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Risk Factors for Hypertension among African-born Immigrants in the United States

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Walden University
2016

Abstract

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MPH, Walden University, 2012

BS, Rhode Island College, 2003

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Essential hypertension (HTN) has been and continues to be a serious public health problem across the globe, particularly among Black races, with an estimated morbidity rate of over 1 billion people and an estimated mortality rate of 9.4 million people worldwide. Essential HTN can lead to a host of chronic diseases including cardiovascular disease (CVD), stroke, myocardial infarction, brain damage, kidney failure, and retinopathy. The main purpose of this quantitative, descriptive, nonexperimental study was to investigate the association of physical inactivity, length of stay in the United States, immigrants' health status, and food security as risk indicators in the development of essential HTN among African-born immigrants after accounting for age and education. The conceptual framework for this study was the socioecological model of health (SEMH). A secondary dataset from the National Health Interview Survey (NHIS), for the year 2014, was used for this study, including data for Africa-born immigrants over the age of 40 who participated in the survey. Logistic regression was used for statistical analyses. The results of the study revealed that length of stay or years in spent in the United States have a significant association with the development of essential HTN. Results from this study could be used to promote positive social change by identifying and assessing challenges in implementing intervention programs meant to assist in controlling essential HTN among African-born immigrants and Black populations who are disproportionately affected by this condition.

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Dedication

My wife, Philomena, where can I start or what can I say? How many words of "Thanks" can I possibly express to you for your understanding, words of encouragement, or simply being there at any given day or night during the course of my dissertation journey. Many times she wondered why I was not upstairs; many times she goes to the basement looking for me even at the dawn of the morning. My heart and soul are yours forever. My boys, Achile A. Ojih and Amana J. Ojih, saw my ordeal differently, they said Dad is crazy…studying till 3:00 AM. The two oldest, Sampson O. Ojih and David E. Ojih, said, that's all he ever does…study! study!! My little grandson, Christopher Enebi Ojih, I challenged that before he turns 5 years I will graduate, well, he was 6 years before I graduated. How about the newest addition to the family, our granddaughter, the only princess in the family, Ms. Aidalynn Adigo Ojih, she brings lots of joy and love to the family. God bless them all!!

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Chapter 1: Introduction to the Study

Essential hypertension (HTN) is a serious chronic health disease that poses significant health problems for public health practitioners and the individuals who are at risk for the disease. Normal HTN for systolic blood pressure is 120 mmHg and diastolic blood pressure is equal to 80 mmHg (citation). At risk for prehypertension systolic is 120 –140 mmHg and diastolic at 80–90 mmHg American Heart Association (AHA, 2013 and CDC, 2014b). Essential HTN affects approximately 600 million people worldwide, and about 80 million people in the United States, the number is still growing (AHA, 2014b; Daniel & Rotimi, 2003; Read & Emerson, 2005). Black adult populations suffer from essential HTN and its complications including cardiovascular disease (CVD), stroke, and kidney disease in higher proportions than other ethnicities including, non-Hispanic Whites, Hispanics, Asians, and other racial/ethnic group combinations found in the United States (Adeyemo et al., 2009). A plethora of studies have examined essential HTN across race/ethnicities, but rarely investigated or included African immigrant populations in the United States.

The main purpose of this quantitative, descriptive, nonexperimental study was to investigate the association of physical inactivity, length of stay in the United States, immigrants' health status, and food security as risk indicators in the development of essential HTN among African-born immigrants. Study results have suggested that U.S. immigrants with origins in African countries have low incidences of this condition, but systematically develop essential HTN with age progression (Luke et al., 2005). It remains the most common risk factor for CVD, strokes, and myocardial infarction (MI) among

the Black population in the United States and in third world countries (Coulon, Wilson, & Egan, 2013). The importance of addressing essential HTN as a chronic disease is well documented among the native Black population, unfortunately, that is not the case with African-born immigrants living in the United States.

Gaps in the literature exist because some topics might not have been explored among a particular group or community (Creswell, 2009). The majority of African-born immigrants still face challenges related to essential HTN; there are limited data on the incidences and the causes among these populations, primarily because African Americans, African-born immigrants, and other resident Blacks are clustered into one racial identifier and immigration history is neither captured nor analyzed (Coulon et al., 2013). There are growing numbers of research studies suggesting that causative factors such as socioeconomic status (SES), physical inactivity, length of stay, and individual lifestyle could play an important role in developing essential HTN disease among the African-born immigrant population; however, little is known about the risk factors for essential HTN among African-born immigrants, equally, the impact of length of stay in the United States has not been adequately researched. Consequently, it is difficult to examine the health needs of African-born immigrants both at the local and federal level due to lack of exposure to the social research environment. This lack of exposure could be related to the contextual heterogeneity issues to assess their health outcomes. The issue is that since African-born immigrants are often clustered into one racial identity, *African American*; there are limited data on their health and it is difficult for the state and federal government to assess their health needs (Coulon et al., 2013, Venters & Gany,

2011). The federal health agencies across the 50 states only focus on tuberculosis and HIV among the arriving African-born immigrants; little attention is paid to research the ailing diseases such as HTN, CVD, strokes, heart attack, diabetes, and kidney disease (Coulon et al., 2013, Venters & Gany, 2011). Therefore, this study may help promote a community based health approach to be sensitive to the needs of African-born immigrants' health profiles, epidemiologic research, and health service delivery to the evolving populations (Addo et al., 2001; Coulon et al., 2013; Venters & Gany, 2011).

Although native Blacks and other resident Black populations are more vulnerable to essential HTN and could even have different causative factors to certain degrees, the same confounding causative factors such as obesity, body mass index (BMI), excessive use of sodium, alcohol consumptions, and poor diets are increasingly suspected as risk indicators (Addo et al., 2001; Coulon et al., 2013; Venters & Gany, 2011). Biologic risk factors or genetic predisposition for essential HTN is a permissive assumption rather than determinative (Opie & Seedat, 2005). Modifiable predicators are associated with the high rate of the condition in African-born immigrants in the United States. Engaging in some levels of physical activity on a regular basis could help improve CVD fitness, and thereby, help control blood pressure (BP); a series of studies suggested, although not conclusively, that acculturation is closely associated with socioeconomic variables such as education, health literacy, poverty, and income (Venters & Gany (2011). However, no studies have directly linked changes in food security, physical inactivity, and length of stay in the hosting country as a direct cause for essential HTN among African-born immigrants in the U.S. (Coulon et al., 2013).

This research may provide evidence to support the need for intervention programs, assist individual behavior changes, promote physical activity, and build an environment that supports healthy communities among African-born immigrants as well as the native Black populations in the U.S. The potential positive social implications of my findings, based on an evaluation of risk among the African-born immigrant population, could lead to improved surveillance and screening, a clearer understanding of the risk profiles associated with this group of immigrants, and eventually to health policy changes designed to decrease risks in this group of individuals as well as others. Among Black populations, the condition is common and poses a serious health burden due to its associated health consequences. The disproportionate morbidity of essential HTN among Blacks is well documented; however, Blacks are less likely than Whites and other race/ethnicities to have their HTN condition under control (Coulon et al., 2013). The challenges now are finding causes of essential HTN among the group of African-born immigrants and to identify strategies to control the risk factors, and help modify individual behaviors leading to the development of the condition.

In this chapter, I discussed the background of essential HTN and Black populations and the problems associated with a lack of information of the differing risk profiles among Blacks, native and African-born immigrants, residing in the United States. I presented the purpose of my proposed research, and the research questions and associated hypotheses I propose to address. I discussed the conceptual framework guiding this research as well as an overview of the nature of my study. Assumptions, potential limitations, and delimiters of my study population were also presented. Finally, I

discussed the significance of this proposed research and the potential for positive social change.

Background of the Study

Among Blacks living in the United States, essential HTN is 60% more prevalent than among Whites (AHA, 2013). According to the AHA (2011) and based on an established health records of 18,865 adults (18 to 85 years old), Blacks who have been diagnosed with prehypertension have a 35% greater risk of developing essential HTN than Whites. High blood pressure (HBP) was listed as a primary cause of death in about 348,102 of the more than 2.4 million in the United States in 2009 (AHA, 2011). The AHA (2011) suggested that comprehensive assessments should be made to understand why Black populations develop the condition more frequently and rapidly than other races. There are theoretical suggestions that attitudes and beliefs are significant predictors of individual behavior and evidence that unhealthy behaviors are ground causes for essential HTN condition (Barnett, Anderson, Blosnich, Halverson, & Novak, 2005, Glanz, Rimer, & Lewis, 2002; Warren-Findlow & Seymour, 2011). There is evidence that African-born immigrants and Black populations, in general, have a much lower occurrence for participating in self-care practices necessary to reduce or prevent essential HTN (AHA, 2011). This pattern was related to decreased access to health resources for essential HTN, partly due to low SES (Venters & Gany, 2011). Researchers have suggested that adequate information is needed to broaden all categories of chronic disease, health attitudes, and health access to better promote the health of African immigrants.

Approximately, 42% of Black men and more than 45% of Black women aged 20 and older have the condition (AHA, 2011). According to the AHA (2011), heart disease and stroke statistics continue to be at an epic proportion in African American populations. African-born immigrant populations living in the United States are not exempted; they have limited access to health information and disease surveillance systems, have low health literacy, and are less likely to participate in HTN prescreening (AHA, 2011). These are the contributing factors to the development of HTN disease. Other significant contributors were linked to personal lifestyle choices including poor diets and lack of commitment to physical activity (CDC, 2014b). While individuals are responsible for instituting and maintaining lifestyle changes necessary to reduce HTN risk and improve overall health, individual behavior was often determined by social environment, it is critical for policy makers to assess the relationship between health behavior and those diagnosed with essential HTN (Glanz, 2002).

The global burden of essential HTN by the CDC's estimation is currently at 40% of the world population. According to Slade and Kim (2014), the World Health Organization (WHO) classified HTN as a single leading risk factor for mortality worldwide. Addo, Smeeth, and Leaon (2007) suggested HTN mortality was estimated at 7.6 million, or 13.5%, of adult premature deaths and had contributed to 92 million disability-adjusted life years (DALYs) worldwide in 2001. The mortality rate is about one billion people worldwide, the equivalent of four adults per day (International Society of Hypertension, 2014).

A longitudinal study conducted from 2003 to 2006 on national representative samples of Black Americans (n = 5,022) (Chae, Nuru-Jeter, Lincoln, & Jacob Arriola, 2012) showed that the participants experienced disproportionately worse cardiovascular outcomes from HTN, atherosclerosis, myocardial infarction (MI), and cerebrovascular incidents compared with other racial groups in the United States. Chae et al. (2012) and Venters and Gany (2011) explained that Blacks were more likely to experience faster progression of diseases and die prematurely than other racial groups. Data obtained from the Chae et al. (2012) study indicated that the prevalence of HTN had increased during the course of their study from approximately 30.6% in Black men and 31.0% in Black women to 42.2% and 44.1% of Black women respectively. This indicated that essential HTN and cardiovascular diseases are significant public health concern among Black American populations Chae et al., 2012).

One reason essential HTN is prevalent among Black races could be due to increased poverty levels that stem from a low level of education and SES, poor housing or living poor diets, excessive consumption of sodium (salt), and alcohol (Venters & Gany, 2011). It is possible to control the modifiable environmental factors by implementing effective systems to improve health care facilities and surveillance systems (Daniel & Rotimi, 2003). Other causes are linked to an absence of fruits and vegetables, urbanization, limited access to healthcare, exposure to toxic surroundings, age progression, and genetic disposition (Warren-Findlow & Seymour., 2011). Non, Gravlee, and Mulligan (2012) opined that the rapid progression of essential HTN in Black populations could also be associated with unmeasured confounders such as compound

societal issues and social inequality in the community. Non et al. (2012) further suggested that it is important to understand that unmeasured confounders such as those associated with socioecological theories that address neighborhood needs and social injustices are significant in the development of the HTN condition. Non et al. (2012) stated that a series of studies identified the role and importance of SES, social injustice, and racial inequalities as causes for hypertension. These researchers linked SES, psychosocial stressors, and neighborhood environment as causes of the condition and suggested that other studies have begun to identify relevant genetic variants, renin–angiotensin–aldosterone axis, and the adrenergic system (Non et al., 2012).

Bodenheimer, Chen, and Bennett (2009) found that in 2005, more than 133 million American population live with at least, one form of chronic diseases; 47% do not live with one predominant chronic health condition but more than one such as diabetes, depression, and obesity. The study suggested that the trend is expected to increase to 155 million people by the year 2020, the reason being, and the aging population (Bodenheimer et al., 2009). According to Bodenheimer et al. (2009) in 1996, 53% of patients with HTN and 60% with diabetes had four or more comorbidities diagnosed within a year.

In this study, I investigated the risk factors for developing essential HTN among African-born immigrants. Read and Emerson (2005) found that although there were several longitudinal studies that include Blacks in general, for example, the Framingham HTN studies, but little is known about the health of African immigrants. This study was

needed to bridge the gap in knowledge among the under researched and underrepresented African-born immigrant populations and their health needs in the United States.

Problem Statement

Most immigrants of African descent arrive in the United States with better health than native Blacks (Hamilton & Hummer, 2011; Read & Emerson, 2005). Read and Emerson (2005) and Venters & Gany (2011) supported this claim through their research of the general health of immigrants and observed that regardless of their good health before arriving in the United States, longer durations of residency in the United States correlate to worsening the health of the immigrants.

Black adult populations suffer HTN conditions in higher proportion than any other races including, non-Hispanic Whites, Hispanics, Asians, and other racial/ethnic group combinations found in the United States (Venters & Gany, 2011). In comparison with other races/ethnicities, African Americans suffer disproportionately from the complications of HTN including CVD, strokes, and kidney disease (Adeyemo et al., 2009). HTN is one of the most common risk factors for CVD; it has been well documented and identified as the leading cause of CVD and MI among Black populations in the United States (Adeyemo et al., 2009; CDC, 2014b; Coulon et al., 2013; Read et al., 2005). HTN related mortality rates were estimated at 7.6 million adults (13.5%) and HTN contributed to 92 million DALYs worldwide in 2001 (Addo et al., 2007). The AHA (2005) estimated yearly costs associated with HTN in the United States are more than $60 billion. The AHA (2005) also suggested the need to continue to invest more

resources in the prevention and early intervention of HTN, CVD, strokes, and other chronic diseases to reduce the current burden of those diseases on individuals and society.

HTN research in the Black population is frequently focused on native-born Black populations. Research investigations of chronic diseases are generalizable and disseminated as applying to African Americans. The lack of information about African-born immigrants from health research literature is a good example of racial or ethnical mismatches between racial self-identity and self-selected races. Despite sharing the same racial identity, physical resemblances, geographic regions, and social-economic status, there are differences between African Americans, British Blacks, Black Indies, Caribbean Blacks, other Blacks, and Black immigrants; however, these groups of Black immigrants have not been found to be captured in health research studies. Addo et al,2007; AHA, 2011; Coulon et al., 2013; Read et al., 2005, and Venters & Gany, 2011) emphasized that there have been no comprehensive studies and assessments of the evidence concerning essential HTN in African-born immigrants and maintained that such evidence is not available. The main purpose of this quantitative, descriptive, nonexperimental study was to investigate the association of physical inactivity, length of stay in the United States, immigrants' health status, and food security as risk indicators in the development of essential HTN among African-born immigrants. (Hamilton & Hummer, 2011 and Read et al. (2005) contend that these groups of immigrants enjoyed better health before migrating to the United States.

A meaningful gap exists in the literature because African immigrants are either excluded from health research studies or clustered into one racial identifier, African

Americans (AHA, 2011). AHA (2011) explained that the common health needs of this population are often overlooked because African immigrants are not studied as a unique group. The results of this study could be used to tailor interventions and policies to African-born immigrants and their unique needs.

Purpose of the Study

The main purpose of this quantitative, descriptive, nonexperimental study was to investigate the association of physical inactivity, length of stay in the United States, immigrants' health status, and food security as risk indicators in the development of essential HTN among African-born immigrants. Data for African-born immigrants over the age 40 years is imperative because the immigrants would have acculturated and adjusted to the host country lifestyles. The dependent variable for this study is development of essential HTN. The independent variables are length of stay in the United States, physical inactivity, health status, and food security. Age and education are moderating variables for this study because they can impact the relationship between the dependent variable and the independent variables.

Research Questions and Hypotheses

Essential HTN among African-born immigrants is the focus of this study and is guided by the following research questions and hypotheses:

RQ1: Is there an association between the length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education?

$H_0$1: There is no association between length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education.

H_a1: There is an association between length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education.

RQ2: Is there an association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education?

$H_0$2: There is no association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education.

H_a2: There is an association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education.

RQ3: Is there an association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education?

$H_0$3: There is no association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education.

H_a3: There is an association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education.

RQ4: Is there an association between physical inactivity and development of essential HTN among African-born immigrants in the United States when accounting for age and education?

$H_0 4$: There is no association between physical inactivity and development of essential HTN among African-born immigrants in the United States when accounting for age and education.

$H_a 4$: There is an association between physical inactivity and development of essential HTN among African-born immigrants in the United States when accounting for age and education.

Conceptual Framework

The conceptual framework that guided this study was the socioecological models of health (SEMH). Bronfenbrenner first introduced this ecological framework for human development in the 1970s. A decade later Bronfenbrenner's focus was on understanding ecological influence on human behaviors (Glanz et al., 2002). Bronfenbrenner postulated that in order to understand human development and upbringing, the entire ecological system in which the individual was born, lives, and grows must be taken into account. Bronfenbrenner described three levels: microsystem as interpersonal interactions; mesosystem as interactions among close associates and social settings; and ecosystem as a larger social system (Glanz et al., 2002). In 1988, McLeroy, Bibeau, Steckler, and

Glanz proposed an ecological model of health behavior; they suggested there are multilevel of influence that provide road maps for public health practitioners and researchers alike to assess and intervene at each level of influence (Glanz et al., 2002). Models and frameworks alone cannot create a healthy individual or community, but social settings, economic opportunities, and ecological systems are strong determinants of health. SEMH posits that a series of factors influence behavior either directly or indirectly through individual perceptions (Glanz et al., 2002). SEMH looks at multilevel of cultural nature and influences on specific health behaviors (Glanz et al., 2002). The role of the socioecological model in social science research is to propose and identify multiple health education and intervention structures for individual and at a community level to focus on reducing environmental causes of diseases, and provide implementation strategies to reduce the morbidity (Glanz et al., 2002; McLeroy, Bibeau, & Steckler, 1988).

The five conceptual levels of the SEMH model that could influence behavior changes used for this study are: (a) intrapersonal such as individual habits, self-efficacy, knowledge, and skills, (b) interpersonal which encompasses peers, family tradition, culture, and social supports, (c) organizational level which includes formal and informal structures, barriers that impede behavior changes, (d) community level encompasses normal standards viewed as formal or informal structures, networks among groups, and individual, and (e) public policies and regulations both at states and federal levels, strategies for disease prevention, control and treatment (Glanz et al., 2002; McKenzie, Neiger, & Thackeray, 2009; McLeroy et al., 1988).

SEMH explores complex interactions between individuals, relationships, community, cultural norms, geographical regions, and societal factors (Glanz et al., 2002). Understanding the differences between African-born immigrants and native born Blacks is needed to ensure that interventions used among immigrant populations fit their norms and no other ethnicities' risk profiles. The model conceptualizes health-related issues and focuses on multiple risk factors that might affect health and the development of HTN, such as length of stay in the United States and food security (Glanz et al., 2002; McLeroy et al 1988). The use of the SEMH for this study could assist my findings and others to understand the range of factors that cause people to be vulnerable to HTN (Barnett et al.2005). SEMH can be used to predict the likelihood of a person taking recommended preventative health action and to understand a person's motivation and decision-making about seeking health services. Environment could then be predicted to influence individual behavior (Glanz, et al., 2002).

The SEMH used as a framework for this study is shown in Figure 1. The SEMH model purports that health related behaviors are part of a larger health problems facing individuals with chronic diseases. Change of health behavior such as reducing salt intake, engagement in physical activity, and improvement of SES could reduce the risk of CVD and HTN (Barnett et al., 2005; Glanz et al., 2002). The five levels of the SEMH depicted in figure 1 below can be integrated to advance and enhance individual personal behavior.

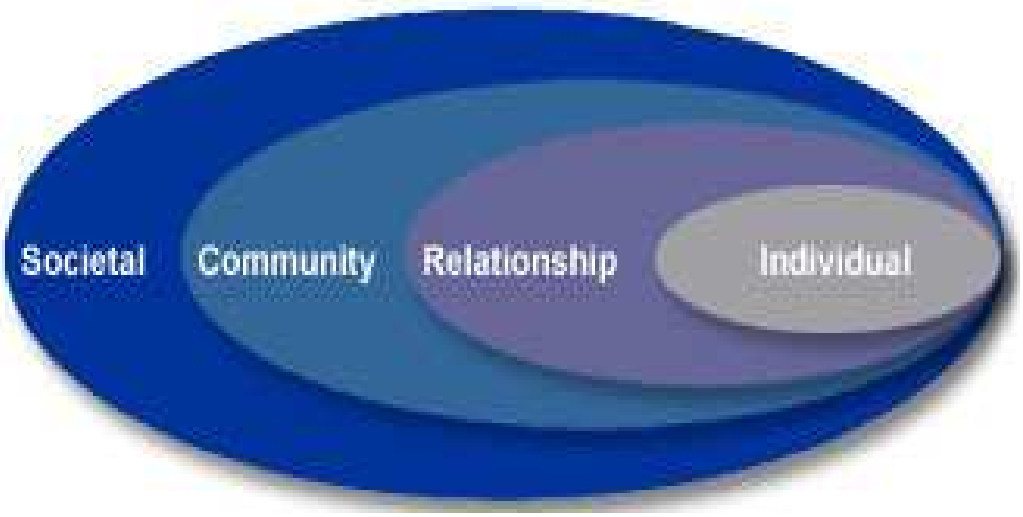

Figure 1. Socio-Ecological Model of Health (Retrieved from CDC, 2015, published for public access, no permission required).

I used this model to explore the differences in risks and behavior based factor on immigrant status with the goal of developing interventions appropriate for African-born immigrants. It was necessary to assess and evaluate all levels which include individual behavior, relationship, community, and societal (Glanz et al., 2002; McLeroy et al., 1988). The model also allowed me to establish a series of leading factors that systematically put people at risk for HTN development (CDC, 2015). The overlapping rings in the model represent how all factors complement each other at various levels to influence and prevent factors that lead to the development of HTN. This approach to my research and conclusions will lead paths to develop and sustain prevention efforts over time (CDC, 2015).

Nature of Study

The nature of the study was quantitative, descriptive, and nonexperimental using secondary data that was collected for the National Health Interview Survey (NHIS) conducted by the CDC for the year 2014. Data was collected using a cross-sectional survey instrument and is purely quantitative in nature. A quantitative method design was feasible for this study because large data sets are available; results are aggregated for analysis and data are in numeric forms. NHIS questionnaires were structured and simplified for the respondents; questionnaires were based on a Likert scale analysis and coded as 0 = Never, 1 = Yes, 2 = No, 7 = Refusal, and 9 = Don't know. Statistical measures and analyses are representation of actual numbers (Creswell, 2009). The independent variables are length of stay, level of physical inactivity, health status, and food security. The dependent variable for this study is development of essential HTN. I used secondary data; the data were analyzed using binary logistic regression analysis to predict the associations between the dependent and independent variables. The rationale for using binary logistic regression analysis for this study was (a) the study is quantitative in nature and is based on single categorical dependent variable with possible two outcomes, (b) binary logistic regression permit comparisons of categorical and continuous independent variables, and (c) binary logistic regression can be performed to estimate for one or more metric interval or ratio scale measurements. Moderating variables (MV) are important whenever a researcher wants to assess whether two variables have the same relation across groups (MacKinnon, 2011). Age is a continuous MV predicted to have a tight relationship with essential HTN. For example, the morbidity

between men and women ages *35-44 (25.1% and 19.0%); 45-54 (37.1% and 35.2%), 55-64 (54.0% and 53.3%), and ages 65-74 (64.0% and 69.3%)* respectively (CDC, 2014b). Education is also predicted to have tight correlations to essential HTN, in that, low level of education leads to low income, and stressful lifestyles. Persistent stressful lifestyles make it difficult to maintain preventive self-care; this can lead to the development of chronic diseases, including essential HTN and CDV.(Mackinnon, 2011).

Definition of Terms

Acculturation. Is a process in which members of one ethnic group adopt or assimilate other cultures, beliefs, and behaviors of another group such as, languages, attitudes, values, social norms, and loss of (Steffen et al., 2006). Acculturation is a common trend among immigrant populations (National Heart, Lung, and Blood Institute [NHLBI], 2010; Steffen et al., 2006).

African-born immigrants: Natives of Africa that originated from the nations in African continent (CDC, 2014b).

Essential HTN: Essential hypertension is the form of hypertension that has no identifiable cause (CDC, 2014).

Food Security: Availability or large enough supply of nutritious quality foods for a long period of time, no limitation, and readily available (CDC, 2014b).

Assumptions

This study was limited to the use of secondary datasets. In terms of my source of data from an established national database, I assumed the data had been cleaned and

accurately entered without errors. I assumed that country of birth had been accurately identified by the participants. There was presumption that participants honestly answered all the questions concerning their health as they are critical components to the study's authenticity, reliability, and validity.

Scope and Delimitations

This study was intended to be limited to African-born immigrants in the United States.Generalizability of the results of this study cannot be extended to women, Black men from other continents, and other ethnic and racial populations. Consideration to use the health belief model (HBM) as the conceptual framework for this study was assessed. However, the six constructs of the HBM do not predicate a good fit for this quantitative study. The models tend to de-emphasize the knowledge component as a motivator for action, and judgmental connotation of behavior questions that were likely to be introduced without valid responses (Glanz et al., 2002); therefore, HBM was not used. African-born immigrants are under researched and understudied for any specific type of chronic diseases, besides their general health; my study was specific to investigating risk factors for essential HTN among this group of immigrants who migrated to the United States. My study was further limited to adult males over 40 years who participated in the National Health Survey conducted by the CDC in the year 2014. Males 39 years or younger were excluded.

Limitations

There are several limitations associated with the use of secondary data including limitations based on the sampling scheme. While random digit dialing was used to collect

the initial data, there remains a potential for self-selection bias. Additional limitations, in the form of response bias, can also occur in any study reliant on information provided by participants during data collection (Creswell, 2009). The possibility for recall bias could occur due to individual responses to the NHIS questioning techniques, questionnaire designs, and the mental competency of respondents to recall the information provided during the survey. The impacts of recall bias could lead to either overestimate or underestimate the outcomes of this study. Undocumented immigrant's reluctance to participate for fear of repatriation. Finally, I critically evaluated the data and ensure the variables used are consistent with my research topic. The questionnaires used by the NHIS during the interview were thoroughly examined to ensure they do not contain ambiguities.

Significance of the Study

The need to understand the health issues among the African-born immigrant population is substantial and is an area that has not been well researched. A few epidemiology studies primarily studied English language competences and diseases such as tuberculosis (TB) and human immunodeficiency virus (HIV) among African born immigrants on arrival into the United States, but have not looked into the effects of time spent in the United States (length of stay) and its association to HTN. In addition, immigrants are often exposed to risks that are similar to native-born Blacks in the United States. These include limited access to healthcare and health education, low SES, inadequate housing, racism, and exposure to toxic environments, (CDC, 2013; Read et al., 2005; Steffen et al., 2006). The existence of essential HTN is multifactorial that are

influenced by several causative factors such as poverty, poor diet, physical inactivity, low educational attainment, and unfavorable environment (Steffen et al., 2006). However, these factors appeared to differ based on immigration status (Adeyemo et al., 2009). The proposed research was intended to close the existing literature gap on the risk factors for HTN associated with African- born immigrants. The outcomes of this study could contribute to the body of knowledge for public health practitioners and the medical community who seek resources for use in designing interventions among African-born immigrant populations. Emerging findings from this study could have implications to encourage behavior modification, promote physical activity, and reduce the impact of effects acculturation among the group of immigrants being studied.

The study findings could also interest stakeholders such as the WHO, CDC, health institutions, and international health communities. Positive social change, based on my research, could come through collaboration and cooperation of health organizations within varying sovereign states. Given that essential HTN is asymptomatic, or a "silent killer," (CDC, 2010) it is not often detected and treated among the African-born immigrant populations as they are less likely to seek HTN screening or treatment from their primary healthcare provider (Doamekpor et al., 2015; Steffen et al., 2006; Venters & Gany, 2011). It is therefore imperative for health practitioners to encourage HTN screening especially, among those at high risk. In addition to reducing the incidence of essential HTN among this population, health practitioners should promote health programs aimed at decreasing the risks identified in this study.

There is a lack of distinction between Blacks who are African-born immigrants, Indies immigrants, and other residual Blacks living in United States in the extant literature related to HTN research. There is a need to increase the level of understanding of the risk factors for HTN in African-born immigrants to help fill a gap in the literature. Blood pressure awareness among these populations are limited; the importance of physical activity is underestimated, and the United States Department of Agriculture (USDA) recommended guidelines on daily serving of fruits and vegetables, guidelines were ignored (CDC, 2013). In addition, proper diet and healthy nutrition are not adequately emphasized to bring awareness to the targeted populations (CDC, 2013). The epidemiologic impacts on this population could be significant.

The findings of this study could contribute to positive social change by increasing the body of knowledge on individual behavior, particularly among African-born immigrants in relationship to HTN. An understanding of the risks for HTN specific to this population could provide insights into the types of interventions that can be used among this immigrant population including education about their health and HTN self-management practices including behavior modification of level of physical activity.

Summary

According to Martins, Agodoa, and Norris (2012), HTN is on the rise among Black populations; the overall health among African-born immigrants has decreased partly due to acculturation, deviation from norms and culture, and extended stay in the United States. In the United States alone, HTN affected approximately 65 million adults in 2005–2006 (Coulon et al., 2013). Coulon et al. (2013) noted that the high increase of

HTN morbidity was attributed to an aging population and rising obesity rates and concluded that while hypertension appeared burdensome among many American communities, it frequently occurred in selected race/ethnic groups, especially among Black populations.

Essential HTN has been associated with numerous lifestyle factors, such as a lack of physical activity, age progression, health behaviors, increased poverty level that stems from low level of education, food security, excessive consumption of salt, and improper diets. In the U.S. alone, HTN affected approximately 65 million adults in 2005–2006 (Agodoa et al., 2012; CDC, 2014; Egan et al., 2013). Martins et al. (2012) and Egan et al. (2013) noted that the rates of increase in essential HTN mortality could be attributed to an aging population and rising obesity rates. They concluded that while essential HTN appeared burdensome among many American communities, it frequently occurred in selected race/ethnic groups, especially Blacks (Egan et al., 2013; Martins et al., 2012). This trend is likely to continue if adequate preventive and treatments measures are not in place to reduce the morbidity rate (Egan et al., 2013; Martins et al., 2012). The social implications of this research lie in its ability to drive culturally appropriate interventions that can reinforce health behavior changes and a better living environment. (Egan et al., 2013; Martins et al., 2012).

In Chapter 2, I described my literature search strategy and reviewed pertinent literature on causes of essential HTN, the mortality, morbidity, and the disproportionate impacts it has on Blacks and African-born immigrant populations as examined by public health research experts. I discussed the health disparities, the roles of SES, physical

activity, extended resident in the United States among the immigrants, immigrants' health status, and food security using scholarly reviewed research studies. In addition, I evaluated the results of other researchers who have studied HTN causes and its associated health consequences. The conceptual framework that guided this study is presented and discussed.

Chapter 2: Literature Review

Introduction

HTN, commonly referred to as high blood pressure, is a serious medical condition which, if not properly managed, can lead to more serious cardiovascular conditions, chronic disease, and death (Slade & Kim, 2014). WHO (2014b) classified HTN as the single leading risk factor for mortality worldwide. It was well documented that HTN is common across race/ethnicities, but disproportionately affects the Black population more than any other races or ethnicities combined (Daniel & Rotimi, 2003; Read & Emerson, 2005). Peters, Aroian, and Flack (2006) reported that one in three Americans are hypertensive and further suggested that Black populations are the most vulnerable and have the highest rates of any ethic groups surveyed for several other disease. Essential HTN's prevalence among Blacks is 45.2% compared to 29.1% among Whites (Warren-Findlow et al., 2011). Black races in general, both native and immigrant Blacks, disproportionately suffer the burden of essential HTN and its health complications, which include strokes, CVD, heart attack, kidney failure, renal disease, brain damage and in some cases death related if not properly managed (Poston et al., 2001).

After a comparison to the plethora of research studies on native Black Americans, the absence of sufficient information on the epidemiology of essential HTN among Black immigrants in the United States becomes apparent (Read et al., 2005). A better understanding of the epidemiology among Black immigrants is needed. In addition, increased knowledge of the pathophysiology of essential HTN, awareness of the importance of early screenings and interventions, and emphasis on the importance of

adhering to drug regimens could result in decreased essential HTN morbidity among Black immigrants and the Black population as whole (Read et al., 2005). This study highlights not only the need and reason for future research on essential HTN among immigrant populations, but can also provide important health information that are not readily or currently available on the risk factors of essential HTN among African-born immigrants in the United States. The main purpose of this quantitative, descriptive, nonexperimental study was to investigate the association of physical inactivity, length of stay in the United States, immigrants' health status, and food security as risk indicators in the development of essential HTN among African-born immigrants.

In Chapter 1, I introduced the critical aspect of the condition among Black populations worldwide and in the United States. I discussed the background of the study, the nature, purpose, significant, statement of the problem, and implication for social change. In addition, I discussed the theoretical framework for the proposed study which, I detailed the context and the cultural phenomenon associated to essential HTN among Black populations. Finally, I acknowledged the assumptions, scope and delimitations and limitations of this study.

In Chapter 2, I explored the extant literature, examine external knowledge and theories, and synthesize evidence related to essential HTN in African-born immigrants in the United States. Specific search strategies search terms, pertinent databases, and studies were reviewed to determine how the constructs aligned with my study. In addition, past and current literature on essential HTN causation factors were presented to further elucidate the issue of essential HTN condition, not only on Black populations, or African-

born immigrants, but among other races/ethnicities, and to emphasize the global impacts of essential HTN facing public health practitioners and the main reasons why this study expect to bridge the gap in the existing literature.

Search Strategy

My literature search included reviewing pertinent literature that is available through the Walden University database including published dissertation works, health journal articles, and textbooks. Other sources include EBSCOHOST database collections, CINAHL collections, Cochrane Collection Publications, Academic Search Premier, Google-Scholar, National database, CDC data base, National Health Interview Survey (NHIS), Mass Media, WHO data base, ICPSR database, and PubMed database. During my data search, I used the following search terms: *HTN among Blacks OR African Americans; physical activity AND correlations with HTN; immigrants of African countries AND HTN AND United States; HTN and similarities between African immigrants and African Americans; socioeconomic status OR HTN OR immigrant population, acculturation and western influences as causes of HTN among immigrant populations?* Other terms used to explore my search were *socioecological model of health and HTN; association of SEMH and HTN; SEMH OR behavior OR HTN*. While, in general, my search was limited to recent materials from the past 5 years, seminal materials from prior to 2009 were also included. To further broaden the scope for this study, over 60 full text journals, peer reviewed articles published since 2009, that were related to HTN among Black populations were sorted and used for this study. Key concepts, topics, and ideas were carefully examined and those found to be appropriate for

the research topic were incorporated into this section of the study. Such terms were used to increase the number of possible responses from the search sources.

Conceptual Framework

The conceptual framework that informed this study was SEMH. The ecological model was introduced to public health in the 1970s, and was formalized as a theory a decade later (Glanz et al. 2002). Moos (1980) developed the social ecology of health related models and specified four categories: (a) natural environment as physical settings which includes geography and weather environmental buildings and urbanization; (b) organizational, which he referred to as workplaces, schools, and churches, each having the tendencies to influence behaviors; (c) human aggregate, which he described as sociodemographic or sociocultural characteristics; and (d) social climate which was described as social environment that influences support for particular behavioral choices, which could appropriate or inappropriate behaviors (Glanz et al., 2002).

SEMH provided a useful framework for researching the interplay of factors that can affect personal health. It provides a better understanding of factors that influence personal behaviors, that are attributed for the presence of chronic diseases such as essential HTN, CVD, strokes, heart attack, kidney failure, and diabetes (Glanz et al., 2002; Bentley, Khan, Oh, Grace, & Thomas, 2013). SEMH integrates intra-and interpersonal factors, community and organizational factors, and public policies as guides to examine and promote long-term health behaviors (Bentley et al., 2013). SEMH also focuses on the multiple layers of cultural influence and how it affects specific health behaviors (Glanz et al., 2002). The five constructs assumed that appropriate changes in

the social context will produce changes in individuals, and affirms that the support of individuals in the population is essential for implementing environmental changes (McLeroy et al. 1998). This conceptual framework places significant emphasis on interventions aimed at changing interpersonal, organizational, community, public policy, and personal factors (Bentley et al., 2013; Ganz et al., 2002, & McLeroy et al., 1998). In Figure 2, I presented a model of SEMH.

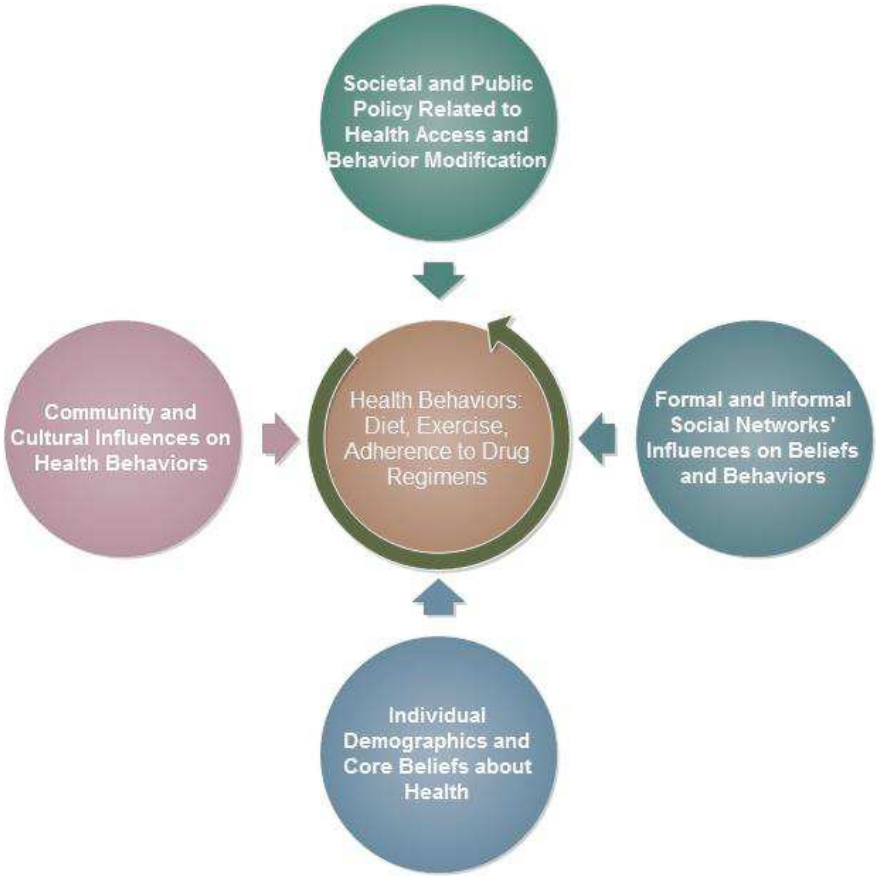

Figure 2. Based on Bronfenbrenner theories of the ecological influences on health behaviors (Retrieved from public domain, published for public use, no permission required).

While the primary relational direction illustrated in Figure 2 is from the four major components of an individual's environment to their health behaviors, each of the environmental factors are also related as demonstrated in the preceding chapter, Figure 1. None of the influences on health behaviors act alone. My use of this theory is based on the idea that differences exist in the environment of Blacks as compared to Whites, and immigrants as compared to native-Blacks in the United States. These differences influence health behaviors and a greater understanding of what could lead to policy improvement, prevention strategies, and treatment efforts. As Bronfenbrenner 1970 postulated while developing the theory, to understand human development the entire ecological system in which growth occurs needs to be evaluated (Glanz et al., 2002).

Socioecological theory provides a framework and expands the understanding on how this study could be used to integrate the independent variables to promote and influence individual behavioral changes (Glanz et al., 2008). The SEMH framework has been used in multiple studies, and therefore holds great promise towards suggesting strategies for intervention and improving individual behaviors. My proposed relationship of SEMH and HTN is based on research studies from 1998 to 2014 that examined the epidemiology of HTN and speculated that the existence of human-essential HTN is multifactorial that can be influenced by several factors: SES, poverty, environment, food security, lack of physical activity, genes with interacting physiological effects, and lifestyle choices (Adeyemo et al., 2009; Ferdinand et al., 2006). These factors are directly associated with the ecological factors defined by SEMH. The major independent variables measured in this study include physical activity, length of stay in the United

States, individual health status, and food security, all consistent with SEMH. Factors such as age, education, health status, poverty, food security, and environmental influences are also significant causes of essential HTN in the African immigrant population (Adeyemo et al., 2009). Of these, education and poverty are captured in the concept of SES. I enumerated the variable construct levels in Table 1.

Table 1

Variable Construct Levels and Explanation

Variable construct levels	Explanation
Intrapersonal Level	Individual characteristics that influence behavior such as knowledge, attitudes, beliefs, and personal traits
Interpersonal Level	Interpersonal processes and primary groups, including family, friends, and peers that provide social identity, support, and role definition
Institutional Level	Rules, regulations, policies, and normal structure, which may constrain or promote recommended behaviors
Community Level	Social networking, and norms or standards, that exist as formal or informal among individuals, groups, and organizations
Public Policy Level	Local, state, and federal policies and laws that regulate or support health actions and practices for disease prevention, early detection, control, and management.

Intrapersonal Level

The intrapersonal level identifies individual biological factors that increase the likelihood of becoming vulnerable to essential HTN. (Glanz et al., 2002; McLeroy et al., 1988). Some of these factors include age, genetic disposition, alcohol use, smoking, and other pertinent lifestyles (Glanz et al., 2002). Strategies at this level are more than likely to promote attitudes, beliefs, and behaviors that ultimately reduce the condition. For

example, individual behavior modification such as regular physical activity, an avoidance of a sedentary lifestyle, a reduction of excessive salt intake and alcohol consumption, smoking, and deviating from actions that precipitate an elevation of blood pressure to reduce hypertension (AHA, 2011; CDC, 2013; CDC, 2014b; Glanz et al., 2002; McLeroy et al., 1988, Opie et al., 2005; Slade et al., 2014; Warren-Findlow et al., 2011).

Relationship

The second overlapping level is relationship. This level examines relationships that could increase the risk exposure to HTN (Barnett et al., 2005). Relationship within families, social peers, partners, fellow students, religious leaders, healthcare providers, and distant family members tend to have positive and negative influences (Barnett et al., 2005). An example of these are behaviors that contribute to discouraging or encouraging participation in life-changing environment that promote healthy lifestyles (Barnett, et al., 2005; CDC, 2015; Glanz et al., 2002). Negativity of cultural perception passed from generation to generation for enageging in physical activity is also a powerful force that discourage healthy behavior (Robinson, 2008).

There is a series of constellations of interrelated cardiovascular risk factors among adult African-born immigrants, African Americans, and other Black races. These are known as socioecological determinants (CDC, 2010). Robinson (2008) articulated that social support is intended to be helpful and supportive, and distinguishes it from intentional negative interactions. The three bases for functional relationships include: (a) emotion that expresses love and sympathy and trust and caring (b) instrumental supports that provide aid and tangible services, and (c) appraisal support that provides useful

information for self-evaluation (Glanz et al., 2002). These all derive from the ecological systems in which the individual resides.

Community

The third level is community design, which explores features of a community that encourage healthier behaviors such as recreational activities, bike paths, and safer neighborhoods that allow people to engage in callisthenic exercises, various sporting activities for adults, health fairs, improved housing for the poor, and social acceptance, regardless of race or ethnicity (Glanz et al., 2002; McKenzie et al., 2009). Health community services have capacities to offer free screening and treatments to improve the health of those priority populations (CDC, 2015). These are basic preventive strategies that are typically designed to impact the social and physical environment (Glanz et al., 2002; McKenzie et al., 2009). Also, critically important are medication adherence and improved health literacy on essential HTN among the general population.

Societal Structures

The fourth level is societal structures (Glanz et al., 2002). It is imperative to look at the very fabric of the societies, assess the spectrum of the societal structures, and evaluate factors that constitute or encourage the development of HTN (Glanz et al., 2002; McLeroy, Bibeau, & Steckler, 1988). Social and cultural norms, beliefs, disparity in educational systems, and lack of meaningful employment are few of the reasons why individuals opted out of health promotion programs. Parallel factors include overall health and challenges, stagnant economic issues, and social policies constitutes to

reducing social inequalities between groups in the society (CDC, 2015). To fully capture societal social issues for healthy environment, government policies are imperative.

The independent variables that guide this study include length of stay in the United States, food security, immigrant health status, and physical inactivity. Research Question 1 examined the association between length of stay in the United States and HTN among African-born immigrants. Research Question 2 was framed to measure the immigrants' health status, and food security, as risk factors for essential HTN among African-born immigrants. Research Question 3 determined if an association exists between length of stay in the United States and physical inactivity as risk factors for essential HTN in African-born immigrants. Research Question 4 examined if there was an association between the level of physical inactivity, and essential HTN among African-born immigrants in the United States.

Essential Hypertension

One of the key risk factors for CVD is HTN (AHA, 2011; NHLBI, 2010; WHO, 2013). The heart is continuously pumping blood into the vessels therefore, each time the heart beats, and blood is transported into the vessels and will then be distributed to the rest of the body. The WHO, (2013) defined HTN as a systolic blood pressure equal to or above 140mm Hg and/or diastolic blood pressure equal to or above 90mm Hg. The NHLBI (2010) as well as the AHA (2011) suggested new guidelines for HTN as: *normal blood pressure reading is less than 120 mmHg and less than 80 mmHg, prehypertension reading is between ≥140 mmHg and ≥90 mmHg systolic or the top number and bottom or diastolic readings. For individuals 60 years and older, blood pressure reading >150 mm*

Hg or 90 mmHg and 160 mmHg and 100 mmHg or higher are considered high blood pressure AHA, (2011). However, blood pressures of 140/90mmHg to 160/100mmHg is medically acceptable if there is no suspected damage to the organs (CDC, 2010; Warren-Findlow 2011). Systolic numbers are recorded when the heart beats while pumping blood through the arteries, whilst the diastolic number is recorded when the heart is at rest between beats (CDC, 2014b; NHLBI, 2003). Weber et al. (2014) noted that systolic blood pressure is particularly important and is the basis for the diagnosis in most patients. Blood pressure measurement at times varies based on the time of the day and the level of activity at the time of reading (CDC, 2014b; NHLBI, 2003; Warren-Findlow et. al., 2011). Therefore, a person diagnosed with HTN has a consistent measurement blood pressure that is ≥ 140 mmHg systolic and diastolic blood pressure that is ≥ 90 mmHg, or (140/90mmHg), on repeated examination.

Essential or arterial HTN is a chronic medical condition in which blood pressure in the arteries is elevated (CDC, 2014b). The National Heart, Lung and Blood Institute (NHLBI) has defined HTN as the force of the blood against the artery walls that if high enough, could cause health problems such as heart disease and other chronic health diseases (NHLBI, 2010). BP is expressed by two measurements, the systolic and diastolic pressures (NHLBI, 2010). The CDC, in conjunction with the AHA and National Institute of Health (NIH) in 2013, have established new definitions and guidelines for five stages of HTN. These were presented in Table 2.

Table 2

Categories for BP in Adults (measured in millimeters of mercury, mmHg)

Category	Systolic (top number)		Diastolic (bottom number)
Normal or Healthy	< 120	*And*	< 80
Prehypertension	≥ 140	*Or*	≥ 90
High blood pressure	60 years and older		
Stage 1	< 150	*Or*	90
Stage 2	160 or higher	*Or*	100 or higher

Courtesy of National Institute of Health (CDC, 2014b).

Blood Pressure Levels Vary by Age

Women are about as likely as men to develop high blood pressure during their lifetimes. However, for people younger than 45 years old, the condition affects more men than women. For people 65 years or older, high blood pressure affects more women than men. Table 3 below shows the level of vulnerability by gender and age, particularly with age progression, and with regards to race/ethnicities (CDC, 2014).

Table 3

Age	**Men (%)**	**Women (%)**
20 - 34	11.1	6.8
35 - 44	25.1	19.0
45 - 54	37.1	35.2
55 - 64	54.0	53.3
65 - 74	64.0	69.3
75 and older	66.7	78.5
All	34.1	32.7

Courtesy of National Institute of Health (CDC, 2014b).

According to the CDC (2014b) and the American Heart Association (AHA, 2013), about 1 in 3 or 67 million adults in the United States have been diagnosed and live with HTN. Because of its asymptomatic nature, HTN is known as a "silent killer," about 1 in 5 adults have the condition without an accompanying diagnosis or being aware of having the condition (CDC, 2014b). An estimated 14.1 million (39.4%), were not aware of their hypersensitive condition. Associated annual costs are estimated at $51 billion (CDC, 2014b). These reports further contended that the prevalence of essential HTN in 2003−2010 among adults living in the United States aged 18 years or older was 30.4% or an estimated 66.9 million people (CDC, 2014b). Of those affected with HTN, it was estimated that 35.8 million (53.5%) did not take action to control their HTN (CDC, 2014b). The CDC also suggested that HTN is the most common cause of myocardial infarction (MI), stroke, CVD, kidney failure, diabetes, brain damage, and retinopathy among the Black population (CDC, 2014b). The International Society of Hypertension (ISH) and the publications from the World Hypertension League (WHL) Day, in 2014, noted that increased BP is the leading risk for death and disability globally. These findings were emphasized and highlighted by the World Health Organization at World Health Day 2014 (WHO, 2014a). Coulon et al. (2013) posited that essential HTN disproportionately affects African-American adults and that it is the leading cause of CVD, stroke, and MI. A growing body of literature and research studies acknowledged that HTN is an important public health challenge for public health practitioners, not only in the United States, but worldwide. Attempts to control HTN are necessary and contribute towards efforts, both primary and secondary, to prevent CVD.

According to the NHLBI, HTN affects approximately 50 million individuals in the United States and approximately 1 billion worldwide. The report suggested that as the population ages, the prevalence of HTN will increase even further unless broad and effective preventive measures are implemented. Ferdinand and Sounders (2006) predicated that the most-current data from the United States estimated that the prevalence of HTN readings of systolic BP (SBP) ≥140 mm Hg or diastolic BP (DBP) ≥90 mm Hg was 41.8% in African-American men compared with 30.6% among White men and 45.4% among African-American women compared with 31.0% among White women. While HTN has no direct causes, risk factors such as age, lack of physical activity, low SES, excessive sodium, and alcohol have been strongly associated with it (CDC, 2014B; NHLBI, 2003; Warren-Findlow et al., 2011). NHLBI affirmed three significant causes of resistance to essential HTN: excess sodium intake, volume of retention from kidney disease, and inadequate diuretic therapy.

The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC7) provided a new guideline for HTN prevention and management. The following numbers were recommended during the JNC7 conference: for an individual who is 50 years old with systolic blood pressure greater than 140 mmHg is CVD risk factor than diastolic blood pressure; CVD risk beginning at 115/75 mmHg with each increment of 20/10 mmHg; vulnerable age of 55 years have a 90 percent lifetime risk for developing HTN, and systolic blood pressure of 120–139 mmHg or a diastolic blood pressure of 80–89 mmHg should be considered as pre-hypertensive and require health-promoting lifestyle modifications to prevent CVD. The NHLBI JNC7 reports (2003) maintained that HTN and risk of CVD incidences has always been associated, consistent, and independent of other risk factors. The report affirmed that the higher the HTN, the greater chance of heart attack, heart failure, stroke, and kidney disease.

Global Burden of Essential HTN

The World Health Organization has recently identified HTN as a leading risk factor for morbidity and mortality worldwide affecting approximately 73 million or one in three adults in the United States (Slade & Kim, 2014). The long term health consequences of HTN are significant; HTN leads to chronic diseases such as CVD, kidney disease, stroke, eye disease (retinopathy or blindness), and brain damage due to block arteries that supply blood and oxygen to the brain (CDC, 2014; NHLBI, 2003, Warren-Findlow et al., 2011).

Essential HTN was not common among Africa populations in their native countries in the past, but it has increased in prevalence and its effect can be viewed in the morbidity and mortality rates (Opie et al., 2005). Opie et al. (2005) postulated that the global HTN epidemic will affect between ten million to twenty million sub-Sahara African populations in the near future. Opie et al. (2005) states that the African Unions considered HTN as one of the continents' second highest health challenges after AIDS.

Prevalence of essential HTN was studied in five Europeans countries by Wolf-Maier et al. (2004). They obtained age-adjusted hypertension measures (140/90 mm Hg or treatment) for persons 35 to 64 years and found that despite the high mortality rates in the United States, the result was substantially lower at 28% compared with the European countries (Sweden [38%], Italy [38%], England [42%], Spain [47%], and Germany [55%]). WHO reports highlighted that HTN remained one of the leading risk factors for heart disease, stroke, and a significant cause of adult's mortality worldwide among adults 25 to 60 years and older. Public health practitioners believe that the epidemic of essential HTN among adults and young adult Black populations is related in part to sedentary behaviors and lack of physical activity, the assumption is true to some extent. However, age progression and deprived SES, urban dwellers, food saturated with sodium, and a variety of non-nutritional diets are significantly associated to essential HTN in Black populations. Eating habit modification is beneficial in reducing high blood pressure (Slade & Kim, 2014; Warren-Findlow et al., 2011).

Essential HTN has been associated with CVD and is also considered a leading cause of cerebrovascular diseases (Slade & Kim, 2014). It is one of the major factors for

the high mortality rate in sub-Sahara African countries, contributing to about 40% of the diseases on the continent of African (CDC, 2013; Opie et al., 2005). The WHO reported that HTN is the third leading cause of deaths worldwide (Mengistu, 2014). The report further strengthen that the prevalence and the burden of HTN worldwide in 2000 was rated at 26.4% of adult world population; 34.3% and 65.7% in developed and undeveloped countries, respectively (Mengistu, 2014). A separate report by the (WHO, 2013) noted that uncontrolled essential HTN morbidity rose from 600 million in 1980 to nearly one billion in 2008. Essential HTN contributes to nearly 9.4 million deaths due to heart disease and stroke every year; together, these two diseases are the number one cause of death worldwide (WHO, 2013). In Figure 3, I illustrate the diseases most often associated with essential HTN.

Figure 3. Chronic Health Diseases Associated with Hypertension.

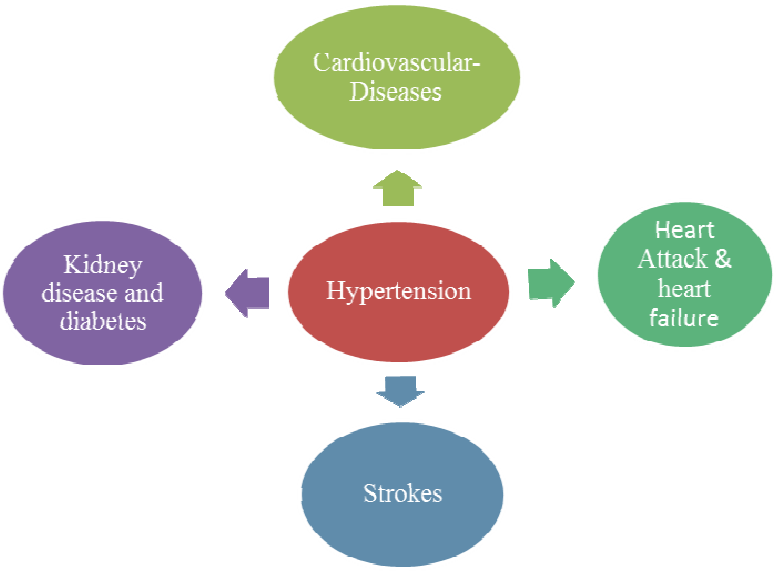

Figure 3: Heuristic diagram of hypertension and its associated chronic health issues. (Ojih, 2015)

Socioeconomic Status (SES) and Health Outcomes

SES differences in health outcomes have been widely documented for most health conditions in many countries, including here in United States (Adler & Ostrove, 1999; Bassuk, Berkman, & Amick, 2002; CDC, 2002; Crimmins, Hayward, & Seeman, 2004; Kennedy et al., 2007). People who are poorer and who have less education are more likely to suffer from chronic diseases, more likely to experience loss of functioning, more likely to be cognitively and physically impaired, and more likely to experience higher mortality rates (Crimmins et al., 2004; Kennedy et al., 2007). Disparities in SES affect health, among other things, and continue to widen in United States and in other developed countries (Crimmins et al., 2004). The potential power of low SES in the society and how the society understands health disparities along racial/ethnic lines remains a current paradigm (Kennedy et al., 2007).

Improved SES is a key component to a healthier life. Higher SES leads to higher quality standards of living, better social networking, access to average to better healthcare systems, and a sense of fulfillment (Kennedy et al, 2007; Crimmins et al., 2004; Robinson, 2008; Kingston & Smith, 1997). In general, regardless of race or ethnicity, environment, or otherwise, people with higher SES are less likely to have exposure to health-threatening conditions. If they do, their risk is lower, and they have the resources to buffer the health threats and the costs (Crimmins et al., 2004). When Kennedy et al. (2007) examined the relationship between SES and health among adults in the United States (N = 10,164), 18 years or older, the response rate was 80%. Using a conceptual framework, the authors factored in the most common variables such as income and

education, and non-variables such as gender and race; they found that race significantly influenced SES which in turns influenced health that lead to chronic diseases. According Kennedy et al. (2007), the results suggested there was a significant increase for diabetes, HTN, CVD, strokes, and obesity across the three level of SES examined.

There was a concern for insufficient environmental supports that promote healthy lifestyles in low-income neighborhoods (Crimmins et al., 2004). For example, sidewalks in the urban cities, safe recreational facilities within reasonable distant, adequately maintained parks and recreational activities (CDC, 2010) are preventive measures that promote healthy lifestyle. The CDC (2010) reported that data from the Third National Health and Nutrition Examination Survey (NHANES III) found that rural African Americans are more likely to have high blood pressure than both urban and rural whites and urban African Americans (p. 33).

Low SES is a problem facing Black populations, including the African-born immigrant population in the United States. Black races of all geographical dimensions have been associated with worse functional ability than their White counterparts (Kennedy et al., 2007; Opie et al., 2006; Read et al., 2005; Venters & Gany, 2011). The focus of this study is not on health disparities among Blacks that have historically existed, but rather on the risk factors for essential HTN among African-born immigrants in United States (Crimmins et al., 2004; Kennedy et al., 2007). It has been documented that Blacks average more than one chronic disease, are far below in education achievement, are less likely to enjoy higher income brackets, are ranked higher in poverty level, and lack of social supports and connectedness (Crimmins et al., 2004; Kennedy et

al., 2007; Kingston & Smith, 1997; Robinson, 2008). Numerous health research studies have argued that racial and ethical disparities exist in healthcare systems across the life cycle in the United States (AHA, 2011; CDC, 2014c; Coulon et al., 2013; Crimmins et al., 2004, Kennedy et al., 2007; Kingston & Smith, 1997; 2013; Pal et al., 2013; Steffen et al., 2006; Trendwell et al., 2013; Venters & Gany, 2011; Warren-Findlow et al., 2011). These disparities are detrimental to those that are often affected (minorities and the underserved groups); this could help pin the differences in SES structures in the same groups (Kennedy et al., 2007; Kingston et al., 1997). Disparities lead to social exclusion which in turn, affects mental and physical health and host of chronic diseases, such as HTN, and CVD. The impact of chronic conditions alone is significant in the United States healthcare systems, chronic conditions accounted for large increase of healthcare spending (Crimmins et al., 2004). Kingston et al. (1997) stated that lower SES is often associated with higher cumulative levels of stress, which lead to the development of essential HTN and other chronic health conditions. Kennedy et al. (2007) contend that other research studies demonstrated an inverse association between SES and CVD and cardiovascular risk factors (Iribarren, Luepker, McGovern, Arnett, & Blackburn, 1997; Osler et al., 2000; Winkleby, Kraemer, Ahn, & Varady, 1998; Winkleby et al., 1992). Kingston et al. (2010) stressed that poor health is also a barrier that limits a person's capacity to work and earn money providing a valid association to low SES. It was stressed that lower SES lead to poorer health outcome (Kinston, 2010).

Robinson (2008) explained that native Blacks find themselves in complex and increased incidences of racial/ethical disparities, low SES, low income, employments, and major chronic health diseases than their White counterparts.

These complex situations are usually attributed to:

- Inequality of healthcare delivery system and refusal to seek treatment because of fear for affordability due to low SES.
- Lack of access to a healthcare system among Black populations, particularly among those with limited education and at the low end of socioeconomic status.
- Cultural beliefs in stereotypes and biases that often emanate from the health care providers being the most significant of the three.

Healthcare utilization where available has been compromised by a mistrust between Blacks, native and immigrant, and their health care providers, which introduces a barrier from seeking health screenings and treatment (Robinson, 2008). The complexity of racial/ethnical healthcare provision and treatment gap was expressed by Trendwell et al. (2013). The majority of Black men express their bitter and negative experiences from their health care providers; 62.8% of Black men have claimed that their race/ethnicity played key role for poor treatment they receive, and 58.6% believed the same to be true of the quality of care they received.

Factors Associated with Essential HTN

Race

Black races bear the greatest burden of all kinds of diseases than any other races or ethnic groups, regardless of their geographical location and socioeconomic status (Read et al., 2005; Warren-Findlow et al., 2011; Venters & Gany, 2011). It is not, as has sometimes been hypothesized that Blacks are born with these diseases; perhaps instead, the disease burdens bearing upon Blacks could be associated with socioeconomic status, healthcare disparities, psychosocial environments, and inadequate surveillances to convey the importance for intervention programs (Warren-Findlow et al., 2011). Black races in general suffer more the burden of hypertension and its health complications including, strokes, cardiovascular disease, heart attack, kidney failure, renal, and other chronic diseases than any other races regardless of residences, rural or urban. Peters, Aroian, and Flack (2006) reported that one in three (33.5%) African Americans are hypertensive. The growing awareness of the importance of early intervention, prevention and adherence to drug lowering regimens results in decreasing the epic proportion of essential HTN among Black races. Approximately one-third of adult populations in the United States are labeled with hypertension. Ferdinand et al. (2006) found that a disproportionate number of Blacks have severe HTN at the age of 21 or younger. The causes have been associated with more clinical issues among this racial group compared to same age-bracket in non-Hispanic Whites and Mexican Americans (Coulon et al., 2013; Pal et al., 2013; Peters et al., 2006).

Opie and Seeday (2005) investigated the endemics and patterns of HTN in developing countries like Nigeria, Ghana, Kenya, and South Africa, and identified the risk factors associated with essential HTN among the rural and urban dwellers that have never migrated. In the study, the authors confirmed that the total number of essential HTN cases in developing countries is high, and the cost-analysis shows that these countries have no healthcare resources for treatment when compared to more developed nations (Opie et al., 2005).

Age

Aging is recognized as a risk factor for HTN and other chronic diseases progression; kidney disease, stokes, CVD, and heart attack. Several studies have shown that as people age, mobility becomes an issue, increasingly vulnerable to pernicious environment, which leads to a sedentary lifestyle, physical inactivity, changes in eating habit, all of which constitute high risk factors to essential HTN (Crimmins et al., 2004). Differential relationships between diseases and socioeconomic status are part of the reasons that the relationship between SES and health varies by age (Crimmins et al., 2004). Environmental and social circumstances if overwhelmed can influence biological changes related to aging and it is not surprising that SES and health tend decrease as old age approaches. Risk factors such as aforementioned always relate to health outcomes as expected among the older population (Cummings et al., 2004; Kingston et al., 1997). The WHO (2013) stated that the risk of HTN increases with due stiffening of blood vessels, which usually occurs in the older age individuals.

Education

Higher education is beneficial at all sociodemographic levels; it remains fundamental to a better life. Education creates opportunities for better paying jobs, which leads to changes in attitudes and behaviors. Education is conducive to better health, as well as a willingness to delay gratification in order to achieve desired goals (Crimmins et al., 2004). It was postulated that people with higher levels of education, smoke less, eat better quality foods, are socialized in a more affluent life consistent with their styles, and are more than likely to engage in physical activity. Education serves as an indicator in empirical research that encompasses a lifetime of access to knowledge, resources, and opportunities.

SES

Crimmins et al. (2004) deduced that SES, which incorporates income and education, has a larger influence on life expectancy than financial well-being alone. Higher SES status brings freedom and alleviates people from some types of worries and stressors, and enables those classes of individuals to cope with other types of stress. Lower status is linked to more disruptive life events, such as family breakup and unemployment, as well as fewer financial resources to cope with such events (Crimmins et al., 2004). When SES is under control through education or other means, poverty and everything else will fall in place, including informed and educated choices for quality food products. Low SES leads to poor diets, which in turn leads to poor health and a host of chronic disease, including HTN and CVD (Crimmins et al., 2004; Venter et al., 2011).

Length of Stay

Most African-born immigrants in the United States arrived with diverse cultural ethnic values, and hosts of deviant socioeconomic backgrounds (Oza-Frank, & Narayan, 2010). According to Read et al. (2005) length of stay in the United States was examined to have significant negative impacts on African-born immigrants' health. Read et al. (2005) and Singhand Hiatt (2006) further explained that the longer Black immigrants remain in the United States, the greater the cumulative exposure to stressful life. It is possible that immigrants' length of stay in the United States could potentially correlate with race/ethnicity, type of medical care they receive and the effects on their general health including chronic disease such as essential HTN. This study will estimate associations between the length of stay and essential HTN among African-born immigrants by region of birth.

Food Security

The USDA defined food security as availability or large enough supply of nutritious quality foods for a long period of time, no limitation, and readily available (CDC, 2014b). The World Food Summit of 1996 defined food security as "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life" (WHO, 2014a, para.1). The USDA defines food insecurity at times during the year, the food intake of household members is reduced and their normal eating patterns are disrupted because the household lacks money and other resources for food (CDC, 2014c). Limited access to quality healthy foods is also a key component in

increased risk of essential HTN. Even when there is unlimited access, choices for quality healthy foods are often ignored (Kennedy et al., 2007; Robinson, 2008).

Physical Activity

Anything that makes an individual move their body is physical activity. Healthy lifestyles, which include physical activity, can help reduce the risk of hypertension. According to AHA (2011) physical activity includes climbing stairs, rock climbing, jogging, walking, biking, swimming, yard work, and sports. Staying physically active helps prevent heart disease and stroke, the nation's number one and four killers. The AHA (2011) implied that engaging in any physical activity is better than nothing, and suggested that even daily walking can significantly improve heart function (Coulon et al., 2013; Middleton, 2013; Pal, Radavelli-Bagatini, & Ho, 2013). SEMH models are useful tools to provide a framework that encourages and emphasizes the importance of physical activity (Coulon et al., 2013; Middleton, 2013; Pal et al., 2013). Active participation in physical activity significantly decreases the risk of several chronic diseases such as obesity, kidney failure, Type 2 diabetes, CVD, and strokes (Coulon et al., 2013; Middleton, 2013; Pal et al., 2013). Risk reductions were observed with as little as 30 minutes of moderately intense activity per day is significant in reducing the risk of these diseases (Bassuk & Manson, 2005). The CDC recommends that everyone should be encouraged to engage in regular exercise for at least 15 to 30 minutes a day, 7 days a week. Physical activity is a modifiable behavior; it serves as an important determinant of morbidity from CVD, strokes and diabetes (Coulon et al., 2013; Powell et al., 2004). These preventive practices are not often common among Black immigrants (CDC, 2013).

Powell et al. (2004) revealed that physical activity patterns differ along racial boundaries. The Healthy People 2010 reports affirmed this claim (CDC, 2013). The Surgeon General Report on physical activity and health stated that the population most at risk for inactivity includes people with low income, members of some ethnic groups, and people with disabilities (Powell et al., 2004; Crespo et al., 2000). Powell et al. (2004) found that there is a premise and belief among the minority groups that physical activities take place in specific environments that are likely to influence the type and size of activity.

A significant proportion of African-born immigrants are physically inactive, perhaps because of a preconceived notion that physical activity has no impact on essential HTN (Duncan et al., 2006). In a univariate analysis of data from their study, Duncan et al. (2006) found a relationship between physical inactivity and hypertension among Black populations. In a controlled clinical trial, they found that physical activity is strongly associated with essential HTN reduction among Blacks. A series of research studies suggested that human behavior is complex and therefore, difficult to change, especially in an environment that does not have program designed to support or influence the change (Duncan et al., 2006; Glanz et al., 2008). SEMH could be tailored to identify such opportunities to influence life changing environments.

Ferdinand and Armani (2007), in their cross-sectional study, found that diet and physical activity are increasingly becoming important health concerns among the Black population. Ferdinand et al. (2007) suggested that excessive use of sodium and a low potassium intake, as well as high risks of obesity and inadequate physical inactivity in

this population are major health issues. The authors contend that it is important to develop health programs in minority communities to address various essential HTN risk factors, e.g. dietary patterns, physical activity, and weight-related behaviors (Ferdinand et al., 2007).

The World Health Organization stipulated that individual behavior and physical activity can be improved if environments and policies that support healthy choices are in place. For example, individual motivation and education and a combination of peoples' interactions with their environments (AHA, 2011; WHO, 2001). The socio-ecological concepts that can be integrated into promoting physical activity and healthy environments are neighborhood walkability, parks and recreation, activities that boost cardio fitness, safe neighborhoods, and social supports (Coulon et al., 2013; Duncan et al., 2006). Neighborhood walkability is described as features, such as enough or adequate sidewalks, in both urban and rural areas which are safe and conducive to walk (Coulon et al., 2013; Duncan et al., 2006). Walkability must also demonstrate that motor vehicle traffic is minimal. According to Coulon et al. (2013), support is also crucial; supports characterize the extent to which people organize and provide companionship, encouragement, and functional supports to support physical activity. Higher levels of general social support for physical activity and specific instruments, information, emotion and appraisal supports have been linked to increased physical activity (Coulon et al., 2013; Duncan et al., 2006).

Relationship covers a broad spectrum of constructs and is present in different ways, for example, neighborhood playgrounds for adults, group walks, leisure gathering

places like Young Mission Christians Association (YMCA), social clubs; church activities that are different from the regular Sunday morning services (Coulon et al., 2013). Coulon et al. (2013) noted that social and physical environmental settings influence physical activities which in turns, impacts HTN. They described this as part of a potential etiologic pathway. A neighborhood study by (Coulon et al., 2013; Duncan et al. 2013), observed that neighborhood walkability was significantly associated with reduction of hypertensive condition among Blacks based on self-reported average daily walking activity.

Epidemiological studies suggested that physically active individuals are about 30-50% less likely to develop Type 2 diabetes and HTN when compared to individuals who live sedentary lifestyle (Coulon et al., 2013; Powell et al., 2004). The importance of self-efficacy and personal factors is pivotal in achieving intended health goals. Black African immigrants and native populations should be at the center of the SEMH framework health promotion initiatives. This means that individual commitments and willingness to be helped is a key to becoming healthier and physically active. It can also lead to more positive attitudes and behaviors, increased motivation and belief in one's self, and an ability to engage at all levels of the promotion intervention (Coulon et al., 2013; Powell et al., 2004).

Other Potential Confounders to Essential HTN

Confounders such as body mass index (BMI), inadequate or low intake of potassium, fruits, and vegetables are significant indicators. There are series of epidemiological research studies that support the association of BMI and obesity with

HTN, however, BMI is not a variable examined in this study. The CDC (2010) publication obtained from the National Health Institute survey interview, reviewed that 67% of African American men and 77% of African American women are overweight or obese. Addo et al. (2007) explained that higher levels of obesity, excessive sodium and fat intake, consuming more processed foods, and engaging in jobs with minimal or no physical activity are likely explanations for higher BMI and essential HTN mortality in urban populations (Steffen et al., 2006).

Confounders such as perceived racism or John Henriysm syndrome have been identified as significant factors to essential HTN. John Henriysm causes high-stress level, low self-esteem, worthlessness, and low SES among African Americans (Kitsios & Zintzaras, 2010). The CDC (2010) suggested perceived racism adversely affects blood pressure level. The CDC described John Henryism as a form of coping behaviors used to deal with psychosocial and environmental stressors such as racial discrimination. Kitsios and Zintzaras (2010) conducted a cross-sectional study to investigate the impact of John Henryism in relation to essential HTN among African Americans and other minority races, the authors affirmed that John Henryism has significant impact in the groups who participated in the study. They concluded that John Henryism is a strong personality predisposition to cope actively with psychosocial environmental stressors.

Immigrant Status and Health

There have been an increased numbers of diverse African-born immigrants in the United States. As the numbers increases, so is the growing need to look into their health status and needs. According to Venters and Gany (2011) between 1990 and 2000, a

significant increase of African-born immigrants, approximately in millions, currently live in the largest cities of the United States, as noted areas such as Washington D.C., New York, Minneapolis St. Paul, Atlanta, and Texas have the highest population. A quick insight to the wave of new generation of immigrants in United States in the 21st century: The trajectory increases of African-born immigrants were primarily self-migration. The Hart-Cellar Immigration Act of 1965, and the recent Diversity Visa Lottery (DVL) that was introduced in the 1990 Venter & Gany (2011).

The Immigration Reform Act of 1990 and the aforementioned acts were introduced to offer visas to underrepresented African and few selected third world countries across the globe with little or no representations in the United States Venter & Gany, 2011). These gestures were for economic benefits to the United States and a path to better opportunities to most of the talented and professional individuals across the nations selected to benefit the DVL visas Venter & Gany (2011). There was another gesture visas offer; Temporary Protected Status (TPS) program, which was introduced to allow temporary status of refugees from war-threatened areas and countries affected by national disasters, countries like Liberia, Somalia, Sierra-Leone, Sudan, and Burundi greatly benefited (Venters & Gany, 2011).

African-born immigrant populations in the United States have doubled in the past 20 years, from 3% in 1980 to 6% in 2000 (Read et al., 2005; United States Bureau of the Census 1980, 2000). The authors noted that beyond gross descriptive comparisons, surprisingly little is known about the health of African-born immigrants when compared to a large body of available literature that studied HTN among African American

populations, despite the physical racial resemblances. In similar observations, David and Collins (1997), Fang, Madhavan, and Alderman (1997), Hamilton & Hummer, (2011) and Read et al. (2005), Singh and Shiapush (2002) contended that African-born immigrants are a group that share the same racial status as native Blacks but maintained that African-born immigrants enjoy better health than native Blacks.

When African-born immigrants arrive in the United State, they are immediately exposed to new nutritional options: high calorie and low nutritional values at low prices. For decades, fruit and vegetable consumption has been significantly associated with decreased incidences of chronic diseases, such as CVD, HTN, strokes, and diabetes (Robinson, 2008; Venter & Gany, 2011; Steffen et al., 2004). New exposures to energy dense, unhealthy food choices tend to increase immigrants' risk for chronic diseases.

Acculturation is a concept that originated in social and behavioral research, particularly in anthropology (Steffen et al., 2006; Venter & Gany, 2011). Western acculturation is defined as cultural change from ones' traditional values to a Westernized lifestyle; it is a convenient way to capture and adopt cultural changes which include change of ways of life and environmental assimilations (Steffen et al., 2006; Venter & 2011). It is improbable to suggest that essential HTN cause acculturation, but there is a possibility that acculturation is a significant cause of essential HTN (Steffen et al., 2006). Venters & Gany (2011) researched acculturation to western society as a risk factor for high blood pressure; in the study, the authors found that acculturation to western society is associated to higher blood pressure among the immigrants due to high stress levels and cultural changes, much more than diet and physical inactivity (Steffen et al., 2006).

Stressors such as social support, increased job demands, and stressful job conditions are strongly associated with HTN (Steffen et al., 2006). Steffen et al. (2006) posit that changes in health behaviors at any time during the period of acculturation influenced the incidence of essential HTN among acculturating populations (Steffen et al., 2006). In their study, Steffen et al. (2006) examined related variables such as poor diets, less physical inactivity, and BMI. They ascertained that unhealthy behavior changes in diets and physical activity lead to increased level of BMI and HTN. Steffen et al. (2006) also examined Samburu tribesmen from Kenya, and the recently arrived Ethiopians immigrant men who had significant low blood pressure before arriving in their host country. The study demonstrated strong association of high blood pressure within 3-4 years of acculturation. The study maintained, however, that the spike in blood pressure observed in the study was related to stressors and behavior health changes (Steffen et al., 2006). The authors also examined Japanese immigrants and noted that Japanese immigrants in the United States who maintained their traditional values and Japanese lifestyles have lower HTN (Steffen et al., 2006). The study affirmed that the impact of acculturation on blood pressure happened the first few years of cultural contracts (Venters & Gany, 2009).

Acculturation has been hypothesized as a risk factor to essential HTN among immigrant groups; it is more common in Black individuals and lower in Hispanic populations (Teppala, Shankar, & Ducatman, 2010). In their study of acculturation to western world, Teppala, Shankar, and Ducatman (2010) examined 50,732 individuals and determined that long-term acculturation is responsible for increased blood pressure

because of stressor, cultural changes, and health behavior changes. Using four different variables from four different countries, (country names not provided) the following variables were examined: (a) country of birth, (b) country of birth of the subjects' parents, (c) language spoken, and (d) duration of stay in the United States. Duration of stay was grouped into three categories: ≤ 10 years, 10 to 14 years, and 15 years and over. Teppala et al. (2010) found higher acculturation scores were found to be positively associated with hypertension in all stratified subgroups, including by gender (men, women), education level (below high school, high school/above high school), smoking status (nonsmokers, smokers), alcohol intake status (never drinkers, moderate drinkers, heavy drinkers), and BMI (obese or non-obese) (Teppala et al., 2010).

Traditionally, the point of contact between newly arrived African-born immigrants and the United States healthcare systems focused mainly on infectious diseases such as HIV and tuberculosis (TB). Venters & Gany (2011) reported that African-born immigrants represented a significant numbers of HIV and TB infection cases in the United States; 76% latent and 7% active TB infection among the immigrants. Chronic diseases such as HTN, diabetes, kidney disease, obesity, CVD, and strokes are not easily assessed or examined because African-born immigrants generally are presumed to have better health before arriving in the United States (Hamilton el al., 2011; Venter & Gany, 2011). However, as a great numbers of African-born immigrants arrive in the United States, social and public health intervention is necessary to recommend changing the healthcare practices to accommodate the health needs of the immigrants, including chronic diseases (Steffen et al., 2006; Venters & Gany, 2011). The American Heart

Association (AHA, 2011) has suggested that immigrants' health and particularly, chronic health diseases are under researched and underreported in social science research environments. Study shows that Black immigrants from Nigeria have the best-overall health self-assessment compared to Black immigrants from other African countries (Hamilton et al., 2011). The report suggested that Nigeria immigrants have the lowest odds of reporting fair/poor health than other African-born immigrants from other countries in Africa (Hamilton et al., 2011). It was thought that Nigerian immigrants are cautious and aware of their health status even after years of acculturation in the United States (Hamilton & Hummer, 2011). However, hypertension is common among these populations compared to other Black immigrants from other parts of African countries (Hamilton et al., 2011; Read et al., 2005). Hamilton & Hummer, (2011) Landele et al. (1999), and Read et al. (2005) affirmed that a stressful life event has long been associated with minority status and maintained that it is not just poor diet and lack of exercise that cause HTN condition, but hosts of unrecognized covariates. (Hamilton & Hummer, 2011) Landele et al. (1999), and Read et al. (2005) narrated that one possible explanation is the differential acculturation process among immigrants in the United States, rather than racial context of origin which accounts for Black immigrant health differences.

Hamilton & Hummer, (2011) assessed the general health of African-born immigrants in United States and found mixed effects of assimilation in relations to the standard hypotheses, suggesting that cultural and behavioral characteristics operate as protective mechanisms for the immigrants. Opie et al. (2005) explained that preexisting health issues could be taken into account when assessing causes of essential HTN

including obesity, diabetes, and biosocial factors such as weight gain, anxiety, and psychosocial stresses. While not related to a lack of desires among the immigrants to stay active, persistent denial of becoming hypertensive and immediate adoption of sedentary lifestyles are also factors. Shaull and Gramann (1998) and Keefe and Padilla (1987) deduced that acculturation does not always lead to complete replacement of one culture by another, however, acculturation to western society is associated to essential HTN for three hypothesized reasons.

Cultural Changes

African-born immigrant populations tend to holding onto several demanding jobs in order to support their family and economic needs (Steffen et al., 2006). This behavior has enormous burden on the African-born immigrant and affects their daily lives. The adverse effects are a deleterious burden of social and mental stressors (Steffen et al., 2006). The immigrants work more than 16 hours a day, probably two or more in a week to satisfy their immediate needs, responsibilities, and that of other family members from their sending countries. The long-hour-work temporarily separates them from their immediate families and normal pattern of life (Steffen et al., 2006). Researchers suggested that African and Caribbean immigrants developed worse health overtime due to higher levels of psychological stress related to overexposure to working environments (Doamekpor et al., 2015; Steffen et al., 2006). A series of studies contend the association of stress to HTN, and believed to be a strong factor for CVD, heart diseases, HTN, and obesity. These conditions are more common among those classified and rated as economically deprived individuals (Doamekpor et al., 2015; Steffen et al., 2006).

Health Behavior Changes

Changes in health behaviors linked with acculturation to western world include physical inactivity, sedentary lifestyles, and self-efficacy; these are factors that are traditionally associated to HTN and tend to increase rate of BMI (Steffen et al., 2006; Venters & Gany, 2011). A large proportion of immigrants, including African-born immigrants in United States, instantly adopt behavior changes, socially, and environmentally (Doamekpor et al., 2015; Opie et al., 2005: Steffen et al., 2006). The sudden changes position immigrants at high risk for diseases. They make poor choices for diets, especially, eating foods saturated with sugar and sodium compounds thereby, exposing their better health before arriving in United States and exposure to essential HTN and CVD conditions (Doamekpor et al., 2015; Opie et al., 2005; Steffen et al., 2006). These are facts and not selective hypotheses. According to Steffen et al. (2006) the increased levels of stress among acculturating populations are more strongly associated to essential HTN condition. In order to encourage behavior changes among the group of immigrant populations and to start or increase the awareness of physical activity, efforts need to be directed on improving their environments.

Health Determinants

A social determinant of health encompasses low income and low level of education, poor living environments, and other pertinent environmental stressors (Steffen et al., 2006; WHO, 2013). Doamekpor and Dinwiddie (2015) and Steffen et al. (2006) found that foreign-born Blacks in the United States tend to be overexposed to physical

environments and attested that the African-born immigrants and other immigrants' health deteriorated because of prolonged lengths of stay in the United States. A second factor noted was unhealthy behaviors in relation to food insecurity debacles that African-born immigrants face upon arrival in the United States: social adoption, smoking and binge alcohol consumption partly due to social affiliations. Steffen et al. (2006) evaluated length of residence and factored three categories: 3 months to 3 years; 3 years to 15 years; and longer than 15 years. To understand acculturation and social environmental stressors among African-born immigrants, three cultural health characteristics that could mediate their life changes are cultural changes, changes in health behaviors, and changes in cultural identities.

- Cultural changes and stressors 3 months to 3 years: random effect models were used with analysis; this study specifically evaluated migration from rural to urbanized or industrialized world. According to Steffen et al. (2006), immigrants from four different regions were observed to have larger social networks and enjoyed more social supports than the westerners; they also appeared to adapt to western way of lifestyles which adversely affect or lose their social affiliations and supports. The immigrant populations are less likely to adapt to westerners' work environment and styles which are considered potent stressor associated to acculturation. They observed changes in work-stressful environment predict changes in HTN over period of time (Steffen et al., 2006).

- Changes in health behaviors 3-15 and longer years associated with acculturation include poor diets, sedentary lifestyles, and physical inactivity. Unhealthy changes in diets and physical inactivity lead to an increase of BMI (Steffen et al., 2006). Their study

also indicated that excessive salt intake was strongly associated to the causes of essential HTN among Black or immigrant populations; however, the study suggested that salt intake is not always related to acculturation, rather, an individual choices for diets (Steffen et al., 2006). The study reaffirmed that diets and physical activity have been consistently associated as risk factors for essential HTN, but stress is not.

- Changes in cultural identity also appear between 3 – 15 years or longer. Steffen et al. (2006) deduced that as the immigrants acculturate into their new environment, they tend to lose their cultural identity and interact more with the new culture (assimilation), they tend to forget the importance of their native cultures. The founding suggested that immigrants in general, have lower SES, greater job-related stress, and small groups of social networks.

In the study of African-born immigrants' general health, Hamilton et al. (2011) suggested that, in every level of health indicators, African-born immigrants appeared to be more similar to American-born Whites than American-born Blacks. The majority of African born immigrants maintained their health and continued to enjoy healthier advantages over native born Blacks and Blacks of West Indies. Nevertheless, each of these racial groups shares some physical racial similarities and differences with regards to natural and adopted life experiences, like human behavior, cultural expression, and unique attitudes to some extents.

The desire to welcome, acknowledge, embrace, and accept health and wellness is entirely dependent on the perceptions of cultural health practices; this is particularly true of the African-born immigrant groups who try to integrate into the new cultures

(Hamilton et al., 2011). The goal and intent of this literature review is to elucidate on the spectrum concerning the health of African-born immigrants in relation to acculturation as one of the causes of essential HTN and to set tasks for further research into the cultures, values, religion, diets, and other pertinent HTN risk factors among the African-born immigrant populations (Hamilton & Hummer, 2011; Venters & Gany, 2011). In New York, the advocacy group that serves African-born immigrant communities conducted a feasibility study on the health behavior and screening practice among the African-born immigrants. In the study, they found a growing number of aging population among the group experienced significant disparities in health care insurance, health screening, intervention, and health promotion programs to address their health needs (Venters & Gany, 2011). The low rates of insurance and acquisitions of new risks are dual risk factors for undiagnosed and untreated chronic diseases including, HTN, TB, and HIV. The advocacy group recommended that African Service Committee conducts frequent HTN and blood sugar screening and health literacy at the primary local hospitals where there are large concentration of African-born immigrant populations.

The United States healthcare system upholds significant preventive measures however; the focus on healthy living among African-born immigrants remains substantially suboptimal and slim, mainly due to health disparities and economically related factors (Coulon et al., 2013). Hamilton & Hummer, (2011) explained that community presumptions, societal influences, absence of material wealth and awareness, self-efficacy and awareness, behavioral management, and numerous physiological issues associated with certain health conditions that tend to prevent these groups from engaging

in healthy practices. Previous research suggests that Caribbean and African-born immigrants differ from their United States-born Black counterparts in various physical aspects and mental health. Some research studies suggest that foreign-born Blacks have better health outcomes than do United States-born Blacks (Doamekpor et al., 2015; Hamilton et al., 2011; Venter & Gany, 2011).

Studies Related to the Methods

Overtime, epidemiological studies have demonstrated HTN is associated with increased risk for CVD, heart attack, strokes, diabetics, retinopathy, kidney failure, and brain injury. Studies show that approximately one in three American adults have essential HTN with African Americans at higher rate of 40.7% compared with Whites at 27.4% (Zoellner et al., 2014). According to Zoellner et al. (2014), numerous risk factors such as age, family history, lack of physical inactivity, and poor dietary habits are strongly associated to the causes of HTN condition. Zoellner et al. (2014) used a convenience sampling method to conduct a six-month, noncontrolled experimental studies and examine the effectiveness of community-based participatory research intervention. The study targeted HTN risk factors among the residents of Hattiesburg in Mississippi which has 53% African American population and 42% Whites. Of the n = 269 who participated in the study, 94% were African Americans. Descriptive statistics were used to summarize the demographic participation rates and outcome variables. The finding suggested that persistent health behavior modification, change of life style, and self-efficacy could reduce the burden of HTN in the community. The study found that community-based participatory efforts were viable strategy and an equitable approach for implementing

nonpharmacological and nonclinical paths for intervention to help reduce the prevalent of HTN.

Venters & Gany (2011) studied the health of African-born immigrant from Nigeria, Ghana, Liberia, Somalia, Sierra-Leone, Sudan, Burundi, and few other selected countries from Central and South African regions, who lived in large cities like New York, Atlanta, Texas, Maryland, Minnesota, and Los Angeles. The study included men and women, 45 years and older. In the study, they found that upon arrival into the United States, the state and federal health agencies, and health practitioners focused only on infectious disease, TB, and HIV diseases, with little or no consideration for chronic diseases such as HTN, CVD, strokes, kidney disease, to name but a few. Venters & Gany (2011) noted that data on African-born immigrant from the National Health and Nutrition Examination Survey (NHANES III) affirmed that African immigrants are less likely to suffer end-organ damage from HTN than other immigrants or native born American Blacks. The study further asserted that they found no statistically significant differences for CVD, HTN, and strokes, but strong association with societal stigma and HTN among the population researched. Venters & Gany (2011) recommended that further studies among African-born immigrants is needed in areas of regular screening for HTN, blood sugar, coronary artery, disease, diabetes, colonoscopy, and cancer. This can be approached through community engagement and educational campaign by public health professionals in areas with dense population of immigrant groups. Venters & Gany (2011) suggested places to promote health screening are African churches and Mosques, places of employment, community based businesses, organizations, and residences.

Robinson (2008) conducted a review of 12 scholarly reviewed research studies that were based on cross-sectional and descriptive on socioecological model targeting on how to improve and promote healthy living, dietary behavior, fruit and vegetable intake among Blacks in the United States. Robison deduced that socioecological model is a useful framework for promoting and achieving better knowledge and understanding of barriers that impacts healthy behaviors. Robinson (2008) noted that they are enough studies that affirmed "good nutrition" has significant impact on individual health. According to Robinson (2008), these claims are supported with abundant scientific literature confirming that there are correlation between diets, fruit and vegetables with better health.

According to the United States Department of Health and Human Services (USDHHS) and NHANES III, "*fruit and vegetable consumption has been associated with decreased incidence of mortality from a variety of chronic disease, such as HTN, CVD, strokes, and diabetes"* (Robinson, 2008, p. 2). In the review of the literature, Robinson (2008) stated that low income, low educational level, and poor dietary patterns have been associated with frequent occurrence of illness and death, including prevalent of the aforementioned chronic diseases among Black populations. Her study suggested that there are four conceptualized principles that could be used to promote healthy living among Black populations: interpersonal, intrapersonal, community involvement, and self-efficacy. Her study recommended that socioecological model of health approach shows greater promise in moving to achieve improved dietary behaviors and healthy nutritional

goals and suggested that the challenge is how to best disseminate ecological national programs among Black populations (Robinson, 2008).

Warren-Findlow et al. (2011) conducted a cross-sectional study on n = 190 African American subjects who resides in the metro areas of Charlotte, North Carolina, about self-efficacy and HTN self-management. They used logistic regression to test the correlation between self-efficacy and adherence to self-care behavior in managing their condition. The results of their study indicated that self-efficacy is statistically associated with increased prevalence of medication adherence *(PR =1.23, 95% CI: 1.08, 1.23%), eating low salt diet (PR = 1.64, 95% CI; 1.07, - 2.20),* participating in physical activity *(PR = 1.27, 95% CI: 1.08 – 1.39),* and not smoking individual *(PR = 1.10, 95% CI: 1.01 -1.15).* Warren-Findlow et al. (2011) emphasized the importance of individuals, Blacks and Whites, including immigrant population that essential HTN is a manageable condition if proper adherence to the regimens is enforced, self-efficacy is encouraged, and proper education and knowledge about the condition is provided.

Implications for Social Change

Research studies on HTN suggested this chronic disease continue to be a serious health concern in Black populations when compared with any other ethnic groups in the U.S. and across the globe. Current morbidity data for HTN from the National Health and Nutrition Examination Survey [(NHANES, 2012)] among United States adults aged ≥18 years in 2003−2010 was 30.4% or an estimated 66.9 million people a year; 35.8 million (53.5%) have uncontrolled HTN; 14.1 million (39.4%) were not aware of their HTN; 5.7 million (15.8%) were aware but were not receiving clinical treatment, and 16.0 million

(44.8%) were aware and being treated with medication. Of the 35.8 million adults with uncontrolled hypertension, 89.4% reported having a usual source of health care, and 85.2% reported having health insurance. The AHA (2005) estimated that the yearly costs associated with HTN in the United States are more than $60 billion. The costs as at the time of a recent survey were up by 45.8%, $131 billion in the United States health-care expenditures (AHA, 2011). The reasons for its prevalence was attributed to individual health behaviors, SES (education, poverty, low income), and inadequate knowledge to control the disease.

This study examined if associations between risk factors for hypertension exist in African-born immigrants and understudied group of individuals. Intervention among this population requires cultural sensitivity, adoptability, and appropriateness. Barriers to the control of essential HTN are an impediment to change and public health concerns as it continues to ravage Black population at epic proportions. It is expected that knowledge gained, and data generated from this study can be used to help provide or prompt and effective screening, surveillance, and treatment among African-born immigrants in the U.S.

Summary

In this literature review, I have focused on research conducted on the global epidemic and burden of essential HTN and the epidemiological impacts on the neglected group, African-born immigrants. Essential HTN is more prevalent in Black populations than in any other races, Whites, Hispanics, Asians, and other racial/ethnic groups combined. Adeyemo et al. (2009) and Slade et al. (2014) stated that in comparison with

other ethnicities in United States, Hispanic non-Blacks and Whites, African Americans suffer disproportionately the burden of essential HTN and its complications, including; strokes, cardiovascular disease, heart attack, and kidney disease. The authors speculated that the existence of human essential HTN is multifactorial that can be influenced by several factors: lack of physical inactivity, SES, despairing poverty, unhealthy environment, poor diet, genetic predisposition with interacting physiological effects, and poor choices of lifestyle. In Chapter 3, I discussed my proposed methodology including the use of secondary data, the study design and rationale, sample setting, operationalization and constructs, search strategies, data collection, the G*Power analysis, the parameter, and method of analysis. Finally, I discussed the independent and dependent variables, threat to validity, and the ethical considerations in chapter 3.

Chapter 3: Research Method

Introduction

HTN is a common, though manageable, chronic health condition; however, lack of awareness and management have created barriers to the reduction in the prevalence of the morbidities and mortality associated with it. The prevalence of essential HTN has been on the increase in recent years among native-born Black populations and African-born immigrants in the United States (Coulon et al., 2013; Zoellneret et al., 2014). Persistent low levels of physical inactivity, limited access to care, and a variety of existing health problems could be associated with this trend, as could a wide range of biological, environmental, and psychological factors (Coulon et al., 2013; Zoellneret et al., 2014). The associations of these factors with essential HTN have been examined by various researchers and their results are described in Chapter 2. However, no published research to date has examined direct correlation between development of essential HTN, physical inactivity, food security, immigrant health status, and length of stay among African-born immigrants in the U.S. The purpose of this quantitative, descriptive, nonexperimental study was to investigate the association of physical inactivity, length of stay in the United States, immigrants' health status, and food security as risk indicators in the development of essential HTN among African-born immigrants. Using secondary data from the 2014 NHIS survey, I tested the association between length of stay, immigrant health status, physical inactivity, and food security, and development of essential HTN among African-born immigrants in the United States.

In this chapter, I discussed the research methodology and outline in detail the study design and rationale. I described the source of the secondary datasets that included the sampling procedures for the population, recruitment, instrumentation, and data collection method. I defined the independent and dependent variables. The data analysis section explains the use of SPSS software and summarizes the planned statistical analyses. Consideration for threats to validity during sample collection and analysis of the data are critical and I assessed all data for correctness.

Research Design and Rationale

The nature of the study was a quantitative, descriptive, and nonexperimental research design using secondary data from a cross-sectional survey from the 2014 NHIS dataset. Quantitative methods can be used to assess multiple variables and test hypotheses (Creswell, 2009). Quantitative methodology allowed me to measure any associations that exist between HTN, immigration health status, physical inactivity, food security, and length of stay in African-born immigrants living in the U.S. In this study I conducted inferential statistical analysis to test my research hypotheses, based on secondary data from a cross-sectional study. A cross-sectional study is often based on samples of general populations that include men, women, and children; the results are generalizable with respect to an outcome and risk factors. My study focused on secondary dataset that contained both the dependent variable development of essential HTN and independent variables: level of physical inactivity, immigrant health status, food security, and length of stay in the United StatesThere were no time or resource constraints in the conduct of this study.

Methodology

Population

There are approximately 200,000 to 1.5 million of African-born immigrants in the United States (MPI, 2011). Countries with the highest African immigrant populations in the U.S. are Nigeria, Ethiopia, Egypt, Ghana, and Kenya (MPI, 2011). Nigeria tops the list at 209,908, or 14.1 percent of all African-born immigrants in the U.S. Ethiopia has 148,221, or 9.9 percent of African-born immigrants in the U.S., Egypt has 138,194, or 9.3 percent, Ghana has 108,647, or 7.3 percent, and Kenya has 87,267, or 5.8 percent (MPI, 2011). This study used a secondary dataset from the NHIS database for the year 2014. For the purpose of this study, potential subjects were African-born immigrants of the age 40 years.

Sampling and Sampling Procedures

My study intended to focus on African-born immigrants living in the U.S.; the NHIS attempted to cover a wide range of ethnic groups and increase the precision of estimates. To do so, three ethnic groups were oversampled; this include Blacks, Hispanics, and Asians. A purposive sample of native Blacks, including African-born immigrants, Hispanics, and Asians from across the United States were surveyed (CDC, 2014b). The NHIS survey focused on particular demographic characteristics of the population that could accurately answer the research questionnaires and also fluent in English and Spanish/Hispanic (CDC, 2014b). Subjects were randomly selected and prior to sampling processes, subjects were notified by the CDC/NHIS office about the nature of the study and the expected outcome (CDC, 2014b). African-born immigrants are the

target population for my study. The NHIS dataset uses stratified, multistage probability sampling of the civilian, noninstitutionalized, and nationally representative resident of United States (CDC, 2014c). For fair and equitable sampling process, the country was divided into four geographic areas, also known as primary sampling units (PSUs), the PSUs are then combined to form strata, and each stratum was then divided into a series of neighborhoods (CDC, 2014c). The PSU consists of a county, small contiguous counties, and metropolitan statistical areas (CDC, 2014c). Also, households and families were chosen at random from these neighborhoods, and among those households, individuals were interviewed to determine their eligibilities to participate in the survey. Eligibility was often based on how well the subjects understand and speak English and Spanish/Hispanic language. Theoretically, each selected survey participant represents approximately 50,000 United States residents (CDC, 2014c).

My study used a secondary dataset from the CDC/NHIS collected from 2014, and is the most current data containing both the independent and dependent variables available to the public in the public domain. For publicly released data files or public use data files, no permission is required to access the data (CDC, 2014c). The analysis for this study will use the dataset that was based on a total number of 44,552 households containing 112,053 persons in 45,597 families; 45,563 were eligible to participate, 36,697 (80.48%) were numbers of adult response rates, this was calculated by dividing the number of completed adult interviewed (36,697/45,563), (CDC, 2014c). However, a stratified random sampling of respondents were used in order to stratify for respondents

whose geographic birth place were from Sub-Saharan African nations and to meet estimated sample size calculated.

Power analysis. I used G*Power version 3.1 software to calculate the sample size, anticipating the use of logistic regression as the statistical test method. The input parameters were: priori analysis, model z_tests, two tailed, logistic regression, and the statistical significance level set at: alpha (α) = 0.05. The effect size provides an estimate of strength of the association between both the dependent, independent, and the moderating variables in this study. The power was set at 0.95 or (95%, confidence interval CI), (1-ß err prob), this is the probability of estimated participants assumed to be sufficient enough to find statistical effect size of 0.3% or (30%), anticipated odd ratio (*OR*) significance of 1.3, and $R^2 = 0$. Pr(Y=1/X=1) H0 = 0.2. Based on these parameters, $n = 1{,}188$ was the estimated sample size.

Data Collection

The NHIS has been in the research field for over 50 years; surveys were conducted in English and Spanish/Hispanic by trained staffers of CDC/NHIS (CDC, 2014c). Participants were interviewed in their homes or at the local community health centers. For the selection process, households that were selected for inclusion in the NHIS survey were usually mailed letters informing them that NHIS interviewers will visit their homes to conduct a one-on-one interview (CDC, 2014c). When permission is granted, and visiting date was agreed, upon arrival, the interviewer requests the household member to answer eligibility questionnaires, the questionnaires are used to determine if occupants meet the NHIS standard criterion (CDC, 2014c). If eligibility is

determined, the occupants are informed of their rights and confidentiality of their information and the purpose of the survey (CDC, 2014c). The NHIS interviewers obtained all information by self-reporting from participants.

Because my study was based on secondary data, relevant questions and participants' responses related to the variables of physical inactivity, length of stay in the United States, immigrant health status, food security, age, educational level, and HTN are extracted from the NHIS datasets and used for my study. These data are released for public use; no permission is required to access the data (CDC, 2014c).

Instrumentation and Operationalization of Constructs

The NHIS surveys assess the health status of adults in United States; it is the foundation of the nation health system surveys (CDC, 2014c). The CDC uses a well-defined, structured, and established research standard and questionnaires for human subjects, tracks changes, and covers all demographics, races, ethnicities, and SES. I used pools of the secondary dataset that have clusters of Africa-born immigrants from NHIS surveys.

Dependent Variable

Development of HTN is the dependent variable for this study. One of the NHIS survey questions I used for this variable was: "Have you ever been told by a health-care provider or other health care professional that you had hypertension, also called high blood pressure"?

Independent Variables

The independent variable physical inactivity is a categorical variable and was based on ordinal scale. The NHIS survey questions used for this variable are: How often do you do vigorous leisure-time physical activities for at least 10 minutes that cause heavy sweating or large increases in breathing or heart rate? Respondents were instructed to use the following response options. The coding scale for this question is:
0 = Never 1 = per day 2 = per week 3 = per month 4 = per year 6 = unable to do this activity 7 = refused 9 = don't know (CDC, 2014c).

Length of Stay in the United States

Length of stay is a categorical variable. The 2014 NHIS dataset includes two recodes that were based on birthplace information. For the purpose of this study, African-born immigrants include all countries on the African continent, plus the Canary Islands, Comoros, Madagascar, and Madeira Islands. Geographical birth (GEOBRTH) indicates geographic place of birth, this has three categories: born in one of the 50 United States and the District of Columbia; born in one of the United States territories. Region of birth (REGIONBR) categorizes all persons into one of 12 geographic categories depending on their country of origin. Length of stays measures the number of years the participant has lived in the United States. It also calculates if the number of years in the United States might have caused the immigrants to development HTN. Participants were asked the months and year they came to this country. Length of stay was determined based on the answer to the questions from the NHIS survey: (1) "What country were you born? (2) About how long have you lived in the United States"? These variables were coded then

categorized into six categories: (1) less than 1 year (2) 1 year or less than 5 years (3) 5 years to 10 years (4) 10 to less than 15 years (5) 15 years or more, and (6) Unknown.

Immigrant Health Status

Health status is defined as the state of well-being, physically, and mentally fit (CDC, 2014c). Health status is a categorical variable. Immigrants arrived with unique health, however, their health status and healthcare needs remain entirely under researched, despite some psychological changes that might have evolved among the groups (Hamilton et al., 2011; Steffens et al., 2006; Venters & Gany, 2011). Health status information was measured by using the following question from the NHIS survey:Compared with 12 months ago, would you say your health is better, worse, or about the same? Multiple logistic regression analysis was used to test the independent effects of the immigrants' health status while controlling for confounding effects of age, education, and race.

Food Security

Food security means access to foods by all members of the families in a household at all times, enough food for an active and healthy life (CDC, 2014). The Family Food Security (FFS) is sponsored by the United States Department of Agriculture (USDA); it consists of 10 questions addressing adult 30 day food security (CDC, 2014c). Food security was used to examine the relationship between food insecurity and health (CDC, 2014). The eligibility of the individual food security questions were determined by reported household food security status. Participants who did not have food security data

reported were not eligible to participate. The FFS section has been included in the NHIS since 2011. I used the following questions related to food security for my study:

1. I worried whether my food would run out before I got money to buy more. Was that often true, sometimes true, or never true in the last 30 days?
2. In the last 30 days, did I or other adults in your family ever cut the size of your meals or skip meals because there wasn't enough money for food?
3. In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money for food?

Moderating Variables Age and Education

Moderating variables (MV) influences the direction and strength of relationship between dependent variable (DV) and independent variables (IV). Age is reported as continuous variable until age of 75. Age is a moderating variable because of its tight relationship with HTN and SES, particularly among the focus population. Education is also a moderating variable in that; it is tightly associated with SES and the development of HTN. Low SES (i.e., education, income, poverty, and age demographics) are often associated to stressful lifestyles and a barrier to preventive self-care, and one of the predictors to the development of essential HTN condition (Kennedy et al., 2009; MacKinnon, 2011). Education was divided into two categories (less than high school and high education or more). Table 4 depicts description of the variables analyzed in this research study

Table 4

Variable Descriptions

Variable Type	**Level Measurement**	**Coding Types**
Development of HTN (Dependent)	Categorical- Nominal	1= Yes, 2 =No, 7 = Refusal, and 9 Don't know
	Independent Variables	
Physical Inactivity	Categorical (Ordinal)	0= Never, 1 = Per day, 2 Per week, 4 = Per year, 6= Unable to do this activity, 7=Refusal, and 9 Don't know
Length of Stay	Categorical (Ordinal)	(1) = <1yr (2) =1yr or <5yrs (3) = 5yrs to 10yrs (4) 10yrs to <15yrs (5) 15yrs or More, and (6) Unknown
Immigrants Health	Categorical (Ordinal)	1 = Better, 2 = Worse, 3 About the same, 7, and 9.
Food Security	Categorical (Ordinal)	1= Often true, 2 Sometimes, 3 Never true, 7, and 9
	Moderating Variables	
Age (MV)	Continuous (Ratio)	18-75 Age in Years; 7, 9.
Education (MV)	Categorical (Ordinal)	19 = Bachelors 20 = Masters, 21 = Professionals, 22 Doctoral, 7, 9

Data Analysis Plan

The data file for 2014 released in SPSS format was used for analysis. SPSS version 21 is appropriate software for this research; this version is capable of storing large volumes of data, provides easy coding for identification and labeling, recording, transformation, and weighting of all variables analyzed in this study.

To test each of the research RQs, descriptive and inferential statistics analyses was conducted using binary (also known as binomial) logistic regression method. Binary method was used to examine the association between variables and it can accommodate more than one categorical predictors, nominal and/or ordinal (CDC, n.d).

Research Questions, Null and Alternative Hypotheses

RQ1**:** Is there an association between length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education?

$H_0$1: There is no association between length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education

$H_1$1: There is an association between length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education.

RQ2**:** Is there an association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education?

$H_0$2: There is no association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education.

$H_1$2: There is an association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education.

RQ3: Is there an association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education?

$H_0$3: There is no association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education.

$H_1$3: There is an association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education.

RQ4: Is there an association between the physical inactivity and development of essential HTN among African-born immigrants in the United States, when accounting for age and education?

$H_0$4: There is no association between the physical inactivity and development of essential HTN among African-born immigrants in the United States when accounting for age and education.

$H_1$4: There is an association between the physical inactivity and development of essential HTN among African-born immigrants in the United States when accounting for age and education.

Descriptive Statistics

I used descriptive statistics to report the number and percentage of frequencies for all except for the age that is a continuous variable. The reporting included frequencies, mode, means, and median. I used descriptive statistics for each of the variables presented in table 3. The use of descriptive statistics helps identify any patterns that might be associated with the variables. Ordinal and categorical variables were presented and summarized by the use of frequency of distribution, count, and percentage of frequencies. Age response will include the respondent's day, month, year of birth, and date of screening by the NHIS.

Inferential Statistics

Inferential statistical analysis was appropriate to answer the research questions, logistic regression model was an acceptable method when there are more than one categorical response variables (binary logistic or binomial). Binomial regression was appropriated when the dependent variable outcome is dichotomous (yes/no) and more than one categorical or (ordinal), and or when either dichotomous or continuous variables are present. It can be used to estimate the association between one or more variables

(CDC, n.d.). For example; Research question 1. Is there an association between the development of essential HTN among African-born immigrants and length of stay in the United States, after accounting for age and education? Length of stay in the United States was assumed as a risk indicator for the development of essential HTN among these groups of immigrants after accounting for age and education. Binary logistic regression was used to make comparisons between direct relationship for length of stay in the United State and the development of essential HTN among the focus group. The logit is the logarithm of ratio that determined the probability of the presence or absence of the study characteristics (diagnosed with HTN coded as 1, or Yes), not diagnosed (with HTN coded as (0 or No), and is defined as In (p/1-p). It further explained the equation as (Y =1 and Y = 0); assuming p as the probability of event, in this case, African-born immigrants have exposure to HTN. The odds ratio between the odds for two sets or more of indicators has this formula; $\theta = (\pi/(1-\pi)) |X=X(1) (\pi/(1-\pi)) |X=X(2)$ (Mackinnon, 2011). The significance level (α) was set at 0.05 to denote statistical significance with a confidence interval (CI) of 95%. Using the p-value approach, if p-value < 0.05, then the null hypothesis are rejected and the research hypothesis is accepted; however, if the p-value is > 0.05, I failed to reject the null hypothesis. The exponentiated coefficient exp ($\beta(1)_0$) is the amount by which the relative risk Pr[Y=category 1]÷Pr[Y=base category] was multiplied when variable X_0 is increased by one or more units (Mackinnon, 2011). The ($ß_0$) represent the odd ratio and was based on the assumption of the outcome predicted.

Threats to Validity

Creswell (2009), Frankforth-Nachmias and Nachmias (2008) assessed that there are two types threats to validity: internal and external validity. Internal validity deduced that research be constructed so as to eliminate the possibility that factors other than those being investigated are responsible for changes in the dependent variables. Therefore, to establish internal validity, a researcher must be able to answer whether the change in independent variable was responsible for the change in dependent variable. Internal validity often occurs at the onset of research operation…termed as "extrinsic factors" (Frankforth-Nachmias & Nachmias, 2008). External validity is threatened when researchers draws incorrect inferences from sample data. It also occurs when findings are generalized to larger populations and applied at a different settings either in the past or relevant to future studies. It is therefore, possible that threats to validity occur during the course of the study, especially, when conducting the research, during data analysis and interpretation of results (Creswell, 2009). For example, if Ghanaian immigrants in New Hampshire are diagnosed with HTN, the one individual or group of individuals are not enough to draw a conclusion that all Ghanaian immigrants in New Hampshire have a HTN condition. The NHIS survey attempted to control threats to validity by ensuring appropriate training of individuals conducting the research and utilizing specific protocols to the study (CDC, 2014c). The Computer Assisted Personnel Interviewing (CAPI) system has built-in consistency checks and programmed to reduce data entry errors. It is also programmed to use online help screens to assist interviewers in defining

key terms used in the questionnaire (CDC, 2014c). All of the data are reviewed by the field office staff for accuracy and completeness.

The anonymous and voluntary nature of participation in research study intrinsically increases the likelihood of honest responses provided by participants. My research will assume that honesty will prevail to reveal an objective reality. Researchers tend to often use a stratified sampling method to ensure that either different groups of the population being researched have adequate representation so as to increase high level of accuracy or to select specific groups of individuals to study. This study used a simple stratified random approach to select African-born immigrants from the NHIS dataset.

A Type I error occurs when the null hypothesis is true meaning, there really is no effect, but the null hypothesis was rejected. A Type II error occurs when the sample is too small; Type II error is when the alternative hypothesis is correct but the researcher fails to reject the null hypothesis, meaning, there is an effect, but there was a failure to detect the effect. If the sample size is large enough, I made efforts to reduce Type II errors. In order to help reduce potential threats to statistical conclusion and validity, the level of significance (α) is set to .05 and statistical power was set to 95%.

Ethical Procedures

This study used NHIS archived, de-identified secondary data available in the public domain for public use. Before conducting data collection, approval #05-09-16-0222560 was obtained from the Walden University IRB office. Data are stored in a password protected personal computer and no one else has access to the information on

the computer. I retained all relevant data to the study for five years after the completion of this study after which the flash drive are physically destroyed.

Summary

HTN is a common disease that remains a significant major risk factor among Black populations worldwide. In this chapter, I presented the study methodology for the proposed study, and outlined the main components of this study, including the research questions, research design, data collection, data analysis plan, sampling procedures, threats to validity, and study variables. The study population comprised of African-born immigrants in the United States. This study will use secondary data from NHIS 2014 dataset. I analyzed the data using descriptive and inferential statistics, binomial regression analysis, and z-test analyses tests for dependent and independence variables. Chapter 4 presented the results of the study.

Chapter 4: Results

Introduction

The purpose of this quantitative, nonclinical, cross-sectional study was to investigate the association of length of stay in the United States, food security, immigrants' health status, and physical inactivity and the development of essential HTN among African-born immigrants. A secondary dataset from a series of cross-sectional health studies by the NHIS designed to explore the development of essential HTN, hearth attack, diabetes, CVD, and other chronic diseases in the United States was used for this study.

Research Questions and Hypotheses

Essential HTN among African-born immigrants was the focus of this study which was guided by the following research questions and hypotheses:

RQ1: Is there an association between length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education?

$H_0$1: There is no association between length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education.

H_a1: There is an association between length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education.

RQ2: Is there an association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education?

$H_0$2: There is no association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education.

H_a2: There is an association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education.

RQ3: Is there an association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education?

$H_0$3: There is no association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education.

H_a3: There is an association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education.

RQ4: Is there an association between physical inactivity and development of essential HTN among African-born immigrants in the United States when accounting for age and education?

$H_0$4: There is no association between physical inactivity and development of essential HTN among African-born immigrants in the United States when accounting for age and education.

H_a4: There is an association between physical inactivity and development of essential HTN among African-born immigrants in the United States when accounting for age and education.

Data Collection

Data was retrieved from the CDC/NHIS survey 2013-2014 databases structured around each of the research questions designed to answer the causes of essential HTN among immigrants of African descent. Prior to data collection, Institutional Review Board (IRB) (#05-09-16-0222560) approval was obtained. The study demographics included four regions of the United States Northeast, North Central/Midwest, South, and Westcorresponding to the U.S. regions recognized by the Census Bureau. The NHIS dataset used stratified, multistage probability sampling of the civilian, noninstitutionalized, and representative resident of United States. In order to have fair and equitable sampling process, four geographic areas were targeted; this was known as primary sampling units (PSUs). The PSUs were then combined to form strata, and each stratum was then divided into neighborhoods. The 2014 NHIS survey consisted of n = 112,053 participants of various racial demographic compositions. A total of 92,859 (83%) of 112,053, who participated in the NHIS national survey self-identified as United States citizens, native Blacks or African Americans, Whites, and Hispanics. African-born immigrants were the focused population of my research, n = 744 (0.7%). The total

household response rate was 73.8%: 17.6% percentage points of the 26.2% noninterview rate were the result of respondent refusal and unacceptable partial interviews. The remaining 8.6 percentage points were primarily the result of failure to locate an eligible respondent at home after repeated contact attempts (CDC, 2014b).

A discrepancy encountered during the course of this research was that the data were generalized to a larger population making it difficult to directly answer the research questions as intended. I expected the African-born immigrants' representatives in the NHIS survey would have had individual data as to how they each responded to the survey questions, but such was not the case. Instead, participants were clustered and results were generalized; this made it difficult to know how African-born immigrants individually answered the survey questions. In the NHIS survey, African-born immigrants were comprised of all people from countries on the continent of African, plus the Canary Islands, Comoros, Madagascar, and Madeira Islands. Asian n = 1313 (1.2%), South East Asia = 2093 (1.95%), Middle East = 401 (0.4%), and South American *n = 10, 015* (8.9%), aged (18 – 44, 45 – 64, 65 – 74, 75) and over. The NHIS used clustered protocols that are usually used in multistage for sample selection, this was done to achieve sampling efficiency and representatives.

Results

Descriptive Statistics

A total of *n* = 112,053 individuals participated in the NHIS survey, of which, 744 (0.7%) were African-born immigrants. Descriptive analyses that included frequencies, percentages, standard deviation (*SD*), means, variances, and summaries are presented in

tables below. Survey questions used in the NHIS study were framed in Likert scale styles to allow the participants to self-rate their health and health behaviors, evaluate their economic status (age and education), ever been told they have hypertension, length of stay in the United States., impact of food security, immigrant's health status, and physical inactivity.

Essential HTN is the single dependent dichotomous variable and is coded as (HYPEV). The related survey question was: Ever been told you have hypertension? Participants were to provide self-evaluation of their health using the following responses: 1-Yes and No-2. More than half of the participants provided, no or never been told responses, overall mean = *.44, or (44%), SD = 0.702 70.2%), and variance = 0.493 (49.3%).* Table 5 reports the frequencies and percentages for the question: Ever been told you had hypertension by their health care providers.

Table 5

Ever been told you have HTN (n = 112,053)

Category	Frequency	Percent
TNP[1]	75,356	67.3%
No	24,254	21.6%
Yes	12,396	11.1%
Total	**112,053**	**100%**

1 Total number of participants (TNP)

Africa-born immigrant populations in the NHIS survey includes all countries on the continent of Africa with representative sample number of only 0.7% (*n*= 744) as participants. The immigrants were asked about the impacts of extended stays or years in the United States which could have contributed to the development of essential HTN. The Years spent in the U.S. and Immigrant health status question was framed as “Health Status compared to 1 year ago" (CDC, 2014b). Questions of how long have you been in the United States? And Years spent in the US were divided into 5 years increment categories as presented in Table 5 (CDC, 2014b). Table 6 reports the frequencies and percentages of years lived in the U.S.

Table 6

Length of Stay in the United States or (Years in Spent in the US) (n= 112,053)

Category	Frequency	Percent
TNP[1]	93,103	83.1%
LT 1year	274	0.2%
1year to less than 5yrs	1,746	1.6%
5yrs LT 10yrs	2,246	2.0%
10yrs LT 15yrs	3,110	2.8%
15yrs or more	11,112	9.9%
Total	**112,053**	**100.0%**

1 Total Number of Participants

Participants were asked of their health status to compare to 1 year ago. The question used was, "Compared with 12 months ago, would you say that your health is better, worse, or about the same?" (CDC, 2014b). Table 7 reports the frequencies and percentages of the participants' responses,

Table 7

Health Status compared to 1 year ago (n = 112,053)

Category	Frequency	Percent
TNP	61,976	55.3%
Better	9,483	8.5%
Worse	3,355	3.0%
About the same	37,155	33.2%
Total	**112,053**	**100.0%**

1 Total number of participants (TNP)

Physical Inactivity

Participants were asked how often they engage in physical activity; among those who participated, they were told to self-evaluate and rate their participation using the following scales 1- Per day, 2 per week, 3- Per month, and 4- Per year. Three categories were measured: moderate, leisure-time, and vigorous physical activity for at least 10 minutes. Table 7 and 8 presented the frequencies and percentages of the participants' responses. More than of half of the participants 67.3% (*n* = 75,356) responded.

Participants were asked to respond to vigorous physical activities question; vigorous leisure-time activities are described in the survey question itself as activities that "cause heavy sweating or large increases in breathing or heart rate," (CDC, 2014b). Examples include fast walking, calisthenics exercise, fast bicycling, jogging, strenuous swimming or sports play, vigorous aerobic dance, and strenuous gardening (CDC, 2014b). Participants reported the time period as 1- Per day, 2 per week, 3 - per month, and 4- Per year. Table 8 reports the frequencies and percentages of the participants' responses for frequency of moderate physical activity, 10 + minutes.

Table 8 reports the frequency of vigorous physical activity for 10+ minutes.

Table 8

Frequency of Moderate Activity 10+ Minutes

Category	Frequency	Percent
TNP[1]	75,356	67.3%
Never	14,247	12.7%
Day	5,242	4.7%
Week	14,955	13.7%
Month	876	0.8%
Year	217	0.2%
Total	**112,053**	**100%**

Table 9

Frequency of Vigorous Physical Activity 10+ Minutes

Category	Frequency	Percent
TNP[1]	75,356	67.3%
Never	19,567	17.5%
Day	2,441	2.2%
Week	12,187	10.9%
Month	1,024	0.9%
Year	312	0.3%
Total	**112,053**	**100%**

1 Total number of participants (TNP)

Food Security Status

Food security information were provided by the head of the household for the family, the question correspond to the past 30 days of food availability. It is important to note that the United States has for long placed significant values for food availability in every houseolds: "It has long been an article of faith among the American people that no one in a land so blessed with plenty should go hungry...Hunger is simply not acceptable in our society" (CDC, 2014b). Food security was defined as access by all people at all times to enough food for an active, healthy life; this includes ready availability of nutritionally adequate and safe foods, and an assured ability to acquire acceptable foods in socially acceptable ways without resorting to emergency food supplies, scavenging, stealing, or other coping strategies (CDC, 2014b). Although food security cannot be

ascertained or captured by a single indicator, household incomes, level of food security, but hunger can be determined by varieties of specific conditions, experiences, and behaviors that serve as indicators of the varying degrees of severity of condition (CDC, 2014b). Food security question on whether participants ate less than they should; food security status were asked of families for whom it was often or sometimes true in the last 30 days that they were worried that their food would run out before they got money to buy more, or that their food didn't last and they didn't have money to get more in the last 30 days. Table 10 present the frequencies and percentages of the participants' responses.

Table 10

Ever ate less than felt you should because there is not enough money in the last 30 days. (n = 112,053)

TNP[1]	89,404	79.8%
No, family respondent only	14,247	12.7%
Yes, family respondent only	8,383	7.5%
Total	**112,053**	**100%**

1 Total number of Participants

Participants were asked of the family's food security status, this was based on their raw score (FSRAWSCORE) for a 30-day period. Food security statuses include high food security, marginal food security, low food security, and very low food security (CDC, 2014b). Overall responses: Table 11 presented the frequencies and percentages of the participants' responses.

Table 11

Food Security Raw Score (n = 112,053)

Category	Frequency	Percent
1 High food security (raw score 0-2)	98,383	87.8%
2 Low food security (raw score 3-5)	8,084	7.2%
3 Very low food security (raw score 6-10)	5,491	4.9%
Total	112,053	100.0%

Age

Age at which the immigrants arrived was calculated by subtracting length of residence from the current age, creating four age-at-arrival categories based on frequency distributions (18–24, 25–44, and 45–74 years, CDC, 2014b).

Moderating variable age; NHIS grouped the participants' age as 18–44 years, 45–64 years, or 65-74 years, and ≥75 years. Age was reported by the individual age in years since last birthday. Age is a continuous variable and cannot be coded as "unknown" and participants could also refuse to say their age and names if they choose to. For the purpose of my study, I focused on age 40 to 75 years and above. Participants were asked of individual age in years since the last birthday. Age ranges were: (40 – 60 years = representing about 1.3 – 1.4%) of participant within the age of 40-60 years old and up to 75 years and above representing (1% and less)

Education

Educational attainment was measured based on the level of education attainment by the participants. Education category is measured from participants who have bachelor degrees and above. Kindergartens through Associate degrees were excluded. Participants were asked to indicate the level of education completed. The frequencies and percentages of the participants' responses are presented in table 12.

Table 12

Educational Attainment (n= 112,053)

Category	Frequency	Percent
TNP[1]	23,999	21.4%
Bachelor's degree	14,371	12.8%
Master's degree	5,990	5.3%
Professional degrees	1,031	0.9%
Doctoral degree (PhD, EdD)	1,092	1.0%
Refused	628	0.6%
Unknown	81	0.1%
Don't know	806	0.7%
Total	**112,053***	**42.9%***

*Note: Refused and unknown responses with 0.0% or redundant values were not included, because there are not statistically significant. Total values will be less than 100%.

Self-Reported Race

The question was asked of the participants about their racial identity and region of birth, self-reported race and country or region of birth overall result analyses (*n= 112053)*, number of participants, *32.7% (n = 36,650),* missing cases, *67.3% (n = 75,403):* self-reported race, mean = *14.83%.* Table 13, the presents percentage and frequency responses from the participants on question about self-race identification

Table 13

Self-reported Race (n = 112,053)

Category	Frequency	Percent
TNP[1]	112,053	100%
White	84,369	75.3%
Black/African American	15, 5 83	13.9%
Native American/Alaskan Native	1375	1.2%
Asian	7403	6.6%
Multiple Race *	3020	2.7%
Race not Released	303	0.3%
Total	**112,053**	**100.0%**

*Multiple races include most African countries clustered into multi-races.

Logistic Regression Analysis.....

A binary logistic regression analysis was conducted to investigate if primary independent variables of length of stay or years in the US, immigrant health status, food

security and physical inactivity are factors that predict the development of essential HTN among the population surved. Also investigated was the association of moderating variables of age and educational attainment. The confidence intervals (CI) defined the values of slope coefficient; 95% CI was reported in row of lower limit (LL) and upper limit (UL) ranges. Significance was set at $p < 0.05$ level. Cox and Snell R Square and Nagelkerke R square values, which are used in calculating the variation, e.g. the variation in the dependent variable, but for the purpose of this study, I reported Nagelkerke R^2 values.

Length of stay or years spent in the US and hypertension.

RQ1: Is there an association between length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education?

$H_0$1: There is no association between length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education.

$H_1$1: There is an association between length of stay in the United States and the development of essential HTN among African-born immigrants when accounting for age and education.

Participants were asked to self-evaluate length of stays or (years spent) in the U.S. The outcome of interest for this study was if each of these indicators has an association with the dependent variable, development of essential HTN. The question was asked of the participants if they were ever been told they have HTN by their healthcare provider.

The dependent variable was a single analysis on its own, no independent variable was included. The unstandardized Hosmer-Lemeshow goodness-of-fit was not statistically significant, Chi Square (X^2) = 57.095 (p >0.005) indicating the model was correctly specified. Additionally, the -2 log Likelihood although, not significant, but can be used to make comparisons with the rest of the statistical analysis. The exponentiation of B coefficient, also known as the odd ratio is the change in the odds for each unit of time of the variable. The Cox and Snell and the Nagelkerke R^2 = 6945.821, was statistically significant if p <0.05. It is worth noting that values less than 1.000 indicate a decreased odd for an increase in one unit of the independent variable. Table 14 provided the results of the logistic regression analysis for "Ever been told you had HTN." Note: *Lower Limit (LL) and Upper Limit (UL) for ranges for confidence interval.*

Table 14

Logistic Regression predicting, Ever Been told had HTN (IV) and Length of Stay (YRSINUS) in the US.

B	S.E.	Wald	df[b]	Sig.	Exp (B)	95% CI OR
-1.095	.029	1454.921	1	P<0.005	.335	Constant
.611[a]	.039	247.519	1	P<0.005	1.843	.708 – 1.989

(a) Ever been told had hypertension; (b) Degree of freedom

The primary independent variable in the equation overall result for length of stay or years spent in the U.S. and dependent variable of Ever been told you had HTN were found to be statistically significant (p < .05). The exponentiation of B coefficient explain the change in the odds for each increase in one unit of the independent variable; it means

for every 5 years increment that the immigrant spent in the US, they have 84% chances of developing essential HTN, or the greater the chances of exposure to essential HTN; essentially, the odds ratio increases. The results showed there was a strong association between length of stay and the dependent variable essential HTN, therefore, the null hypothesis was rejected.

A binary logit was performed on the following variables, length of stay or years spent in US (YRSINUS[a)], (moderators of age, and education) as continuous and ordinal regression. The expeonential values predict the probability of an event occurring. Values less than 1.00 indicate a decreased odd ratio for an increase in one unit of developing essential HTN. The Exp(B) of 1.152 = [1.152-1.0 = .152 x 100 = 15.2%] represents the odds of having essential HTN for each unit reduction in the independent variable, the odds of having essential HTN increases by a factor of 15.2% , signifiying that length of stay or years spent in the U.S. is strongly associated to the development of essential HTN. Table 15 provided the statistical analysis for the dependent variable, length of stay or years spent in the US after adjusted Exp(B) values for age and education.

Table 15

Logistic Regression predicting length of stay or years spent in the US (YRSINUS), Age, and Education in relation to essential HTN.

B	S.E.	Wald	df	Sig.	Exp (B)	95% CI OR
.141[a]	.042	11.578	1	.001	1.152	1.062 –1.250
.072[b]	.002	885.3701	1	.000	1.074	1.069-1.079
-026[c]	.006	17.130	1	.000	.974	.962 - .986

(a) YRSINUS (b) Age, and (c) Education

Age[b] is the odds for each increase for one unit, which means, .074 (7.4 %)' odds of age being a factor for developing essential HTN among the participants in the survey. Age is statistically significant; 7.4% signified there is a moderate association with age and the causes of essential HTN.

For Education[c], *[p <0.005], [-2 Log likelihood = 5814.123, Nagelkerke R^2 = .299], and [Hosmer and Lemeshow R^2 = [27.111], [sig. = 0.001],* statistically, values less than 1.000 indicate a decreased odd for an increase in one unit of the independent variable. It suggests decreased odd ratio for an increase in one unit of the independent variable, essentially, less vulnerability to morbidity of the condition. Education has value of 0.974 = -0.026 (-2.6%) decreased odds of education associated with development essential HTN. This means that those with higher education are more likely to control the essentially HTN; $p < 0.005$, the value was statistically significant; the null hypothesis was rejected and alternative hypothesis was accepted.

Immigrant health status and food security.

RQ2: Is there an association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education?

$H_0$2: There is no association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education.

$H_1$2: There is an association between immigrants' health status and food security as risk factors for essential HTN among African-born immigrants in the United States when accounting for age and education.

Health status and the dependent variable essential HTN were measured; participants were instructed to self-rate their health and compare to 1 year ago. The parameter coding for participant responses were "better, worse, and about the same." The overall percent = *64%, [-2 Log likelihood = 8257.453], [Nagelkerke R = .071] [Hosmer and Lemeshow = 7.061], and [sig. = .423]*. Values less than 1.00 indicate a decreased odd ratio for an increase in one unit of developing essential HTN. Health status was coded as: health status (1) and health status (2). For Health status (1), $p < 0.005$, the Exp(B) [1.384 – 1 = 0.384 x 100 = 38.4%], this means that for each unit reduction in the independent variable of health status, compared to 1 year ago, the odd ratio of having or developing essential HTN increased by factor of 38.4% therefore, not statistically significant, the null hypothesis is accepted; health comparison status to 1 year ago was found not associated to the causes of essential HTN.

Health status (2) *the Exp(B) = [1.467-1.0 = .467 x 100 = 46.7 %];* this indicated that for each unit reduction in the independent variable, health status, compared to 1 year ago, the odd ratio of developing essential HTN is increased by factor of 46.7%, therefore, not statistically significant, the null hypothesis is accepted. Health status comparision to 1 year was found not to be associated to the development of essential HTN. Statistical data analysis is presented in table 16.

Table 16

Logistic Regression predicting, Ever Been told had HTN (IV) and Immigrant Health Status (HSTAYYR) Compared to 1 year Ago?

B	S.E.	Wald	df	Sig.	Exp (B)	95% CIOR
.325[a]	.068	22.941	1	.000	1.384	1.211 – 1.580
.903[b]	.073	151.731	1	.000	2.467	1.137 – 2.849

(a) Health status 1 and (b) Health status 2

Food security is a primary independent variable. The following survey questions were asked: Ever ate less than felt you should because not enough money to last 30 days. Food Security Status was measured based on enough food in the house for 30 days. Frequency for Food Security was based on 30 days, if the participants ever ate less than they felt they should because there is not enough money, to last for 30 days.

Material hardship: participants'were asked on material hardship as part of food security question. Families were asked if they ever thought to eat less than they should on a given day in a month or before they have money to buy more; the mean = 2.99, SD = 6.41%. Participants were asked of ever hungry or did not have enough money to buy food before end of the month, mean = 2.67, SD = 5.82%; food did not last or family are unable to buy food before the end of the month, mean = 2.82, SD = 0.50%, and on question of if family worried that food would run out before they able to buy in a month, mean = 2.78, SD = 0.55%. The responses strongly suggested that there were no significant correlations between food security and causes of essential HTN across all races and ethnicity surveyed.

The second Food Security question is Family-level food status for 30 days. Overall statistical analysis: The Hosmer-Lemeshow goodness-of-fit was not significant ($p > .05$) indicating the model was correctly specified. Additional results were the [-2 log Likelihood = 8241.623], and the [Nagelkerke R squared = .074], [Chi square (R^2) = 7.815, Sig .452]. Values less than 1.00 indicate a decreased odd ratio for an increase in one unit of developing essential HTN. The model suggested that food security was not statistically significant ($p < .05$). Controlling for age and educational level, the predictor variable with the *p* value greater than > .05, is not statistically significant. The Exp(B) = [1.029 - 1 = 0.029 x 100 = 2.9%], this indicated that for each unit in the independent variable, food security, the odd ratio of developing essential HTN increases by a factor of 2.9%, this favored a moderate positive association of the predicted variable for developing essential HTN. The *p* value was not significant because it was greater than the alpha set at p = < 0.05, therefore, the null hypothesis cannot be rejected.

Family Food Security Status (1); participants were asked if they have adequate food for 30 days period. Predictor variable estimated Exp(B) [.748 - 1 = - 0.252 x 100 = -25.2%]. Values less than 1.00 indicate a decreased odd ratio for an increase in one unit of developing essential HTN. P <0.05 is significant, therefore, null hypothesis is rejected and alternative hypothesis was accepted. The estimated Exp (B) = [.834 - 1 = -0.116 = -16.6%], this means, for each unit reduction in the independent variable, Food Security, the odd ratio of developing essential HTN decreases by a factor of -16.6%. A *p* value of 0.033 was statistically significant therefore, the null hypothesis was rejected and alternative hypothesis accepted. It was concluded that none of the two categories of Food

Security Status analyzed were associated with causes of essential HTN among the participants. Table 17 presents the results.

Table 17

Logistic Regression predicting the Food Security (in the last 30 days

B	S.E.	Wald	df	Sig.	Exp (B)	95%CI OR
.029e	.084	.166	1	.733	1.029	.873 – 1.213
-408f	.102	7.998	1	.005	.748	.612 – .915
-181g	.085	4.563	1	.033	.834	.706 - .985

(e) Food Security of ever ate less, (f) Food Security Status 1 and (g) Food Security Status 2

Length of stay and physical inactivity.

RQ3: Is there an association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education?

$H_0$3: There is no association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education.

$H_1$3: There is an association between length of stay in the United States and physical inactivity as risk factors for essential HTN among African-born immigrants when accounting for age and education.

For the question "Ever been told you had hypertension"? The overall percent = 64.0%, [-2 Log likelihood = 8257.453], [Nagelkerke R^2 = .071 = 7.1%] [Chi-square (X^2) = 7.061], [Sig. = .423]. Values less than 1.00 indicate a decreased odd ratio for an

increase in one unit of developing essential HTN. For the question "Frequency of Moderate activity 10+ minutes Time period," response [Exp (B) = .790], the value of .790- 1 = -0.021 (-2.1%)]; this means that for each unit reduction in the independent variable, physical inactivity, or moderate to vigorous physical activity, the odd ratio of developing essential HTN is decreased by a factor of -2.1%; sig = <.496, or p value ≥ 0.5 is greater than the set p value of 0.05, therefore, the null hypothesis cannot be rejected. The second category of moderate physical has the value Exp(B) = .737 – 1 = -.0.263 (-26.3%) is the decreased odd ratio in one unit of the dependent variable, physical inactivity or vigorous physical activity. The *p* value of .385, is greater than the standard alpha value of *p* >0.05, therefore, null hypothesis was rejected and alternative hypothesis accepted. Table 18 present the statistical analysis for RQ3 and the dependent variable essential HTN.

Table 18

Logistic Regression predicting, Ever Been told had HTN (IV), Length of Stay (YRSINUS) in the US, and Physical Inactivity

B	S.E.	Wald	df	Sig.	Exp (B)	95% CI OR
-1.095	.029	1454.921	1	P<0.005	.335	Constant
.611[a]	.039	247.519	1	P<0.005	1.843	1.708 – 1.989
.141[b]	.042	11.578	1	P< .001	1.152	1.062 –1.250
.-235c	.345	.465	1	P<.496	.790	.402 – 1.555
-305d	.351	.755	1	P<.385	.737	.370 - 1.467

(a) Ever been told had hypertension (b) Length of Stay or Years in the US (c) Moderate Physical Inactivity 10min time period 1 and Moderate Physical Inactivity 10min time period 2.

Physical inactivity and hypertension.

RQ4: Is there an association between physical inactivity and development of essential HTN among African-born immigrants in the United States when accounting for age and education?

$H_0$4: There is no association between physical inactivity and development of essential HTN among African-born immigrants in the United States when accounting for age and education.

$H_1$4: There is an association between physical inactivity and development of essential HTN among African-born immigrants in the United States when accounting for age and education.

For the dependent variable essential HTN and the independent variable of physical activity, participants were asked if they engage in moderate physical activity for at least a 10+ minute time and vigorous physical activity for a 10+ minute time period. Participants were also asked if they have "Ever been told you had hypertension?" Participants responses were overall percent = 64.0%, [-2 Log likelihood = 8257.453], [Nagelkerke R^2 = .071 = 7.1%] [Chi-square (X^2) = 7.061], [Sig. = .423]. Values less than 1.00 indicate a decreased odd ratio for an increase in one unit of developing essential HTN. For the question on "Frequency of Vigorous physical activity 10+ minutes Time period," $p < 0.05$, the value of .790 -1 = -0.021 (-2.1%)]%)]; this means that for each unit reduction in the independent variable, physical inactivity, or moderate to vigorous physical activity, the odd ratio of developing essential HTN is decreased by a factor of -

2.1%; sig = <.496, or p value ≥ 0.5 is greater than the set p value of 0.05, therefore, the null hypothesis cannot be rejected. This means that engaging in moderate to vigorous physical activity by the participants' have -2.1% odd ratio to reduce the morbidity of essential HTN; p <.496 was greater than the standard alpha value of $p > 0.05$, therefore, the null hypothesis cannot be rejected. For the second category of moderate physical activity, the value .737 = -.0.263 (-26.3%) decreased odds ratio in one unit of the dependent variable. This means that engaging in moderate physical activity has (-26.3%) decreased odds ratio of reducing the morbidity of essential HTN and the participants. The p value of .385 was greater than the standard alpha value of p >0.05, therefore, null hypothesis was rejected and alternative hypothesis accepted. Table 19 below presents the statistical analysis.

Table 19

Logistic Regression predicting the Physical Activity Moderate 10 min time period

B	S.E.	Wald	df	P value	Exp (B)	95% CI OR
.-235a	.345	.465	1	.496	.790	.402 – 1.555
-305b	.351	.755	1	.385	.737	.370 - 1.467

(a) Moderate Physical Activity for 10 minute time period 1 and (b) Moderate Physical Activity for 10 minute time period 2

Vigorous physical activity 10+ minutes per week Time period; The Hosmer-Lemeshow goodness-of-fit is not significant (p > .05) indicating the model is correctly specified. Additional results included the [-2 log Likelihood = 8257.453] and the [Nagelkerke R squared = .071], [Chi square (R^2) = 7.061, Sig .423]. Values less than 1.00

indicate a decreased odd ratio for an increase in one unit of developing essential HTN. The model suggested that vigorous activity 10 + minutes time period was not statistically significant, sig. = .570. The sig of .570 is more than the alpha value set at ($p > .05$). Vigorous activity 10+ minutes time period predicted was statistically significant, sig. = .245 ($p < .05$). Controlling for age, and educational level, the predictor variable has a *p* value that was greater than > .05, which means not statistically significant. The estimated odds ratio of 1.210 = 21.0% favored a positive association of an increase for every one unit increase of predicted variable for developing essential HTN. The *p* value was not significant because the p value was greater than the alpha set of $p < 0.05$; the null hypothesis was not rejected.

Results for vigorous physical activity 10+ minutes per week responses from the participants when asked how often they engage in physical activity were: the *p* value was greater than the alpha set of $p = 0.05$; the *p* value was not statistically significant. The estimated odds ratio of [.665 = -33.5%] showed that for each unit reduction in the independent variable, physical inactivity, the odd ratio of developing essential HTN decreases by -33.5%, the null hypothesis was not rejected and alternative hypothesis accepted. Table 20 presents the statistical analysis.

Table 20

Logistic Regression predicting the physical Activity Vigorous 10min per week

B	S.E.	Wald	df	Sig.	Exp (B)	95% CI OR
.191c	.335	.323	1	.570	1.210	.627 - 2.335
-408d	.352	1.350	1	.245	.665	.334 – 1.324

(c)Vigorous physical activity for 10min time period 1 and (d) Vigorous physical activity for 10 min + time period 2

Self-Reported Race

Are you Hispanic, White, Black, and Asian, participants were also asked what race do you consider yourself to be? Participants were then asked to self-identify their country of birth; native Blacks identified they were born in the U.S. and considered as African Americans, and African-born immigrant in the survey identified their nationality as African, this include all countries on the continent of African, and Black as race. African-born immigrants who self-identified their race as Blacks of African descent were n= 744 or approximately (0.7%). After the primary analysis, I performed secondary binary logic regression to determine if race was associated with the development of essential HTN. Values less than 1.00 indicate a decreased odd ratio for an increase in one unit of developing essential HTN. Estimated odd ratio Exp (B) [1.373 = 37.3%]; [sig. = 0.29]; for each unit reduction in the analysis of Self-reported race, the odd ratio of developing essential HTN increases by 37.3%, the percentage increase calculated is not significant because self-race identification has no impact for the causes of essential HTN. The sig. of 0.29 is greater than a $p > 0.05$; therefore the null hypothesis cannot be

rejected. Table 21 presents the results for self-reported races. From the results, it was concluded that self-reported race was not associated with causes of essential HTN among the African-born population in the in the survey.

Table 21

Logistic Regression predicting, Ever Been told had HTN (IV), Race, and Region of Birth.

B	S.E.	Wald	df	Sig.	Exp (B)	95%CI OR
-.669[a]	.011	3652.407	1	P<0.05	.512	Constant
.317[b]	.301	1.112	1	.292	1.373	.761 – 2.477

A is the Constant B is Race

Summary

In this study, I investigated whether the independent variables of length of stay or years spent in the US, physical inactivity, immigrants' health status, and food security are directly associated with the development of essential HTN among African-born immigrants in the United States. Of the four independent variables that were tested, length of stay or years spent in the US was found to be statistically associated with respect to the dependent variable essential HTN. Physical inactivity was found to be moderately associated with the development of essential HTN, however, immigrant health status, and food security were found to have weak or no significant association on the dependent variable essential HTN. This supported the null hypothesis which stated that the risk of essential HTN among African-born immigrants was not associated with immigrants' health status and food security. Physical activity is moderately associated the

development of essential HTN after adjusting for the moderating variables of age and education.

In conclusion, the findings from my study demonstrated that length of stay or years spent in the U.S has a strong association with the development of essential HTN. The physical inactivity variable however, demonstrated a weak association with the development of essential HTN. It was hypothesized that age, although, a moderating variable was a factor to the development of essential HTN among African-born immigrants; age has strong correlation with the development of essential HTN, age progression perhaps determined the vulnerability, also, the longer an African-born immigrant remain in the U.S., the higher the vulnerability to the morbid of essential HTN.

Education was also hypothesized to an indicator, although, education is a moderating variable in this study, the education hypothesis has a weak association. However, the analysis showed that the more educated an individual, the more likely to control the morbidity of essential HTN (Coulon et al., 2013). Chapter 5 discusses the interpretation of research findings and implications for social change. Conclusions and recommendations for future research are explained in chapter 5.

Chapter 5: Discussion, Conclusion, and Recommendations

A growing body of literature continues to show that essential HTN is the leading cause for CVD, strokes, heart attack, preventable chronic health related conditions, and deaths among Blacks populations, not only in the U.S. but globally (Coulon et al., 2013; Middleton, 2009). Essential HTN is the form of hypertension that by definition has no identifiable cause (AHA, 2010; CDC, 2014b). It is the most common type of hypertension, affecting 95% of hypertensive patients (AHA, 2010; CDC, 2014b; Coulon et al., 2013, and NHLBI, 2010). The condition is well too familiar to healthcare practitioners, patients, and health science researchers, and is likely to have sizeable consequences on overall health emanating from chronic diseases, and mortality, in the United States and across the globe.

The main purpose of this quantitative, descriptive, nonexperimental study was to investigate the association of physical inactivity, length of stay in the United States, immigrants' health status, and food security as risk indicators in the development of essential HTN among African-born immigrants. I examined the markers such as health status, physical inactivity, and food security, length of stay in the U.S., education, and age. Literature on essential HTN among Blacks has long been described, defined, and classified to be at epic proportion affecting millions of lives, and causing disabilities and morbidities across racial lines (Coulon et al., 2013). For decades, researchers have looked into the prevalence of essential HTN among native Blacks (African Americans), but little has been done to capture the health of African-born immigrants that live in the U.S (Coulon et al., 2013; Singh et al., 2006). Information is lacking on health and adverse

impact on the immigrants in the U.S. (Singh et al., 2006). To better understand the markers or factors that might be responsible for the increasing risk of essential HTN and other chronic diseases among Blacks and immigrants in the U.S, it was necessary to evaluate each of the underlying suspected independent and moderating variables and measures the roles each plays in the development of essential HTN.

My research used secondary data from the NHIS database to examine and understand the high risk incidence of essential HTN among African-born immigrant populations in the U.S. My study evaluated the relationship between physical inactivity, length of stays, health status, and food security and development of essential hypertension in this group of individuals. African immigrants have worse health over time in the U.S. due in part to high psychological stress related to adjusting to their new environment in the U.S. (Doamekpor et al., 2015). While correlations between the independent variables (length of stay in the US, immigrants' health status, food security, and physical inactivity) existed for HTN and other chronic diseases, these also appeared to be significant, particularly at immigrants' newly adopted residency, an environment that may be culturally and environmentally different; different in values, behavior, and community interaction. My research revealed the following findings; the results suggested that extended length of stay in the U.S. plays a critical role in the development of essential HTN among the immigrant groups. Among foreign-born adults, duration of U.S. residence was positively associated with the likelihood of hypertension (Fang, Ayala, & Loustalot, 2012). Physical inactivity or lack of exercise moderately contributes to the risk of increasing the development of HTN among the individuals who were

interviewed in the NHIS survey. Often ignored, are countries of origins of the immigrants; it is a crucial and an important proxy that can be measured to help provide in-depth understanding of historical context. Country of origin could be used as the baseline to understand cultural characteristics. Recognition of this aspect of the immigrant in their new environment tends to mediate the adoption of U.S. cultures, norms, values, and how they view or influence their health and lifestyles (Alegria, 2009).

Interpretation of the Study

African-born immigrants with a longer duration in the U.S. have greater cumulative exposure to stressful life events (Coulon et al., 2013; Read et al., 2005; Steffen et al., 2006). Lengths of time or years spent in the U.S. are associated with the development of essential HTN among the immigrant populations. In Table 5, I presented the frequencies and descriptive statistical results of immigrants who lived in the U.S. for 1 year, but less than 5 years, 1.6% (*n* =1,746), 5 years but less than 10 years, 2.0% (*n* = 2,246), 10 years but less than 15 years, 2.8% (*n*= 3,110), 15 years or more 9.9% (*n* = 11,112). In the binary regression analysis, the results demonstrated that the unit of exposure increases [Exp(B) or OR] for every 1 year to 5 years increment the immigrant lived or stayed in this country. The health effects are not just the development of essential HTN or other related chronic conditions immigrants are confronted with, but can also be the development of sociopsychological health-effects, stressors, decreased social support and ethnic discrimination, social segregation, difficulty to maintain cultural lifestyles, and values (Coulon et al., 2013, Hamilton et al., 2011; Homer et al., 2011).

Physical activity plays a pivotal role in reducing cardiovascular diseases and

decrease essential HTN morbidity among the general populations, Blacks, Whites, and other ethnic races, however, it has not been established from this study that physical activity can prevent hypertension. Little prior research evaluated physical activity and its association with HTN; further research in this area is still needed. Two other primary independent variables examined in this study, immigrant health status and food security, did not suggest significant association with the development of essential HTN among the population surveyed. Further research could contribute to these findings to better understand the association of these independent variables with the dependent variable HTN.

Changes in health behaviors are traditionally associated with emulating the western world; this intrinsically includes poor diet choices, excessive sodium in the diets, and lack of exercise or physically inactivity (Coulon et al., 2013). Although few studies have directly provided evidence to support this claim, variables related to eating habit or diet, physical inactivity, and sedentary lifestyle are frequently examined and leaked to body max index (BMI) (Steffen et al., 2006). In my research food security and immigrant health status did not present an impact as it was initially hypothesized; therefore, no associations were established with development of hypertension. Moderating variables of age and education were examined; the analysis results indicated weak association with the development of essential HTN. However, the more educated an individual was the more likely they were able to control the HTN condition, and the older in age, the more vulnerable to the condition.

The findings from this study suggest that foreign-born residents have a reduced

prevalence of essential HTN before migration; over the course of time, they become vulnerable, an indication that, the longer the immigrants remain in the newly adopted country, the greater the risks of developing essential HTN. In the context of the conceptual framework of my research findings, I used the SEMH to explore the association of essential HTN and the independent variables: length of stay or years spent in the US, immigrant health status, food security, and physical inactivity. Of the four independent variables, only length of stay or years spent in the US was significantly associated to essential HTN, perhaps due to the environment. Based on Bronfenbrenner postulates (Glanz et al., 2002), the environment in which one lives and grows determines their health; my finding correlated with the postulation. The framework also placed significant emphasis on changing intrapersonal characteristics based on knowledge, and attitudes. Living in the U.S. does not automatically expose an individual to essential HTN, but personal health choices do. As past studies have suggested, immigrants arrived in the U.S. with better health than the native Black residents (Hamilton et al., 2011).

Limitations of the Study

There were several limitations associated with the use of secondary data including, limitations based on the sampling schemes. While random digit dialing was used to collect the initial data, it remained a potential issue for self-selection bias. Responses were wholly based on self-reporting. which may not always be accurate. There may be difficulties in appropriateness, authenticity, future recall, and memory loss with respect to participant responses. Additional limitations in the form of response bias can also occur in any study reliant on information provided by the participants during data

collection (Creswell, 2009). The possibility for future recall bias could occur due to individual responses to the NHIS questioning techniques, questionnaire designs, and the mental competency of respondents to recall the entire information provided during the survey; such information could not be recollected to completeness. The impact of recall bias can lead to either overestimation or underestimation of the outcomes of this study. A number of undocumented immigrants were reluctant to participate in the survey for fear of residency status and ultimate repatriation. Finally, I critically evaluated the data and ensured the variables used were consistent with my research topic. The questionnaires used by the NHIS during the interview were thoroughly examined to ensure they do not contain ambiguities.

This study was limited to adult males 40 to 75 years. Men ages 18-39 years and women of all ages were excluded. Education attainment was limited to those with bachelor degrees and above.

Recommendations

Future research is merited to verify the finding of this study particularly, related to length of stay or years spent in the U.S., by the Africa-born immigrant population and its correlation with increased morbid risk of essential HTN. Also worthy of further investigation to support the hypotheses of my study is physical inactivity as it revealed to be moderately correlated to the development of essential HTN. This study revealed weak association of lack of physical activity with essential HTN. A second priority that merits further recommendation is expanding research studies on essential HTN to include African-born immigrants in the U.S; limited or scarce literature exists on these groups of

population despite their significant presence in the U.S. Current research studies have focused only on native Blacks and Whites, but other ethnics/races are minimally researched. The necessary pathways to achieve this include evaluating societal and environmental factors, individual health behaviors, community involvement, and continued campaign to seek for inclusion in health research studies, among other elements, to understand the cultural values and lifestyles of African-born immigrants in the U.S. Essential HTN is generally an asymptomatic condition (AHA, 2011; CDC, 2010). Patients who have this condition do not know they have it and assume its absence. Health care providers should engage in exploring all necessary approaches to develop open communication with their patients, use all resources within their scope of practice to communicate to the vulnerable patients and educate them on the health consequences of essential HTN. Also this study showed how weak lack of physical activity was associated with the dependent variableessential HTN; this area merits further research.

Self-behavior and self-management are also crucial in addressing the proportionality of essential HTN and other chronic diseases that continued to delineate Black populations globally. Future investigations are imperative for potential footpaths to study the roles of environmental factors, recruitment of more diverse Black populations from underserved communities, reinforcing the importance of self-behavior modification, and engaging in longitudinal surveillance to better serve these vulnerable communities. Better education, awareness, and behavior changes may have significant impacts on reducing both the mortality and morbidity of this preventable health condition. Public health officials can play important roles in reducing or controlling essential HTN by

exploring intervention programs and strategies that are: (1) evidence-based, (2) culturally specific or oriented, and (3) include community involvement; these can be achieved by social interactions while maintaining professional etiquettes. Attaining these depends on two key factors: patients' self-involvement and openness to their health care providers about their health need.

Implications

Consistent with research studies on essential HTN over the years and a series of chronic medical conditions that continued to inflict pain, mortality, and morbidity among Black communities at disproportionate rate, essential HTN continues to be a global threat to patients with HTN condition and the public health communities. The issue of essential HTN among Blacks, and African-born immigrant populations behooves on their ability or desire to fully utilize community health educators, health care providers, and policy makers both at local and federal level. It has long been established by various research studies that essential HTN has strong correlation with CVD, strokes, kidney disease, and heart conditions, health conditions that have been responsible for high numbers of deaths among Black populations (Coulon et al., 2013, Hamilton et al., 2011; Homer et al.,2011; Steffen et al., 2006). However, no known study to date has been able to address this health concern of African-born immigrants in the U.S. in relation to essential HTN.

To be able to best promote positive health behaviors, help reduce the morbidity, and the mortality of essential HTN in the general populations, either on a global basis, or among native Blacks, and African-born immigrant communities in the U.S., the populations considered to be at highest risk should be encouraged to participate in

community-based health education programs and awareness. Community outreach and strong relations with individual healthcare providers, Racial and Ethnic Approaches to Community Health (REACH), a wide array of networking tools available through their healthcare providers to provide comprehensive education on treatment, dietary changes, exercise, and adherence to medications are best approaches to reduce the morbidity of HTN (Middleton, 2009).

Potential positive social change in the communities on healthy behavior could be a starting point. However, a starting point may be to realize and understand the complexity of the issues and the impacts involved. With this understanding in mind, future endeavors could perhaps bring a broader perspective, as well as better information and true openness to effective solutions to better dissect the etiology of chronic diseases such as essential HTN, CVD, strokes, diabetes, and kidney failure. Adapting health programs suitable to the cultural needs and values of a community may be more appropriate than creating preventive health programs that are not extended to those who actually need them. It imperative therefore, that future investigations include more communities and areas with dense populations of Africa immigrants, families, and their second generations in order to implement healthy programs that benefit not only the immigrants' communities, but the entire Black communities that are vulnerable to CVD and essential HTN condition.

Conclusion

My research results and findings were based on analysis of data from the NHIS national database. The results indicated that prevalence of essential HTN was

significantly higher among the population being studied, including African-born immigrants and other race/ethnicities in the study. Results also showed that among African -born immigrants, the risk for essential HTN increased significantly with the length of time or years lived in the U.S., an indication that correlates with the hypothesis of length stays or years spent in the U.S., 15 years plus at 9.9% increase developing essential HTN. The immigrant populations must move away from the simplistic explanation that states that incorporation of U.S. customs and traditions are harmful to our health. Rather, this population should seek a more nuanced and multidimensional approach to acculturation measures. This will require distinguishing between cultural transactions and psychological impacts of acculturation between aspects of acculturation and those of enculturation and the reasons behind those choices, as well as whether those transactions are seen as enhanced coping or as societal stressors, voluntary choices, and or sociopolitical coercions. Another area of importance is how acculturation happens in different contexts and the immigrant-context of interactions that can lead to successful and healthy integration in the U.S. society. The benefit of maintaining traditional cultural ties and understanding which aspects of cultural adaptation in their environment among the new immigrant groups should also be part of the upcoming agenda for health researchers to evaluate (Alegria, 2009).

Healthcare practitioners and providers, state and federal health agencies, and the local community health centers should retool the traditional emphasizes of reaching out and screening Africa-born immigrants for only infectious diseases upon arrival, but focus

also on screening for chronic diseases, including, asymptomatic essential HTN, CVD, diabetes, kidney disease, strokes, and all related heart diseases.

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