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Controlling Hypertension Among Young Black Men in America: A Prescription Medication Alternative

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Walden University
2019

Abstract

Controlling Hypertension Among Young Black Men in America: A Prescription

Medication Alternative

by

Winston Charles

MA, University of Phoenix, 2007

BS, Northern Caribbean University, 1991

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health/Epidemiology

Walden University

February 2019

Abstract

Despite the evident improvements in the awareness of hypertension among the adult

population in the United States, disparities remain in the burden of the disease, its

treatment efficacy, and its control when data are compared along age, gender, and race.

The purpose of this study was to determine the strength of the relationship between blood

pressure control and prescription medication and lifestyle modification (smoking

cessation, changes in eating habits, and weight loss). The target population were adult

young Black men, and the control variables were age, low socioeconomic status (SES),

and disparities in health care. A convenience sample of Black men (age 16-45 years) was

obtained ($N = 297$) from the 2013-2014 NHANES dataset, and bivariate and multiple

regressions were conducted after the assumptions were satisfied. The results indicated a

statistically significant relationship between prescription medication and systolic blood

pressure control ($B = -4.327$, $p = 0.009$). The findings of the study can promote social

change by highlighting that medication compliance must be encouraged and adhered to

by members of this high-risk group. However, further research is suggested to explore the

efficacy of lifestyle modification closely to determine if this is a viable treatment option

for young Black men of low SES in the United States.

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Dedication

      It is with a heart full of thanksgiving that I dedicate this project to God who gave me the strength and endurance to complete this journey, my wife Marva S. Marshall-Charles (my biggest fan), and my two sons Gilles Cavel, and Okafa Che´, whose lives I am privileged to influence during my tenure here on earth. When I embarked upon this journey, I had no idea of the degree of difficulty that I would encounter but having my family support and understanding made a world of difference as evidence in the outcome. I thank God for such a wonderful family and I dedicate my best efforts to them.

Acknowledgments

I would like to extend special thanks to my mentor, leader, and guide Dr. Vasileios Margaritis, for his untiring efforts of leadership and friendship during this journey and for his patience and loyalty to this cause. Also, special thanks to Dr. Kate Callahan-Myrick for her strong and objective statistical perspective and advice that added rigor to this investigation, and Dr. Shingariai Feresu whose recommendations aided in setting the right course and a strategic perspective for this study. I appreciate the input of the entire team and extend my heart-felt thanks for supporting me to the finish.

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Chapter 1: Introduction to the Study

High blood pressure (referred to in medical circles as hypertension) is identified as a major modifiable risk factor of cardiovascular disease (CVD; Allen et al., 2014). Left uncontrolled, this disease can lead to injury of the arterial wall and increases the risk of renal disease (Schneider, 2014). In assessing the global burden of diseases, Lim et al. (2012) identified high blood pressure, tobacco smoking, and excessive alcohol consumption as the top three leading risk factors to the global burden of disease and the mortality and disability adjusted life-years. Referencing the CARDIA prospective cohort study, Allen et al. (2014) noted the increase in blood pressure among Blacks in the study, especially the young Black males. Further, Hicken et al. (2014) identified hypertension as one of the probable reasons for the notable increased mortality in the Black male population (50 per 100,000) in the United States. With more than 78 million young adults (≥ 20 years old) being diagnosed with hypertension (Go et al., 2010) the American Heart Association (AHA) escalated hypertension control to becoming a top priority in its strategic planning for the 2014-2017 term (Go et al., 2014).

The impact of hypertension as a significant risk factor that partially accounts for the increased mortality and burden of CVD among Blacks (especially Black men) is the phenomenon of interest that I am dedicating this research to understanding. I aimed to discover if the mortality and morbidity of young Black men decreased if hypertension is controlled, and if it does, what method of hypertension control is most effective in achieving this goal. How hypertension is defined in the literature and what constitutes hypertension control will be the issues that form the focus of the first part of this chapter.

I will continue with the defined statement of the research problem, the study purpose, and the related research questions that will provide clarity when answered. This would be followed by the theoretical framework for the study, an introduction of the tenets of the theory that will provide an explanation of the phenomenon. The definitions, assumptions, scope, and limitations all precede the chapter summary.

Background Information

CVD accounts for 13% (7.5 million people) of deaths globally (Sampson et al., 2014), and 375,000 deaths in the United States in 2011 (Mozaffarian et al., 2015). Hypertension is the number one modifiable risk factor in the development of CVD (Schneider, 2014). However, despite improvements from increased awareness and treatment modalities for hypertension, undiagnosed and uncontrolled hypertension remains a significant public health problem in the United States and globally (Nwankwo et al., 2013). According to Weber et al. (2014), hypertension is noted to be present in Blacks at a much earlier age than among Whites, and it progresses faster and is more severe. In discussing the mortality rate in the United States, Aschengrau and Seage (2014a) recognized the "j" shaped pattern of mortality and noted that mortality rate increased with age. Of equal importance is the fact that death from heart disease occurs as early as age 25 years among United States residents (Aschengrau & Seage, 2014a). This finding holds true globally as indicated in the Global Burden of Disease Study, which identified hypertension as the leading risk factor for the global burden of disease in 2010 (as cited in Lim et al., 2012).

According to Mozaffarian et al. (2015), in 2010 about 80 million Americans aged 20 years and older had hypertension, yet only 54.1% of them achieved control. This means that 36.7 million of those diagnosed are untreated or not being controlled. In addition, Blacks are more likely to have adverse CVD risk profiles, with a higher prevalence and control of hypertension among them (Short, Gamble, & Mendy, 2013).

Hypertension, defined as the sustained elevation of systolic and diastolic blood pressure at or above 140/90 mmHg (Weber et al., 2013), has been identified as a major modifiable risk factor of coronary heart disease (CAD); (Allen et al.2014; Weber et al., 2014). Individuals with a functional blood pressure of 115/70 are the lease likely candidates of CAD, stroke, renal disease, or complications of CVD (Weber et al., 2014). *Hypertension control* signifies the achievement of the goal of reducing blood pressure to the levels or below the level for a diagnosis of hypertension, and Weber et al. (2014) further emphasized the scarcity of evidence that validates the need to treat hypertensive patients to an optimal blood pressure of 115/70. Therefore, for this study, hypertensive control refers to the use of therapeutic measures to decrease blood pressure in individuals who experience consistent elevations in systolic and diastolic blood pressure equal or above 140 and 90 respectively.

Evidence from the literature has revealed that goals of hypertension control are not being achieved globally or in the United States. Yoon et al. (2015) noted that hypertension control in the United States remained unchanged between 2009 and 2014. During that period, hypertension control among Black men was lower (48%) than among White men (58%), with only 28% of those 18 to 39 years achieving control. This

supports the expressed notion of Ameling et al. (2014) that Blacks in the United States demonstrate disproportionately poor hypertensive control compared to Whites, despite available efficacious methods of control, such as community bases antihypertensive education, free screenings at community health centers, insurance coverage for low income citizens, and low-cost prescription medication. More significantly is the fact that young Black men, aged 19 to 35 years, are endangered of being diagnosed with hypertension and remaining uncontrolled because of physiological and sociological factors (Go et al., 2013; Weber et al., 2014). As a common finding among Blacks, hypertension is identified earlier among Black men, compared to White and Hispanic men, causing them to carry the burden of the disease longer while increasing their risk of suffering more complications (Weber et al., 2014).

Recent data published by the Centers for Disease Control and Prevention (CDC, 2017) indicated that the prevalence of hypertension among adults 18 years and older in the United States from 2011 to 2014 was 29.0% (Yoon et al., 2015). However, when prevalence was reviewed along racial lines, non-Hispanic Blacks held a 41.2% prevalence compared with a 28.0% prevalence among Whites. Adding gender as a variable indicated that Black men held the highest prevalence (40.8%) of hypertension, when compared with White men (29.4%). (Yoon et al., 2015) However, when hypertension control was investigated, Black men had a lower control rate compared to White men (43.8% to 53.8%), and those aged 18 to 39 years achieved only a 27.9 % control (the lowest documented control rate for hypertension in the United States; National Center for Health Statistics, 2015) (Yoon et al., 2015).

As part of the Healthy People 2020 initiative, the CDC (2014) published the frequency (number of hypertensive cases per 100,000 cases) of hypertension among non-Hispanic Black men (35 years and older) across the United States to be of a higher frequency than among men of other races. It showed that in seven states (Arkansas, California, District of Columbia, Georgia, New York, North Carolina, and South Carolina), the frequency of hypertension among Black men 35 years and older was twice as frequent than among White men of the same age group in the same states. This supports the fact that hypertension, apart from being a precursor to CVD, is disproportionately distributed among the different age groups, races, and sexes in the United States (Ameling et al., 2014).

The evidence in the literature that supports a disparity in the control of hypertension among Black men in the United States gives rise to a need to investigate the extent of hypertension control that exists among the vulnerable subpopulation of Black men (aged 19-35 years) of low socioeconomic status (SES) in this society. In this study, I aimed to discover what specific behaviors, if any, are precursors to the poor control of hypertension among young Black men, 19 to 35 years old, of low SES living in the United States. I also focused on how hypertension is perceived among this subpopulation of concern and the factors that motivate them to seek measures of control. Finally, I sought options of control measures available that provide them with a choice of treatment measures, and what theoretical framework could best explain the phenomenon of uncontrolled hypertension in this subpopulation.

Problem Statement

Black men are less likely to experience hypertensive control than men of other races of the same age (Johnson et al., 2014), and there is limited knowledge regarding the true impact of this disease among young Black men in the United States (Johnson, Warner, La Mantia, & Bowers, 2016). Black men in the United States are also less likely to be compliant with medication regimens and experience more adverse complications from hypertension (like heart disease, stroke, and death), than White and Hispanic men in the United States (Cané et al., 2013; Lewis, 2012). Bauchner, Fontanarosa, and Golub (2014) identified an estimated 78 million Americans ($\geq$20 years) to be hypertensive, with 50% of them not achieving blood pressure control using prescribed medications. Further evidence provided by Johnson et al. (2015a) indicated that young adults (age 18-36 years) of multiple races are at a high risk of cardiovascular morbidity and mortality because of the frequency of uncontrolled hypertension among them. Rader, Elashoff, Niknezhad, and Victor (2013) went a step further and investigated the risk among non-Hispanic Black men in the United States and reported that young adults (<40 years old) hold the lowest awareness of hypertension when compared with older adults, and thus are less likely to be interested in or compliant with treatment options. This young adult population (non-Hispanic Black men <40 years old) also has the greatest prevalence of hypertension among them.

With the current stated trajectory, Black men aged 19 to 35 years of low SES in the United States are more likely to be diagnosed with hypertension and not achieve control during their lifetime compared to White men of the same age and status. Also,

young Black men (age 19-35 years) in the United States are less likely to be on

prescription medication to control their hypertension, while being more likely to engage

in high risk behaviors (smoking, inactivity, poor weight control, and high sodium diet).

Johnson et al. (2014) acknowledged that the Joint National Commission recommended

lifestyle modification as an effective method of controlling hypertension for those who

qualify for this treatment option. These measures include weight loss, a sodium restrictive

diet, increase in physical activity, and moderation in alcohol consumption (Chobanian et

al., 2003). Short et al. (2013) also noted that frequent exercise, weight control, and

smoking cessation are significant contributors to hypertension control among black men.

The relevance of the African American (AA) cultural impact is detailed by Sims

et al. (2015), who noted that AA men exhibit the poorest health profiles when compared

with men of other races, despite the improvements in health over the past decades. Sims

et al. also identified more socioeconomic trends among AA men, including their earlier

onset of disease and their late presentation for treatment. They are often identified in the

low SES and endure the psychosocial stressors of poverty, perceived racism, and

discrimination. This adversely impacts their life expectancy and increases the burden of

diseases among Black men in the United States. This raises the question of whether

lifestyle modification offered as an effective therapeutic option to young Black men with

hypertension would be effective in the control of their blood pressure.

Rayner and Ramesar (2015) documented a strong relationship between salt

sensitivity and hypertension in Black men, while the correlation between low SES and

hypertension among Black men surfaced as a consideration from the research conducted

by Subramanyam et al. (2013). Would young Black men be motivated enough to commit to lifestyle modification as a method of hypertension control if offered as a therapeutic option by their health care provider? According to James et al. (2014), there are insufficient data to determine the therapeutic significance of lifestyle modification because of the limited number of studies conducted on populations younger than age 40 years.

There is a significant number of resources dedicated to the investigation of the efficacy of antihypertensive drugs on the control of hypertension among all affected groups of the population (Cané et al., 2013; Johnson et al., 2014; Lewis, 2012; Mozaffarian et al., 2015;;), but a sparse number of materials that acknowledge or address lifestyle modification as a viable treatment option for hypertension among young Black men (Rayner & Ramesar, 2015; Short et al., 2013;). To address this gap, in this quantitative research study, I compared the significance of prescription medication in the control of hypertension with the significance of lifestyle modification as a therapeutic measure for control of hypertension among young Black men (age 19-35 years) of low SES living in the United States.

Study Purpose

The purpose of this quantitative study was to address the gap identified in the literature regarding the comparison between the treatment methods for hypertension control using prescription medication versus lifestyle modification (smoking cessation, changes in eating habits, and weight loss), among young Black men (age 19-35 years) of low SES in the United States. According to Sampson et al. (2014), most studies on the

topic of hypertension are conducted on older adults (age ≥ 55 years) and include mixed groups (both males and females, or a combination of races). Documentation from the eight Joint National Committee (JNC 8) report determined that there is insufficient evidence to properly classify hypertension in young adults or to make recommendations for best practice in treatment outcomes because of insufficient research evidence among young adults (as cited in James et al., 2014).

In this study, I examined the relationship between prescription medication and hypertension control among young Black men, aged 19 to 35 years of low SES in the United States and compared these findings with the relationship between lifestyle modification and hypertension control among members of the same group. Essentially, I aimed to discover if prescription medication is more statistically significant in the control of hypertension among young Black men (aged 19-35 years) of low SES in the United States, when compared with lifestyle modification (smoking cessation, changes in eating habits, and weight loss) among the same population of men.

The dependent variable of hypertension control was compared with the independent variables of prescription medication, smoking cessation, changes in eating habits, and weight loss. Age, sex, and SES were the control variables in this study as they kept constant. The results of this study may provide an answer to the overarching question of which method of hypertension control is better suited for young Black men, aged 19-35 years, of low SES in the United States. It may also help to increase awareness among members of this high-risk group regarding the effectiveness of the more effective treatment measure when it is implemented early. The potential community impact could

be in increasing the percentage of hypertension control in this population of interest, decreasing the incidence of complications from this chronic disorder, and in the reduction of the disproportionate burden of the disease among young Black men in the United States.

I define low SES and health disparities for the study in the research questions (RQs) below and more detail in Chapter 3.

Research Questions and Hypotheses

The RQs and hypotheses (*H*) that follow guide this study:

RQ1: To what extent does an association exist between the use of prescription medication and the hypertension control, adjusted for age, low SES (low annual household income and/or low ratio of family income to poverty), and health care disparities (health insurance coverage, routine place to go for healthcare, and time since last healthcare visit) among Black men 19 to 35 years old in the United States?

$H_0$1: There is no significant association between prescription medication use and the control of hypertension adjusted for age, low SES (low annual household income and/or low ratio of family income to poverty), and health care disparities (health insurance coverage, routine place to go for healthcare, and time since last healthcare visit) among Black men 19 to 35 years old in the United States.

H_a1: There is a significant association between prescription medication use and the control of hypertension adjusted for age, low SES (low annual household income and/or low ratio of family income to poverty), and health care disparities (health

insurance coverage, routine place to go for healthcare, and time since last healthcare visit) among Black men 19 to 35 years old in the United States.

RQ2: To what extent does an association exist between the use of prescription medication and lifestyle factors including smoking cessation, changes in eating habits, and weight loss and hypertension adjusted for age, low SES (low annual household income and/or low ratio of family income to poverty), and health care disparities (health insurance coverage, routine place to go for healthcare, and time since last healthcare visit) among Black men 19 to 35 years old in the United States?

$H_0$2: There is no statistically significant association between the use of prescription medication and lifestyle factors and hypertension adjusted for age, low SES (low annual household income and/or low ratio of family income to poverty), and health care disparities (health insurance coverage, routine place to go for healthcare, and time since last healthcare visit) among Black men 19 to 35 years old in the United States.

H_a2: There is statistically significant association between the use of prescription medication and lifestyle factors and hypertension adjusted for age, low SES (low annual household income and/or low ratio of family income to poverty), and health care disparities (health insurance coverage, routine place to go for healthcare, and time since last healthcare visit) among Black men 19 to 35 years old in the United States.

Theoretical Framework

The health belief model (HBM), which includes constructs from Tolman and Lewin's work on social learning theory (as cited in Rosenstock, Strecher, & Becker, 1988), is one of the oldest theories used in social science research. It has been tested and

used in many studies (Gerend & Shepherd, 2012) and is the theory of choice that I used to explain the behaviors and outcomes behind the hypertension phenomenon noted among young Black men (age 19-35 years) with low SES living in the United States. This model explains the outcome of social behaviors and norms as it relates specifically to a health phenomenon and is most commonly used in epidemiological research to explain the behavior of participants towards a treatment or health concern.

Tenets of the HBM

The constructs of the HBM as described by Rosenstock et al. (1988) include the beliefs that with sufficient motivation (a health threat of significant magnitude), individuals will sense a degree of vulnerability that will result in behaviors that indicate their interest in solving the problem. The next construct is the susceptibility pillar, which explains the behavior of individuals upon recognition of their own susceptibility to the health threat (they may experience or exhibit signs and symptoms of susceptibility to the threat). Finally, there is the behavior of conformity in which the individual indicates willingness to adhere to any or all prescribed measures (medication, modifications, or methods) to mitigate the risk associated with the health threat. The constructs of the HBM formed the overarching theory that I used to interpret and explain the behaviors noted among participants in this study. I also used this theory to explain the behaviors of the research participants related to the development and control of hypertension among young Black men (aged 19-35) of lower SES in the United States.

The application of these constructs was discussed in the comparative investigation done by Gerend and Shepherd (2012), who compared the tenets of HBM with that of the

theory of planned behavior. Through this comparison, it becomes obvious why the HBM is so widely used. James, Pobee, Oxidine, Brown and Joshi (2012) demonstrated the appropriate use of this theory in their obesity investigation, in which the behavior of African-American women was observed after sensitizing them to the dangers of obesity. These overweight and/or obese women were motivated to lose weight when they learned that their health was in danger and that there was nothing cute about being "thick and curvy." (James, Pobee, Oxidine, Brown and Joshi, 2012) Their heightened sense of health endangerment motivated them to seek help with weight loss. Their perceived benefits from weight loss included a decline in their health threat, improved physical appearance, and increased self-esteem (James, B. et al., (2012). Using a similar approach, I used the constructs of perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy to explain the choice of treatment of young Black men (age 19-35 years) in the control of hypertension.

Barriers to the Application of the HBM

According to Schneider (2014b), the application of the constructs of the HBM is based on the clarity of the strength of the potential health threat. Discussing this feature, Schneider stated that individuals who have control over their life (self-efficacy) are more likely to take measures to modify their behavior to avert health threats. Those with low self-efficacy are less confident and more vulnerable, thus they are more likely to succumb to health threats (Schneider, 2014b). The determinants of age, low SES, and the disparities in health care faced by Black men are notable barriers to the control of hypertension among Black men in the United States. These factors can lower their self-

efficacy and increase their vulnerability to hypertension. Sims et al. (2015) concluded that Black men are of lower SES and have less access to affordable health care. These men are also affected by the unique stressors of racial profiling and discrimination. This results in young Black men developing low self-efficacy and adaptive coping mechanisms of smoking, alcohol use, violence, poor nutritional intake, and inactivity, which ultimately results in hypertension.

By contrast Barrington, Adeyemo, and Rotimi (2014) indicated that Black men who were fortunate to have parents of higher SES (high household income, increased educational achievement, and good housing) have lower systolic and diastolic BP. However, there are the unavoidable higher rates of unemployment, the display of poorer health behaviors, and the increased prevalence of the disparities in health care faced Black men (Barrington et al., 2014). The findings in the CARDIA study reported by Allen et al. (2014) showed compelling evidence that young Black males are more likely to experience rapid BP increases as they progress through their lifetime. They attributed this to the maladaptive coping measures (poor health behaviors, increased use of tobacco and alcohol, inactivity, and obesity) to health disparities and discrimination faced by Black men (Allen et al., 2014). Allen et al. also shared concern that the trajectory set by trends observed among the population of young Black men in the United States predisposes them to a higher risk of hypertension. At a young age, Black men in the United States are more inclined to indulge in behaviors that are known to be officially tied to a predisposition, the development of hypertension among them (Sims et al., 2015).

Applying the HBM to This Study

In this study, I intended to compare the effectiveness of two approaches used in the control of hypertension among young Black men of low SES in the United States, carefully considering the determinants of age, SES, and the attributes of the disparities in health care faced by Black men in the United States. The strength of the relationships of the variables helped to determine which method better achieves the goal of hypertension control among this high-risk population. The results can be used to increase the awareness of members of this high-risk group of Black men (age 19-35 years of low SES). The HBM is the model I used to explain how age, SES, and the disparities in health care are barriers for Black men in the United States achieving control of their BP during their young adult life. This, I hope, can sensitize them to the severity of the threat of hypertension and the benefits they can derive from achieving control of this silent killer by implementing early and complying with the best approach to control the disease.

<div align="center">

Nature of This Study

</div>

In this study, I measured the extent of the association between a dependent variable and independent variables. Thus, it was necessary to use the quantitative design, guided by the research questions that helped me determine the effectiveness of the predictor variables (prescription medication and lifestyle modification) on the dependent variable of hypertension control, using the control variables of low SES, age, and gender. This is critical for young Black men (aged 19-35 years) of low SES in the United States because of the disproportionate burden of the disease that they carry and their high risk of uncontrolled hypertension during adulthood. Hypertension leads to vital organ

destruction and organ system failure (Cené et al., 2013; Johnson et al., 2016; Rader et al.,

2013), which accounts for complications in later life. The cross-sectional design,

identified by Crosby, DiClemente, and Salazar (2013) as one of the most popular

research designs used in epidemiological research, is recognized among epidemiological

researchers for its effectiveness in evaluating the strength of the relationship among

variables. Because I was considering secondary data use, this design was a high priority

for consideration. Additionally, I used a linear regression model to answer questions as to

if a given independent variable (χ) is associated with the outcome variable, after

controlling for numerous covariates. These rigorous analytical methods were used to

derive answers for my research questions and to accurately document the outcomes

obtained after analysis.

<div align="center">**Definitions**</div>

The definition of terms used in this study allows all persons of interest to interpret

the results of this research using the same cognitive tools. Here I establish a working

knowledge of the terms used throughout this dissertation.

Disparities in health care: According to Williams, Priest, and Anderson (2016),

disparities in health care is a contributor to the early onset of diseases and is well

demonstrated among ethnic and racial minorities. To understand the impact of disparities

in health care, it is important to define to term. According to Chen et al. (2016), the major

contributors to disparities in health care are health care access and health care insurance

coverage. Thus, for this study, the variables disparities in health care are health insurance

coverage, routine place to go for healthcare, and time since last healthcare visit.

Hypertension: As defined by the World Health Organization (WHO) and the CDC and documented by Weber et al. (2014), hypertension the sustained elevation of systolic blood pressure (the top number) ≥ 140 millimeters of Mercury (mmHg) and diastolic blood pressure (bottom number) ≥ 90 mmHg. There is a lack of sufficient data regarding the trends among younger adults (those less than 50 years old) to determine if a different blood pressure range should be used to make a diagnosis among them, hence the importance of conducting studies of this nature, using data from a younger sample.

Lifestyle modification is identified as systematic changes in physical activities, social behaviors, and dietary adjustments (Go et al., 2014). In this study, I focused on smoking cessation, changes in eating habits, and weight loss. These parameters have been identified as determinants of hypertension (Jackson, Coleman King, Zhao, & Cogswell, 2016; Mkhonto, Labadarios, & Mabaso, 2012; Suglia, Clark, & Gary-Webb, 2013), and I needed to answer the question of how these variables can be manipulated to best achieve hypertension control.

Socioeconomic status (SES): Assumes varying definitions based on the way it is applied. Both Shi and Johnson (2014) and Shi and Singh (2011) identified SES as having the greatest impact on population health in the United States, yet very little has been done to address the disparities that result from inequities in SES. For this study, SES refers to the social and economic state (low annual household income and/or low ratio of family income to poverty) of individuals as they live their lives. Compared with other developed nations (Britain, Japan, Australia, Denmark, New Zealand, and Israel), the United States was the last to include SES its national mortality and morbidity report (1976). Since then,

Shi and Johnson reported that there are no policies or measures implemented to address the disparities noted in the racial/ethnic differences in mortality and morbidity.

Acknowledging the racial/ethnic differences in the prevalence of hypertension among Blacks in the United States, without determining the influence of SES, brings a bias to the analysis (Shi & Singh, 2011). According to Shi and Johnson (2014), the distribution of wealth (income opportunities) and education are two factors that impact the health and life expectancy of any nation. This is noted in the Gini index coefficient scores (which measures the equitable distribution of wealth of a country: the lower the score, the more equitable the distribution). In 2010, the United States held a score of 40.8 compared with Japan and Denmark who had scores of 24.9 and 24.7 respectively (Shi & Johnson, 2014). SES in this study, was used to apply to study participants whose income does not exceed $15,500 annually, achieved up to a High School education (graduated from High School), and who are of low-income housing ("the projects"). This population is exposed to the highest levels of stress, and because they are often the subject of discrimination (Sampson et al., 2014), it would be prudent to rule out discrimination as a confounder among the variables.

Assumptions

A premise of scientific research is that a phenomenon can be rationally explained as occurring by a force in nature (Frankfort-Nichmias & Nachmias, 2008a). When this attempt fails, the investigation is no longer valid. Using the independent variables of prescription medication use and lifestyle modification to measure the efficacy of hypertension control among young Black men (aged 19-35 years) in the United States, I

used a selected secondary data set and extracted an appropriate sample from it based on the inclusion/exclusion criteria. Some of the assumptions made include that the data used were collected for a similar purpose and that there was a reasonable degree of accuracy in the self-reported data. Accurate reporting of income and education helps to determine the SES of the participant (Shi & Johnson, 2014), while blood pressure reading classifies the diagnosis of hypertension. The variables of age and ethnicity were also assumed accurate. The guidelines for the treatment of hypertension identified by Weber et al. (2014) helped to determine standard practice in the diagnosis and treatment of hypertension. Therefore, the assumption that those on medication have exhausted alternatives for treatment and their treatment regime adhered to the standard medical practices in the treatment for hypertension was made.

Further, both Cané et al. (2013) and Johnson et al. (2014b) noted that providers are more hesitant to prescribe antihypertensive for young Black men even though they are insured and keep regular appointments with their primary care physician. Therefore, poor compliance was not assumed to be the result of underinsured or uninsured status among research participants.

<div align="center">**Scope and Delimitations**</div>

The problems associated with uncontrolled hypertension result in significant health and financial implications for both citizens and society. Go et al. (2014) estimated the population of hypertensive sufferers in the United States in 2010 to be 78 million, with Blacks holding a 44% prevalence among this population. Furthermore, Abel et al. (2015) estimated 1/3 of the young adult population in the United States to have

hypertension. The total direct and indirect cost of treatment for the same period reached $315.4 billion. In addition, Sampson et al. (2014) documented the findings of the Global Burden of Disease study that listed hypertension at the top of the list of risk factors for death and disability. The report JNC 8 indicated controversy regarding the best treatment measures for the control of hypertension (Abel et al., 2015). This suggests the urgency with which the problem should be addressed, especially among the high risk young Black male subpopulation. I used a dataset of secondary data collected from across the United States containing the required variables to measure the strength of both the prescription medication treatment module and the lifestyle adjustment treatment option.

Included in the delimitation list is the comparisons of the efficacy of antihypertensive medication and lifestyle modification treatments among Black and White men (age 19-35 years), of low SES in the United States, in the control of hypertension. This study can potentially help to identify the more appropriate treatment for young Black men with hypertension.

Limitations

This investigation of the efficacy of prescription medication and lifestyle modification on the control of hypertension among young Black men in the United States involves a comparison of the sample of interest with a sample of White young men of similar characteristics, of low SES, in the south-eastern United States. Both Johnson et al. (2014) and Din-Dzietham et al. (2007) attested to the fact that data indicating trends in blood pressure management and control among young adults are very limited at best. This can be attributed to the fact that most investigations related to hypertension research

have been conducted using samples of individuals 45 years and older. Therefore, it is likely that obtaining a large enough sample to make meaningful inferences may be quite challenging. Since time did not allow me to recruit participants and track them for any significant period, I focused on the available samples and developed the analysis as rigorously as possible, by also conducting post hoc power analysis to confirm the statistical validity of the sample.

Another limitation that must be considered is in the selected design of the study. Using a cross-sectional design means that correlations can be established, and the strength of the relationship measured, but causality cannot be determined using this design (Crosby et al., 2013). The fact that there is a strong relationship between an exposure and a disease does not infer that the exposure causes the disease. This has to be subjected to experimental investigation if causality must be established. Additionally, Aschengrau and Seage III (2014) explained that temporal sequence (establishment of the time-line between the exposure until the disease occurs) and incorrect prevalence are additional limitations of the cross-sectional design. Further, the design does not explain the impact of attrition, mortality, and recovery on the prevalence of the disease. This means that diseases that have an extended incubation period would automatically have a high prevalence. All of these limitations must be given consideration and reported on during the discussion of the study.

Study Significance

Socioeconomically disadvantaged groups have been noted to experience a higher rate of high BP and CVD. This is evident in the comparisons made by Coulon, Wilson,

Alia, and Lee Van Horn (2016), which indicated that 44% of Black adults have high BP compared with 28% among White adults. Sims et al. (2015) noted that among adult men, Black men suffered higher rates of high BP when compared with White men (39.1% vs 27.5%). However, hypertension remains an underrecognized cardiovascular risk factor among young men 18 to 35 years old (Johnson et al., 2015).

Black men are less likely to experience hypertensive control compared to White men and men of other races of the same age (Johnson et al., 2014). There is limited knowledge regarding the true impact of hypertension among young Black men in the United States (Johnson, Warner, La Mantia, & Bowers, 2016). The CDC reported that the prevalence of hypertension among adults 18 years and older in the United States from 2011to 2014 was 29.0%. However, when prevalence was reviewed along racial lines, non-Hispanic Blacks held a 41.2% prevalence compared with a 28.0% prevalence among Whites (Yoon et al., 2013). Young Black men (aged 19-35 years) in the United States are less likely to be on prescription medication to control their hypertension while being more likely to engage in high risk behaviors (smoking, inactivity, poor weight control, and high sodium diet; Weber et al., 2014).

These are just some of the reasons that have caused high BP among Blacks to become a significant public health issue. Investigating this problem among young Black men (age 19-35 years) in low SES in the United States could be a key step in identifying the barriers to hypertension control among this high-risk group, while providing an opportunity to identify the most efficacious method for controlling hypertension among them. Conducting this study could also help to raise awareness among young Black men

regarding the potency of hypertension and with proper education and coaching, the

results can provide evidence for the modification of treatment approaches of hypertension

among young Black men in the United States. There is also a great opportunity to

engineer social change by advocating for the development of a robust systemic method of

screening to identify young Black men who are at risk of developing hypertension during

their young adult years and to get them started early on the path to lifestyle modification

through community support. This could be achieved by developing algorithms and

referral methods that would direct these men to the required resources (Go et al., 2014;

Weber et al., 2014). The disparities in the distribution of disease incidence, mortality, and

longevity identified by Mays, Cochran, and Barns (2007) among Blacks in the United

States fuels the urgency with which these systemic changes must be implemented.

Identifying an option for the successful control of hypertension among young Black men

of low SES in the United States will be the catalyst to implementing a systemic change in

the black community.

Summary

As the single most modifiable factor that influences the development of CVD

(Schneider, 2014), hypertension exists among 33% of the young adult U.S. population

(Mozaffarian et al., 2015), with 44% of Black men experiencing control compared to

54% control among White men of the same age group (Yoon et al., 2013). More

importantly, although 76% of those with hypertension are aware that they have the

disease, only 51% achieve control of their hypertensive condition (Bauchner et al., 2014).

The situation is graver among Blacks, who achieve a 44% control overall, and Black men

≤ 45 years old who achieve only 28% control (Yoon et al., 2013). This raises the concern of the disparity in the distribution of the burden of the disease among Blacks and the overwhelming cost of treatment and rehabilitation because of these complications from hypertension (Go et al., 2014). These factors make hypertension a primary concern on the public health agenda, and Healthy People 2020 has identified hypertension control as a high priority item. The goal of 58% control by 2020 is the focus of this health organization (www.healthypeople.gov.2020).

To better examine the evidence that can help to explain the phenomenon of the lack of control of hypertension among young Black males of low SES living in the United States, it is imperative to conduct a thorough review of the literature. The effort is not in support of any existing notion but an activity that enables the identification of trends that relate to the phenomenon. It is then the issues related to poor hypertension control can be put in a theoretical frame and its tenets aligned with the cognitive framework of a specific theory. These tasks will account for most of the work in the next chapter.

Chapter 2: Literature Review

Introduction

Hypertension is a significant public health challenge because of its influence in the development of CVD, the number one cause of death among Black men in the United States (Yoon et al., 2015). When the Department of Health and Human Services released its priority list of health indicators (22 items) (www.healthypeople.gov.2000), in response to existing public health concerns regarding the health and longevity of the American people, heart disease and stroke were identified as health indicators that must be controlled to decrease mortality and increase longevity in the United States. The CDC has since advocated for regional and local programs to educate the public on the benefits of hypertension control and have listed reduced incidence of hypertension as a priority for Healthy People 2020 (www.healthypeople.gov.2020). In response to this initiative, I conducted this study to investigate the relationship between prescription medication and lifestyle modification in the control of hypertension among young Black men (age 19-35 years) considering the determinants of age, SES, and the disparities in health care faced by AA men in the United States. The results of this investigation are my contribution to the body of knowledge on hypertension control and help to sensitize those at risk of developing hypertension to take preventive measures.

Chen and Wong (2008) concluded that there is a strong relationship between childhood BP and their BP noted in adulthood. That implies that a clear understanding of the phenomenon of hypertension in adulthood begins with diligently tracking the patterns of BP during childhood and adolescence. These changes during childhood and

adolescence have been noted by subtle incremental increases in BP. However, Din-Dzietham et al. (2007) expressed concerns regarding the studies conducted from the 1960s to the 1980s on children and adolescence, noting that the data were insufficient at that time and that hypertension in children and adolescence was not then well defined. Nevertheless, Din-Dzietham et al. emphasized the increasing trend in BP elevation among adolescence during that period as an emerging public health concern. Their study results indicated that Black males aged 15 to 17 held a 5.6% prevalence for hypertension, while White males of the same age had a 3.9% prevalence. Allen et al. (2014) also validated that Black men accounted for most hypertensive individuals with elevated increasing BP in the cohort of Black and White men (age 18-30 years) who they followed for 25 years.

In Georgia, according to the Georgia Department of Public Health website (http://www.gdp.ga.org), in 2008, there were 940 deaths from hypertension related illnesses. In 2010, 137,000 Georgians were hospitalized for hypertension-related illnesses. Men in Georgia were 1.4 times more likely to die because of CVD complications than women, and Blacks were 1.3 times more likely to die of hypertension related illness than Whites in the state. In addition, 50% of the Black men diagnosed with hypertension in Georgia will die before age 65 because of a lack of control of the disease (GDPH, 2012). Rein et al. (2006) identified young Black men as being 30% more likely to die from high blood pressure complications than young White men. Sims et al. (2015) documented a higher rate of hypertension among Black men in the United States when compared with White men (39.1% versus 27.5%), even considering that more Blacks

have health insurance and there have been significant improvements in the treatment of the disease. This silences the assumption that lack of health care is a contributor to hypertension among Black young men in the United States. Yoon et al. (2017) examined data from 2011 to 2014 and noted that Black men aged 18 years and older held a 40% prevalence and those 18 to 39 years had a 27.9% control of their BP.

Despite the acknowledged widespread prevalence of hypertension in the United States (Allen et al., 2014; Mozaffarian et al., 2015; Weber et al., 2014), the Southeast States (Sampson et al., 2014), and in Georgia (Rein et al., 2006), there is sparse information identifying the magnitude of the problem of hypertension among the subpopulation at significant risk. Black males aged 19 to 35 years, of low SES who encounter significant disparities in health care (uninsured with limited access to health care). Further, there are significantly fewer studies that compared the efficacy of prescription medication on hypertension control with lifestyle modification and hypertension control among young Black men (James et al., 2014 and Sampson et al., 2014). This study is focused on two main objectives: To compare the strength of the relationship between prescription medication and hypertension control, and lifestyle modification and hypertension control among young Black men (age 18-35 years).

In this study, I considered the strength of impact of the barriers of age, low SES, and the disparities in health care faced by AA men on the association of prescription medication and lifestyle modification on hypertension control among young Black men (age 18-35 years). Subsequently, I hoped to identify which of the two approaches is a more effective measure of hypertensive control among this subpopulation of Black men

and better suited for this high risk subpopulation. I will use the results to advocate for systemic changes to integrate this measure in the treatment of hypertension among them.

This chapter is dedicated to the review of the literature that is relevant to the current investigation, and I focus on four main subtopics. These are the strategies used in the literature search, the overarching theoretical foundation, the conceptual framework, and identification and dynamics of the variables that are integral to the research study. The strategies used in the literature search and review reflect the depth and effect of this study, and the theoretical foundation is used to explain the participants behaviors noted in the study. The identification of the variables, their possible impact on the relationship they share with each other, and their influence on the outcome of the study are points of discussion in that subtopic. The summary concludes the discussions of this chapter and forecasts the main areas of the next chapter.

Literature Search Strategy

In conducting this study, I focused on the young Black male subpopulation, aged 19 to 35 years, of low SES in the United States. The purpose of this study was to identify whether prescription medication or lifestyle modification can better facilitate the control of BP among this high-risk age group. The results obtained from this research can be used to inform the change process that facilitates the identification of an efficient method of treatment for those who are at high risk for developing hypertension. The results from this study can also help to implement changes in the methods of hypertension treatments among this vulnerable high-risk group. There is evidence of noncompliance with medication treatment regimens among Black men on prescription medication for

hypertension control (Cane´ et al., 2013). However, most of the studies addressing hypertension control measures are conducted on men aged 55 years and older. I aimed to find out whether the same pattern of nonadherence exists among younger Black men in similar high-risk categories and if lifestyle modification provides a better approach to hypertensive control for them.

The empirical materials of this research study spanned the period from 2012 through 2018 but extended into the historical data from 1988 to 2001, and future projections beyond 2018. Information was obtained from research studies, peer reviews, and scholarly journals in the CINAHL Plus, PubMed, ProQuest Health & Medical Collection, and Google Scholar repositories. Once identified, each article was reviewed, and the reference information was stored using the Zotero software for sequencing and easy access. The search was managed using search terms that yielded the best results. The terms that provided those results were *high blood pressure* and *African American, hypertension and Blacks, high blood pressure in America, obesity and hypertension, controlling hypertension*, and *high blood pressure and CVD*. These terms were used in various combinations, generating 85 relevant articles from scholarly and research journals. These I have selected from referencing in the Zotoro software, and they formed the main source of reference in this literature review.

Once identified, the next step was their inclusion in the annotated bibliography list. I selected only those referenced articles that were published over the 5-year period that ends in 2018, with few exceptions. The only exceptions are those referenced materials that formed the historical perspective of the research premise. There were about

five such articles, and their information were used as a comparative source from what was then to what is now. This was important to establish a time-line of the problem of interest and to build upon the existing research. Keeping the referenced material within a 5-year frame is a standard set by the Walden Research department, and respecting this standard helps to provide consistency to the dissertation process here. There were times however, when more granular information that was needed was not readily available, like recent data that compared hypertension prevalence across age and ethnicity in the United States. It was then that I had to resort to reports, web site released information, and professional commentaries to obtain data relevant to my investigation. I have since requested relevant data from the Georgia Department of Public Health through their research portal, and the NHANES to access current and relevant data that I used to update this script once the data were released.

The Theoretical Foundation

One of the goals of the Healthy People 2020 initiative is to achieve a 61.2% control on hypertension among those diagnosed with the disease (Yoon, Fryar, & Carrol, 2015). Currently, black men have a 43.8% control of hypertension, compared with 53.8% among white men, and Yoon, Fryar, & Carrol, (2015) noted that the control rate is significantly lower among younger men (27.9% among those age 18-39 years). To achieve the goal of 61.2% control among this younger population would require more innovative and aggressive measures of health teaching and intervention (Go et al., 2014). But first a clear understanding of the phenomenon of the development of hypertension among blacks must be obtained. Cené et al., (2013) identified the issues related to beliefs

and trust, and Sampson et al, (2014) referenced behavioral determinants (including lifestyle adjustments) as essential elements in the achievement of this purpose. The socioeconomic factors were well outlined by Sims et al., (2015) and Coulon et al., (2016) which align with some of the elements of the Health Beliefs Model (HBM) (Rosenstock, Strecher, & Becker, 1988).

The HBM Constructs Outlined

The use of the HBM to explain the outcome of social behaviors and norms goes back more than fifty years (Newell, Modeste, Marshak, & Wilson, 2009). To validate the relevance of theory in social science investigations, Connelly (2005) encourages researchers to dedicate a segment of their study to the proof of the theory (a summarized explanation as to how the constructs of that theory further explained the attitudes, conduct, or behaviors of the research participants). The constructs of the HBM provided a valuable framework for explaining the occurrence of hypertension among young black men in America and seek to identify what barriers may influence the deviations noted in the target population. The constructs of perceived susceptibility, perceived severity, perceived benefits, and perceived barriers are at the very foundation of the HBM (Glanz, Runer & Viswanath, 2008). According to Onoruoiza, Musa, Umar, & Kunle, (2015) physical activity behaviors are more readily adopted when the perception of the severity of a disease outweighs their perceived barriers to act.

Commenting on the most recent guidelines for the diagnosis of hypertension, Stergiou (2018) emphasize the importance of adequate evaluation BP using electronic equipment and correlating the findings of office visits with trends noted in out of office

BP checks. This facilitates accuracy in diagnosis, rules out biases like white coat syndrome, and prevents overdiagnosis and underdiagnosis among vulnerable populations. The notable implication of the perception of subjects regarding the risks and benefits of certain behaviors, will become evident in the outcomes identified in studies of reference compared to the one I conducted. Identifying these correlations will help to explain the results and behaviors of the participants in this investigation.

The HBM has evolved to become one of the overarching models use to explains human health related behaviors (Glanz, Rimer, & Viswanath, 2008). The basic construct of this model, as presented by Rosenstock, Strecher, and Becker (1988), are founded in the work of Tolman and Lewin who introduced the core constructs of the model in 1935.The four constructs of the HBM are perceived susceptibility, perceived benefits, perceived barriers, and perceived threats, and these constructs are inter-related. They define the relationships between behaviors and decisions of individuals who are faced with health issues that will impact their lives. According to Glanz, Runer & Viswanath (2008), individuals will act to screen, prevent, or control a disease process based on their perception of the condition (the threat). Their reaction to the threat of disease is defined by their perception of their susceptibility to the disease. They perceive susceptibility when they believe that they can contract a disease or condition based on the risk factors that they are exposed to. However, that belief is often insufficient to trigger an action (Schneider, 2014).

The HBM Applied

In a study in which a sample of black men who were told that they have high blood pressure, they opted against acting to prevent the progression of the disease because of their ignorance of the sequel of the disease (Bakris et al., 2014). This raised questions regarding how well-informed black men are regarding the potency of hypertension existing among them. The committee responsible for publishing the JNC-8 confirmed that one third of the population of young adults in America is hypertensive (Abel et al., 2015), yet according to Sims et al (2015) young black men in America continue to indulge in high risk behaviors (tobacco smoking, excessive alcohol use, poor nutritional habits, and inactivity) that predisposes them to hypertension. The findings of Hicken et al., (2014) identified significant disparities in the prevalence and mortality among blacks compared with whites, caused by hypertension. They a prevalence difference of 40% to 30% (blacks to whites) and 40 per 100,000 deaths to 15 per 100,000 deaths (blacks to whites). This question whether age, Black norms, and the SES of black men are barriers to their achievement of blood pressure control in their young adult years.

Gerend & Shepherd (2012) saw a different sequence of action by participants in their study that investigated the reaction of women to the impact of the Human Papillomavirus (HPV) vaccine. They measured participants reactions after they viewed one of three short films on the effect of the HPV vaccine. Based on the constructs of the HBM, they noted that those who perceived the vaccine to be of benefit to their situation and who felt that the benefits outweighed the risks of taking the vaccine, acted to reduce the risk and complications from HPV. The urge to be preventive coupled with the cues to

engage in behaviors that would prove beneficial to their health were noted and well

explained by the HBM constructs (Gerend & Shepherd, 2012). Perceived threats or

barriers are what drives individuals to act to protect themselves from further harm. This

happens when the individual has come to the realization that the condition presents a

significant risk and they believe that the rewards from seeking help is worth their efforts

to seek the help they need (Glanz, Rimer, & Viswanath, 2008). This, however, may not

always serve as a sufficiently strong stimulus, especially when negative behaviors are

held as norms among the population of interest. Rak, Kornafel, and Bronkowska (2016)

published findings that indicate that nutritional deficiency, low birth weight, and poorly

breast-fed infants have a higher predisposition to metabolic anomalies and the

development of chronic disease. This pattern, they stated, is especially prevalent in black

and Hispanic communities. When those in the high-risk population accepts these

conditions as normal, there is less desire to attempt to change the behavior to lead to a

different outcome.

The HBM operates on the premise of perception and susceptibility, which,

according to Carpenter (2010), motivates individuals to become more proactive in

seeking treatments or alternatives to the negative outcome when their perception of a

health outcome is negative. Any measure that they believe can facilitate their avoidance

of the negative outcome would be a viable option that they would want to select. This

was well noted in the study done by Papathanasiou et al., (2015), in which young adults

were observed to determine the impact of some risk factors on their development of

hypertension. This study outcome indicated that those with increased body mass index

(BMI) were at greater risk of developing hypertension than those who smoked regardless of their sex (male or female). This fact led to the participants becoming proactive in increasing their activity to increase their weight loss and decrease their BMI. Their motivation was inspired by their perception of the risk that they faced, and the negative outcomes (obesity and CVD) they feared. There are instances however, when perception and susceptibility are powerless in having individuals take measures in preventing illness or injury. This is what Schneider (2014a) described as low self-efficacy. This results from individuals experiencing a lack of control over the circumstances that they face in life. The frequency with which the HBM has been used in social science research (Newell, Modeste, Marshak, & Wilson, 2009) has determined that its tried and tested constructs, which have been around for beyond half a century, can adequately enlighten researchers and research participants regarding the seemingly arbitrary behaviors of individuals towards a health threat.

<div align="center">**Literature Review**</div>

Epidemiology of Hypertension

Hypertension, as defined by WHO, the CDC, and the American Heart Association (AHA) refers to a consistent elevation in SBP ≥140 mmHg and/or DBP ≥90 mmHg for three or more consecutive readings (Go et al., 2014; Levine et al., 2011; Suglia et al., 2013 and Weber et al., 2014). Based on the recommendations of these health authorities, blood pressure should be checked multiple times on a variety of occasions, and the results closely examined, to differentiate between pre-hypertension, systolic hypertension, diastolic hypertension, and essential hypertension (Din-Dzietham et al., 2007). Often

those with hypertension are undiagnosed because they remain asymptomatic for a significant period (years). This delay in diagnosis and treatment can result in morbidity and mortality (Zoeller et al., 2014). Concerns have been raised regarding the use of the standard definition of hypertension as it relates to adolescents and young adults, however, James et al., (2014) documented that in the absence of sufficient evidence of a significant difference in outcomes, the same definition for hypertension can be used across age categories.

Etiology of Hypertension

The etiology of hypertension is unknown, however there are multiple factors associated with the etiology and they are best explained by the relationship that they share with the physiological, cultural and environmental factors of those at risk. Weber et al., (2014) identified two categories that predisposes individuals to hypertension. These are genetic factors and environmental factors. The genetic or heredity factors include a hyperactive renin-angiotensin-aldosterone system, or a sensitive sympathetic nervous system. The renin-angiotensin-aldosterone system regulates the vasoconstrictive activity of the arterial system by blocking the conversion of Angiotensin 1 to Angiotensin II. Likewise, the sympathetic nervous system responds to every stressful episode that the individual encounters (Hickens et al., 2014), thus those living in communities threatened by violence or any eminent danger may experience higher pressures.

The behavioral factors of smoking, sedentary lifestyle, increase sodium intake, and obesity are what Zoellner et al., (2014) regarded as the modifiable risk factors, and when restricted early, can reverse the progression of hypertension. Yet, there are

additional factors (like the socio-familial and socioeconomic factors) that are included in the list of modifiable factors that influence the control of hypertension among young black men. According to Barrington, Adeyemo & Retimi (2014) adolescents who live with both parents in the same home, and are raised in a secure financial family, are less likely to develop hypertension during their adult years. They suggest that those raised by parents who are educated and earn a substantive income experience better hypertension control in adulthood. These findings were observed among young black men. Also, the findings of Coulon, Wilson, Alia, & Lee Van Horn (2016) identified socioeconomically disadvantaged groups in the United States as experiencing higher rates of cardiovascular disease and hypertension. Although prevention measures have been in effect among high risk groups, these measures have not been impactful among high risk groups (namely among African Americans or blacks). Sims et al., (2015) further explained that blacks with low income, low educational achievement, and who are uninsured or under insured are more likely to be diagnosed with high BP because they experience more perceived racism and discrimination.

It has been determined that hypertension is the most important preventable modifier of mortality and morbidity in the US (James et al., 2014), yet this disease affects 1 in 3 people in America (Zoeller et al., 2014). This means that approximately 78 million Americans are hypertensive, yet according to Go et al, (2014), only 52% of them will achieve blood pressure control during their lifetime. More importantly, Yoon et al., (2015) reported that those achieving control would more likely be ≥60 years old, while those 19-35 years old are less likely to achieve blood pressure control (only 27.9%

control). Hypertension accounted for 360 thousand deaths in 2009, 7.5 million deaths by 2013, and 13.5% of the annual death toll worldwide (Sampson et al., 2014). The cost incurred by the government and insurance companies for treatment and care of hypertension and hypertension related diseases in America is over $69 billion (Go et al., 2014).

Hypertension prevalence in the US was reported as 29% overall from 2011-2014, with a noticeable increase with age and a significant disparity across the races (Yoon et al., 2015). Among young adults age 18-35 years, Yoon et al., (2015) reported a 7.3 % prevalence compared with a 32% among those ≥ 40 years and a 65% prevalence among those ≥ 60 years. There is also a disproportionate difference in the prevalence of hypertension between blacks and whites, as evidenced by the results published by Sampson et al, (2014) showing that high BP as significantly higher among blacks (59% vs 52%; $p < 0.001$). Yoon et al. (2015) found that high BP was more prevalent among black men (41.2%) when compared to white men (28%). In Georgia, a southeastern state in America, it was reported that black men became hypertensive at a younger age than white man, and 30% of the deaths among black men were as a result of hypertension or hypertensive related causes (Rein et at., 2007). The cost and prevalence of hypertension reflects the significance of this population health problem and helps to underscore the reason why the AHA had made hypertension control the focus of its 2014-2017 strategic plan. This resonates with the Healthy People 2020 vision of improving cardiovascular health in America by 20% by the year 2020 (Go et al., 2014).

Treatment of Hypertension

Traditional treatment options for hypertension were centered on the use of a single prescription medication or a compound medication approach (James et al., 2014 and Weber et al., 2014). However, with the infiltration of new data, there is now the inclusion of non-drug therapeutic treatment measures that are potentially rewarding, if applied to the appropriate population (Ameling et al., 2014, and Go et al., 2014). Both Weber et al., (2014) and James et al., (2014) outlined the current treatment protocols for hypertension, and both agree that the treatments differ across the races. For non-blacks they recommend the use of an angiotensin-converting enzyme (ACE) inhibitor, or Angiotensin Receptor Blocker (ARB), with a Thiazide type diuretic or Calcium Channel Blocker (CCB). For blacks, the recommendation is to start with a CCB or Thiazide type diuretic and add an ACE or ARB if chronic kidney disease is present or if blood pressure is not controlled with the initial treatment. This is the basic treatment model used by medical practitioners, but Li, Kelly, &Petrasko (2015) questioned whether these classes of medicines differs in harm and benefits when considering the expected health outcomes.

In addition to medication therapy, Weber et al (2014) identified the non-drug therapeutic option that Go et al., (2014) also referenced as a viable option. It's the use of lifestyle modification for those with prehypertension or early diagnosis of stage one hypertension (BP of 140/90 to 159/99) which Weber et al., (year) identified as weight loss, dietary salt restrictions (especially for those with salt sensitivity), exercising regularly, decreasing alcohol use, and smoking cessation. Both Zoeller et al., (2014) and

Go et al., (2014) agree that before administering the option of lifestyle modification, each participant must be carefully screened, and the program must be administered under the supervision of qualified clinicians. They also noted that the non-drug therapeutic programs must include considerations of cultural, physiologic, and environmental differences that drive behavior.

Identifying the Population at Risk

Investigations into the identification, treatment, and control of hypertension has been on the public health agenda for a long time. From the prospective cohort study published in 1980, by Kochen et al., who observed a group of adolescence (age 14-16 years) that they followed for a period of five years; to the work of Din-Dzietham et al., (2007) that confirmed the findings of Kochen et al, (1980) and documented their concern for the emerging public health concern of racial/ethnic disparities in hypertensive control. Din-Dzietham et al., (2007) conducted a retrospective cohort study using a mixed sample of adolescents (age 8 to 17 years) and found the trend of increasing blood pressure among adolescents to be commonly related to a corresponding increase in the prevalence of obesity among them. The increasing trend of hypertension among children of color from 1980 and beyond, although concerning, did not engage the attention of public health leaders during the nineties and beyond. Chen & Wang (2008) reported that the tracking of this problem was poorly done. The volume of information that exists to correlate the variables that would help identify the cause or explain hypertension and the disparities among young black men is sparse (Dzietham et al., 2007). This single out this sub-

population of young black men as an at-risk population that should be investigated to identify the extent of hypertension control that they experience.

Disparities in Prevalence and Mortality

Interest in this public health problem grew slowly, even after the release of the Heckler report of 1985 (May, Cochran & Barnes, 2007). This report focused on the issue of disparity and its impact on the health outcomes among Hispanics and Blacks compared with the health outcomes among whites in America. According to May, Cochran, & Barnes, (2007), blacks have consistently had poorer health outcomes than whites in America, with black men experiencing a life expectancy of 80.9 years, compared to 82.7 years for white men (Sims et al., 2015). More recently Hicken et al., (2014) reported a mortality difference of 50 per 100,000 deaths among black men compared with 15 per 100,000 white men. This can be explained by the racial/ethnic disparities in health care between blacks and whites in America, an issue that Heckler focused on in the minority report. According to Kumanyika (2016), Heckler used the concept of 'excess death" to sound the alarm on health outcome disparities among minority populations. This concept Kumanyika (2016) explained, examined the difference between the number of deaths observed in a minority population and compared it with the number of expected deaths of that same population if they had the same age-specific and sex-specific death rates as the majority population.

Looking at hypertension among blacks, Hicken et al., (2014) reported a 10% difference in prevalence between blacks and whites in 2011 and went on to further explain the financial impact of this disparity. If this disparity was corrected $400 million

in out-of-pocket cost would be saves on treatment for hypertension among blacks. Further an additional $2 billion in private insurance cost, and $375 annually in Medicare/Medicaid cost could be saved just by correcting this disparity. There is no doubt that there is excessive death among black men with hypertension, and this cost is passed on as a financial burden to the economy as evident in the high cost of health care.

Medication Compliance and Hypertension Control

Hypertension presents in blacks earlier than in whites, yet black men in America are less likely to be diagnosed and treated for hypertension even though they are insured (Ameling et al., 2014, Cané et al., 2013, and Johnson et al., 2016). Those who present early and remain undiagnosed and untreated, partially explains the poor control experiences of young black men (age 19-35 years of low SES in America (Yoon, 2015). This identifies young black men as a minority sub-population that is at a high risk for having a diagnosis of high BP, experiencing complications from having hypertension, and dying because of a lack of control of their hypertensive state.

After investigating forty-four years of research (1966-2010) that examined medication compliance among black hypertensive men, Lewis (2012) concluded that young black men were less likely to adhere to a medication regimen than older black men or white men of any age. This raises the question of what then, would be the most efficacious approach for controlling high blood pressure among young black men who experience the highest mortality from it. Lewis (2012) however, did not investigate the outcome of control to determine if those black men who adhered to their medication regimen achieved control of their hypertension. Cané et al., (2013) disclosed that a

combination of psychosocial and environmental factors contributed heavily to the

noncompliance with antihypertensive medication among males. Cané et al., (2013)

further noted that those black men who took their prescription medication, suffered

complication of hypertension because of recreational drug use, environmental stressors

(violence and discrimination), and the effects of poverty. These factors are common

among young black men of low SES in America. It is important to note that Cané et

al.,(2013) did not have a homogeneous group of young adult black men, nor did they

focus on the achievement of hypertension control.

The concern of the delay in the initiation of treatment with prescription

medication for those young adults that meet the criteria for a diagnosis of hypertension,

was addressed in a study conducted by Johnson et al., (2014). The results indicated that

among the 18-35-year-old participants, only 35% of them received treatment when they

were diagnosed, compared with 44% among those 40-55 years, and 59% among those ≥

60 years old. Those in the 18-35-year-old group were less likely to be treated, and this

contributes to a significant public health problem. This study had a majority male

population and the trend showed that males were 36% less likely to be started on

medication by physicians even after a diagnosis of hypertension was made. None of the

studies investigated the efficacy of antihypertensive medication in controlling

hypertension among young black men or compared prescription medication therapy with

other treatment approaches for hypertension among young black men.

Lifestyle Modification and Hypertension Control

Zoellner et al., (2014) investigated the efficacy of lifestyle modification in the control of hypertension control among blacks in America. This study included a sample containing 94% African-American of which 85% were females. However, it is useful to introduced two important concepts that are relevant to this investigation. The first is the community/systemic approach that is necessary if changes are to be achieved in the treatment methods of hypertension among blacks. The second, of equal importance, is the introduction of non-medication therapeutic measure (lifestyle modification) as a treatment option for hypertension among blacks. The lifestyle modification therapeutic method was endorsed by Go et al., (2014) who published the importance of systemic changes that are required to hard-wire a new approach. According to Go et al., (2014) the same systemic approach used to correct the high frequency of medication errors occurrence in the acute care setting in the 1980's can be repeated in this instance to obtain a similar outcome.

However, both Ameling et al., (2014) and Weber et al., (2014) documented the importance of the lifestyle modification as a treatment option for hypertension control and referenced the outcomes of randomized control trials (RCT) that produced significant outcomes from the application of these treatments. Weber et al., (2014) specified that the lifestyle modification option is best suited for those who are pre-hypertensive (SBP 130-139 mmHg and DBP 80-89 mmHg) or Stage 1 hypertensive (SBP 140-159 mmHg and DBP 90-100 mmHg). They recommend that primary care providers participate in this treatment option and that it be carried out for a six month or one-year period. Weber et al.

(year) further outlined the measures that should be considered, mainly weight loss, reduction of dietary sodium, exercising regularly, and smoking cessation. The importance of this method of hypertension management can be applied only to those meeting the criteria for this treatment option. Thus, Go et al. (2014) emphasized the importance of developing an algorithm that would easily identify those who would benefit from this treatment option.

The relationship between sodium intake and hypertension has been well established, and it is now of public health concern that Americans are consistently consuming more than the recommended daily amount of sodium. According to Jackson et al., (2016), who reported on the cross-sectional quantitative study conducted by the CDC, 86% of hypertensive adults in America consume more than 2,300 milligrams (mg) of sodium daily. The prevalence is higher among males than females, and whites than blacks (Jackson et al., 2016). Interestingly though, more blacks are affected by high sodium intake than whites are. However, the report does not include the effect of reduced sodium intake on hypertensive control among the sample. Also, there is no specification regarding the number of black males in the sample, or the effect on their blood pressure. Savoca et al., (2011) investigation into the dietary patterns of young black males indicate that they often indulge in consuming large amounts of commercially prepared fast foods that have high sodium, cholesterol, and preservatives. Participants agreed that these food choices contributed significantly to hypertension and obesity, even among those who were actively participating in athletic activities. Weber et al., (2014) recommended that

those sensitive to sodium take measures to decrease their consumption of it to prevent the development of hypertension.

The study that addressed the most variables of interest to this investigation, is one completed by Papthanasiou et al., (2015) that investigated the effects of smoking, physical activity, and BMI on the development of hypertension. A cohort of more than 1,200 participants of which 522 were males of age range 19-30 years, were followed to determine the effect of the independent variables (smoking, physical activity, and BMI) on the outcome of hypertension. The variable of greatest significance was BMI, while smoking showed no significant effect on hypertension development. Physical activity (PA) showed an unusual outcome. Low PA was inversely related to hypertension, while those participating in vigorous activity recorded higher systolic blood pressures. This study was conducted in Greece and none of the participants were black. This validates the importance of repeating this study, or conducting a similar study here in the US, to observe the outcome and report the effect of the association of the variables.

Indications for This Study

The common trend among all the studies mentioned is that none of them addressed the variables that this study proposes to address. There are no available studies that investigate the efficacy of prescription medication on the control of hypertension among young black men (age 19-35 years) of low SES in America. Further, the paucity of studies investigating the therapeutic effect of lifestyle modification on the control of hypertension in young black men presents an opportunity for my study to fill that gap and contribute to the body of knowledge in this area. It is important to identify control

measures for hypertension among young black men in America because they are

identified as a high-risk group. Also, because it is noted that the response of blacks to

prescription medication differs from the responses from other races, it is important to

identify alternatives to the treatment of hypertension among them. This is exactly the

objective of this investigation, to identify the ideal method of treatment to achieve

hypertension control among young black men (age 19-35 years) of low SES in America.

This could address the existing gap in the literature and become a meaningful addition to

the literature.

Summary

This chapter investigated the literature to determine the extent of information that

can adequately address the issue of the control of hypertension among black men (age 19-

35 years) of low SES in America. It is evident that studies that investigate hypertension

among blacks focused primarily on those >40 years old and used samples of both sexes

(males and females) to draw comparisons. Although Johnson et al., (2015) focused on a

younger group (age 18-39 years), their study examined differential diagnoses of high BP

using traditional medication therapy. There are even less studies that were interested in

the use of lifestyle modification (smoking cessation, changes in eating habits, and weight

loss) as an acceptable method of hypertensive control. These reasons validate the need to

have contributions made to the existing body of knowledge regarding the available

methods of high BP control that may be adequate for young black men (specifically those

19-35 years) of low SES in America. Considering the poor medication compliance rates

among blacks (Lewis, 2012), the concern of a viable alternative for high BP control among young black men becomes an urgent need.

To successfully conduct this investigation, there must be an appropriate study design that would facilitate the answering of the research questions, compare the variables of the investigation, and measure the strength of the relationships among these variables. With proper statistical analysis the significance of each relationship would be quantified, and this would help to identify the treatment that is better suited for hypertension control among the target population. In the chapter that follows the details of my choice of design, the dataset, sample selection process, and the statistical methodology would be validated.

Chapter 3: Research Method

Introduction

The disproportionate number of young Black men with hypertension compared with young White men with hypertension, along with the increased incidence of hypertension among Black men since 2011 highlights the disparity in the distribution of the disease among both ethnicities (Yoon et al., 2013). Information obtained from previous studies indicates that hypertension among Black men results in the loss of life years and significant organ damage during their younger years (Sampson et al., 2014). Further, Blacks in the United States demonstrate poorer levels of hypertensive control than Whites (Ameling et al., 2014), and according to Weber et al. (2014), this may be because there is a delay in the initiation of their treatment even though the disease shows up earlier among them. Weber et al. further commented that young Black men are less likely to receive treatment for hypertension even after they are diagnosed, and this results in significant organ injury by the time they get to age 40 years. This public health concern finds commonality across the world as indicated in the Burden of Disease study (2015) outcomes (Forouzanfar et al., 2017). Hypertension was identified as the most prevalent of the modifiable precursors to coronary artery disease with a control rate below the goal set by the WHO and the CDC (Lim et al., 2012)

Because Black men are often faced with socioeconomic disadvantages, and they experience physiological alterations that cause hyperactivity of their sympathetic nervous system (Weber et al., 2014), they are more likely to become hypertensive earlier in life, remain undiagnosed for a longer time, and not experience hypertensive control for a

prolonged period. This accounts for the increased prevalence of hypertension among

Black men being higher (40.8%) than among White men (29.4%; National Center for

Health Statistics, 2017). With the existing risks among Black men, especially young

Black men, there is a need to investigate of this public health problem. I sought answers

to the question of whether there is a statistically significant relationship between

prescription medication use and hypertension control and lifestyle modification and

hypertension control.

This chapter is dedicated to identifying and validating the research design that

best answers the research questions, discussing the research methodology in sufficient

depth to facilitate replication of this investigation, and identifying the threats to the

validity of the study (including the anticipated ethical concern that may arise).

Research Design and Rationale

For this research, a secondary dataset set (NHANES 2013-2014) obtained through

a previously conducted survey served as the source for the sample that I analyzed. Thus,

the quantitative cross-sectional research design was appropriate for this research

investigation. The success of any scientific investigation is hinged upon three factors: (a)

clarity of the issue or problem that requires investigation, (b) proper sequential

delineation of the variables that are associated with the issue/problem of interest, and (c)

the identification of a composite plan for addressing each variable in solving the problem

or understanding the issue. Thus, the research design becomes the blueprint that is

followed in finding answers to a research question or the explanation an existing

phenomenon of interest (Frankfort-Nachmias & Nachmias, 2008b). Selecting the correct

design is pivotal in controlling biases and confounders that may modify the outcome or alter the effect of the study results (Aschengrau & Seage III, 2014c).

In this study, I was interested in identifying the strength of the relationship between prescription medication and the control of hypertension compared with the strength of the relationship between the lifestyle modification approach (smoking cessation, changes in eating habits, and weight loss) and the control of hypertension. The population of interest was young Black men aged 19 to 35 years living in the United States, considering the barriers of age, low SES, and the disparities in health care that they face. Because I sought to determine the association of two different approaches to hypertension control (prescription medication vs lifestyle modification) and to use that information to make recommendations for change in the treatment spectrum, my investigation was categorized as a quantitative one.

Benefits and Limitations of the Cross-Sectional Design

Both Frankfort-Nachmias and Nachmias (2009c) and Aschengrau and Seage III (2014b) agreed that the cross-sectional study is the most prominent design among social scientist who investigates health related issues. Also referenced as correlational research, the cross-sectional design allows researchers to observe the interactions of variables as they naturally occur (without manipulations), thus limiting the researcher's bias during the investigation (Field, 2014). This design allows the use of data obtained from surveys, making secondary data use appropriate with this design (Crosby et al., 2013). The cross-sectional design also allows researchers to investigate the relationship between diseases (or other health related characteristic) and other variables that the researcher is interested

in. Because it presents a snapshot of the population impacted by the public health problem of interest, it allows the measurement of disease prevalence bases on past exposure to a disease if the date of exposure is ascertained (Aschengrau & Seage III, 2014).

There are, however, some limitations associated with the cross-sectional design that both Aschengrau and Seage III (2014) and Crosby et al. (2013) identified as limitations of the design. These include the inability to infer temporality, the overreaching of prevalence in diseases of long duration, and the inability to infer causality from the results. The issue of poor temporal sequencing is one that restricts the determination of whether the exposure came before the disease or the disease before the exposure. This is important especially if the goal is to identify causative factors of a disease or condition. Regarding prevalence overreaching, in diseases where the incidence is high with an equally high mortality, those contracting the disease who died before the survey would not be accounted for. Finally, since the design investigates the relationship between variables, it is often difficult to determine cause because the strength of these relationships does not assume a set direction. In this investigation, I was interested in observing the relationships shared by the independent variables and their effects on the dependent variable to determine the optimal measure of control for the dependent variable.

The Research Variables

The concise definition set forth by Crosby et al. (2014) identified a variable as anything that can assume a range of values. This brings into consideration a range of

indices that can be considered. To provide perspective, Field (2014) explained that whenever there is an index that is perceived to be a contributor to the cause, that index is considered an *independent* variable. Those that are the effect or the result of the cause is the *dependent* variable. Further, variables can be defined by the level of measurement that they provide. Forthofer, Lee, and Hernandez (2007) listed those levels (scales) as nominal, ordinal, interval, and ratio. Although there are four levels of measurement, there are really three types of data, namely, nominal (categorical), ordinal (ordered or hierarchal), and continuous (interval or ratio; Sullivan, 2012). Having a clear understanding of these types of variables and their levels of measurement is essential to the appropriate measurement and interpretation of the analysis of the data in this research.

Defining the Variables

In this study, hypertension control (having a BP sustained at 140/90 and below for those diagnosed with hypertension and 130/80 and below for those with prehypertension) is the result or outcome variable (dependent variable), and prescription medication and lifestyle modification (smoking cessation, changes in eating habits, and weight loss) are the predictor/independent variables. Age, sex and race determine the inclusion criteria of the study sample and are also included in the list of variables, as control variables. More specifically, the age range of 19 years to 35 years inclusively, the sex is male, and the race is Black (including African Americans). The factor that require clarification is SES and health care disparities as used in this study.

According to Shi & Johnson (2014), SES has the greatest impact on population health. Shi & Johnson (2014) further noted that income and educational achievement are

primary elements used to evaluate SES. However, there are additional determinants that are included in the SES of this sub-population. According to Coulon et al., (2015), living in low income housing areas or in neighborhoods that have high criminal activity, often contribute to hypertension. Go et al., (2014) also emphasized the lack of affordability of health care as another factor. Low income individuals are seldom able to afford health care, and thus the stress and fear of impending diseases leads to hypertension. This is what Dolezsar et al., (2014) referenced as the psychosocial aspects of hypertension. Thus, using some of these measures in this study, low SES would refer to participants who are of low income, of low educational achievement, and have limited access to health care. For the purposes of this study and according to the codebook of dataset used, (NHANES 2013-2014) low SES was defined using two variables; i) INDHHIN2: This variable indicates the total annual household income in dollar ranges and low SES is considered when this income is under $20,000; ii) INDFMPIR: This variable is the ratio of family income to poverty. The Department of Health and Human Services (HHS) poverty guidelines were used as the poverty measure to calculate this ratio. These guidelines are issued each year, in the Federal Register, for determining financial eligibility for certain federal programs and the poverty guidelines vary by family size and geographic location (with different guidelines for the 48 contiguous states and the District of Columbia; Alaska; and Hawaii). INDFMPIR was calculated by dividing family (or individual) income by the poverty guidelines specific to the survey year. The value was not computed if the respondent only reported income as < $20,000 or ≥ $20,000 and the values were not computed if the income data was missing.

Further, health care disparities as described in the RQs were measured in this study by using the following variables; i) HIQ011: this describes if the individual is covered by health insurance; ii) HUQ030: this variable assesses if there is a routine place to go for healthcare; iii) HUQ060: which refers to the time since last healthcare visit.

It is also important to mention here that when variables interact there are several effects that they exert upon each other. Some of these influences include mediation, moderation, and confounding. Following is an introduction to the concept of variance.

Variance, Moderation, Mediation, and Confounding

Both Field, (2014) and Frankfort-Nachmias & Nachmias, (2008b) identified variance as a primary indicator of a lack of congruence among the variables. Variance is measured by calculating the deviation of each variable from the mean and using it to determine the direction of the variance. Variance can be corrected by *standardization*, which, according to Field, (2014), requires the use of the same unit of measurement for each variable. Once the dataset was finalized and the sample extracted, the descriptive statistics were calculated using the SPSS software.

The combined effect of two or more predictor variables on the outcome is referred to as *moderation.* Where moderation exists, there is the tendency for the variable acted upon to exert an exaggerated effect in the model (Field, 2014). It's likely to have moderation when the relationship of all the predictor variables are evaluated with the dependent variable, as opposed to examining the relationships of each predictor with the outcome variable. Mediation, on the other hand, occurs when the relationship between a predictor variable and the outcome variable can be explained by a third variable (the

mediator). When the strength of the relationship between the predictor variable and the outcome variable decreases by adding a third variable, there is positive mediation (Field, 2014). Considering the relationship between weight control and hypertensive control, the strength of that relationship may be altered if regular exercising is added.

Finally, there is the *confounding effect* which Aschengrau & Seage III (2014) described as the "mixing effect" between an exposure, an outcome, and a third variable. Confounders often distorts the relationship between the exposure and the outcome because of the relationship between the confounder and the exposure. Confounding is the most significant alternative relationship among the variables, and early identification and resolution of the confounding variable, is a crucial first step in the accurate interpretation of the outcome of the statistical analysis (Szklo & Nieto, 2014). Revisiting the etiology of hypertension, Weber et al., (2014) verified that there is no specific causative factor for this chronic disease, thus establishing confounding among the variables in this study. With these existing possibilities, there is a need to conduct multiple analyses to ensure they are identified and addressed to prevent biases in the study results.

Methodology

In this section I will discuss the population and its unique characteristics, the sample and the sampling process, and the data collection process using secondary data. The purpose here is to clarify the process that I intend to follow through the method of scientific investigation of the determinants that are actively involved in the potential achievement of the control of hypertension among young black men in low SES in America.

Population

The population is the collection of the research units of interest the researcher intends to use to make generalizations about (Sullivan, 2012). Since both Crosby et al., (2013) and Field (2014) agree that the population may comprise of units other than just people (cases, events, or creatures) it is necessary to establish the units of the population of interest. The population may be narrowly defined rendering it a very finite group or may be broadly referenced causing it to be an infinitely large collection (Frankfort-Nachmias & Nachmias, (2009a). Care must be exercised in defining the population, since, according to Field (2014), by making it too restrictive, generalizations made may be inaccurate. In this study, the population of interest is comprised of people in America who have been diagnosed or told that they have high blood pressure. They are representative of a variety of races and ethnicities, ages, and SES across the United States. They use medication, lifestyle modification, or a combined approach to achieve blood pressure control.

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Sample and Sampling Process

</div>

The sample is the smaller version of the population that would be used to make generalization about the population (Field, 2014). Often referenced as the statistical model, the strength of the sample is bound up in its size and method of collection. This concept is clarified by Field (2014), who explains that a small model would be restricted in determining the true characteristics of the actual frame while a larger model would more adequately represent the actual population. Using the public dataset NHANES

2013-2014 published by the Department of Health and Human Services, all black men

aged 19-35 years, and of low SES were used to address the RQs.

Description of the Dataset

The data collected in the NHANES 2013-2014 dataset was based on identifying

an eligible respondent at the residence (a responsible adult). The respondent was then

administered a computer-assisted personal interview (CAPI), which is programmed to

ensure completeness and consistency. Participants are aged ≥ 16 years (with parental

permission), and they are randomly selected to complete four six-month cycles of

physical examinations conducted at the designated mobile examination center (MEC).

Each variable from the interview and the examination are clearly described and coded,

then added to the dataset.

Using this dataset, I pulled all black males (age 19-35 years) with demographics

that meet the criteria of the study and is being actively treated for high blood pressure

(*n*=297). Treatments options of prescribed medications and lifestyle modification

(smoking cessation, changes in eating habits, and weight loss) were selected.

In this case, the sample would be considered a probability sample, and as

Frankfort-Nachmias & Nachmias (2008c) explained, probability samples are

representative of the population, and the statistical measurements obtained from the

analysis can be used to estimate population parameters. The estimation of the rate of

control of hypertension among young black men (age 19-35 years of low SES) using

prescription medication, was compared with and estimation of hypertension control

among young black men (age 19-35 years of low SES) in the same group using lifestyle

modification methods as defined in this study. The inclusion criteria were gender (males), age (19-35), diagnosis (high blood pressure), treatment (prescription medication and lifestyle modification), socioeconomic status (low SES) and race (black not Hispanic).

Power Analysis

The consideration of power in research studies was first conceptualized by Jacob Cohen (1962) when he attempted to draw attention to the statistical power of existing social science researches published in 1960 (Ellis, 2010). Power, by definition, relates to the ability of a statistical test to correctly reject the null hypothesis when the alternative hypothesis is true (Aschengrau & Seage III, 2014). Power is best applied through what Aschengrau & Seage III, (2014) constitutes hypothesis testing; the setting of a uniform decision-making criterion for evaluating random error above that of mealy guessing. This means that the null hypothesis must be concisely stated, with a fair comparison of compatibility of the null hypothesis from similarly conducted studies, then using the established criterion, determine the rejection of the null hypothesis. The sample for this study consisted of all the black males from the dataset that meets the age and SES criteria set for the study, who are 297 participants.

This gives rise to the estimation of the probability of obtaining the desired result and more extreme results by chance, often referred to as the p value. By applying the appropriate statistical tests, a p value can be obtained that would quantify the compatibility of the study data with the null hypothesis (Aschengrau & Seage III, 2014). This is what Field (2014) referenced as Null Hypothesis Significance Testing (NHST), and explained that this process allows for the computation of a test statistic for the

alternative hypothesis and calculate the probability of obtaining a value of a similar size or greater in the null hypothesis is true. It is important to note that NHST provide the statistical significance, and Field (2014) cautioned against mistaking statistical significance as an indication of the effect size of the study. Therefore, statistical significance is set as $p \leq .05$ while non-significance is $p > .05$. Thus, when the statistical outcome is significant, the null hypothesis is false, and the alternative hypothesis is a better explanation of the results (Aschengrau & Seage III, 2014c and Field 2014). The limits of significance ($p = .05$) is the alpha and it is interpreted as a 5% chance of mistakenly rejecting the null hypothesis incorrectly (Alpha or Type 1 error (Aschengrau & Seage III, 2014c). Statistical values that are greater than .05 are not significant and there is the probability that there can be an incorrect failure to reject the null hypothesis (a Beta or Type II error). Preventing these errors are crucial to the successful interpretation of the statistical results of the investigation, and Sullivan (2012) provided measures that can be taken to prevent these errors. According to Sullivan (2012), by decreasing the alpha (α) the Type I error is avoided, and by increasing the power (sample size) the Type II error is avoided.

For this research I used all the cases included in the secondary data, according to the aforementioned inclusion criteria. Therefore, there is no need for a priori power analysis. However, after the collection of the data, I followed the format outlined by Field (2014) to set the alpha and beta and use the G*Power software to calculate the post hoc power analysis of the sample, which was adequate (>80%), please see chapter 4 for more details. I worked with multiple predictor variables in determining the strength of their

relationship with the prediction of the outcome, and thus, the use of a multiple regression model was required with a forced entry method. Field (2014) explain that the forced entry method of regression allows the researcher to enter the predictors into the model simultaneously, thus predicting the strength of their relationships. The one method that Field (2014) advises against is the stepwise method, since this method uses a mathematical predictive method that makes it improbable to reproduce the outcomes if the test is repeated.

Data Analysis Plan

The data prepared for this research were analyzed using the IBM statistical package for social sciences (SPSS version 24). The NHANES 2013-2014 dataset contain numerous variables that are relevant to my investigation, and therefore were included in my sample. Those variables that are not relevant were carefully examined and removed where necessary. Once the required variables are identified, they were ranked and checked for missing data. The selection inclusion/exclusion criteria were applied, and the required sample size selected for the study. The sample comprised of all the young black men (age 19-35 years) of low SES and have high blood pressure and is using antihypertensive medication or lifestyle modification measures (smoking cessation, changes in eating habits, and weight loss) to achieve control of their blood pressure.

The following are the hypotheses that were tested during this investigation:

RQ1: To what extent does an association exist between the use of prescription medication and the hypertension control, adjusted for age, low SES (low annual household income and/or low ratio of family income to poverty), and health care

disparities (health insurance coverage, routine place to go for healthcare, and time since

last healthcare visit) among Black men 19 to 35 years old in the United States?

$H_0$1: There is no significant association between prescription medication use and

the control of hypertension adjusted for age, low SES (low annual household income

and/or low ratio of family income to poverty), and health care disparities (health

insurance coverage, routine place to go for healthcare, and time since last healthcare

visit) among Black men 19 to 35 years old in the United States.

H_a1: There is a significant association between prescription medication use and

the control of hypertension adjusted for age, low SES (low annual household income

and/or low ratio of family income to poverty), and health care disparities (health

insurance coverage, routine place to go for healthcare, and time since last healthcare

visit) among Black men 19 to 35 years old in the United States.

RQ2: To what extent does an association exist between the use of prescription

medication and lifestyle factors including smoking cessation, changes in eating habits,

and weight loss and hypertension adjusted for age, low SES (low annual household

income and/or low ratio of family income to poverty), and health care disparities (health

insurance coverage, routine place to go for healthcare, and time since last healthcare

visit) among Black men 19 to 35 years old in the United States?

$H_0$2: There is no statistically significant association between the use of

prescription medication and lifestyle factors and hypertension adjusted for age, low SES

(low annual household income and/or low ratio of family income to poverty), and health

care disparities (health insurance coverage, routine place to go for healthcare, and time

since last healthcare visit) among Black men 19 to 35 years old in the United States.

H_a2: There is statistically significant association between the use of prescription

medication and lifestyle factors and hypertension adjusted for age, low SES (low annual

household income and/or low ratio of family income to poverty), and health care

disparities (health insurance coverage, routine place to go for healthcare, and time since

last healthcare visit) among Black men 19 to 35 years old in the United States.

There are two (2) competing pairs of hypotheses that must be tested, and since

each pair deal with a different treatment (prescription medication or lifestyle

modification), the comparison groups are independent (Sullivan, 2012). By selecting a

level of significance of .05 ($\alpha = 0.05$) to create a decision rule for rejecting the null

hypothesis, all the hypotheses were tested, and the effect size determined. The strength of

the relationship among the variables in the RQs was addressed by using linear regression

testing method and by first confirming if the assumptions to conduct these tests are met.

(Table 1). These statistical measures are in addition to the descriptive statistics that would

establish measurements for the probability calculations (Table 1).

SPSS is a very robust and initiative statistical software that, in addition to

providing efficient statistical calculation, will also provide graphs, maps, tables, and

charts to represent the results of each test conducted. Although the results must be

accurately interpreted, the result format is made available for presentation. Using these

presentations would facilitate effective communication of the results and multiple

methods of to enhance my statistical presentation. Each method was formatted to meet

the American Psychology Association (APA, 6th Edition) writing standards. A summary

of the results would be presented in the text and the graphic presentations would be

housed in the appendix pages of the presentation.

Table 1

Statistical Procedures per Research Question and Hypothesis

Research question	Hypothesis (*H*a)	Variables	Statistical procedures/analysis
RQ1: To what extent does an association exist between the use of prescription medication and the hypertension control, adjusted for age, low SES (low annual household income and/or low ratio of family income to poverty), and health care disparities (health insurance coverage, routine place to go for healthcare, and time since last healthcare visit) among Black men aged 19-35 years old in US?	Ha: There is no significant association between prescription medication use and the control of hypertension adjusted for age, low SES (low annual household income and/or low ratio of family income to poverty), and health care disparities (health insurance coverage, routine place to go for healthcare, and time since last healthcare visit) among AA men aged 19-35 years old in US?	IV: Use of prescription medication[1]. DV: control of hypertension[2] Control Variables: black mean, age 19-35 years, low SES, health care disparities.	Univariate; mean, sd, median and interquartile range for continuous variable; frequencies for categorical variables. Linear Regression if DV continuous normally distributed. If DV not normally distributed: Binomial Logistic Regression
RQ2: To what extent does an association exist between the use of prescription medication and lifestyle factors including smoking cessation, regular exercising, weight control, and low sodium diet) and hypertension adjusted for age, low SES (low annual household income and/or low ratio of family income to poverty), and health care disparities (health insurance coverage, routine place to go for healthcare, and time since last healthcare visit) among Black men aged 19-35 years old in US?	Ha: There is no statistically significant association between the use of prescription medication and lifestyle factors including smoking cessation, regular exercising, weight control, and low sodium diet) and hypertension adjusted for age, low SES (low annual household income and/or low ratio of family income to poverty), and health care disparities (health insurance coverage, routine place to go for healthcare, and time since last healthcare visit) among AA men aged 19-35 years old in US?	IVs: Use of prescription medication; lifestyle modification[3] (smoking cessation, regular exercising, weight control, and low sodium diet). DV: control of hypertension Control Variables: black mean, age 19-35 years, low SES, health care disparities.	Univariate; mean, sd, median and interquartile range for continuous variable; frequencies for categorical variables. Linear Regression if DV continuous normally distributed. If DV not normally distributed: Binomial Logistic Regression

Note.[1]Nominal variable (yes/no), [2]Continuous variable, [3]Categorical variables

Threats to Validity

The term validity is used in epidemiological study to refer to the degree of confidence that the instrument or test of measurement exerts on the analysis process (Field, 2014). In essence, is the instrument or test accurately measuring the variable(s) that it was intending to measure, taking into consideration all of the internal and external factors that are associated with the measuring process. Further explanations by Frankfort-Nachmias & Nachmias (2008b) suggest that internal validity is impacted by occurrences prior to the study, and factors that impinge on the results of the investigation. A major extrinsic factor is selection bias (Frankfort-Nachmias & Nachmias (2008b), and it is very relevant to my study. Considering that I am pulling randomly from a dataset of individuals of varying ages, races, and including both genders, I am concerned that by focusing on a specific age, gender, and SES combination can limit the accuracy of the outcome of the statistical test. The intrinsic factors of history, testing, and self-reporting are also of concern. Because the data were obtained from the general public, and some of the measurements were based on self-reporting, it presents the potential for inaccuracy and bias. This makes it increasingly difficult to measure the degree of control that each treatment (prescription medication and lifestyle adjustment) exerts on the blood pressure of the participants of the study.

To manage these threats, I deliberated with ensuring that randomization is a key feature in the participant selection process, after applying strict inclusion/exclusion criteria. By doing this and ruling out extreme scores/conditions, I would be able to

significantly decrease the impact of those intrinsic and extrinsic factors on the outcome of the investigation. Also, by carefully examining the measurements that are present in the sample and comparing them with general outcomes noted in the populations, Field (2014) noted that validity can be preserved in that way.

Ethical Considerations

It is the responsibility of the researcher to ensure that the public and vulnerable groups are protected during the research process. This means that information of a personal nature (names, addresses, social security numbers, date of birth) must be excluded from the descriptive of the participants. In addition, the proposal for the study was reviewed by Walden institutional review board (IRB) and received approval (#08-27-18-0468665) to determine the authenticity of the study and to ensure that there is no potential for harm to any of the study participants (Rudestam & Newton, 2015). All of these steps were adhered to in my investigation. Not only would my proposal vetted by my mentor and committee member, but I subscribed to the requirements of the Walden IRB by completing the required application forms and following the IRB process.

It is also noteworthy to mention here that in the process of collecting the data, the owner of the dataset (NHANES) obtained consent from each participant who agreed to participate in the data collection process and the cyclic examinations conducted at the mobile examination center (MEC). Also, the dataset does not contain any information to identify participants, such as name, social security number, etc. Yet, to further enhance the privacy process, the dataset, the sampling process, and all research related

information would be kept on a portable hard drive with encryption and password. This is to ensure that there is no easy access to the information.

Summary

This chapter completes the proposal for my study and it details the procedures that I will follow in conducting my research. The main areas covered includes a description of the study design with the associated rational for selecting this design, a detailed listing of all the research variables and their categorization, and the data collection and recruitment procedures. These were followed by definitions and applications of statistical terms and the identification and justification of the selected statistical model for the investigation. What is more important to my investigation is an explanation of the sampling process, the power analysis, and the statistical model that would determine the best outcome for explaining the problem of hypertension control among young Black men (age 19-35 years) of low SES in America. These were explored in detail in the latter part of this chapter, and the account includes the data analysis process predicted, the statistical tests identified for use, and the plan for result interpretation.

The task ahead supersedes in magnitude the one just completed. The following chapter focuses on the data preparation, the statistical analysis, the results of the statistical analysis, the interpretation of the results, and the reporting methods that would convey the research findings.

Chapter 4: Results

Introduction

This study was conducted to determine if there is a statistically significant relationship between the control of BP among young Black men in the United States of low SES and the use of prescription medication versus the application of lifestyle modification. In this chapter, I present the data collection process and the results per RQ.

Data Collection Process

As described in Chapter 3, secondary data from the NHANES repository were used in this study It took 90 days of intense searching, and I identified the 2013-2014 NHANES code book and dataset. This dataset included the responses of more than 27,000 participants during the interview period (2013-2014) of data collection, and the outcomes of BP screening for a subset of these participants. After addressing all inclusion and exclusion criteria mentioned in Chapter 3, the total sample size for this study was 279.

Discrepancies and Deviations

The focus of this study was to examine the strength of the relationship between the use of prescription medication and the control of BP among young Black men (age 16-45 years, initial age 19-35) of low SES in the United States, and to compare this finding with the findings of the examination of the strength of the relationship between lifestyle modification (smoking cessation, changing eating habits, and weight control) and the control of BP among Black men of the same group. In prepping the dataset for the extraction of the sample, the inclusion/exclusion criteria were applied. I needed a

sample of young Black men who are within the specified age group (16-45 years) and are

either taking prescription medication or attempting to control their BP by lifestyle

modification. The participants were men of low SES (low annual household income

and/or low ratio of family income to poverty), and health care disparities (health

insurance coverage, routine place to go for healthcare, and time since last healthcare

visit). The application of the inclusion criteria yielded a sample that was smaller than was

estimated (approximately 300 participants,) for this investigation. Thus, the adjustment

that I made was to expand the age range from 19 to 35 years to 16 to 45 years old. This

change produced a final sample of 297 participants ($N = 297$) of low SES Blacks, aged 16

to 45 years old.

The next adjustment that became necessary was the handling of missing data for

the smoking cessation variable. Applying the procedure of series mean in SPSS allows

the statistical mean to be calculated and applied to participants whose data did not include

the time that the participant stopped smoking. This decreased the inaccuracy of missing

data effect. The new variable SMQ050Q_1 replaced the original variable "How long

since quit smoking cigarettes (in months)." This and the age range adjustment are the

only deviations from the investigation blueprint that was presented in Chapter 3.

Treatment of the Data

Results

The data analysis plan is dictated by the research hypotheses. To address both

RQs, linear regression analyses were conducted. More specifically, for RQ1, a bivariate

linear regression was used to determine the relationship between BP control (DV) and

prescription medication (IV) while controlling for gender, age, low SES, and race. RQ2

was addressed using multiple linear regression to explore the strength of the relationships

between the DV of blood pressure control and the IVs of prescription medication and

lifestyle factors under study in the same population group. Because the strength of the

relationship was being investigated, a regression was preferred.

To successfully interpret the results, the initial step was to check that the

assumptions of linear regression were met: The Durbin-Watson value was 2.093 for RQ1

and 2.097 for RQ2, very close to 2, indicating no correlation to the residuals. Further, the

VIF value was 1.000 for RQ1 and 1.028 to 1.070 for RQ2, far below 10; therefore, there

was a low level of multicollinearity. Also, Cook's distance was .465 for RQ1 and .620 for

RQ2, both below 1, which means there was no undue influence on the model.

Additionally, for both RQs graphically it was found that the distribution was

approximately normal and at least did not have an extreme variation. Finally, the dataset

demonstrated homoscedasticity since the points had about the same distance from the line

for both RQs regression models.

Also, a post hoc power analysis was conducted to confirm the adequacy of the

sample size. Using the results of multiple regression to address RQ2, $R^2 = 0.044$, effect

size $f^2 = 0.046$, a $=0.05$, number of predictors $= 4$, and sample size $= 297$, the achieved

statistical power was found satisfactory 0.85>0.80, G*Power Calculator.

Research Question 1

To what extent does an association exist between the use of prescription

medication and the hypertension control, adjusted for age, low SES (low annual

household income and/or low ratio of family income to poverty), and health care

disparities (health insurance coverage, routine place to go for healthcare, and time since

last healthcare visit) among Black men 16 to 45 years old in the United States?

From the result Table 2 for RQ1 analysis, I found that prescription medication

significantly decreased systolic BP; for those taking prescription medication, their

systolic BP was lowered by 3.8 mmHg compared to those who did not take prescription

medication $(p < 0.014)$. Therefore, the null hypothesis was rejected for this question.

However, based on the model, only 3% of the variance can be explained by the predictor

prescription medication $(R^2 = 0.030$ or 3%), thus more factors need to be investigated

regarding this outcome.

Table 2

Bivariate Linear Regression Analysis Between Using Prescription Medication for Hypertension and Blood
Pressure (BP) in Low SES, Males, 16-45 Years Old Blacks.

Predictor	Outcome	B	95% CI.	b	t	p
Taking prescription for hypertension	Systolic BP	-3.810	-6.850, -.771	-.172	-2.472	**0.014**
Taking prescription for hypertension	Diastolic BP	-.007	-2.596, -.2.583	0	-.005	0.996

Research Question 2

To what extent does an association exist between the use of prescription

medication and lifestyle factors (including smoking cessation, changing eating habits, and

weight control) and hypertension adjusted for age, low SES (low annual household

income and/or low ratio of family income to poverty), and health care disparities (health

insurance coverage, routine place to go for healthcare, and time since last healthcare

visit) among Black men 16 to 45 years old in the United States?

To address RQ2, first a series of bivariate linear regressions were conducted to

see the potential effect of each lifestyle factor (smoking cessation, changing eating habits,

and weight control) separately on BP control. As seen in Table 3, none of these factors

were found to significantly affect BP control, although almost all of them seem to

decrease both systolic and diastolic BP levels.

Then, to determine which approach to BP control is better (prescription

medication vs lifestyle factors), a multiple linear regression was conducted (Tables 4 and

5). The strength of the relationship among the variables indicated that prescription

medication takers was the only group that had a significant effect on the control of their

systolic BP (p = .009). Individuals taking prescription medication consistently

demonstrated a decrease in their systolic BP by about 4 mmHg (B = -4.327), compared to

those who did not take medication. Thus, the null hypothesis is rejected for this RQ.

However, the model used was not a satisfactory predictor of the outcome, accounting for

only 4.4% of the variance in the result (R^2= .044).

Table 3

Bivariate Linear Regression Analysis Between Each Lifestyle Factor and Blood Pressure (BP) in Low SES, Males, 16-45 Years Old Blacks.

Predictor	Outcome	B	95% CI.	b	t	p
Changing eating habits	Systolic BP	-3.648	-11.633, 4.336	-.064	-.901	0.369
Changing eating habits	Diastolic BP	-4.617	-11.300, 2.066	-.096	-1.362	0.175
Trying to lose weight the past year	Systolic BP	-.236	-3.438, 2.965	-.010	-.146	0.884
Trying to lose weight the past year	Diastolic BP	-2.181	-4.850, 0.489	-.113	-1.611	0.109
How long since quit smoking cigarettes	Systolic BP	-.252	-.732, 0.219	-.074	-1.054	0.293
How long since quit smoking cigarettes	Diastolic BP	0.063	-.333, 0.459	0.022	0.312	0.755

Table 4

Multiple Linear Regression Analysis Between Prescription Medication Use, Lifestyle Factors and Systolic Blood Pressure (BP) in Low SES, Males, 16-45 Years Old Blacks.

Predictor	Outcome	B	95% CI.	b	t	p
Taking prescription for hypertension	Systolic BP	-4.327	-7.381, -1.092	-.191	-2.657	**.009**
Changing eating habits		-3.466	-11.549, 4.617	-.060	-.846	.399
Trying to lose weight the past year		0.805	-2.506, 4.117	0.035	0.480	.632
How long since quit smoking cigarettes		-.344	-.816, .128	-.102	-1.437	.152

Table 5

Multiple Linear Regression Analysis Between Prescription Medication Use, Lifestyle Factors and Diastolic Blood Pressure (BP) in Low SES, Males, 16-45 Years Old Blacks.

Predictor	Outcome	B	95% CI.	b	t	p
Taking prescription for hypertension	Diastolic BP	.536	-2.137, 3.209	0.029	.396	.693
Changing eating habits		-3.620	-10.491, 3.251	-.075	-1.039	.300
Trying to lose weight the past year		-1.953	-4.768, 0.862	-.101	-1.369	.173
How long since quit smoking cigarettes		0.046	-.355, 0.447	0.016	.226	.822

Summary

The analysis of the data was intended to address the research questions identified in the proposal. The questions determined the methodology and the type of analysis used to address each RQ.,T determine the effectiveness of each approach to BP control (prescription medication and lifestyle factors)in a sample of 297 AA, of low SES, males, aged 16-45 years, a series of bivariate regression analyses were conducted. Only prescription medication was found significantly affecting systolic BP. Then, a multiple regression analysis was conducted including as predictors both prescription medication and lifestyle factors, and again prescription medication was found significantly to decrease systolic BP. However, all models used were not satisfactory predictors of the outcome, explaining a small percentage of the variance, thus more factors or larger sample should be included in future analyses.

    In chapter 5, the last chapter of this dissertation, the findings of this research study

will be compared with similar studies and the strengths and weaknesses of this study will

be identified. Also, implications for social change and recommendations for research and

practice will be discussed.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The frequency of occurrence of high BP among Black men is well documented in the literature (Allen et al., 2014; Sims et al., 2015; Yoon et al., 2015). Data collected nationally and globally indicate that hypertension poses a very high risk of mortality and morbidity, with smoking and alcohol use compounding the burden of disease especially among Blacks of low SES (Campbell et al., 2015; Lim et al., 2015). More significantly, there is evidence that high BP presents earlier among Blacks than among Whites (Weber et al., 2014). Blacks are at greater risk of developing complications (like CVD) from high BP because of its high prevalence among them, and this increases the cost of rehabilitation and the burden of the disease among them (Go et al., 2014). High BP is also the leading cause of death among Black men in the United States, decreasing their longevity (Yoon et al., 2015). Finally, Schneider (2015) confirmed that hypertension is the most modifiable risk factor among the factors that contribute to the high mortality among Blacks.

The question of poor BP control among Black men piqued my interest, and I staged an inquiry to determine whether prescription medication is a better means of BP among young Black men when compared with lifestyle modification. The focus of the inquiry was on determining if there is a statistically significant relationship between BP control (the dependent variable) and prescription medication and lifestyle modification (main independent variables). Age, low SES, and health disparities were controlled during the analysis.

Key Findings

With statistical significance set at $p = .05$, the results showed that there is only one variable that has a significant relationship with the outcome variable. Prescription medication in the bivariate regression was significantly related at $p = 0.014$ and at $p = 0.009$ in the multiple linear regression analysis. No other variable had a statistically significant effect on the outcome of BP control. Especially multiple regression results revealed that individuals taking prescription medication significantly demonstrated a decrease in their systolic BP by about 4 mmHg (B = -4.327), compared to those who did not take medication. The model, however, proved not to be a good predictor of the outcome, accounting for only 4.4% of the variance in the result ($R^2= .044$).

Interpretation of the Results

The findings in this study showed a significant relationship between prescription medication and the control of systolic BP. The medication had no significant effect on diastolic BP ($p = 0.996$), and when compared with lifestyle modification, prescription medication had a weaker relationship with diastolic BP control as noted with eating habits ($p = 0.175$) and weight loss ($p = 0.109$). Those modifying their eating habits experienced a decrease in their diastolic BP by almost 5 mmHg (B=4.6) while those who lost weight saw a decrease of 2 mmHg in their diastolic BP. However, this decrease was not statistically significant. These findings reinforce the importance of prescription medication in the treatment of high BP among young Black men of low SES living in the United States (Sampson et al., 2014).

The results of this study are consistent with study findings in the literature. It has been reported that there are racial disparities in the prevalence and burden of hypertension among Blacks living in the Untied States, with hypertension being identified much earlier but being treated later than those of other races (Whites and Hispanics; Go et al., 2014; Sampson et al., 2014;; Weber et al., 2014; Yoon et al., 2015). Other researchers stated that prescription medication is the most effective approach in the treatment of hypertension (James et al., 2014). However, Weber et al. (2014) did recommend the implementation of lifestyle modification for those diagnosed with Stage 1 hypertension (when the staging method of classification is used) for a period of 6 to 12 months and then be reassessed. Further evidence indicates that the reduction of salt in the diet can have direct positive effect on BP control. This was reported by Savoca et al. (2011) who was the first to report on the effect of diet on BP control among young Black men. Campbell et al. (2015) corroborated those finding, reporting that increase in dietary sodium accounted for 5.6% of premature deaths among Blacks.

Lifestyle modification, a method of BP control suggested by Weber et al. (2014) can be effective if the individual is diagnosed early, has no evidence of cardiovascular complications, and is consistent with the modification measures for 6 to 12 months. The evidence presented in this dataset indicate that the only $n = 27$ individuals made attempts to change their eating habits, while $n = 60$ attempted to lose weight. The best lifestyle modification was in smoking cessation ($n = 202$), which was consistent for an average of 19 months. The overall inconsistent method of implementation of the lifestyle modification measures may explain the insignificant outcome. For most of the

participants, these modification measures were optional, and they did not adhere to all of the measures. Sampson et al. (2014) noted that prescription medication is more targeted and administered according to the diagnostic stage of the individual. The medication has a rapid onset, and its effect is noted quicker that any lifestyle modification intervention, which may not become evident for 3 to 6 months. Finally, because of the low SES of the men in the sample, there is a greater tendency for them to eat the foods that are of low cost and readily available (these foods are often high in sodium and fats) and are less likely to participate in modification measures because of the cost associated with them.

Further, the notable effect of prescription medication of lowering only systolic BP may be attributed to the use of diuretics and calcium channel blockers among blacks. The eight Joint National Committee report recommended that hypertension among Blacks be treated with calcium channel blockers and thiazide diuretics, adding that there is no evidence that the use of angiotensin converting enzymes inhibitors improves the outcome among them (as cited in Janes et al., 2014). Since diuretics decreases the hydrostatic pressure in the circulatory system, the change in the systolic blood pressure would be seen first (Weber et al., 2014).

Interpretation Based on the HBM

Underpinning the HBM is the cognitive constructs of self-efficacy that was described by Schneider (2014) as the extent of control that individuals exert over the circumstances that govern their lives. The degree of self-efficacy is directly related to the level of sensitization that individuals develop towards a potential health threat. Using this measure, the decreased response of Black men to take measures to control their BP can

be explained by the disparities they face and the poor coping mechanisms they employ in the face of their life's circumstances. This was clarified by Sims et al. (2015) who reported that discrimination and racial profiling account for decrease in health care coverage among Black men in the United States. In addition, Allen (2014) explained that the stressors discrimination and low SES have contributed to Black men participating in more high-risk behaviors (smoking, excessive alcohol use, recreational drug use, and eating fast foods) than men of other races. Finally, the reported decreased sensitivity regarding the danger of hypertension and the burden of the disease among Blacks have resulted in the declining level of screening and a reluctance among Black men to follow-up with their health care provider for BP control measures (Twum-Asante, 2015).

Study Limitations

Some limitations were encountered while conducting this study. Although the dataset was discretely selected, the data presented the lack of other factors that may significantly affect the outcome variable. This became more obvious when the analysis was completed. The multiple regression model used was not a satisfactory predictor of the outcome, accounting for only 4.4% of the variance in the result ($R^2 = .044$). The missing responses for some of the variables and the small sample sizes for the variables of lifestyle modification rendered the model inadequate for making generalization about the population. While the size of the total sample was adequate to conduct the statistical analysis, generalization of the results to similar populations should be done with caution.

Finally, although lifestyle modification is a recommended treatment measure for Stage 1 hypertension (Weber et al., 2014), this treatment must be directed and monitored

by credentialed clinicians and the outcome tracked to determine its effectiveness (Ameling et al., 2014). The timeline of 6 months should be adhered to before assessing effectiveness. These measures were not applied to the participants in this study, and thus the validity of the life style modification factors becomes questionable.

Recommendations for Future Research and Practice

The intent of this investigation was to determine if there is an association between prescription medication and the control of blood pressure among black men age 16-45 years, and to compare that association with that of lifestyle modification and blood pressure control in the same sample. In both instances adjusting for age, low SES, and health care disparities were done. The resultant statistically significant relationship between prescription medication and the control of systolic blood pressure among black men, provides support for this method of treatment as a recommended form of blood pressure control measure in this population group. However, repeating this study with a recruited sample under experimental or quasi-experimental conditions, using prescription medication and lifestyle modification as the prescribed treatments will be valuable to this population. Additionally, a future research can include more factors/co-variates in the analysis, such as physical activity, duration and frequency of life style modifications over time, in order to build the best possible model to predict the outcome variable.

It is clear from the literature that there is a low level of awareness among young black men regarding the importance of blood pressure control to their overall wellbeing (Nwankwo et al., 2013, Yoon et al., 2015, and Hicken et al., 2014). Raising the level of awareness and providing non-drug therapeutic options to those that meet the criteria will

help to achieve the Healthy People 2020 goal of 65% control of blood pressure among adults with hypertension in America. This can be achieved by conducting additional studies to address this health concern.

Implications for Social Change

Hicken et al. (2014) published some compelling facts that identified the significance of hypertension as a potent disease among blacks. These facts include a prevalence of hypertension of 40% among blacks (compared to 30% among whites), mortality rate of 50 per 100,000 among black men (15 per 100,000 among whites) and a cost of $400 million in out of pocket treatment cost. Twum-Asante (2015) stated further that for every 10% increase in the control of blood pressure that is achieved across the population of adult hypertensive individuals, 14,000 deaths would be avoided. This puts the control of blood pressure among young black men (the most vulnerable group of sufferers) as a top priority if the mortality trajectory among the black population is to experience a change.

To implement the increase in awareness about hypertension among young black men, I am using my professional and social medium to educate individuals of this target group. As a registered nurse I can screen for hypertension and gather relevant data regarding the individual lifestyle of those that I screen. Sharing the information that I gleaned through this research can help them to become more aware of this deadly disease. I will also use my social media platforms (Facebook, blogs, Linked-in, and You Tube) to release information and obtain feedback related to issues of blood pressure control among black men. Partnering with faith-based organizations is also on my radar. I

am affiliated with a church in West Atlanta that is a predominantly black congregation. I am scheduling a lecture series with them to help raise awareness about hypertension among them. The final frontier is getting the message to students at historically black colleges and universities (HBCU). Here is where a significant segment of the black population is educated. I anticipate the penetration of this community would come with challenges, however I am proceeding with a proposal to attempt to have hypertensive awareness become an integral part of the education of college men at HBCUs.

The goal is to increase the awareness of black men to the ills of hypertension, and to encourage screening and early treatment of this disease among them, with the hope that they would achieve control of their blood pressure while young. To achieve this, I must consider Schneider's concern of self-efficacy as a confounder in the sensitivity of black men to the potency of hypertension (Schneider, 2014). If black men are to understand and appreciate the potential threat of hypertension among them, I must be sensitive to their life's issues and how they prioritize them. Working with black men to achieve blood pressure control must be in tandem with the other problems that they are challenged by.

Conclusion

The reported disparity in the burden of diseases carried by blacks in America and around the world (Lim et al., 2015 and Campbell et al., 2015), coupled with the high prevalence of CVD among them, triggered an interest in the factors that can best modify these outcomes. It was from an exhaustive search of the literature that blood pressure control surfaced as the most modifiable risk factor in the reduction of CVD (Weber et al.,

2014). Passionately pursuing the investigation, I developed an interest in determining whether prescription medication or lifestyle adjustment had a stronger association with blood pressure control. The RQs guided the research design and I conducted a statistical analysis within a quantitative design to find answers to two research questions. The first RQ investigated the association between prescription medication and blood pressure control and based on the model the null hypothesis (H_o) was rejected. The second RQ examined the associations between both prescription medication and lifestyle adjustment on the control of blood pressure to determine which of the two can better predict the outcome. Again, the results indicated that prescription medication had a more significant relationship with systolic blood pressure control than lifestyle adjustment in this sample.

In both analyses the variables age, low SES, and health care disparities were the control variables. The analysis of choice was a regression and both a bivariate regression and multiple linear regressions were conducted and all the assumptions were met. The results were explained, and the limitations of the study identified, then the implications explored. Prescription medication was the only variable that had a significant effect on blood pressure (systolic) control. This study added an important perspective to the literature regarding the need to provide options of treatment outside of the traditional prescription medication method. Although there is evidence that lifestyle modifications can facilitate blood pressure control, the therapeutic measures and clinical guidance of these measures need to be explored. I am interested in participating in any further studies that would explore this option and in leading an investigation in its therapeutic outcome. Since prescription medication was the only variable with a significant statistical

relationship to blood pressure control, this the only recommended treatment measure for black men emerging form this study. I will continue to explore the efficacy of lifestyle modification closely to determine if this is a viable treatment option for young Black men of low SES in America. Until then, medication compliance must be adhered to by members of this high-risk group.

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