of this research was to explore the effects of lifestyle adjustments such as moderating alcohol consumption, weight loss and smoking cessation on the prevalence of cardiovascular disease in the African Americans between the ages of 40 and 60. The independent variables were being overweight and obesity, smoking, and alcohol consumption, and the dependent variable was CVD.

Research Questions

RQ 1: Was there a significant difference in the use of the lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the National Health and Nutrition Examination survey (NHANES) for the years 2013-2014?

$H_0$1: There was no significant difference in the use of lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$1: There was a significant difference in the use of lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

RQ 2: Was there a significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American

population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$2: There was no significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$2: There was a significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

RQ 3: Was there a significant difference in the use of the lifestyle adjustments of moderating alcohol consumption and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$3: There was no significant difference in the use of the lifestyle adjustments of moderating alcohol consumption and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$3: There was a significant difference in the use of the lifestyle adjustments of moderate alcohol consumption and smoking in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

RQ 4: Did the combined effects of weight loss, moderating alcohol consumption, and smoking cessation result in a significant difference in the prevalence of CVD in African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$4: The combined effects of weight loss, moderating alcohol consumption, and smoking cessation did not result in a significant difference in the prevalence of CVD in African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$4: The combined effects of weight loss, moderating alcohol consumption, and smoking cessation resulted in a significant difference in the prevalence of CVD in African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

Theoretical Framework

The theoretical framework for this research was the social cognitive theory. The social cognitive theory originated from the theory that all animal actions were derived from satisfying their psychological needs of emotion, feeling, and desire (Holt & Brown, 1931). This original theory was then referred to as social learning and imitation theory, which stated that learning depends on cues, drives, rewards, and responses, which means that motivation in social context drives the imitation of behavior or drive stimulated learned action that cues the model with positive feedback or reward, which in turn engender reinforcement (Miller & Dollard, 1941). Then, this theory evolved to be social cognitive theory, which emphasized (a) the importance of cognition in attention,

retention, and performance of behaviors; and (b) the value of self-efficacy and motivation to perform the action (Bandura, 1977, 1986).

This theory asserted that people, their behavior, and social/physical environment influence one another with reciprocal associations, and that altering these factors could have a preventive outcome (Crosby, DiClemente, & Salazar, 2006; Schiavo, 2007). In this study, I used this theory to understand the interplay of intrapersonal factors, such as individual behavior, cognition, and health belief, with environmental factors (Centers for Disease Control and Prevention, 2013a; Rudestam & Newton, 2007). Environmental factors include not only immediate social environment, such as family members and peers, but also the physical environment, such as a neighborhood, whether there is backyard, playground, safe walkways, and nearby recreational parks (CDC, 2013a).

In addition, social cognitive theory explains embraces the various levels of the social ecological model including individual, interpersonal, organizational, community, and policy levels (Centers for Disease Control and Prevention, 2013f; Rudestam & Newton, 2007). In a study that used social ecological model to assess the association of social and environmental factors with chronic disease, such as CVD, Addy et al. (2004) suggested that influencing social and environmental factors could motivate people's behavior to reduce chronic disease. Because social cognitive theory and the social ecological model dealt with the association of changeable variables or factors that could affect cardiovascular health, and because I sought to assess risk factors that were associated with CVD, it was appropriate to use in this research. Recognizing the risk

factors of CVD would help to take appropriate preventive measure on a timely basis before the disease develops.

Nature of the Study

This was a cross-sectional quantitative study. A quantitative approach was useful in exploring the significance of lifestyle adjustments to the risk factors of CVD in the African American population. The research population was African Americans, ages 40-60, who participated in the NHANES for the years 2013-2014. That is, I used secondary data. Statistical data analyses included in this study were measures of central tendency, measures of spread, and inferential statistics using binary logistic regression. The independent variables were being overweight and obesity, smoking, and alcohol consumption, and the dependent variable was CVD.

Definitions

Cardiovascular disease (CVD): Also known as heart disease, this illness involves problems with blood vessels and the heart, such as atherosclerosis and heart attack. It can involve strokes that occur when plaque blocks artery that carries oxygen and nutrient rich blood to the brain (AHA, 2015).

Moderate alcohol consumption: Daily consumption of up to 1 alcoholic beverage for women, and up to 2 for men (1 beer = 12 oz; 1 wine=4 oz; 1 liquor =1.25oz; Centers for Disease Control and Prevention, 2014).

Overweight and obesity: Medical conditions expressed in terms of body mass index (BMI), using the weight and height of the person. A BMI between 25 and 29.9 is overweight, and a BMI of ≥ 30 is obese (CDC, 2012).

Assumptions

For this study, I assumed that (a) the secondary data that I used reflected honest and open responses of participants, (b) the quantitative method of study was the best possible tool to address the research problem stated above, (c) the above stated risk factors were important for cardiovascular health, (d) the sample would reflect the population that I wished to make inferences for, (e) the social cognitive theory and social ecological model would fit with the health problem of interest (CVD). These assumptions were necessary because they would show the things that were likely true but out of my control, and their existence would show the relevance of the study.

Scope and Delimitations

Cardiovascular health disparity in the United States was the problem of choice in this study. Because the purpose of this study was to determine if there was a significant difference in the use of lifestyle adjustments such as moderating alcohol consumption, weight loss and smoking cessation on the prevalence of CVD in the African Americans between the ages of 40 and 60, this study did not include all minority populations. My decision to include only African Americans in this study was based on the fact that many studies have indicated that the African American population has been disproportionally affected by CVD. In this research, I addressed the effects of weight loss, moderating alcohol consumption, and smoking cessation on CVD. The findings from a sufficiently large sample could represent the population of interest—the African American population between the ages 40 and 60.

When designing this study, I considered using the health belief model, but decided not to because the health belief model emphasizes the interaction of individual perception, modifying factors, and the individual's action toward changing health behavior (Crosby, DiClemente, & Salazar, 2006). However, the social cognitive theory emphasizes the interaction of social and environmental factors that influence individuals' health behavior. The generalizability of this study depended on my use of nationally representative data that included both women and men.

Limitations

It is necessary to note that this study could have some limitations. The participants of this study were from the database of NHANES. The participants might not necessarily represent all African Americans with CVD in the United States. Because the data was collected from legal residents of United States, there was a possibility that some individuals of African descent who did not have legal residency were not included during the time of data collection. Selection bias could influence the study outcomes. Because I used secondary data from the NHANES survey, there was not any way to address these limitations.

Significance of the Study

CVDs have affected the African American population disproportionally, and are responsible for over one-third of the life expectancy differences between African Americans and Whites (Wong, Shapiro, Boscardin, & Ettner, 2002). The risk factors that contributed to CVD include smoking, excessive alcohol consumption, being overweight

or obese, hypertension, diabetes, limited healthcare access, lifestyle, and social deprivation (Nwose et al., 2013; Westerby, 2010).

In this research, I tested if there was a significant difference in the use of lifestyle adjustments such as moderating alcohol consumption, weight loss, and smoking cessation on the prevalence of CVD in the African Americans between the ages of 40 and 60. This research could advance knowledge in the discipline because there is little research on the combined effects of moderating alcohol consumption, weight loss, and smoking cessation on cardiovascular disease in the African American population. The findings of this research could help advance practice by helping to improve recommendations for lifestyle adjustments related to cardiovascular disease, particularly in African Americans, and might contribute to positive social change by saving lives, increasing life expectancy, improving quality of life, and reducing the burden of certain chronic diseases, which could have a direct impact on healthcare costs.

Summary

In this chapter, I have noted that CVD is one of the major public health problems in the United States. The prevalence of CVD is a current public health crisis, even though public health had been successful in controlling and preventing communicable diseases. Multiple studies have shown that CVD disproportionally affect African Americans. The mortality rate and hospitalization due to CVD was also higher in the African American population as compared to Whites. I also pointed out that the major driving force for the current prevalence of CVD was related to being overweight or obese, physical inactivity, hypertension, smoking, and alcohol consumption. Hence, I tested the effects of lifestyle

adjustments to address the risk factors of cardiovascular diseases in African Americans between the ages of 40 and 60.

To do so, I developed relevant research questions along with null and alternative hypotheses and theoretical framework to guide this study. I chose a cross-sectional quantitative study method to address the stated research problem. The findings of this study have the potential to result in recommendations about approaches of lifestyle modifications needed to address the risk factors of CVD in the African American population. In doing so, this study might contribute positive social change such as improving quality of life, increasing productivity of citizens, increasing life expectancy, and reducing healthcare costs. In Chapter 2, I discuss the literature related to risk factors of CVD and lifestyle adjustments, particularly the effects of weight loss, smoking cessation, and moderate alcohol consumption.

Chapter 2: Literature Review

Introduction

The purpose of this research study was to explore if there was a significant difference in the use of lifestyle adjustments such as moderating alcohol consumption, weight loss, and smoking cessation on the prevalence of CVD in the African Americans between the ages of 40 and 60. This chapter includes sections about the literature search strategy, theoretical framework, cardiovascular health disparity, CVD risk factors, and epidemiological transition from infectious to chronic disease. In this chapter I also review the current knowledge about risk assessment and management strategies through the years, smoking and CVD, weight loss, alcohol consumption, secondary prevention of CVD, and the gap in knowledge that exists today.

Literature Search Strategy

For the literature search, I used the databases Academic Search Complete, ProQuest Central, Google Scholar, and Medline with full text using the article topic Health Sciences. I accessed these advanced search engines via the Walden University Library and Google. Search terms and phrases that I used to locate literature include *cardiovascular disease in the United States, CVD risk factors, what is CVD, racial difference in CVD, disparity in cardiovascular disease, cardiovascular disease. In addition, the following search terms and combination of terms were used: smoking cessation and CVD, smoking, weight, alcohol consumption and cardiovascular disease,* and *behavioral modification and CVD*.

The literature review consisted of peer-reviewed full text scholarly articles and books published between 1931 and 2015, and articles from websites of organizations such as the Centers for Disease Control and Prevention and the American Heart Association. I selected a total of 45 articles to include in this literature review.

Theoretical Framework

The theoretical framework for this research was the social cognitive theory. The social cognitive theory originated from the theory that was intended to explain how all animal actions are derived from satisfying their psychological needs of emotion, feeling, and desire (Holt & Brown, 1931). This original theory was then referred to as the social learning and imitation theory, which stated that learning depends on cues, drives, rewards, and responses; and that motivation in social context drives the imitation of behavior or drive stimulated learned action that in turn cues the model with positive feedback or reward that engender reinforcement (Miller & Dollard, 1941). Later, this theory evolved into the social cognitive theory that emphasized the importance of cognition in attention, retention, and performance of behaviors, and the value of self-efficacy and motivation to perform the action (Bandura, 1977, 1986).

This theory asserted that people, their behaviors, and social and physical environments influence one another with reciprocal associations, and that altering these factors could have a preventive outcome (Crosby, DiClemente, & Salazar, 2006; Schiavo, 2007). I used this theory to understand the interplay of intrapersonal factors, such as individual behavior, cognition, and health belief, with environmental factors (Centers for Disease Control and Prevention, 2013f; Rudestam & Newton, 2007). Environmental

factors include not only the immediate social environment, such as family members and peers, but also the physical environment, such as a neighborhood, like a backyard, playground, safe walkways, and nearby recreational parks (CDC, 2013f).

In addition, the social cognitive theory embraces various levels of the social ecological model including individual, interpersonal, organizational, community, and policy levels (Centers for Disease Control and Prevention, 2013f; Rudestam & Newton, 2007). In a study that used social ecological model to assess the association of social and environmental factors with chronic disease, such as cardiovascular disease, Addy et al. (2004) suggested that influencing social and environmental factors could motivate people's behavior to reduce chronic disease. Because social cognitive theory and the social ecological model deal with the association of changeable variables or factors that could affect cardiovascular health, and because this study assessed risk factors that were associated with CVD, I determined that it was appropriate to use social cognitive theory in this research. Recognizing the risk factors of CVD would help individuals take appropriate preventive measure on timely basis before the development of the disease.

Cardiovascular Health Disparity

For public health practitioners, it is important to have evidence-based studies on cardiovascular risk assessment in different population groups. This allows practitioners to identify people at high risk of CVD and apply appropriate interventions and management strategies. Early studies revealed that mortality rates in the United States declined dramatically over the past century, yet persons with fewer years of education and African Americans still lived approximately six fewer years than better-educated persons and

Whites, respectively (Wong, Shapiro, Boscardin, & Ettner, 2002). Consequently, the Healthy People 2010 initiative made the elimination of disparities in health its primary goal (Wong et al., 2002).

Eliminating health disparities seemed daunting, because the poorly educated and minorities had higher mortality rates for a variety of diseases, such as stroke, diabetes, cancer, heart disease, AIDS, and lung disease (Wong et al., 2002). Nevertheless, Wong et al. (2002) stated that focusing on diseases had the greatest impact on disparities in mortality might deliver greater success in eliminating health disparities.

Multiple studies have shown that cardiovascular health disparities have persisted. Mensah (2005) reported that cardiovascular health disparity was one of the most significant public health problems in the United States. Bibbins-Domingo et al. (2009) noted that the African American population had a disproportionally higher prevalence of heart failure than other racial/ethnic groups. The driving forces behind this higher prevalence of heart failure in the African American population were believed to be the higher burden of hypertension, obesity, depressed systolic function, chronic kidney disease, and exposure to environmental toxins, such as drugs and alcohol (Bibbins-Domingo et al., 2009).

The results of a prospective cohort study that was carried out for 20 years and included 5115 participants (African Americans and Caucasians of both sexes), indicated that 1 in 100 African Americans in their 30s and 40s started to experience heart failure, which was 20 times higher than in Caucasians (Bibbins-Domingo et al., 209). Flynn et al. (2013) observed that hypertension was not adequately controlled in the African American

population, as compared to Caucasians, even though there were medical as well as non-medical management approaches. Cooper et al. (2013) corroborated that hypertension-associated cardiovascular disease was responsible for 35% of the overall mortality rate in African Americans, and suggested that intervention in hypertension control would result in 5000 less deaths from coronary heart disease and save more than 2000 lives from stroke in the African American population each year.

Possible lifestyle adjustment strategies might include weight loss, moderating alcohol consumption, and smoking cessation. Thus, in this research I focused on addressing the effects of lifestyle adjustments such as moderating alcohol consumption, weight loss and smoking cessation on CVD in the African Americans between the ages of 40 and 60.

Cardiovascular Disease Risk Factors

The main risk factors for CVD are associated with lifestyle, such as physical inactivity, tobacco use, and unhealthy eating habits. Nwose et al. (2013) stated that smoking was an age-old CVD risk factor, due to its oxidative stress effect. Hyperglycemia and the non-smoking individual who might have hyperglycemia-induced oxidative stress and/or other forms of chronic stress might be at risk of future CVD (Nwose et al. 2013). Rama Krishna, Mahendra, Gurumurthy, Jayamathi, and Babu (2015) pointed out that atherosclerosis was the major risk factor responsible for the current burden of cardiovascular disease. Rama Krishna et al. also associated the risk of CVD with the widespread growth of obesity, sedentary lifestyle, gender, age, high low-

density lipoprotein cholesterol, low high-density lipoprotein cholesterol, diabetes, inflammation, and genetic susceptibility (Rama Krishna et al., 2015).

Excessive alcohol consumption might lead to high blood pressure and high levels of triglycerides that, in turn, increase the risk of heart disease (CDC, 2013c). Dietary patterns including high level of saturated fats and cholesterol, and diets with high sodium also contribute to elevated blood cholesterol levels and atherosclerosis, and have been linked to heart disease (CDC, 2013c). Even though risk factors for CVD could function individually, most of the time they work in combinations that tend to increase the probability of CVD development (Jarakovic et al., 2015). Hence, it is important to recognize individuals' CVD risk factors early on.

Epidemiological Transition from Infectious to Chronic Diseases

CVD is the main reason for morbidity and mortality in the developed world, notwithstanding a plenitude of assets and resourceful healthcare systems (Kariuki, Stuart-Shor, Leveille, & Hayman, 2013). Lately, another pattern has been seen in developed nations where cardiovascular disease has turned into the general driving reason for death due, in part, to the continuous epidemiological move from infectious to non-transferrable diseases (Kariuki et al., 2013). At present, 80% of the worldwide burden of CVD is in developed nations (Kariuki et al., 2013).

This epidemiological transition has presented an extended twofold burden of disease in developing nations, which are likewise laden by immature and delicate health care systems (Kariuki et al., 2013). In the scenery of the approaching general public health emergency, most governments in developing nations, for example, those in Sub-

Saharan Africa, still apportion 80% of their aggregate health spending to acute infectious diseases (Kariuki et al., 2013). The same pattern of skewed assignment of assets has been trailed by real contributor organizations including the World Health Organization (WHO) (Kariuki et al., 2013). A relative analysis of WHO 2008–2009 financial resource allocation showed that just 12% of the WHO aggregate spending plan was reserved for chronic diseases, while 87% was allotted for communicable diseases (Kariuki et al., 2013).

Risk Assessment and Management Strategies through the Years

CVD has remarkably diminished in numerous developed nations in the past three decades as a result of measures taken at the population level and the management of risk factors (Nordet et al., 2013). CVD prevention, and especially heart attack and stroke prevention, has been in the forefront for a significant amount of time through interventions focusing on people with major CVD risk factors (Nordet et al., 2013). However, this strategy may leave patients at high risk of a cardiovascular event because of inappropriate control measures; for instance, even with medication for risk factors of CVD, such as hypertension or cholesterol, levels may stay high and patients may be unaware of unusual levels of one or more risk factors (Nordet et al., 2013).

There is still an elevated burden and expanding pervasiveness of CVD in U.S. populations that requires powerful and even-minded primary and secondary prevention strategies (Kariuki et al., 2013). Numerous current guidelines for CVD management suggest complete cardiovascular risk evaluation as a clinically solid practice for preventive and treatment techniques (Kariuki et al., 2013). Ascertaining the patient's total

risk for CVD empowers clinicians to gauge the probability that a specific grouping of risk factors will add to the manifestation of a CVD-associated disability or mortality over a particular period of time (Kariuki et al., 2013).

Complete risk estimates can be helpful in raising awareness of CVD, and in persuading adherence to suggested lifestyle changes or treatment (Kariuki et al., 2013). In clinical practices throughout numerous developed nations, algorithms of CVD risk evaluation have been used to distinguish people at high risk for acquiring CVD within about 10 years, and to identify these people for more serious preventive intervention and treatment strategies (Kariuki et al., 2013). A preventive strategy that encompasses the absolute risk approach could possibly have a significant effect in reducing the incidence and the burden of CVD (Kariuki et al., 2013).

By ushering the limited assets toward those in most prominent need, the CVD burden could be diminished without the cost of pointless treatment and related unnecessary impacts to those at generally safe (Kariuki et al., 2013). Absolute risk approach is beneficial since CVD risk assessment algorithms are derived from laboratory measurements. However, Kariuki et al. (2013) discovered that generalizability of the non-lab based risk evaluation algorithms in differing population will be an imperative venture in learning their execution and appropriateness to diverse populations, and to improve clinicians' trust in utilizing them to guide screening and administration of CVD in limited resource settings.

In the past 10 years, complete risk factor evaluation and management (assessment of risk factors considering all known significant risk factors) has been suggested via

guides of cardiovascular control in most high-income nations, taking into account cardiovascular risk projection scores or graphs derived from different sources in those nations (Nordet et al., 2013). These risk factor prediction instruments have been taking into consideration of the following variables: age, sex, cigarette smoking, systolic blood pressure, only total cholesterol or including HDL cholesterol, and diabetes (Nordet et al., 2013). The risk factor prediction instruments are created utilizing multivariate risk predication mathematical equations coming from expansive population based studies or data of risk factor and health outcome (heart attack and stroke) analyzed over a long period of time (Nordet et al., 2013).

The risk factor prediction instruments need particular alignment to be utilized in different populations (Nordet et al., 2013). In 2007, WHO and the International Society of Hypertension (ISH) gave out two groups of CVD risk projection diagrams for each of the 14 WHO epidemiologic sub-regions: one can be used in place where blood cholesterol can be measured and the other for those where it can not (Nordet et al., 2013). Both settings take into consideration smoking, blood pressure, diabetes, age, and gender; both additionally utilize relative risk and prevalence of risk factor data for myocardial infraction and stroke derived from each of the 14 WHO epidemiologic subregions, from WHO conducted Comparative Risk Assessment Project (Nordet et al., 2013). Absolute risk of CVD event is determined by scaling individual relative risk to population incidence rates of major CVDs, assessed from the worldwide burden disease study (Nordet et al., 2013).

Doctors can utilize guidelines of CVD control to tailor treatment systems in view of patients' anticipated risk classifications (Nordet et al., 2013). As a rule, guidelines do not suggest the utilization of medications for persons with CVD hazard <20%; rather, it is recommended to manage this based on lifestyle adjustment for smoking and alcohol consumption, diet, and exercise; the guidelines suggest medication treatment for persons with a CVD risk limit ≥20% (Nordet et al., 2013). Drug treatment, such as antihypertensive, diuretics and lipid-lowering medications, is additionally prescribed for persons with blood pressure (≥160/100 mmHg) persistently and/or total cholesterol ≥8 mmol/L, or in view of the doctor's clinical judgment (Nordet et al., 2013). Cost effective cardiovascular disease prevention and management strategies entails lifestyle adjustments as well as total risk approach at a population level focusing on population with high risk (Nordet et al., 2013). As many people do not know their cardiovascular risk status, it is necessary for health care providers to screen in order to address the risk of CVD (Nordet et al., 2013).

Smoking and Cardiovascular Disease

Smoking is an important risk factor for CVD. A study in Framingham, Ma and Albany, NY found out that men who were smoking 20 or more cigarettes per day had the risk of heart attack at least three times greater than non-smokers or former smokers (Doyle, Dawber Kannel, Kinch, & Kahn, 1964). A twenty-five year follow up study of seven countries including the United States of America indicated that mortality rate due to CVDs had increased significantly as number of cigarette smoked had increased (Jacobs, et al., 1999). A cross sectional study conducted by Mallaina et al. (2013)

revealed that smoking was responsible for a seven-fold increase in peripheral arterial disease and a two-fold increase in coronary artery disease. The result of the Mallaina et al. (2013) study demonstrated that smokers had a 100% increase in probability of death due to CVD within 10 years as compared to non smokers.

The mechanism by which smoking induces atherosclerotic lesions, which increases the risk of CVD, was associated with the breakage of double strand of DNA in mononuclear cells examined in the laboratory (Ishida et al., 2014). Godtfredsen and Prescott (2011) indicated other mechanisms that smoking would increase the chance of developing atherosclerosis and thrombus formation, such as the smoke's free radical damage of endothelial function (vessel wall), lipids modification, inflammation, and through affecting vasomotor activity, which is the dilation and contraction of blood vessels. A 3 years randomized controlled trial conducted by Gepner et al. (2013) demonstrated that heavy smoking was associated with major abnormality of electrocardiogram (ECG), which is a device used to detect and quantify CVD. Ishida et al. (2014) showed that 1-month of not smoking cigarette reduced the DNA double strand breakage to the level that was comparable with non-smokers mononuclear cells. Mallaina et al. (2013) also indicated that smoking cessation decreased the risk of heart attack by about 65% in study participants. Gepner et al. (2013), however, found out that after three years of quitting smoking there was no significant difference in the major or minor ECG abnormality between the baseline and at year three even though there were smaller number of minor ECG abnormality among those who quite smoking. This was so

because the Q-Waves findings of the minor or major ECG abnormality are associated with myocardial scar that may not be resolved in three years period (Gepner et al., 2013).

Multiple cohort studies carried out between 1980-2000, related to smoking cessation after the event of myocardial infarction or heart attack, showed that there was significant non-fatal benefits compared to those smoked continually (Godtfredsen & Prescott, 2011). Godtfredsen and Prescott (2011) further indicated that the morbidity and death due to coronary heart disease significantly reduced within six months of smoking cessation and within 10-15 years the risk of morbidity and mortality due to coronary heart disease close to those who never smoked. Smoking cessation before 35 years of age doesn't involve excess risk of morbidity and mortality due to CVD as compared to never smokers (Godtfredsen & Prescott, 2011). Thus, it was possible to infer from all consistent evidences that smoking cessation would result in CVD prevention in the target population.

Weight Loss, Alcohol Consumption, and Cardiovascular Disease

Unhealthy diet would lead to overweight and obesity, which was also considered as an important risk factor that would determine morbidity and mortality rate associated with CVD. The statistical data from 2011-2012 showed that about 78.6 million adults and 12.7 million young people between the ages of 2-19 in the United States had obesity (CDC, 2014a). The 44 years of follow up study of Framingham Heart Study cohort revealed that overweight and obesity increased the risk of CVD (Wilson, D'Agostino, Sullivan, Parise, & Kannel, 2002). Wilson et al. (2002) also indicated that losing excess

weight had a significant effect on reducing CVD at individual as well as at population levels.

Physical activity and weight loss could have substantial benefit for cardiovascular health. Healthy behavioral modification including healthy dietary lifestyle and moderate alcohol consumption conferred significant benefit in reducing the risk of CVD (Pryde & Kannel, 2011). The result of 30 years of follow up study on the association between obesity, physical activity, and CVD showed an increased risk of CVD with increasing categories of body mass index (BMI < 25 kg/m2: normal weight; BMI 25-30 kg/m2: overweight; BMI > 30kg/m2: obese); however, increasing physical activity rendered a deceased risk of CVD on each categories of BMI (Calsson et al., 2015). Pryde and Kannel (2011) stated that moderate alcohol consumption was associated with decreasing CVD mortality by increasing HDL cholesterol (good cholesterol), decreasing thrombus formation that decreases the risk of stroke and coronary heart disease. Rimm, Williams, Fosher, Criqui, and Stampfer (1999) indicated that consumption of 30g of alcohol per day (equivalent to 3 standard drinks) decreased risk of coronary heart disease by 24.7% through altering biomarkers, such as HDL, high-density lipoprotein. Hence, physical activity, weight loss, and moderate alcohol consumption could have beneficial effect on cardiovascular health.

Secondary Prevention of CVD

Prevention of CVD entails managing risk variables such as blood pressure (BP) and lipids in addition to primary prevention. Even though medicines have been cost burden to the community, pharmacological treatment has been played significant role in

controlling BP and lipids (Vagholkar et al., 2014). It has been reported that hypertension cost $21.3 billion in the United States annually (Vagholkar et al., 2014). The Australian government had spend about $3 billion for medicines to lower BP and lipids each year; Considering the costs, it was essential that the target population would benefit from the pharmacological treatment (Vagholkar et al., 2014). Guidelines for the management of hypertension and lipids recommended evaluation of absolute risk of CVD in the management process, instead of focusing on BP or lipids separately (Vagholkar et al., 2014).

Absolute risk of CVD considered many variables such as, smoking, diabetes status, age, sex, lipids, and BP that would help to assess an individual's estimated risk percentage of developing a CV event during the next 5 to 10 years (Vagholkar et al., 2014). Medical treatment was for those with absolute risk of CVD greater than 20% based on the guideline (Vagholkar et al., 2014). Nevertheless, high-risk patients had not been managed successfully (Vagholkar et al., 2014). Vagholkar et al. (2014) suggested systematic assessment of absolute CV risk since research reflected the fact that assessment of absolute risk of CVD had minimal effect on prescribing CV medication and moderate impact in prescribing for patients with high risk of CVD.

However, the older adult population with CV risk has benefited from a sharp decline in mortality though advances that have been made in early detection and aggressive medical treatment of CVD (Rosneck, et al., 2014). Because mortality rate had declined, the healthcare system would need to provide tools necessary for long-term management of CV in the predominantly older population (Rosneck et al., 2014).

Rosneck et al. (2014) pointed out that in the hospital patient education ha suffered even though there had been significant decrease in hospital stay and advance in early detection and aggressive treatment of CVD. The short term stress on psychological and physical level which could occur during an inpatient hospital stay might impede adult patient and family understanding of behavior that was necessary for improving long term health outcome (Rosneck et al., 2014). Patients, as well as families, thought that post recovery period learning were focused on survival of the next cardiac event rather than strategies on secondary prevention (Rosneck et al., 2014). Rosneck et al. (2014) asserted that the objective of cardiac rehabilitation after a hospital stay had been to maintain the physical and psychological state of cardiac patients at optimum level.

Current cardiac rehabilitation programs tap on the available resources to teach CVD risk factors as well as strategies on how to manage CVD (Rosneck et al., 2014). The programs were used to educate cardiac patients, modify risky health behavior, and take responsibility for managing the disease long term (Rosneck et al., 2014). Studies indicated that in settings where cardiac education was taking place there was 34% decline in cardiac mortality and 29% reduction in heart attack (Rosneck et al., 2014). Thus, secondary prevention using cardiac rehabilitation programs were working to create optimum cardiac health in the population.

The Knowledge Gap Factor

Researchers have pointed out that patients with diagnosed coronary heart disease (CHD) had a poor comprehension of risk factors associated with CVD (Broadbent, Leggat, McLachlan, & Kerr (2013). Cardiovascular patients' view of their own risk

factors might not coordinate with their real risk determinants, for example, smoking, a family history, or past issue related with heart disease (Broadbent et al., 2013). Myocardial infarction patients' view of risk had been demonstrated to be disconnecting to their risk evaluations from well-known clinical model (Broadbent et al., 2013). Broadbent et al. (2013) demonstrated that the views of hospitalized patients about risk factors a couple of days after they experienced heart attack were not identified with risk factors, including age, smoking, and family history, and that numerous patients overestimated or belittled their risk as per model expectations. Enhancing patients' understanding about risk factors was essential since patients' view about risk factor might impact patients' adherence to treatment and appropriation of lifestyle adjustment (Broadbent et al., 2013).

Moreover, numerous individuals of the population couldn't give any quantitative estimates of cardiovascular event that might happen in their future (Broadbent et al., 2013). When they did assess their risk, they had a tendency to go over their absolute numerical risk (Broadbent et al., 2013). In spite of the fact that this might lead to follow a healthy way of life, it might likewise bring about superfluous heart tension and unnecessary use of healthcare services by low risk individuals (Broadbent et al., 2013). When people rated their risk of CVD event with others, they tended to provide a different picture; the vast majority of people demonstrated a hopeful inclination to rate their own risk as lower than that of the average individual of the same age and sex (Broadbent et al., 2013). These descending comparisons among cardiovascular patients had been deciphered as an emotion centered coping methodology (Broadbent et al., 2013).

Investigators had proposed that inconsistencies about the patients’ view or

perception about cardiac risk and actual risk of cardiac event needed to have resolution so as to urge individuals to lead healthy lifestyle (Broadbent et al., 2013). Studies indicated that giving information about the risk of CHD to adults could enhance exactness of risk perceptions, and might encourage beginning preventive risk lessening treatments (Broadbent et al., 2013). It was also recommended that repeated information about the risk would bring about a better result than one information session (Broadbent et al., 2013). Patients in primary care settings didn't have accurate risk perceptions and programs for management of cardiovascular disease risk factors had demonstrated to reduce total cholesterol; however, the programs didn't have significant impact on some groups on diet and exercise (Broadbent et al., 2013).

Nevertheless, more research was required with patients with CHD so as to have actual risk information to patients and to make informed decision about lifestyle adjustments (Broadbent et al., 2013). Patients tended to produce perceptions about CVD after a cardiac event and these perceptions were necessary for recovery (Broadbent et al., 2013). The acceptance level of lifestyle adjustment and prevention was high during the patients were in hospital recovering from heart attack (Broadbent et al., 2013). There was good evidence that would reflect the efficacy of in hospital cardiac rehabilitation and after discharge classes (Broadbent et al., 2013). Therefore, cardiac rehabilitation classes in hospital as well as classes in community centers would be encouraged in order to lessen the impact of CVD.

Summary and Conclusion

CVD is global public health crisis and therefore it is imperative to address this problem as diversely as possible. Currently, CVD has been the major driving force of mortality partly because of the epidemiological transition from communicable disease to chronic disease including CVD (Kariuki et al., 2013). The status of CVD risk of a population was determined by various factors, including physical inactivity, tobacco use, gender, diet, and alcohol use. Nwose et al. (2013) pointed out that smoking was one of the risk factors of CVD that might involve the oxidative stress of free radicals on the wall of blood vessels. Nwose et al. (2013) also stated that hyperglycemia induced oxidative stress and chronic stress might increase the risk of CVD. Other risk factors, such as age, high low-density lipoprotein (LDL, bad cholesterol), low high-density lipoprotein (HDL, good cholesterol), inflammation, and genetic predisposition also played significant role for CVD (Rama Krishna et al., 2015). The 44 years of follow up study of Framingham Heart Study cohort revealed that overweight and obesity increased the risk of CVD (Wilson, D'Agostino, Sullivan, Parise, & Kannel, 2002). The Centers for Disease Control and Prevention (2013) stated that consumption of excessive alcohol might bring about high blood pressure and high levels of triglycerides and that in turn increased the risk of heart disease

In the past three decades, there had been a decline in CVD due to measures taken at the population level including controlling risk factors through lifestyle adjustment (Nordet et al., 2013). The estimate of absolute risk of CVD could be helpful in raising awareness of CVD, and in persuading adherence to suggested way of lifestyle changes or

treatment (Kariuki et al., 2013). It was also important that CVD patients' perception about their own risk factor be compared with their real risk factors, including smoking, family history, heart disease problem in the past (Broadbent et al., 2013). A prospective cohort study of twenty five years of seven countries including the United States of America indicated that mortality rate due to cardiovascular diseases had increased significantly as number of cigarette smoked had increased (Jacobs, et al., 1999). The result of Mallaina et al. (2013) study demonstrated that smokers had a 100% increase in probability of death due to CVD within 10 years as compared to non smokers.

Morbidity and death due to coronary heart disease significantly reduced within six months of smoking cessation and within 10-15 years the risk of morbidity and mortality due to coronary heart disease close to those who never smoked (Godtfredsen & Prescott, 2011). Healthy behavioral modification including healthy dietary lifestyle and moderate alcohol consumption conferred significant benefit in reducing the risk of CVD (Pryde & Kannel, 2011). Prevention of CVD entails managing risk variables such as blood pressure (BP) and lipids in addition to primary prevention. Therefore, lifestyle adjustment including weight, alcohol consumption, and smoking are the cornerstone of modifiable risk factors for CVD. Health behavior can be affected by various factors including intrapersonal, social, and physical environment; thus, this study will use social cognitive theory and social ecological model as a theoretical model. In the next chapter, methodology would be discussed that was based on quantitative design focused on upholding the purpose of the research.

Chapter 3: Research Method

Introduction

The purpose of this research was to determine if there was a significant difference in the use of lifestyle adjustments such as moderating alcohol consumption, weight loss, and smoking cessation on the prevalence of cardiovascular disease in the African Americans between the ages of 40 and 60. In this chapter, I discuss the design and rationale for this study including the study variables, and the connection between the research questions and research design. In the methodology section, I defined the target population, sampling and sampling procedures, treatment of archival data, instrumentation, and operationalization of constructs. This chapter also included the data analysis plan and a discussion about the threats to validity and ethical procedures that I implemented in the study.

Research Design and Rationale

This was a cross-sectional quantitative study. The underlying concepts of cross-sectional study design entail examining not only the association between the disease of interest and risk factors of a target population over a short period of time, but also assessing the frequency as well as the burden of disease of a population at a given point in time (Public Health Action Support Team [PHAST], 2011). Thus, the connection of this design with research questions pertained to the fact that cross sectional quantitative design was useful in testing the significance of lifestyle adjustment to the risk factors for CVD of the African American population such as being overweight or obese, smoking, and alcohol consumption. The study's independent variables were overweight and

obesity, smoking, and alcohol consumption, and the dependent variable was CVD. Epidemiologists have used cross-sectional study designs for a long period of time to assess the association of risk factors with health outcomes of interest (PHAST, 2011). Specifically, epidemiologists use cross-sectional design to understand the distribution of disease in a target population, and to make comparisons of disease occurrence between population groups (PHAST, 2011). Therefore, cross sectional design was a useful measure I used to advance knowledge in epidemiology. I did note expect time and resource constraints to be an issue because of the merits of cross-sectional study design, which could be conducted relatively easily and quickly (PHAST, 2011).

Methodology

Population

The target population for this study was African Americans between the ages of 40 and 60 who were living in the United States during the time the NHANES was conducted. The latest U.S. census indicated that African American constituted 15% (45 million) of the total U.S. population in 2013 (CDC, 2015a).

Sampling and Sampling Procedures

Sampling was important to make inferences about the target population. The study's generalizability depends on the representative sample used to help make inferences about the target population (Frankfort-Nachimias & Nachimias, 2008). A sampling strategy, in turn, could help to enhance the generalizability of the sample to the population of interest (Crosby, DiClemente, & Salazar, 2006). Thus, a representative sample would ensure the veracity of inferences about the population, and give credence

to the study's contribution to overall scientific findings. With this in mind, I used secondary data, which had been collected by NHANES. NHANES has been used a rigorous probability-sampling strategy, which should produce a representative sample of the target population (CDC, 2014d).

Sampling Procedures

The sampling procedures of NHANES consisted of four stages:

- Selecting primary sample units using 2000 census data from a frame of all U.S. counties that represent all noninstitutionalized civilian populations in the 50 states, including the District of Columbia (CDC, 2014c).
- Selecting a systematic sample of area segments (clusters of 18 housing units) that included census blocks to produce about equal sample sizes per primary sample unit (CDC, 2014c).
- Selection of all households, including group quarters such as dormitories, from each segment (CDC, 2014d).
- Systematic selection and interviews of a subsample of individuals from household members based on sex, age, race, income, and Hispanic origin (CDC, 2014d).

Sampling Frame: Inclusion and Exclusion Criteria

The sampling frame consisted of all U.S. counties in 50 states, including the District of Columbia. The inclusion criteria guaranteed that all states in the U.S. and District of Columbia were included, taking into account defined geographic areas, appropriate proportions of minority population, and appropriate proportions of age, ethnic, and income groups (CDC, 2013b). The exclusion criteria disqualified members in

the armed forces, U.S. nationals residing outside of the United States, individuals living in nursing homes, and institutionalized individuals (CDC, 2013b).

Power Analysis

I used a power level of 0.8, alpha level 0.05, and effect size in terms of odds ratio of 1.72 to determine my sample size and these parameters may help to draw a conclusion about the effect (Ellis, 2010). I used the G*power 3.1 tool to calculate the sample size.

z tests - Logistic regression

Options:	Large sample z-Test, Demidenko (2007) with var corr	
Analysis:	A priori: Compute required sample size	
Input:	Tail(s)	Two
	Odds ratio	1.72
	Pr(Y=1|X=1) H0	0.2
	α err prob	0.05
	Power (1-β err prob)	0.8
	R^2 other X	0
	X distribution	Normal
	X parm μ	0
	X parm σ	1
Output:	Critical z	1.9599640
	Total sample size	177
	Actual power	0.8018787

Procedures for Recruitment, Participation and Data Collection

For this study, I used the NHANES dataset for the years 2013 to 2014. Procedures for recruitment, participation, and data collection used by NHANES include:

- The representative sample of 5,000 participants of all ages was recruited each year from 15 counties from all 50 states and the District of Columbia using rigorous systematic probability sampling (CDC, 2014c).
- Data was collected using a survey that combined both interview and physical examination (CDC, 2014c).
- The interview included health, socioeconomic status, dietary habit, and demographic questions (CDC, 2014c).
- The physical examination was comprised of physiological, laboratory tests, dental, and medical measurements carried out by medical professionals (CDC, 2014c).

The NHANES dataset was publicly available from the CDC website; therefore, it was not necessary for me to secure permission to access data set.

Instrumentation and Operationalization of Constructs

I examined CVD risk factors and lifestyle adjustment in the African American population, the data for which had been collected by NHANES. The National Center for Health Statistics (NCHS) developed NHANES, and the survey has combined both interview and physical examination information since the early 1960's (CDC, 2014c). There was no need to ask permission to use the instruments since the data collected using the instruments are publicly available. Instruments used in NHANES were unique to that the survey, and combined both interview and physical examination to collect health-

related data from the U. S. population. NHANES oversampled African Americans, Hispanics, and those aged 60 and older to ensure statistical reliability (CDC, 2014c). For example, research conducted to assess the reliability and validity of a survey questionnaire of NHANES 2011-2014 specifically for taste and smell indicated that NHANES's test and retest reliability provided good information compared to broader chemosensory function measures (Rawal, Hoffman, Honda, Hedo-Medina, & Duff, 2015). Even though interview questionnaire data were based on self report and were susceptible to recall problems and question misunderstandings, NHANES data incorporate physical examination and laboratory testing that engender valid, objective, high quality, high response rate, nationally representative data on a broad range of health outcomes including CVD and related risk factors (The National Academies, 2011).

The instruments (interviews and physical examination) were used with the U.S. population, and included a study sample size of 5000 every year from 15 counties chosen randomly within each of the 50 states (CDC, 2014c). Fahimi, Link, Mokdad, Schwartz, and Levy (2008) compared the weighted health and risk factor estimates of National Health Interview Survey (NHIS), Behavioral Risk Factor Surveillance System (BRFSS), and NHANES, and found that the surveys produced similar weighted health and risk factor estimates; however, there were differences that had limited consequences for implementing programs for public health.

The following operational definitions for the variables in this study were as follows:

CVD is also known as heart disease that involves blood vessels and the heart, such as atherosclerosis and heart attack; it can involve stroke that occur

when plaque blocks artery that carries oxygen and nutrient rich blood to the brain (AHA, 2015).

Moderate alcohol consumption can be defined as drinking of up to 1 alcoholic beverage for women and up to 2 for men (1 beer = 12 oz; 1 wine=4 oz; 1 liquor =1.25oz) (Centers for Disease Control and Prevention, 2014).

Weigh loss can be losing weight about 1 to 2 pounds per week steadily and gradually to keep weight off successfully and maintain normal or healthy weight of BMI between 18.5 and 24.9 provided that Overweight and obesity are expressed as the ranges of calculated numbers, body mass index (BMI), using weight as well as height of the person; the BMI between 25 and 29.9 is overweight and BMI of ≥ 30 is obese (CDC, 2012; CDC, 2015c).

Smoking can be categorized as current smokers, former smoker, and non smoker; current smokers were those who were smoking cigarettes every day or some days and smoking 100 cigarettes in their lifetime; those who did smoke 100 cigarettes in their lifetime, but did cease now categorized as former smoker; those who did not smoke 100 cigarettes in their lifetime are non smokers (never smoker) (CDC, 2015d).

The following table shows the variables and their corresponding coding options.

Table 1

Coding of Variables

Variable	Type of variable	Data Coding
Weight Loss	Categorical	1=yes 2=no 7=refused 9=don't know
Alcohol consumption	Categorical	1=yes= drink in moderation 2=no= never drink/ former drinker 7=refused 9=don't know
Smoking Status	Categorical	1=yes= current smoker 2=no=non smoker/former smoker 7=refused 9=don't know
Age	Interval	0-79 and 80 coded for 80 years of age and over
Race	Nominal	American Indian or Alaskan Native = 1 Asian=2 Black or African American= 3 Native Hawaiian OR Pacific Islander =4 White= 5 Other=6 don't Know=99 Refused=77

For each variable stated on Table 1, I used the following survey questions and their corresponding coding options for the variables that are found in the data-coding column of Table 1.

For the questions pertaining to smoking, I used the following survey questions:

- During the past 5 days, including today, did {you/SP (sample participant} smoke cigarettes, pipes, cigars, little cigars or cigarillos, water pipes, hookahs, or e-cigarettes? Coding options: YES =1 NO = 2 Refused = 7 (SMQ.851) Don't know = 9;

- During the past 5 days, including today, on how many days did {you/he/she} smoke cigarettes? Coding options: RANGE 1 – 5 Number of days; Refused=7 Don't know = 9;
- During the past 5 days, including today, on the days {you/he/she} smoked, how many cigarettes did {you/he/she} smoke each day? Coding options Range 1 – 95. Number of cigarettes; Refused =777; Don't know= 999;
- When did {you/he/she} smoke {your/his/her} last cigarette? Was it . . . today= 1 yesterday, or=2; 3 to 5 days ago?.=3; Refused = 7 Don't know = 9;
- When did {you/he/she} last use a nicotine replacement therapy product? Was it . . . today=1; yesterday, or= 2; 3 to 5 days ago? = 3; Refused = 7; Don't know = 9 (CDC, 2015b).

For demographic variables (age and race/ethnicity), I used the following survey questions:

- What was the participant age at the time of screening and coding options: 0-79 and participants of 80 and over years old coded at 80 years of age;
- What race or races {do you/does SP (sample participant} consider to be? Coding options: American Indian or Alaska Native = 1 Asian=2 Black or African American= 3 Native Hawaiian or Pacific Islander =4 White= 5 other=6 don't Know=99 Refused=77 (CDC, 2015b).

For the weight variable, I used the following survey questions:

- Do you now consider yourself… coding options: fat or overweight= 1; thin=2 ; right weight=3? Refused =7; don't know =9;

- What are you trying to do about your weight? Coding options: lose weight =1; gain weight =2; remain the same=3; not dealing with your weight =4; refused=7; don't know=9;
- How many times have you tried to loss weight in the past year? Coding options: Never =1; sometimes =2; many times=3; refused =7; don't know=9 (CDC, 2015b).

With regard to alcohol use I used the following questions:

- In any one year, {have you/has SP} had at least 12 drinks of any type of alcoholic beverage? By a drink, I mean a 12 oz. beer, a 5 oz. glass of wine, or one and a half ounces of liquor. ; Have you/SP (sample participant) had 12 drinks of alcoholic drinks during entire life?; and the coding options are 1=yes 2=no; 7=refused; 9=don't know;
- How often have you/SP had drinks in the past 12 months (how many per week, month, year) and coding options of refused =777; don't know=999; week=1; month=2, year=3; refused =7; don't know=9;
- Have you/SP got drunk almost every day in your life time; coding options: 1=yes 2=no; 7=refused; 9=don't know; (CDC, 2015b).

Data Analysis Plan

SPSS software version 23 was used for analysis of data relevant to the current study. The research questions, hypotheses, and planned analysis for each question were as follows:

RQ 1: Was there a significant difference in the use of the lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the National Health and Nutrition Examination survey (NHANES) for the years 2013-2014?

$H_0$1: There was no significant difference in the use of lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$1: There was a significant difference in the use of lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

RQ 2: Was there a significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$2: There was no significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$2: There was a significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American

population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

RQ 3: Was there a significant difference in the use of the lifestyle adjustments of moderating alcohol consumption and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$3: There was no significant difference in the use of the lifestyle adjustments of moderating alcohol consumption and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$3: There was a significant difference in the use of the lifestyle adjustments of moderate alcohol consumption and smoking in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

RQ 4: Did the combined effects of weight loss, moderating alcohol consumption, and smoking cessation result in a significant difference in the prevalence of CVD in African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$4: The combined effects of weight loss, moderating alcohol consumption, and smoking cessation did not result in a significant difference in the prevalence of CVD in African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$4: The combined effects of weight loss, moderating alcohol consumption, and smoking cessation resulted in a significant difference in the prevalence of CVD in African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

Statistical data analysis for all research questions included measures of central tendency-mean, mode, and median, measures of spread-variance and standard deviation, and inferential statistics- binary logistic regression. Statistical significance would be determined in such way that $p<0.05$ would indicate the null hypothesis can be rejected and the result was statistically significant.

Data cleaning and screening procedures included:

- Making sure that the values of data were plausible (Issel, 2009).
- Making sure that there was no data entry error in the NHANES dataset through screening the plausibility of values of data (Issel, 2009).
- Screen for outlier and exclude an outlier by determining some cut-off point for the values of the data and/or using large sample size to lessen its effect on data analyses (Issel, 2009).

Threats to Validity

External validity can be described as the extent to which the study findings can be generalized to target population (Crosby, DiClemente, & Salazar, 2006). Because NHANES used a representative sample using multi stage probability sampling strategy that involved randomization, the threats to external validity had been addressed. History might pose a threat to internal validity because of experiences of participants in the study

their response to the survey might have differential effect and randomization could help to achieve internal validity (Crosby et al., 2006). Because of the randomization in the selection of sample during NHANES study, there might not be validity threats to construct or statistical conclusion. Issues such as sample size, bias, response rate, and confounding factors could arise during interpretation of statistical analysis; however, randomization during sampling could minimize the effect of confounding factors in the interpretation of statistical analysis (Chambers & Licari, 2009).

Ethical Procedures

The NHANES data was publicly available and the privacy of participants was protected by public law and the data collected using the survey was kept strictly confidential (CDC, 2014c). Data was de-identified and anonymous. I sought after the Walden University IRB approval before initiating the study. The laptop that I used for storing data in the study was password protected and I was the only one who had access to the laptop as well as the password protected stored data in the laptop. Data will be destroyed after five years.

Summary

In conclusion, this study will use a cross sectional quantitative study design to determine if there is a significant difference in the use of lifestyle adjustments such as moderate alcohol consumption, weight loss and smoking on the prevalence of cardiovascular disease in the African American population between the ages of 40 and 60 years old. The current study will use secondary data collected by NHANES to answer

four research questions. Chapter 4 will provide results of the statistical analysis of the data.

Chapter 4: Results

Introduction

The purpose of this research was to explore if there is a significant difference in the use of lifestyle adjustments such as moderating alcohol consumption, weight loss, and smoking cessation on the prevalence of CVD in the African Americans between the ages of 40 and 60. The research questions and hypotheses of this study were:

RQ 1: Was there a significant difference in the use of the lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the National Health and Nutrition Examination survey (NHANES) for the years 2013-2014?

$H_0$1: There was no significant difference in the use of lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$1: There was a significant difference in the use of lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

RQ 2: Was there a significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$2: There was no significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$2: There was a significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

RQ 3: Was there a significant difference in the use of the lifestyle adjustments of moderating alcohol consumption and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$3: There was no significant difference in the use of the lifestyle adjustments of moderating alcohol consumption and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$3: There was a significant difference in the use of the lifestyle adjustments of moderate alcohol consumption and smoking in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

RQ 4: Did the combined effects of weight loss, moderating alcohol consumption, and smoking cessation result in a significant difference in the prevalence of CVD in

African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$4: The combined effects of weight loss, moderating alcohol consumption, and smoking cessation did not result in a significant difference in the prevalence of CVD in African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$4: The combined effects of weight loss, moderating alcohol consumption, and smoking cessation resulted in a significant difference in the prevalence of CVD in African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

This chapter is organized into the following sections: data collection, results, and summary.

Data Collection

The data were collected by the NHANES from 2013 to 2014 from the civilian, non-institutionalized population living in the 50 states and the District of Columbia (CDC, 2015). The 14,332 participants from all age and gender groups were recruited from 30 different study locations. Of these participants, 10,175 completed the interview, and 9,813 completed the examination; the response rate for the interview was 71%, and response rate for the examined sample was 68.5% (CDC, 2015b).

There were no any discrepancies in data collection from the plan I presented in Chapter 3. The sample included non-Hispanic Black participants between 40 and 60

years of age of both genders. In order to increase the reliability and precision of the health status of the target population, and to ensure the representativeness of sample, NHANES used a complex, multistage probability design with a larger sample size (CDC, 2015b).

Results

I analyzed data for this study using SPSS v. 21. The findings of this study are presented in Tables 2-18 and Figure 1, which show descriptive statistics and logistic regression analysis.

Table 2

Descriptive Statistics of Weight Loss in Pounds, Alcohol Consumption, Smoking, and Gender

		Weight Loss in Pounds	Alcohol Consumption	Smoking Status	Gender
N	Valid	177	177	177	177
	Missing	0	0	0	0
Mean		1.56	1.49	1.54	1.51
Median		2.00	1.00	2.00	2.00
Mode		2	1	2	2
Std. Deviation		.498	.501	.500	.501
Variance		.248	.251	.250	.251
Minimum		1	1	1	1
Maximum		2	2	2	2

Table 3

Smoking Status

	Frequency	Percent	Valid Percent	Cumulative Percent
Current Smoker	82	46.3	46.3	46.3
Non-smoker/former smoker	95	53.7	53.7	100.0
Total	177	100.0	100.0	

Table 4

Weight Loss

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	78	44.1	44.1	44.1
	no	99	55.9	55.9	100.0
	Total	177	100.0	100.0	

Table 5

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	86	48.6	48.6	48.6
	Female	91	51.4	51.4	100.0
	Total	177	100.0	100.0	

Table 6

Alcohol Consumption

	Frequency	Percent	Valid Percent	Cumulative Percent
Drink in moderation	90	50.8	50.8	50.8
Drink above moderation	87	49.2	49.2	100.0
Total	177	100.0	100.0	

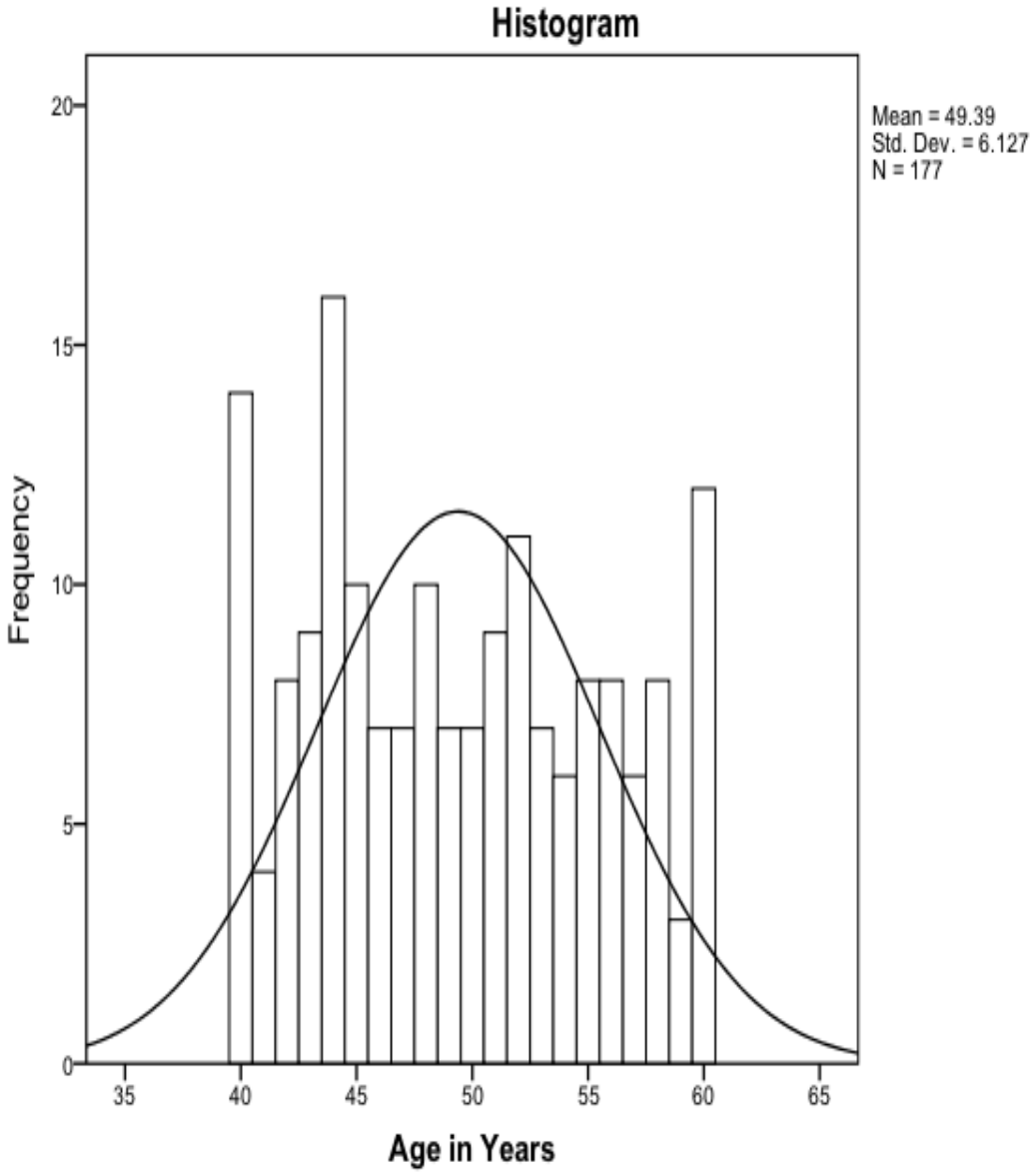

Figure 1. Histogram of age frequency.

The evaluation of statistical assumptions entails making sure that binomial logistic regression is appropriate for analysis of the data of the study so that the analysis can provide a valid result. Thus, I determined that the data of this study met the following assumptions of logistic regression:

1. The dependent variable is dichotomous (cardiovascular disease).
2. The independent variables are categorical.
3. The model is fitted in that all meaningful variables have been included in the model.
4. Independent variables are independent with each other.
5. The linearity of independent variables and log odds are met through categorization of independent variables and fit into the model.
6. The sample size is large enough (Statistics Solutions, 2016).

In what follows, I report the findings of the statistical analyses, organized by research questions and hypothesis.

Research Question 1

RQ 1: Was there a significant difference in the use of the lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the National Health and Nutrition Examination survey (NHANES) for the years 2013-2014?

$H_0$1: There was no significant difference in the use of lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African

American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$1: There was a significant difference in the use of lifestyle adjustments of weight loss and moderating alcohol consumption in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

I performed a logistic regression to assess the effects of weight loss and moderating alcohol consumption had on the likelihood that participants had CVD. As shown in Table 7, the Chi-square that tests if the null hypothesis is true was not statistically significant; thus I could not reject the null hypothesis. Table 8 shows that 112 participants were observed to be without CVD and were correctly predicted to be without CVD; however, 65 participants were observed to have CVD, but they were predicted to be without CVD based on the logistic regression model. The overall percentage of participants that were correctly predicted by the logistic regression model was 63.3. Table 9 shows the fact that the logistic regression model was not statistically significant with $P>0.05$, 95% CIs [0.765, 2.663] and [0.721, 2.469] for weight loss and moderate alcohol consumption, respectively. Thus, the null hypothesis cannot be rejected.

Table 7

Logistic Regression of Weight loss and Moderating Alcohol Consumption: Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	2.165	2	.339
	Block	2.165	2	.339
	Model	2.165	2	.339

Table 8

Classification Table[a]

			Predicted		
			CVD		Percentage
	Observed		yes	no	Correct
Step 1	CVD	yes	0	65	.0
		no	0	112	100.0
	Overall Percentage				63.3

a. The cut value is .500

Table 9

Variables in the Equation

								95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	Alcohol Consumption	.289	.314	.845	1	.358	1.335	[.721,	2.469]
	Weight Loss in Pounds	.356	.318	1.248	1	.264	1.427	[.765,	2.663]
	Constant	.248	.255	.945	1	.331	1.281		

a. Variable(s) entered on step 1: Alcohol Consumption, Weight Loss in Pounds.

Research Question 2

RQ 2: Was there a significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$2: There was no significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$2: There was a significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

I performed a logistic regression (Tables 10-12) to assess the effects of weight loss and smoking cessation on the likelihood that participants have CVD. As shown in Table 9, the Chi-square that tests if the null hypothesis is true was not statistically significant; thus the null hypothesis cannot be rejected. Table 11 shows that 112 participants were observed to be without CVD and were correctly predicted to be without CVD; however, 65 participants were observed to be with CVD, but were predicted to be without CVD based on the logistic regression model. The overall percentage of participants that were correctly predicted by the logistic regression model was 63.3. Table 12 points out that the logistic regression model was not statistically significant with $P>0.05$, 95% CIs [0.771, 2.698] and [0.333, 1.147] for weight loss and smoking cessation, respectively. Thus, the null hypothesis cannot be rejected.

Table 10

Logistic Regression of Weight Loss and Smoking cessation
Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	3.659	2	.161
	Block	3.659	2	.161
	Model	3.659	2	.161

Table 11

Classification Table[a]

			Predicted		
			CVD		
	Observed		yes	no	Percentage Correct
Step 1	CVD	yes	0	65	.0
		no	0	112	100.0
	Overall Percentage				63.3

a. The cut value is .500

Table 12

Variables in the Equation

							95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	Weight Loss in Pounds	.366	.320	1.312	1	.252	1.442	[.771,	2.698]
	Smoking Status	-.481	.315	2.328	1	.127	.618	[.333,	1.147]
	Constant	.618	.257	5.770	1	.016	1.854		

a. Variable(s) entered on step 1: Weight Loss in Pounds, Smoking Status

Research Question 3

RQ 3: Was there a significant difference in the use of the lifestyle adjustments of moderating alcohol consumption and smoking cessation in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$3: There was no significant difference in the use of the lifestyle adjustments of moderating alcohol consumption and smoking cessation in the prevalence of CVD in the

African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$3: There was a significant difference in the use of the lifestyle adjustments of moderate alcohol consumption and smoking in the prevalence of CVD in the African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

I performed logistic regression (Tables 13-15) to explore the effects of moderate alcohol consumption and smoking on the likelihood those participants have cardiovascular disease. The logistic regression model of Table 15 was not statistically significant with $P>0.05$, 95% CIs [0.653, 2.304] and [0.433, 1.586] for alcohol consumption and smoking, respectively. Thus, the null hypothesis cannot be rejected.

Table 13

Logistic Regression of Moderate Alcohol Consumption and Smoking cessation

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	2.738	2	.254
	Block	2.738	2	.254
	Model	2.738	2	.254

Table 14

Classification Table[a]

			Predicted		
			CVD		
	Observed		yes	no	Percentage Correct
Step 1	CVD	yes	0	65	.0
		no	0	112	100.0
	Overall Percentage				63.3

a. The cut value is .500

Table 15

Variables in the Equation

							95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	Smoking Status	-.434	.322	1.826	1	.177	.648	[.345	1.216]
	Alcohol Consumption	.204	.322	.403	1	.525	1.227	[.653	2.304]
	Constant	.650	.292	4.965	1	.026	1.916		

a. Variable(s) entered on step 1: Smoking Status, Alcohol Consumption

Research Question 4

RQ 4: Did the combined effects of weight loss, moderating alcohol consumption, and smoking cessation result in a significant difference in the prevalence of CVD in African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014?

$H_0$4: The combined effects of weight loss, moderating alcohol consumption, and smoking cessation did not result in a significant difference in the prevalence of CVD in

African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

$H_1$4: The combined effects of weight loss, moderating alcohol consumption, and smoking cessation resulted in a significant difference in the prevalence of CVD in African American population between 40 and 60 years of age who participated in the NHANES for the years 2013-2014.

I performed logistic regression (Tables 16-18) to assess the effects of weight loss, moderate alcohol consumption, and smoking cessation on the likelihood those participants have cardiovascular disease. Table 18 revealed the fact that the logistic regression model was not statistically significant with P>0.05, 95% CIs [0.342, 1.213], [0.646, 2.288], and [0.372, 1.305] for smoking cessation, alcohol consumption and weight loss, respectively. Thus, the null hypothesis cannot be rejected.

Table 16

Logistic Regression of Weight Loss, Moderate Alcohol Consumption, and Smoking

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	4.024	3	.259
	Block	4.024	3	.259
	Model	4.024	3	.259

Table 17

Classification Table[a]

			Predicted		
			CVD		
	Observed		yes	no	Percentage Correct
Step 1	CVD	yes	0	65	.0
		no	0	112	100.0
	Overall Percentage				63.3

a. The cut value is .500

Table 18

Variables in the Equation

							95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	Smoking Status	-.439	.323	1.853	1	.173	.645	[.342	1.213]
	Alcohol Consumption	.195	.323	.365	1	.545	1.215	[.646	2.288]
	Weight Loss in Pounds	-.361	.320	1.275	1	.259	.697	[.372	1.305]
	Constant	1.225	.591	4.294	1	.038	3.404		

a. Variable(s) entered on step 1: Smoking Status, Alcohol Consumption, Weight Loss in Pounds

In summary, I found that there was no statistically significant difference in the use of the lifestyle adjustment of weight loss and moderating alcohol consumption in the prevalence of CVD in the African Americans between 40 and 60 years of age. The findings of the study indicated that there was no statistically significant difference in the use of lifestyle adjustment of weight loss and smoking cessation in the prevalence of CVD in the African Americans between 40 and 60 years of age. The results of the study

also revealed that moderating alcohol consumption and smoking cessation were not statistically significant different in the prevalence of CVD in the African Americans between 40 and 60 years of age. The combined effects of weight loss, moderating alcohol consumption, and smoking cessation were not showed to be statistically significant different in the prevalence of CVD in the African Americans between 40 and 60 years of age. Chapter 5 will discuss about interpretation of the findings, limitations, recommendations, and implications of the study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this research was to explore if there is a significant difference in the use of lifestyle adjustments such as smoking cessation, moderate alcohol consumption, and weight loss on the prevalence of CVD in the African Americans between the ages of 40 and 60. This was a cross-sectional quantitative study I designed to determine the significance of lifestyle adjustment to the risk factors of CVD in the African American population. The research population was African Americans, ages 40-60, who participated in the NHANES for the years 2013 and 2014.

Data analysis included measures of central tendency, measures of spread, frequencies, and logistic regression analysis. The independent variables were weight loss, moderate alcohol consumption, and smoking, and the dependent variable was CVD. I conducted this study to investigate whether the lifestyle adjustment of weight loss, moderating alcohol consumption, and smoking cessation had an impact on the prevalence of CVD in the African Americans between the ages of 40 and 60 who participated in the 2013-2014 NHANES. The key findings from logistic regression analysis show that the null hypotheses of this study could not be rejected, meaning that there were no statistically significant effects of weight loss, moderate alcohol consumption, and smoking cessation on CVD in the African Americans who participated in NHANES 2013-2014.

Interpretation of the Findings

Numerous studies have shown that CVD has affected the African American population disproportionally. Mensah (2005) reported that cardiovascular health disparity is one of the most significant public health problems in the United States. Bibbins-Domingo et al. (2009) noted that the African American population has a disproportionally higher prevalence of heart failure than other racial/ethnic groups. The driving force behind this higher prevalence of heart failure in the African American population is believed to be the higher burden of hypertension, obesity, depressed systolic function, chronic kidney disease, and exposure to environmental toxins such as drugs and alcohol (Bibbins-Domingo et al., 2009).

The results of a prospective cohort study that was carried out for 20 years, and included 5115 participants (African Americans and Caucasians of both sexes), indicated that 1 in 100 African Americans in their 30s and 40s started to experience heart failure, which was 20 times higher than in Caucasians (Bibbins-Domingo et al., 209). The main risk factors for cardiovascular disease are associated with lifestyle, such as physical inactivity, tobacco use, and unhealthy eating habits. Nwose et al. (2013) stated that smoking was an age-old CVD risk factor, due to its oxidative stress effect. The risk of CVD is also associated with the widespread growth of obesity, sedentary lifestyle, and an aging population (Rama Krishna, Mahendra, Gurumurthy, Jayamathi, & Babu, 2015).

The risk factors for cardiovascular disease also include gender, age, high low-density lipoprotein cholesterol, low high-density lipoprotein cholesterol, diabetes, inflammation, and genetic susceptibility (Rama Krishna et al., 2015). Consumption of

excessive alcohol may lead to high blood pressure and high levels of triglycerides, which in turn increases the risk of heart disease (CDC, 2013c). Dietary patterns including high level of saturated fats and cholesterol, and diets with high sodium contribute to elevated blood cholesterol levels and atherosclerosis are linked to heart disease (CDC, 2013c). Even though risk factors for CVD can function individually, most of the time they work in combinations that tend to increase the probability of CVD development (Jarakovic et al., 2015). After reviewing the literature, I conducted this study to focus on the effects of lifestyle adjustments such as moderating alcohol consumption, weight loss and smoking cessation together on CVD in the African Americans between the ages of 40 and 60. However, after collecting data on weight loss, moderate alcohol consumption, smoking cessation, and CVD, and analyzing the data using logistic regression, I generated findings that disconfirmed what has been found in the peer-reviewed literature.

The theoretical framework for this research was social cognitive theory. This theory asserts that people, their behavior, and social and physical environments influence one another with reciprocal associations, and that altering these factors can have a preventive outcome (Crosby, DiClemente, & Salazar, 2006; Schiavo, 2007). I used this theory to better understand the interplay of intrapersonal factors, such as individual behavior, cognition, and health belief, with the environmental factors (Centers for Disease Control and Prevention, 2013d; Rudestam & Newton, 2007). Because social cognitive theory and the social ecological model address the association of changeable variables or factors that could affect cardiovascular health, and this study to assesses

changeable factors that are associated with cardiovascular disease, this theoretical framework was appropriate to use for this research.

Within the context of this theoretical framework, I performed the analysis and interpretation of the findings using a logistic regression to assess the effects of weight loss and moderate alcohol consumption on the likelihood that participants had CVD. The results of the logistic regression model were not statistically significant with $P>0.05$, 95% CIs [0.765, 2.663] and [0.721, 2.469] for weight loss and moderate alcohol consumption, respectively. I performed a logistic regression analysis to assess the effects of weight loss and smoking cessation on the likelihood that participants have CVD. The logistic regression model was not statistically significant with $P>0.05$, 95% CIs [0.771, 2.698] and [0.333, 1.147] for weight loss and smoking, respectively. Similarly, for the effects of moderate alcohol consumption and smoking cessation on the likelihood those participants had CCD, the logistic regression model was not statistically significant with $P>0.05$, 95% CIs [0.653, 2.304] and [0.433, 1.586] for alcohol consumption and smoking cessation, respectively.

In this research study, I set out to examine the effects of weight loss, moderating alcohol consumption, and smoking cessation on the prevalence of CVD in the African American population between 40 and 60. Results of this study indicated that there were no statistically significant effects of weight loss, moderating alcohol consumption, and smoking cessation on the prevalence of CVD in African Americans between the ages of 40 and 60 who were participated in the 2013-2014 NHANES. Nevertheless, the odds that making the lifestyle adjustment of moderating alcohol consumption impacted prevalence

of CVD was greater than one in the African Americans between the ages of 40 and 60 who were participated in the 2013-2014 NHANES. Similarly, the odds that making the lifestyle adjustment of weight loss would affect the prevalence of CVD was also greater than one in the first two research questions. Thus, moderate alcohol consumption, weight loss, and smoking cessation could most likely have small effect on the prevalence of CVD in the target population.

Limitations of the Study

The participants of this study were from the NHANES database. The participants might not necessarily represent all African Americans with CVD in the United States. Because the data was collected from legal residents of United States, there was a possibility that some individuals of African descent who did not have legal residency were not included during the time of data collection. Because NHANES used a representative sample using a multistage probability sampling strategy that involved randomization, the threats to external validity had been addressed. History may pose a threat to internal validity because of experiences of participants in the study their response to the survey may have differential effect and randomization can help to achieve internal validity (Crosby et al., 2006). Because of the randomization in the selection of sample during NHANES study, there may not be validity threats to statistical conclusions. Issues such as sample size, bias, response rate, and confounding factors could have arisen during interpretation of statistical analysis; however, randomization during sampling when the survey was originally conducted may have minimized the effect of confounding factors in my interpretation of the statistical analysis (Chambers &

Licari, 2009). There was a large sample size; however response rate and selection bias could have influenced the study outcomes. Because I used secondary data from the NHANES survey in this study, there was not any way for me to address these limitations.

Recommendations

My findings showed that there was no statistically significant difference in the use of lifestyle adjustment of weight loss, moderating alcohol consumption, and smoking cessation in the prevalence of CVD in the African Americans between 40 and 60 years of age who participated in the 2013-2014 the NHANES. Nevertheless, the odds of moderate alcohol consumption and weight loss were greater than one. This showed that these covariates have some impact on the prevalence of CVD in the African American population, however small they might be.

Therefore, I make the following recommendations, considering the strengths and limitations of this study and as well as the literature I reviewed:

- Future researchers may consider the effects of weight loss, moderating alcohol consumption, and smoking cessation on prevalence of CVD in Caucasians and Hispanics.
- Future studies may consider the effects of genetics along with each variable in my research questions.
- Further studies with higher sample size may be needed to verify the statistical significance of the variables in questions.
- The result of this study may open to new research questions in epidemiology since I have ruled out the alternate hypotheses.

Implications

The findings of this research may have a potential impact on CVD in the African Americans through lifestyle adjustments and may contribute to positive social change by saving lives, increasing life expectancy, improving quality of life, and reducing the burden of certain chronic diseases, which may have a direct impact on healthcare costs at individual, family, organizational, and societal levels.

With regard to methodological and theoretical implications, the current study was conducted using a quantitative method that produced empirical evidence; however, there were no statistically significant findings. In this study, I used social cognitive theory, which has implications for understanding how the relationships between intrapersonal or individual behavior and the social and physical environments influence chronic diseases such as CVD (Addy et al., 2004). These implications may help to further the current findings by generating new research questions.

Conclusion

In conclusion, I used a cross sectional quantitative study design in this study to determine if there was a significant difference in the use of lifestyle adjustments such as moderating alcohol consumption, weight loss and smoking cessation on the prevalence of CVD in the African Americans between the ages of 40 and 60. However, the findings showed that there was no statistically significant difference in the lifestyle adjustment of weight loss, moderating alcohol consumption, and smoking cessation on the prevalence of CVD in African Americans between the ages of 40 and 60. Nevertheless, the odds

ratio of moderate alcohol consumption was greater than one in all research questions, and the odds ratio of weight loss was also greater than one in the first two research questions. Thus, this study shows that these lifestyle adjustments may have a small impact on the cardiovascular health of African Americans, and signals the need for further rigorous study with larger sample sizes to see the statistically significant impact of lifestyle adjustment on CVD in the African American population.

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