

The Effect of Migration on Cognitive Representations, Blood Pressure Level and Dietary Habits in African Immigrant Women

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Nursing)
in The University of Michigan
2012

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“But they that wait upon the Lord shall renew their strength;
they shall mount up with wings as eagle; they shall run, and not be weary;
and they shall walk and not faint.” Isaiah 40: 31

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DEDICATION

This dissertation is dedicated to the glory of God who brought me through this process;

“Had it not been for the Lord on our side now might Israel say” Psalm 124:1.

And also my parents Olusanmi and Ibitola Daramola

who encouraged me to do and be my best always.

ACKNOWLEDGEMENTS

My dissertation committee has been phenomenal in making this study possible. My special thanks go to Dr Margaret Scisney-Matlock for her mentorship, encouragement, and professional assistance. Dr Bonnie Metzger, you provided encouragement at crucial points in this journey and got me interested in cognitive representations. I also thank Dr Antonia Villarruel for being with me from the beginning. Dr Silvia Pedraza, thank you for being direct and clear about your expectations; in addition, your knowledge of and insight into migration were very helpful.

I also thank the Nigerian women who stepped out of their comfort zone to participate in this study and the Nigerian organizations that supported me in approaching their members.

My special thanks to my friends Ms. Joan Ajayi, Ms. Dinah Rene Mathew, Ms. Althea Seaborn, and Mr. Lateef Jimoh with whose help the data collection went quite smoothly. My deepest appreciation to my family for their support: To my sister Ms. Kemi Daramola who would not let me throw in the towel; to my other brothers and sisters for encouragement; and to my daughter Olusolape Oluborode for her technical support and enduring it all. Last but not the least; I thank Dr. Steve Nwabuzor for all that he did. I am grateful to all who contributed to my success, and I thank God.

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ABSTRACT

The Effect of Migration on Cognitive Representations, Blood Pressure Level, and Dietary Habits in African Immigrant Women

by

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Migration has been associated with increased risk of hypertension through stressors associated with cultural change and health behavior. Like other immigrants, women arriving in the U.S. in good health have experienced health declines with increased time in the U.S.

The purpose of this study was to determine the effects of migration to and residence in the U.S. on the development and perceptions of hypertension and dietary behavior (DASH Diet) associated with control of hypertension in African immigrants, using the Self-Regulation Model (SRM) of Leventhal et al. SRM concept is that people evaluate health threats by constructing culturally based representations or perceptions of threats that influence the individual's coping patterns and adaptive outcomes. The illness representations of African immigrants are based on beliefs that illnesses have both natural and unnatural causes.

This cross-sectional correlation research used two survey instruments (WHEELS and ASSIS) with a convenience sample of 91 Nigerian immigrant women (NIW) and secondary data analysis of 38 African American women (AAW) from the WHEELS Study of 2008/2009.

Descriptive analysis disclosed the most salient demographic variables for NIW and AAW. A t-test and ANOVA compared NIW and AAW and duration of residency in the U.S. with dependent variables (cognitive representations, blood pressure, and BMI).

Knowledge of Hypertension (HTNKNOW) and Cognitive Representation of Hypertension (CRHTN) were significantly increased in NIW by years of residency. AAW had significantly higher HTNKNOW than NIW. No significant differences were found for the CRHTN or Cognitive Representation of DASH Diet (CRDD) between AAW and NIW. A significant difference was found in the CRDD dimension of perception representing knowledge. No differences were found in CRDD or its dimensions by years in the U.S. An important finding was the number of women who had BMI > 25 and those with pre-hypertension (SBP 120 to 139mmHg).

An association exists between HTNKNOW and CRHTN and years of residence in the U.S., with no association found with CRDD. NIW generally exhibited high levels of acculturative stress compared against normative values. A longitudinal study initiated on immigrants' arrival in the U.S. is recommended to understand the trajectory of chronic illnesses such as hypertension.

CHAPTER 1

INTRODUCTION

Background and Significance

Migration is a process that has been associated with increased risk of psychological and physiological problems, including hypertension. It is estimated that the global migrant stock will reach 200 million people by the year 2050 (International Organization for Migration, Appave, & Cholewinski, 2009). The percentage of women in the global migrant population has been increasing. Women constituted 47% of the migrants in developed countries by 1960, 53.5% of newly admitted immigrants in 1998, and were estimated to be 49% in 2010 (International Organization for Migration, 2010; United Nations, 2009; Brauer, 2004). Women are no longer migrating only to join their families; many are migrating independently, finding employment not only as housemaids, entertainers, factory workers but also as nurses, doctors, and professionals in a range of other fields as well (Adepoju, 2007; Jolly & Reeves, 2005; Oishi, 2002). Immigrants, women included, tend to be healthy upon their arrival to the U.S. and other host countries, such as Canada, but a decline in their health advantage is experienced with the duration of their stay (Hyman, 2001; Hyman, 2007; Uretsky & Matheisen, 2007).

Carballo and Neruka (2001) found that many immigrant women experience stress, often arising from the conflict between their traditional domestic values and practices and those of the social environment they live and work in. Other sources of stress include acculturation to the language, food, and social structure of their new home. Increasing Body Mass Index (BMI) was noted in the immigrant population, more so in women than men; the gains in weight have been associated with the change in dietary habits and lack of exercise. Forman, Stampfer, and Curhan (2009) identified BMI as a powerful predictor of hypertension. The stress and lifestyle change in African immigrant women has been associated with hypertension, a condition whose prevalence in the African American population is among the highest in the world (Mosca et al, 2011; Roger et al, 2011).

Theories of Migration

In the push-pull theory of migration, human mobility will occur from an ecologically risky environment to a safer location (United Nations Economic Commission for Africa, 2010). Migration is viewed as an innovative human response to an environmental “push factor” related to the place of origin, which may include political instability, inadequate economic opportunities, lack of access to resources, joblessness, or other severe problems. The “pull factor,” related to the destination, may include greater stability, higher wages, better opportunities, and greater access to resources and services (Kniveton et al. 2008).

Migration requires financial resources to cover transportation and other expenses; therefore, the poor, who are most affected by environmental stressors, find it more difficult to migrate. In addition to financial constraints, other factors, such as old age or

lack of knowledge about possible relocation sites often complicate migrants' decisions (United Nations Economic Commission for Africa, 2010). The fact that would-be migrants must overcome financial or physical challenges may contribute to their relative health advantages over the average residents of their destination countries, an advantage that has been termed the "healthy immigrant effect." The healthy immigrant effect also partly results from the self-selection process of those who are able and motivated to migrate, as well as the immigration procedures at the receiving countries, which valorize educational achievement, job skills, and good health (Hyman, 2007).

Profile of African Immigrants in the U.S.

The African foreign-born population was estimated at one million immigrants in the 2002 U.S. census, representing 3% of the foreign-born in the United States. West Africans form the largest group of this contingent, with about 35%, and Nigerians totaled 39% of that group (Grieco, 2002). Nigeria, Egypt, and Ethiopia accounted for the largest number of arrivals between 1990 and 2000 (Dixon, 2006.). Over half of all African immigrants are relatively recent arrivals, having migrated in the last two decades. African immigrants represent 6% of all immigrants who have become naturalized over that period (Kent, 2007). Africans were less likely than other immigrants to become citizens, however, and were slightly younger at the time of immigration than newcomers from other continents. Four out of five spoke English, and nine out of ten had a high school education or higher. They also had higher labor participation and were less likely to be unemployed than non-African immigrants. Nonetheless, one in five African-born immigrants was living in poverty (Kent, 2007).

According to Kent (2007), many of the African-born immigrants report difficulty in adapting to U.S. society. They tend to hold on to their immigrant identity and may also live in enclaves, a situation that reinforces separateness while maintaining ties with their home countries. Black African immigrants do not earn income or hold jobs commensurate with their educational levels, and also earn less than White African immigrants with comparable backgrounds.

Impact of Migration on Development of Chronic Disease

Migration has been associated with increased risk of hypertension. African immigrant women, like other immigrants typically have better health than their American-born counterparts on arrival in the U.S. (Singh, Siahpush, Hiatt, & Timsina, 2010). Their health picture converges to that of the host country the longer they stay in the U.S. Overall, immigrants have lower mortality risks than their U.S.-born counterparts, and new arrivals enjoy many health advantages over long-term immigrants and the native-born population in overall health status, particularly with prevalence of chronic diseases such as cancer and diseases of the heart (Hyman, 2007; Hyman, 2001; Singh & Siahpush, 2001). However, immigrants in the U.S. experience stress from acculturation to language, food, and the social structure. A California study found that immigrant stress in Korean women related to language difficulty, occupational adjustment, discrimination, and not feeling at home, and associated these factors with depression (Ayers, Hofstetter, Usita, Irvin, Kang & Hovell, 2009). Studies done on Asian and Hispanic immigrants have shown that long-term immigrants are more likely to have hypertension than those who have been in the U.S. for five years or less (Angel, Angel, Venegas, & Bonazzo, 2010).

Young age at arrival was also associated with higher cardiovascular risk factor; this finding was attributed to greater acculturation and a consequent increase in smoking, drinking, lack of physical activity, obesity, and other health-risk behaviors (Angel, Angel, Venegas, & Bonazzo, 2010; Roshania, Vanket Narayan, & Oza- Frank, 2008).

The Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure in 2003 provided evidence-based recommendations for the prevention and management of hypertension (Chobanian, Brakis, Black et al, 2003). Lifestyle modifications, in conjunction with pharmacotherapy, were recommended as an effective treatment and management of hypertension. In light of those findings, the study undertaken for this paper was designed to address lifestyle modification as a means of controlling blood pressure, since, in the process of acculturation, the immigrants have to adapt to the food, lifestyle, and culture of their host country. Furthermore, there is evidence that urbanization and modernization in African countries are associated with cardiovascular diseases.

Cardiovascular diseases are fast becoming a public health problem in African countries undergoing increasing urbanization and modernization or “westernization,” as it is often called (Adedoyin et al., 2008; Addo, Smith & Leon, 2007; Asfaw, 2006; van der Sande, 2003). These studies also identified a rise in such risk factors as obesity and physical inactivity in the urban areas, all related to lifestyle changes. Thus, it is most likely that the African immigrants in the U.S., who now find themselves even more exposed to an array of socioeconomic changes that are often denoted as “modern” or “Western” culture, would exhibit the same increased risks that have been found in other

immigrant populations (Singh & Miller, 2004). It has been suggested that the progressive decline in the health of first-generation immigrants can be attributed to the stresses of acculturation, demeaning social marginalization, inadequate medical services, and the adoption of unhealthy habits (Singh & Miller, 2004).

This study is proposed to explore the effects of the process of migration and acculturation on perceptions of hypertension, dietary habits, and other practices that affect the health trajectory of African immigrant women using a sample of Nigerian Immigrant Women (NIW). Leventhal's Self-Regulation Model will be helpful in understanding the perceptions of hypertension and the dietary habits in the group under study. The Self-Regulation Model suggests that individuals form cognitive representations that are culturally based and relevant, with which they make sense of their environment. The culture of African immigrants is expected to play a role in their cognitive representation around the illness of hypertension and in their means of coping with the illness.

Aims

There are two aims for this study,

1. To determine the relationship of migration and acculturation with the development of hypertension, and
2. To compare with cognitive representations of dietary behaviors associated with hypertension control between Nigerian women who migrated to the U.S. and with the cognitive representations of African- American women.

Definitions

Migration

Migration is derived from the Latin verb *migrare*, to move from place to place. Migration may involve internal migration, the movement of people from rural to urban areas within the same country, or, international migration, the movement of people beyond their country's borders. Regular immigrants are those whose entry, residence, and employment in the host country is recognized and authorized by official state authorities. Irregular immigrants have entered the host country without legal authorization or have overstayed their authorized entry. This paper focuses on international migration, the movement of people across borders of different countries, with no distinction between regular or irregular immigrants.

Acculturation

Gordon (1961) conceptualized the American process of assimilation as comprising a multitude of sub-processes. "Assimilation" is often used synonymously with "acculturation," but Gordon (1961) made a useful distinction between behavioral and structural assimilation. Behavioral assimilation, which he defined as acculturation, is the absorption of the cultural behavior patterns of the host society (Gordon, 1961); it refers to the degree to which an individual from one culture has given up the traits (language, cultural beliefs, values) of his or her original culture and adopted the traits of the dominant culture in which he or she now resides (Huff & Kline, 1999). Hazuda, Haffner, Stern, and Eifler (1988) viewed acculturation as a multidimensional process involving language, cultural beliefs, values, and structural assimilation. Those who

acculturate still keep their culture of origin, but they also learn and adopt important features of the mainstream culture (Korzenny & Abravanel, 1998), while assimilation involves the abandonment of the first culture in favor of the second culture. Assimilation is viewed as the social, economic and political integration of a cultural group into the mainstream of the society into which they immigrated or otherwise been drawn into (Casas & Casas, 1994). This is what Gordon (1961) terms structural assimilation, which refers to the entrance of the immigrants and their descendants into the social cliques, organizations, institutional activities, and general civic life of the receiving society. The concept of assimilation assumes that with the passage of time, all immigrants, in an evolutionary process, become like the dominant group (Pedraza, 1996).

This paper will generally employ Gordon's concept of acculturation to assess the degree to which an individual has given up traits of his or her culture and adopted the traits of the dominant culture in where he or she now resides, a process involving language, cultural beliefs, and values (Hazuda, Haffner, Stern, & Eifler, 1988; Huff & Kline, 1999). The present study focuses, however, on the stress that often results in the acculturative process, stress experienced as the newcomer adopts the traits of the dominant culture, strives for acceptance into that culture, and, especially, seeks to participate in health-promotion and disease-prevention practices in the new community.

Acculturative Stress

Acculturative stress is the stress arising from the acculturation process. It is a psychocultural stress the individual immigrant experiences in adjusting to cultural differences between her original culture and the host culture. Researchers have shown

that such stress varies indirectly with the newcomer's status in the new society: a reduction in the physical or mental status of the newcomer—or of the group to which he or she belongs—has been associated with a rise in stress (Nwadiora & McAdoo, 1996; Singleton et al 2008).

Dietary Approach to Stop Hypertension (DASH) Diet

The DASH diet is an eating plan comprising of eating more fruits and vegetables, low fat dairy food, whole grain products, fish, poultry and nuts; while reducing the intake of food high in saturated fat and total fat, red meat and sweets. This has been found to be effective in lowering blood pressure and is recommended by the American Heart Association (Sacks, Svetkey, Wollmer, Appel et al, 2001; Writing Group Premier Trial, 2003).

CHAPTER 2

THEORETICAL FRAMEWORK

This study will be viewed within the Self-Regulation Model (SRM) proposed by Leventhal et al. 1992, which is based on the concept of how people evaluate health threats by constructing their own cognitive representations or perceptions of the threats and of ways to allay them. This in turn influences their pattern of coping. SRM is more appropriate for this study than the other behavioral change models such as the Theory of Planned Behavior (TPB) and the Health Belief Model (HBM). On one hand, TPB addresses the beliefs that guide action, and asserts that intention is the immediate antecedent of a behavior (Ajzen and Fishbein, 1980; Ajzen, 1991). The HBM framework is based on the concept that an individual desires to avoid illness or to get well and forms a belief that a specific health action available to the person will prevent or ameliorate the illness (Janz, Champion & Strecher, 2002). The distinct advantage of the SRM is that it allows for the exploration of cultural input into the specific cognitive representation, which is obviously highly influential in the thinking of immigrants. Every culture has its institutions, lay roles, and rituals; an individual's perception and interpretation of new information is filtered through such everyday beliefs and procedures, including those deployed in coping with health threats (Leventhal & Diefenbach, 1991). The main

construct of the SRM is that the action taken to reduce a health risk is guided by a subjective, common-sense construction of the health threat (Leventhal & Diefenbach, 1996). Common sense is viewed as a cultural system in the anthropological view of illness representation (Farmer & Good, 1991). The health threat is represented by its identity (symptoms and labels), causes, timeline, consequences, and cure (Leventhal & Cameron, 1987).

Cognitive Representation Development.

Cognitive representation, a product of environment, self, and experience, is a basic process in our efforts to understand and interpret our environment; it helps us to adapt and prosper in the presence of environmental challenges and guides decision making for goal achievement. Cognitive representation is developed from knowledge gained from our environment and our life experiences. Our brains develop cognitive representations from data gathered from the environment and filtered through existing knowledge and goals stored in our long-term memory, which in turn comprises organized clusters or categories of similar objects, events, or people. The ability to understand one's environment accurately, or effectively, depends on having the knowledge of the essential features of an event that enable us to place it in a "proper" category (Wyer, 2007). Cognitive representation is dynamic, that is it is constantly modified as we encounter new environmental inputs and acquire new knowledge.

The cognitive representation of illness (hereafter referred to as *illness representation*) is shaped by the makeup of the physical environment, sociocultural influences, past disease experiences, and beliefs that people hold about diseases and cures

that are handed down from past generations (Waldron, 2003). Illness representations acquired from their original cultures continue to influence greatly the thoughts and behavior of African immigrants.

Illness Representation in Africans

Illness representation in Africans is closely related to the African cosmology of health and healing, which holds that a state of balance exists, or should exist, between the individual and the environment, including the cosmos. Therefore, traditional healers seek to secure and maintain balance between the individual, elements of nature, and heavenly bodies (Airhihenbuwa, 1994). The African concept of a human describes a person as having a mind, body, and spirit that must maintain a balance within itself between organic disorders, physiological disorders, and social conflicts (Opoku, 1978). The individual in turn should strive to maintain a state of balance with the elements of nature (earth, fire, water, air, and metals), and finally with the heavenly bodies (sun, moon, and stars) (Airhihenbuwa, 1994). A complete harmony must exist within the individual and with the environment in order to enjoy health.

The world is also seen from the point of view of communal interaction; hence, illness is viewed as symptomatic of a deeper communal malaise (Ogbonnaya, 1994). Some ailments are seen as having no discernible moral or social cause, such as rashes or the common cold. Other types of diseases are classified as modern diseases that can be contracted by anyone in the world, and which were introduced to Africa by European settlers. Still other diseases are thought to afflict only Africans, regardless of tribal or geographic origin (Green, 1994; Ngubane, 1976; Yamba, 1997). Illnesses, especially the

latter two types, are seen as having proximate and ultimate causes. The proximate cause, or specific etiology, is how the disease occurred; healing requires an explanation of the medium through which it happened. The ultimate cause is that person or thing that caused the illness and the reason for causing the affliction (Airhihenbuwa & Harrison, 1993).

One type of ultimate cause includes contact with pollutants, which can originate from other people's bodies, whether healthy, sick, or dead. (Ngubane, 1976). One needs to constantly avoid such pollutants and fortify oneself against any unavoidable contact by maintaining strict moral codes and observing protective rituals. Witchcraft and sorcery are seen as other sources of illness, usually inflicted by people the victim has, or is thought to have, offended. Ancestral vengeance or punishment is another type of ultimate cause of illness (Airhihenbuwa & Harrison, 1993, Ngubane, 1976).

In traditional African thought, illness is therefore considered to have an external source and to result from weaknesses in character and/or heredity. Such beliefs tend to influence the African immigrant to seek help for an illness based on her understanding of the source of the symptoms, an understanding based upon the culturally appropriate way of addressing both the proximate and ultimate causes. To what degree do migration and the ensuing acculturation affect such beliefs and perceptions in African immigrants? Waldron (2003) studied African-Canadian immigrants and identified three types of help-seeking that were related to the degree of exposure to Canadian culture: Some sought only traditional help; a second group was oriented toward both traditional and Western health care; and the third sought Western help only. This variety of approaches underscores the need to understand the specific illness representation of a given health-

seeker, in order to plan appropriate intervention. Thus, the Self-Regulatory Model concept of illness representation and free will proposed by Leventhal et al. (1991) was deemed the most appropriate theoretical framework to apply in this study.

Self-Regulatory Model (SRM)

The SRM is based on the concept that people evaluate health threats by constructing their own representation or perceptions of the threat, which in turn influence their pattern of coping. Illness representations are then directly related to coping behavior and eventual adaptive outcome. The impact of a problem is mediated by the person's representation about such symptoms as discomfort and disability. These representations will in turn influence not only their emotional responses and coping behavior but also the ways in which they monitor and appraise the success or failure of the coping behavior.

Some basic assumptions of SRM are:

- Cognitive, emotional, and behavioral responses are self-regulated in that they both impinge upon and are influenced by the individual self.
- Cognitive representations of health threat (illness) are a function of semantic knowledge that has been accumulated across a lifespan; therefore, the individual's symptoms and the contents of their representations will vary with their age and social circumstances.

Leventhal et al. (1996) describe the self-regulation process as a dynamic, interactive process that integrates internal and external stimulus information with existing cognitive structures to give meaning to an experience. The meaning essentially directs coping, and

the results of coping provide the feedback by which the coping behavior and illness representations are evaluated.

Relationship between SRM and Migration

Migration process and the ensuing acculturation are social circumstances that expose the individual to new and challenging situations to which he or she must adapt. The individual is presented with new information and challenges to be incorporated into his or her knowledge base (Moskowitz, 2005). The process of understanding and interpreting the situation is influenced by knowledge and previous experience schema or mental representation. (Wyer, 2007). Judgment and decisions are influenced by the information received in the immediate situation and knowledge acquired in the past (Wyer, 2007; Moskowitz, 2005).

The past for the immigrants' representation is based on information and experience from their culture of origin. As noted above, the illness representation of the African immigrant is often informed by the belief that illnesses have natural and unnatural causes, possibly including curses or punishment for wrongdoing. Factors such as the immigrant's disease experience, level of exposure and access to Western medicine, level of literacy, and social class can affect such belief singly or in combination (Waldron, 2003). Therefore, when confronted with new information and situations, the representation could be changed or modified.

Luria (1976), in his study of residents of a remote part of the Soviet Union at the dawn of the socialist movement, was able to demonstrate that after having been provided with new knowledge, people changed their perceptions and thought process. His subjects

were a group of peasants with no formal training and a second group with some formal training. The peasants with no formal training were inclined to situational thinking—which has been generally characterized as a concrete, nonabstract mode of thinking—and classified objects based on this rather *ad hoc* basis. The subjects with more formal training, however, though inclined to situational thinking were nonetheless able to shift to more complex verbal and logical operations and to classify objects in terms of more abstract categories. The difference in the group indicated a change in the perception and thought process of those with some formal training, and reflected the new information they had been exposed to. In a similar process, the cognitive representation of immigrants tends to undergo a transformation in response to their exposure to new environmental challenges. But those responses also include migration stress. Hence, the cognitive representation of an illness, hypertension in this study, is expected to undergo some transformation from what it was in the country of origin to an ongoing adaptive process post migration.

The constructs, or content, of cognitive representation of an illness include the identity of the illness, its cause, the potential consequences of the illness, the possibilities for controlling it, and the timeline associated with each of these constructs (Leventhal, Safer, & Panagis, 1983; Leventhal & Crouch, 1991). Cognitive representation of an illness is viewed as a dimension of culture, which is to say that in interpreting an illness, the individual draws upon beliefs about and expectations of his or her available choices when determining his or her behavior or other responses. Very few studies, however, have been conducted on illness representation in African immigrants. Beune et al. (2006)

in their study of first-generation Ghanaian and African-Surinamese immigrants in the Netherlands and of Dutch patients found that both the immigrants and the Dutch had difficulty describing hypertension. The Surinamese were more likely to describe it as “rising blood looking for a way out,” while the Ghanaians described it as “too much blood.” The majority of the respondents considered hypertension as either created (caused by external forces) or both created and natural (arising from a patient’s internal make-up). The Ghanaians and Surinamese were more likely to emphasize the created cause, attributing it to the perceived social pressure of adapting to life in a new homeland, Holland, while also having to continue to meet their traditional obligations to their family in their home country. They also cited factors such as stress incurred in migration, in coping with discrimination, and in working within new job norms. Few attributed causes to lifestyle or to environmental factors such as their typical Ghanaian diet, migration-related changes in diet, and increased alcohol consumption. Very few saw the link between being overweight or lack of exercise and hypertension.

As for the duration of the condition, a majority of the respondents consider hypertension as a chronic condition, but a considerable portion of these mostly Ghanaian participants believed the condition would affect them only temporarily or intermittently. The Ghanaians believed that once they had overcome their migration-related stressor, or once their living circumstances had improved, their blood pressure would drop. Many claimed they were able to recognize elevated blood pressure through signs and symptoms, such as pain or tension in the head, dizziness, or lack of energy. All the respondents were aware of the detrimental effect of poorly controlled blood pressure,

including potential damage to vital organs, especially the brain. The Surinamese and Ghanaians expressed concern about the potential threat hypertension posed to their health and social life, to their ability to control their blood pressure, to their prospects of becoming dependent on medication, and to their ability to fulfill their social obligations. Although factors such as personality, age, social, and cultural factors can affect an individuals' appraisal of health threats, the Ghanaian study did not address the effect of age.

Scisney-Matlock, Watkins, and Colling, (2001) demonstrated that age played a strong role in the formation of three cognitive representation constructs: perceived consequences, likelihood of control, and expected duration of the condition (timeline) as predictors of hypertension in their African-American sample population. The self-regulation of an ailment is an interactive process that integrates internal and external stimulus information with existing cognitive structures to give meaning to an experience. For an immigrant, the process of migration, especially including the ensuing attempts to adapt to a new culture, constitutes the dominant external stimulus. Two important internal stimuli are personal characteristics and attributes, such as age at migration, current age, years of residency in the U.S., and the stress produced by environmental factors associated with acculturation, such as perceived discrimination, culture shock, loss of status, and adoption of unhealthy behavior.

Migration processes expose individuals to environmental factors that, along with personal attributes, facilitate modifications in their cognitive representations. Figure 2.1 shows a conceptual framework of the process of migration as the mediating factor that

presents the stimuli and information initiating the change in the individual's cognitive representation and health behavior. The resulting adaptation to and adoption of new ways of life can lead to deleterious health behavior such as poor dietary and social habits. A major goal of this study is to understand how migration affects the cognitive representation of hypertension and the lifestyle behavior (dietary habits, etc.) of African immigrant women and their subsequent health status.

Research Questions

It is necessary to determine if migration has a definite effect on the cognitive representation of hypertension in African immigrant women. Therefore, the following questions need to be answered: (a) Is there a difference in the cognitive representation of African immigrant women and African American women? (b) How does the cognitive representation of lifestyle behavior (DASH diet) differ for African immigrant women and African American women? (c) Does migration affect the cognitive representation of hypertension in the African immigrant women? (d) Is there a difference in the blood pressure readings between recent African immigrant women (0-5years) and long-resident African immigrant women (6-10 years and >10years)?

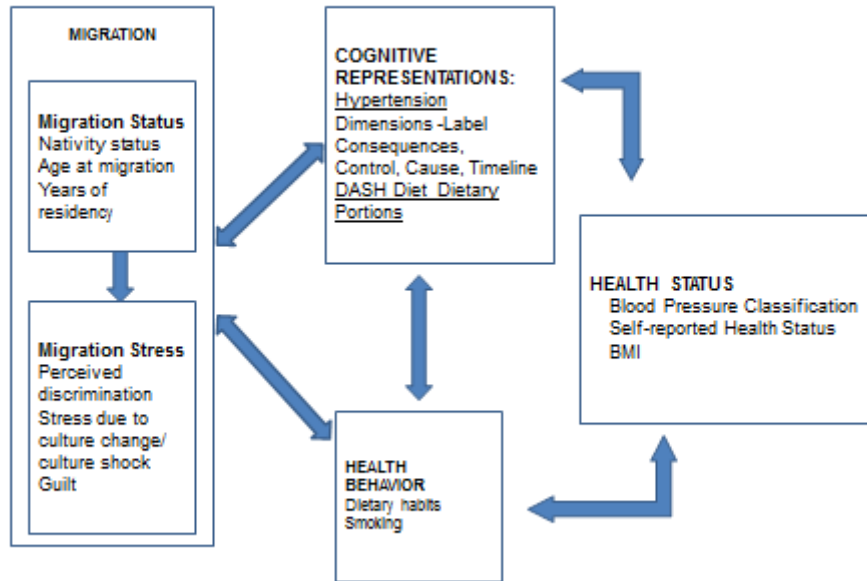


Figure 2.1. Proposed Conceptual Framework for Migration Effect on the Cognitive Representation (CR) of Hypertension/Health Behavior and the Subsequent Health Status

CHAPTER 3

REVIEW OF THE LITERATURE

Hypertension in African Americans

The prevalence of hypertension in the African American population is among the highest in the world, with high mortality, morbidity, and predisposition to stroke, which is the third leading cause of death in the U.S. (Kochanek Xu, Murphy, Minino & Kung, 2011). Black Americans are more likely to be diagnosed later in the course of the disease when serious organ damages have set in (Goel, McCarthy, Phillips, and Wee, 2004). There are more hypertensive women than men in the U.S. The women are also more likely to be aware of their diagnosis and more likely to be treated than men, but less likely to achieve blood pressure control (Roger et al., 2011).

The prevalence of hypertension has increased to 41.4% in Black adults, 28.1% in White adults, and 23% in Mexican Americans. Compared with Whites, Blacks have 1.3 times greater rates of non- fatal stroke, 1.8 times more fatal stroke, 1.5 times more deaths from heart disease, 4.2 times more end- stage renal disease, with the highest rates more likely in middle-aged or older, less-educated, physically inactive, and diabetic Blacks (Roger et al 2011; Yancy, Benjamin, Fabunmi, & Bonow, 2005). The death rate in Black males is 49.2%, compared with 15.7% for White males; for Black females it is 37.0%, compared with 14.3% for White females (Roger et al, 2011). In spite of the

improvement in the general health of the U.S. population as whole, the gap between Blacks and Whites persists (Roger et al, 2011). The disparity in prevalence, mortality, and morbidity of hypertension in the populations of African ancestry has been associated with biology as well as socioeconomic status (SES) and such psychosocial factors as obesity, smoking, and level of education (Ong, Bernard Cheung, Man, Lau & Lam, 2007; Jones, 1999; Williams, 2009). Mortality, morbidity, and prevalence of the various disease processes in the immigrant population have been linked to stress, socioeconomic status, lifestyle, and behavior. A similar increase in the prevalence of cardiovascular diseases is emerging in the urban areas of Sub-Saharan African nations and is associated with lifestyle changes and stress.

It is noteworthy that the data from NHANES 1999 to 2006 shows an estimate of 29.7% of adults ≥ 20 years of age have pre-hypertension. These participants were found to have a higher likelihood of microalbuminuria than those with normal blood pressure. Higher prevalence of microalbuminuria was observed in ethnic minorities, that is, non-Hispanic Blacks and Mexican-Americans (Ogunniyi et al, 2010). Ogunniyi et al. (2010) concluded that individuals with prehypertension are still at risk for organ damage and recommended screening, early treatment, and intervention for those with microalbuminuria.

Hypertension in Sub-Saharan Africa

Cardiovascular diseases are emerging as a health problem in Sub-Saharan Africa. Studies in various countries such as Nigeria, Ghana, Gambia, Eritrea, and South Africa, show a rise in the prevalence of cardiovascular disease and hypertension with a rural to

urban gradient (Adedoyin et. al, 2008; Addo, Smeeth & Leon, 2007; Christensen et al, 2008). Hypertension is also more prevalent in the higher socio-economic status attributable to exposure to elements of modernization that have been termed “Western culture.” This is contrary to the findings in the U.S., where lower socioeconomic status is associated with high blood pressure. In a study of a semi-urban community in Nigeria, a higher prevalence of stage 2 (blood pressure $\geq 160/95$) hypertension was found in women while the stage 1 (blood pressure $\geq 140/90$) was found in males. Lifestyle risk factors associated with hypertension, such as obesity and inactivity, are on the rise with increased adoption of the Western world culture (Poulter et al., 2005). All across Sub-Saharan Africa, overweight/obesity is on the rise, with women disproportionately affected in urban areas (Belue et al., 2009). Women in West Africa constitute the major source of increase in obesity.

The general prevalence of hypertension in Sub-Saharan Africa is less than that in the United States, however. A prospective study in a rural Nigerian community showed a prevalence of hypertension at 7% (Kaufman, Owoaje, Rotimi, & Cooper, 1999). Another study of an urban community found a prevalence of 10.3% (Olatunbosun, Kaufman, Cooper & Bella, 2000). Olatunbosun et al. (2000) also found an obesity rate of 11.7% in the hypertensive subjects compared with 8.5% in normotensive subjects and an association between obesity and hypertension in women. A rise in hypertension in Africa has been identified as a function of education, occupation rank, and other measures of socioeconomic position, which is contrary to the pattern in the U.S. The common factor is that the influence of urbanization on health is mediated by increased stress and by

changes in diet to include more processed food with higher salt intake, resulting in an increase in body mass index ($BMI \geq 25 \text{ kg/m}^2$) (Van der Sande et al., 2005; Poulter et al., 2005). These results are similar to those found in studies of African immigrants after their subsequent acculturation and assimilation to the U.S.

Migration

Migration is a significant life event, one that often entails stress-producing social changes, including challenges that require new perceptions, information, and knowledge. The new information and knowledge are provided in the process of acculturation and assimilation in the host country. Length of residency in the host country is associated with progressive cardiovascular risk.

Studies also show that BMI increases with increasing years of residency (Antecol & Bedard, 2006; Goel, et al., 2004; Renzaho, Swinburn, & Burns, 2008). A study of the dietary habits of indigenous Nigerian men and Nigerian male immigrants concluded that the immigrants transition towards more saturated fat and processed food (Kumar, Yu, Akinremi & Odedina, 2009). Poverty and unemployment also have a strong impact on health, particularly that of women and children (Dunn & Dyck, 2000).

Migration Stress

Stress in the immigrant population has been associated with the process of migration itself, beginning with the pre-migration phase of decision making and selection of a destination, and then moving on to the migration experience and the post-migration phase (Bhugra, 2004). Language difficulties and loss of social support are common occurrences during the migratory phase, and they continue post migration. Post-migration

sources of stress include adaptation (acculturation) to the new environment, discrimination, economic and material difficulties, as well as feelings of rootlessness and of the loss of status (Bhugra, 2004). Nwadiora and McAdoo (1996) defined acculturative stress as the stress due to the acculturation process. It is a psychocultural stress due to cultural differences between the host culture and the incoming culture, marked by reduction in the physical or mental status of the individual or groups.

Acculturative stress has been related to economic hardship, language and cultural gaps, discrimination, and a loss of social, familial, and other traditional support networks (Singleton et al. 2008). In their study of Korean Immigrants, Shin, Han, & Kim (2007) found that increased language mastery and greater social support were consistently predictive of happiness and less depression in the study population. Constantine, Okazaki, and Utsey (2004) also found language difficulties to be a source of stress in their International Students Sample. However, the Black African International Students higher level of stress than either the non-Black African International students or the Asian students and reported more difficulty in adapting to their new surroundings, difficulties that were attributed to their being possible targets of racism. Sandhu and Asrabadi (1994), in developing the Acculturative Stress scale, found perceived racial discrimination to be of major concern for the International students, followed by homesickness, perceived hate, and fear. These studies associated acculturative stress and depression. Ayers et al. (2009), in their study of female Korean immigrants in California, show the same association but concluded also that the stress and subsequent depression

might lead to obesity, smoking, and use of alcohol, all of which are risk factors for hypertension.

Migration Stress and Hypertension

Migration from rural communities to urban areas in the Sub-Saharan Africa has been associated with increased prevalence of hypertension in studies done in Gambia, Ghana, Nigeria, and South Africa (Cooper, Rotimi, Ataman, 1997; Kaufman et al., 1996; Van der Sande, 2003). The rural-to-urban increase in prevalence of hypertension has also been demonstrated in the Caribbean (Dressler, 2001). The higher incidence in the urban areas has been attributed to stress as well as to the adoption of “Western culture,” which is pervasive in the urban areas (Cooper, Rotimi, Ataman, 1997; Kaufman et al., 1996; Steffen et al., 2006,). The mediating factor in the development of hypertension is the higher levels of catecholamines found in immigrants who are more acculturated (Timio et al., 2001). Although hypertension has been associated with the stress occurring during the migratory process, the migration stress does not fully explain the increased risk of hypertension. More significant are the experiences of the immigrants after their arrival in the U.S., experiences that often involve living in less healthy environments or the adopting less healthy habits that are more easily acquired in the U.S. (Jasso et al., 1991).

Acculturation and behavioral changes

Most of the studies discussed below show that the majority of the immigrant groups fare better than the native-born population initially but begin to decline after ten years of residency and eventually, the longer the stay, converge with that of the host country (Antecol & Bedard, 2005; Goel, McCarthy, Phillips, & Wee, 2004; Hyman,

2007; Lassetter & Callister, 2009; Roshania et al., 2008; Singh, Shiapush, Hiatt, Timsina, 2011). This trend is also demonstrated in the area of risky behaviors, such as smoking, alcohol and drug use, and poor dietary habits (Fosados et al, 2007).

Antecol and Bedard (2005) stated that immigrants overall arrive with a lower BMI than natives but gradually converge with that of the natives. Goel et al. (2004), using data from the National Health I Study (NHIS) 2000, found that among different subgroups, an increase in BMI started after 10 years of residency. Those who had been living in the U.S. for 15 years had a BMI approaching that of U.S.-born adults. The adolescents in different surveys, such as NHANES III and the Adolescent Health Survey, also showed an overall rate of obesity of 26.5 %, with non-Hispanic Whites having a rate of 24.2 %, non-Hispanic Blacks 30.9 %, and all Hispanics 30.4 %. All the groups showed more obesity in males than females, except for Blacks, who showed a 27.4 % for males versus 30.4% for females (Goel, et al., 2004; Popkin & Udry, 1998). In the same study, U.S.-born Asians and Hispanic adolescents were twice as likely to be obese. These findings show that the first generation of immigrants loses its lower BMI advantage over time and that the adoption of poorer health habits is reflected in the state of health of the second and third generations.

The situation suggests that the exposure to the new culture and environment has resulted in new dietary habits that produce harmful weight gains, with an attendant increase in the probability of health problems and premature death (Antecol and Bedard, 2005). Taken as a whole, these studies point to the importance of early dietary intervention to prevent harmful weight gain, obesity, and related chronic illnesses.

McDonald and Kennedy (2005) combined data from the Canadian 1996 wave of National Population Health Surveys (NPHS) and the 2000-2001 wave of Canadian Community Health Surveys (CCHS) to identify how the weight of immigrants to Canada compared with that of native-born Canadians. They concluded that the probability of becoming overweight or obese was lower for immigrants upon arrival and gradually increased with additional years in the host country. After 20 to 30 years in Canada, the indicators of obesity met or exceeded that of the general Canadian population. The increasing incidence of obesity was tempered, however, by the presence of significant ethnic social network effects. An immigrant residing in an area with a lower concentration of her ethnic group was less likely to be overweight. Black women immigrants who lived in their ethnic community were more likely to be overweight than the typical Canadian woman; therefore, the probability that a recent immigrant would be overweight was higher than the native-born.

Increasing BMI has been associated with increased risk of hypertension and cardiovascular diseases. The Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC7) in 2003, after reviewing the evidence resulting from several studies, recommended health-promoting lifestyle modifications to improve blood pressure control as well as the efficacy of medication therapy (Chobanian, Brakis, Black et al., 2003). In order to achieve better control rates, the Institute of Medicine's (IOM) Committee on Public Health Priorities to Reduce and Control Hypertension in the U.S. Population has recommended a population-based approach grounded in the principles of measurement, system change, and accountability

(Institute of Medicine, 2010). A panel of clinicians and researchers convened by the International Society of Hypertension in Blacks (ISHIB) in 2009 released culturally relevant strategies to implementing and sustaining therapeutic lifestyle changes as well as improving medication adherence in African Americans (Flack, Sica, Babaris et al., 2010). The culturally based habits and perceptions related to hypertension in African immigrants, especially women, have been understudied, however. Leventhal's Self-Regulation Model (SRM) will be helpful in rectifying this discrepancy by taking into account the perceptions of hypertension and dietary habits of African immigrant women.

It has been established that both environmental factors and genetic predisposition contribute to the state of health, mortality, and morbidity. Lifestyle habits such as high consumption of processed food and physical inactivity contribute to one's risk of hypertension and other ailments. Like African American women, African immigrant women are also more likely to become obese than are men from the corresponding backgrounds. Even though several studies have, as noted above, documented the convergence of the health of immigrants with characteristics of the host population, no studies have focused specifically on the African immigrant female population. As a result, it was not known how much of the change in dietary habits could be related to the processes of acculturation and assimilation or to adaptation to what is available. Little is known about the connection between dietary habits and hypertension or health. Understanding the perception of a disease process prevalent in the Black community might shed some light onto the problem.

CHAPTER 4

RESEARCH DESIGNS AND METHODS

Design

This was a cross-sectional correlation survey design using two instruments on a convenience sample of African immigrant women of Nigerian descent, as well as a secondary data analysis of African American women in the Women's and Men's Hypertension Experiences and Emerging Lifestyle Survey (WHEELS) project data of 2008 and 2009. The survey included demographic variables, such as age, education, marital status, income, migration (country of birth, age at migration, language spoken at home), the Migration Stress Tool, and questions based on the WHEELS survey addressing cognitive representation and lifestyle issues. Two blood pressure readings and a weight measurement were conducted by four assistants, two who were Registered Nurses and two who were Certified Nursing Assistants skilled in blood pressure measurement.

Participants

The sample was a convenience sample of 91 non-pregnant, 18-to-75-year-old African immigrant women of Nigerian descent, with blood pressure of 120/80 (prehypertension) and greater, according to the JNC7 definition of hypertension. The African Immigrant women were selected from local Nigerian cultural organizations, and

all self-identified as being of Nigerian descent. All could read and write English, and most had a minimum of high school education; some had attended college. The 38 African-American participants were drawn from the WHEELS project data of 2008 and 2009; all had responded to the WHEELS survey. Inclusion criteria were female of African descent, ages of 18 and older, able to read and write, resident in the U.S., and having blood pressure at screening of 120/80 and above or previously diagnosed as having hypertension. Exclusion criteria include pregnancy, age less than 18, and the male gender.

The University of Michigan Institutional Review Board's (IRB) approval was obtained prior to starting the study. The approval of the authorities of cultural organizations in Metro Detroit was sought, and their letters of support were submitted with the IRB application. Recruitment was done at the monthly meetings of the two groups between February 2011 and July 2011. A consent form explaining the purpose and the procedure of the study was signed by all participants who met the criteria of the study prior to their participation in the study.

There was no personal identifier on the survey forms, but all records were kept in a locked cabinet. The health problem addressed in the study is specific to the study population of African immigrant women ages 18 years and older; hence, the subjects were all Black, African immigrant women.

Procedure

The participants were recruited from Nigerian cultural organizations during their monthly meetings. Researchers distributed a recruitment flyer and also explained the purpose of the study to the groups through presentations.

Two sets of blood pressure readings were obtained from volunteers. Those with blood pressure of 120/80 and above or who self-identified as having been told they had high blood pressure, were eligible to participate in the study. These participants then proceeded to have their weight and BMI checked. The consent form was signed and the participants were given the survey booklets to complete on-site. The tokens (refrigerator magnets with the warning signs of stroke printed on them) were awarded after the completion of the survey, which took about 45 minutes. Forty-seven of the women preferred to take the survey home to complete and mail back; these were given a stamped self-addressed envelope. Thirty take-home surveys were returned. Follow-up calls were made to remind these participants as well, to ensure completion of the survey booklets.

Sample for Secondary Data Analysis

The African American women subjects' information regarding the WHEELS survey was extracted from WHEELS studies of 2008 and 2009. A convenience sample of 38 African American women was selected from a pool of 95 in the study. Data such as demographic information and the cognitive representation of hypertension and lifestyle behavior (DASH diet) were gathered from the WHEELS Survey booklet. The booklet addresses self-definition of hypertension (Section A), knowledge of hypertension (Section B), cognitive representation of hypertension (Sections C and D), healthy eating

patterns (Section E), recent food habits (Section F), knowledge of laboratory tests related to cardiovascular risks to quality of life (Section G), cognitive representation of DASH diet (Sections H, I, and J), general health (Section K), and demographic data. These data were compared with the Nigerian Immigrants data.

Data Collection

The survey and blood pressure measurement took place between February and July of 2011 in the facility where the Nigerian civic organizations have their monthly meeting, with tables and chairs set at the back of the room. Healthy African and American food and water were provided for the participants as well as literature on the risk factors for high blood pressure and stroke. The subjects who agreed to participate in the survey had their blood pressure measured. Those who met the blood pressure criteria had their weight measured and then proceeded to fill out the survey. At the end, each received a refrigerator magnet. Since blood pressure measurements were taken, any individual with a systolic blood pressure greater than 180 was referred to a physician or to an Urgent Care facility.

Measures

Cognitive Representations.

The Cognitive Representation of Hypertension (CRHTN) and the Cognitive Representation of DASH Diet (CRDD) were measured using the Women's and Men's Hypertension Experiences and Emerging Lifestyle Survey (WHEELS), an instrument with multiple questionnaires developed by Scisney-Matlock (1997, 1998, &1998). The details of each section of the booklet were described in the discussion of the "Sample for

Secondary Data Analysis” above. Each of the items—self-definition of hypertension, knowledge of hypertension, cognitive representation of hypertension, healthy eating patterns, recent food habits, knowledge of laboratory tests related to cardiovascular risks to quality of life, cognitive representation of DASH diet, general health, and demographic data—was measured on a six-point Likert scale. The overall internal consistency test revealed a Cronbach alpha of .89.

Cognitive Representation of Hypertension (CRHTN)

Sections B (knowledge of hypertension) and C (cognitive representation of hypertension) were considered in the estimation of the cognitive representation of hypertension. Section B was a true-or-false 12-question test of the knowledge of hypertension (HTNKNOW), scored as correct (1) and incorrect (0). Any missing data for this section were considered incorrect (0). Scores ranged from 0 to 12.

Section C measured the cognitive representation of hypertension (CRHTN). This was a 15-item section measured on a 6-point Likert scale, with possible scores of 15 to 90. Confirmatory factor analyses for the original CRHTN scales revealed a 21-item, 5-dimensional measure reflecting theoretical concepts of illness representation described by H. Leventhal et al. (1992). Dimension scores proved equal to the mean of contributing test items, and included: 1) *label*—physiological symptoms reported by the individual, 2) *consequences*—psychological themes, such as worry and fear, associated with the illness, 3) *cause*—items that described attitudes and behaviors likely to exacerbate the hypertensive condition, 4) *control*—health-behaviors germane to HTN management, and 5) *timeline*—perceptions that dealt with the future course of the preceding dimensions.

The participants then indicated the extent to which each item described them by using a 5-point scale ranging from “not at all” (1) to “very much” (5). The options of “don’t know” or “not sure” were also included as an attempt to control for bias. These items were used to assess the five dimensions of CRHTNs, and are presented in a mixed order within the questionnaire’s five major themes. The reliability coefficients used for the scales were taken from the study data; all fell within the acceptable range (i.e., 0.70 or better). In the current study with the Nigerian Immigrants, the reliability coefficient using the Cronbach’s alpha was 0.89

Cognitive Representation of DASH diet (CRDD).

Section H of the instrument contains 11 questions that address three dimensions of the cognitive representation (Perception, Preference, and Possibilities) of the DASH diet (CRDD). Questions eight and ten needed reverse coding to align the direction of the questions with the other questions. The aggregate score for this section is 33 to 198. From September to December, 2008, data analyses were conducted by Sherry Bumpus, to establish psychometric estimates of the DASH Diet Cognitive Representation Scale (CRDD), the control dimension of the illness CR. An unpublished manuscript, “Reliability and Validity of the DASH Diet Cognitive Representation Scale,” presents those results. The purpose of the study was to establish construct validity for the cognitive representation DASH diet scale (CRDD) and support the underlying three-dimensional assumption of tool using data gathered in the Summer 2008 from the database of health-insurer Blue Cross Blue Shield. The primary objective was to determine optimal internal consistency. The major finding was that the study achieved

reliability with a Cronbach alpha coefficient of .92. Internal consistencies, as demonstrated with Cronbach's alpha, were established for all CRDD subscales after discarding seven items (knowledge $\alpha = .79$, attitude $\alpha = .86$, and skill $\alpha = .89$). For an established tool, Cronbach's alpha should be at least .80 (Pallant, 2007).

Principal component analysis (PCA) and principal axis factoring (PAF) methods with varimax rotation using SPSS Version 16 for Apple Macintosh computer were utilized to assess factor loadings. A priori criteria for factor extractions included eigenvalues greater than 1, the breakpoint on the scree plot, and item factor loadings of greater than .40. Prior to performing PCA and PAF, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above (Tabachnick & Fidell, 2007). Bartlett's test of sphericity reached statistical significance ($df = 351, p = .001$), supporting the factorability, despite the small sample size of fewer than five cases per variable (Tabachnick & Fidell, 2007). The Kaiser-Meyer-Olkin value, measuring sampling adequacy, was middling at .79, but exceeded the recommended value of .6 (Tabachnick & Fidell, 2007). Twenty-six of the 30 items of the DDCR were subjected to principal component analysis (PCA) and principal axis factoring (PAF) with orthogonal varimax rotation.

PCA revealed the presence of seven components with eigenvalues exceeding 1, explaining 74.3% of the variance. An inspection of the scree plot revealed a clear break after the second component, with an elbow at the third component. After reviewing the scree test, it was decided to retain three components for further investigation. Three components are ideal, as this matches the theoretical underpinnings of the survey design.

The three-component solution explained a total of 53.65% of the variance, with Component 1 contributing 36.84%, Component 2 contributing 8.64%, and Component 3 contributing 8.16%. To further aid in the interpretation of this solution, varimax rotation was performed. The rotated solution revealed the presence of a simple structure with most components showing a number of strong loadings. Six variables loaded on more than one factor, as described by Nunnally and Bernstein (1994), at less than .20 difference. The interpretation of the three components was consistent with previous research and the theoretical model of the CRDD.

Construct Validity Using Contrast Validity.

As a further measure of construct validity, contrast validity was conducted on the sample. Recall that there were approximately equal percentages of Caucasians and African Americans in the sample. Using the t-test to compare the mean total score and sub scores between these two groups revealed no significant differences. The CRDD scale demonstrated internal consistency within both groups, using Cronbach's alpha (Caucasian $\alpha = .93$, African American $\alpha = .92$). Each sample was subjected to principal component analysis (PCA) and principal axis factoring (PAF) with varimax rotation, as in the primary analysis. Despite the low number of participants in each sample, the Kaiser-Meyer-Olkin (KMO) test was sufficient for each (Caucasian KMO = .66, African-American KMO = .58) and Bartlett's test of sphericity was equal and significant for both (df = 325, $p < .001$).

In this study, the procedure for the CRDD scale demonstrated an internal consistency with the Nigerian immigrant group of Cronbach's alpha of .86. The

Cronbach's alpha was established for the subscales (Perception-Knowledge .64, Preference-Attitude .72, and Possibility-Skill .75).

Background Characteristics

Background characteristics including age, education, income, and employment status were obtained. Marital status and religiosity were also obtained.

Physiological measures:

The blood pressure, height, and weight were also measured using Omron Model 780 and Omron digital scale model HBF-400, which has the capability of calculating the BMI. Both instruments were checked and approved by the IRB for use.

Blood pressure was measured using the Omron Model 780 designed for self-BP monitoring according to American Heart Association (AHA 1987) guidelines. Two readings using the appropriate cuff were obtained in the seating position at one-minute intervals after the participant had been sitting for five minutes. The average of the two readings was then recorded. A blood pressure of 120/80 mmHg and above, or a history of hypertension, qualified the individual to fill the survey. There was an individual with a blood pressure of 184/113 who claimed she had forgotten to take her medication in the morning but had taken it just before the screening. She refused to have it repeated and decided to go home, adding that she had an appointment with her physician the following day.

Body mass index (BMI) was calculated based on the height reported and weight as measured by Omron digital scale Model HBF-400. The age and height of each participant

was programmed into the scale, then the participant was weighed, and the scale calculated the BMI with the information programmed in and the weight obtained.

Migration:

Migration status for the African immigrants was measured with nativity status, age at migration, years of residence in the U.S., and generational status (first or second). First-generation immigrants are those who are foreign-born and second generation are those having one or both parents foreign-born. Third-generation immigrants are those with at least one grandparent foreign-born; they were excluded from this study (Williams, 2005). Most of the women in this sample were first-generation immigrants.

Migration Stress was measured using an Acculturative Stress Scale adapted from the Acculturative Stress Scale for International Students (ASSIS) developed by Sandhu and Asrabadi (1994). The only change made to the instrument was to replace the phrase “International Students” with the word “Immigrants.”

The instrument—which contained 36 items in seven subscales (Perceived Discrimination, 8 items; Homesickness, 4 items; Perceived Hate, 5 items; Fear, 4 items; Stress Due to Change/ Culture Shock, 3 items; Guilt, 2 items; Nonspecific Concerns, 10 items)—employed a five-point Likert scale. The six subscales of the Acculturative Stress Scale were Perceived Discrimination, Homesickness, Perceived Hate/Rejection, Fear, Culture Shock/Stress Due to Change, and Guilt. Other items were included in the seventh subscale (Miscellaneous), which addressed some additional concerns of the foreign students that were not empirically identified in the six subscales. These items were

considered significant enough for a comprehensive assessment of acculturative stress scale in the development of the original instrument (Sandhu and Asrabadi, 1994).

Perceived Discrimination contributed 38.3% of the total variation, followed by the second major factor, Homesickness (9.0 %). The other factors—Perceived Hate, Fear, Stress Due to Change or Culture Shock, and Guilt—contributed 7.2%, 6.1percent, 3.7%, and 3.2percent to the variance, respectively. The nonspecific items (Miscellaneous) contributed to the unexplained variance but did not fall under any of the main six factors. Sandhu and Asrabadi (1998), using the ASSIS in another study, reported a Cronbach' alpha ranging from .87 to .95. A Cronbach's alpha of .92 was demonstrated in the study of acculturative stress in African, Asian, and Latin American international students (Constantine, Okazaki, & Utsey, 2004). In the present study of Nigerian Immigrants, a reliability coefficient Cronbach's alpha .96 was demonstrated.

Data Analysis

A descriptive analysis of the demographic variables (age and race), socioeconomic (education, income, marital status), and lifestyle behavior (tobacco use/smoking, alcohol use, and home remedies) for each group of subjects was done. Multivariate analysis also was used to answer the questions.

The independent variables were the groups (African Immigrants and African Americans) and duration of residency in the U.S. (0-5yrs, 6-10yrs, >10yrs). Dependent variables included the Cognitive Representations, Blood Pressure, BMI, and Acculturative Stress.

Question A

Is there a difference in the Cognitive Representation of hypertension between African immigrant women and African American women?

H₁: The cognitive representation of hypertension will be lower in African Immigrant (AI) women than African American (AA) women.

Independent sample t-tests were used on the variables HTNKNOW and CRHTN to determine the difference in the two groups.

Question B

Does migration have an effect on the Cognitive Representation of hypertension in the African Immigrants?

H₂: The cognitive representation of hypertension will increase with years of residency in the U.S.

H₃: The cognitive representation of lifestyle behavior (DASH diet) will decrease with years of residency in the U.S.

An analysis of variance (ANOVA) was performed using three levels identified according to the years of residence in the U.S., to show the interactions in the CRHTN and Lifestyle behavior CRDD with this variable. Bonferroni post-hoc tests were used to identify where the main interaction was occurring.

Question C

How does the Cognitive Representation of lifestyle behavior (DASH diet) differ for African Immigrant women and African American women?

H₄: The Cognitive Representation of lifestyle behavior (DASH diet CRDD) will be higher in the African Immigrant women than in the African-American women.

Independent sample t-tests were used to determine the difference in the two groups.

Question D

Is there a difference in the blood pressure readings for hypertension between recent African immigrants (0-5years) and long-staying African Immigrants?

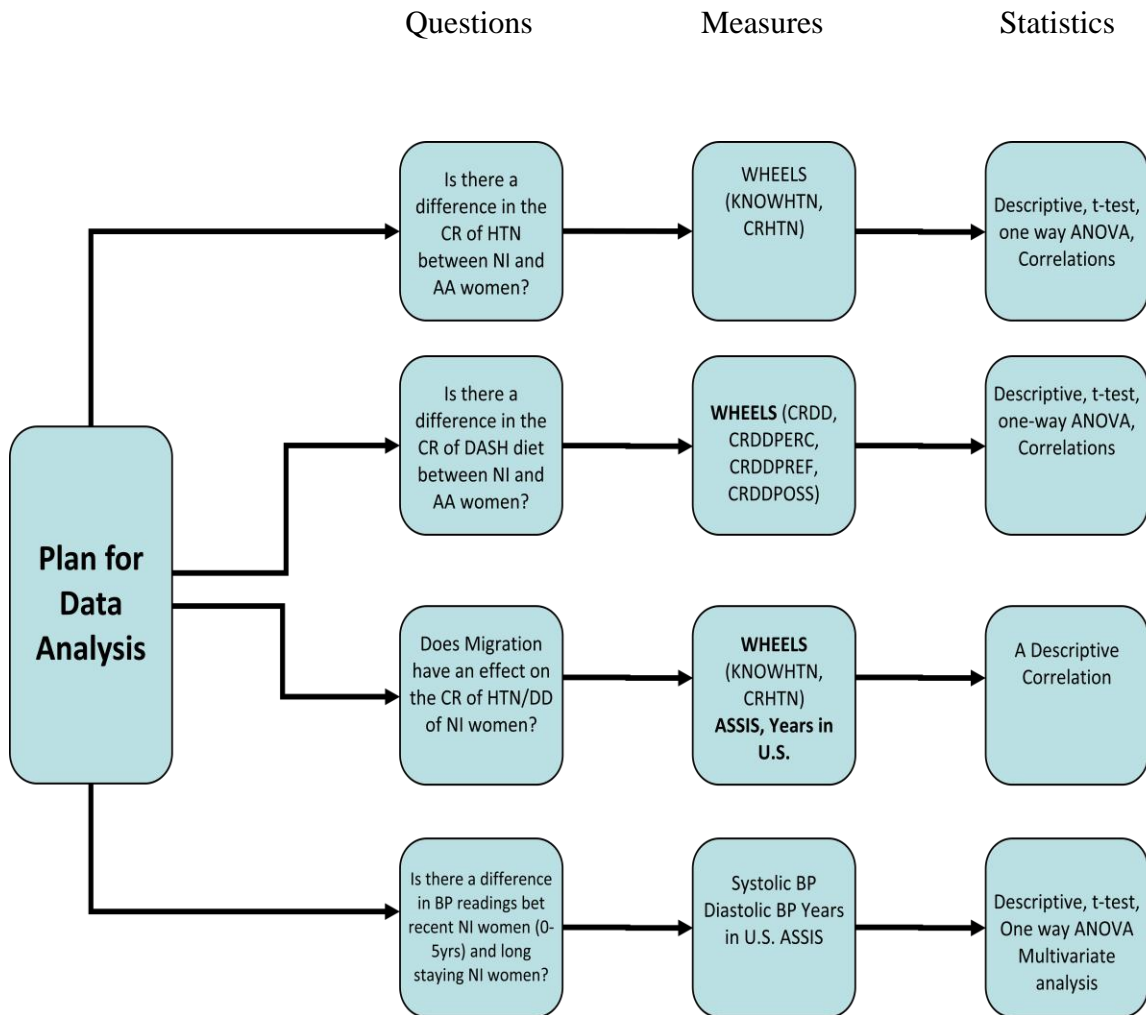
H₅: Blood pressure readings will increase with years of residency in the African Immigrant women.

The blood pressure classification of hypertension by the American Heart Association was used to create the categorical variable from the blood pressure readings obtained from the Nigerian Immigrant participants (Normal BP >120 systolic BP or >80 diastolic BP, prehypertension SBP 120 to 139 or DBP 80 to 89, Stage 1 HTN SBP 140 to 159 or DBP 90 to 99, Stage 2 HTN SBP ≤ 160 or DBP ≤ 100). There was only one participant with normal blood pressure and seven with stage 2 HTN, a finding that created a challenging analytical issue. To resolve the problem, the categories were collapsed to a binary variable (Normal and Prehypertension = 1, Stage 1, and Stage 2 = 2). A t-test was done to test the difference between the means.

H₆: African Immigrant women with high acculturative stress scores will have higher blood pressure.

A t-test was done for the difference between the means with Acculturative Stress

Figure 4.1 Analysis Plan



CHAPTER 5

RESULTS

Description of the Sample

The sample size was 38 African American women from a secondary data analysis and 91 Nigerian Immigrant women. The Nigerian Immigrant women filled out the WHEELS survey that was previously used to collect the data from the African American women in the WHEELS 2 survey of 2007 and in the acculturative stress scale. The Nigerian immigrants received 110 survey booklets; they returned 93 of them, 30 by mail. Two returned booklets with a substantial amount of missing data were not usable. The return rate was 84%, since most booklets were collected face to face.

Sample Characteristics

The women in the study ranged from 18 to 74 years old. Most of the African American women in the WHEELS study had been diagnosed earlier with hypertension, whereas the Nigerian Immigrants had not all been previously diagnosed with high blood pressure. The African American women's ages ranged from 39 to 74 years old with a mean age of 56.45 years, while the Nigerian Immigrant women's ages ranged from 18 to 66 years with a mean age of 48.8 years (Table 5.1). The mean age of the immigrants leaving their homeland for the U.S. was 29.86 years, with the age at time of immigration ranging from 2 years old to 57). Other demographic characteristics are shown in Table 5.2

Most of the Nigerian Immigrant women were married (64.8 per cent) compared with 39.5% of the African-American women. Most of the immigrants had four years or more of college education (67.1%) compared with 36.8% for African Americans. Nearly one quarter (24.2%) of the Nigerian Immigrants reported a household income level below \$30,000 per year, with the same percentage reporting income level greater than \$90,000 per year. Most of the Nigerian women were two-income families. In contrast, 21.1% of the African American women reported a household income level below \$30,000 per year, and 2.6% greater than \$90,000 (see Table 5.2). While the 28.6% and 17.6% Nigerian Immigrants reported annual income \$30,000 – \$60,000 and \$60,001- \$90,000, a corresponding 52.6% and 23.7% African American women reported income at each of the levels respectively.

According to the lifestyle behavior described in Table 5.3, none of the Nigerian Immigrant or the African American women chewed tobacco. While 15.8% of the African-Americans women smoked, none of the Nigerian Immigrant woman in the sample smoked. Most of the Nigerian Immigrant women (65.9%) never had an alcoholic drink; most of the African American women also abstained from alcohol (60.5%). Most of the women had health insurance (82% NI and 92% AA).

The body mass index (BMI) for the African American women was calculated from reported weight and height; 86.9% were overweight and of these 47.4% were obese. Similarly, 91.2% of the Nigerian Immigrant women were overweight and 63.7% of these were obese. It is noteworthy that most (61.5percent) of the Nigerian immigrant women had systolic blood pressure in the prehypertension range. Seventy two percent of the

African American women were normotensive or in prehypertension, since they had been prediagnosed as such and were in treatment for hypertension. Seventy percent (n = 63) of the Nigerian Immigrants “do think about” or “always think about” exercise, compared with 85.48% (n = 26) African-American women.

Migration data were obtained for the NI only as shown in Table 5.4. Most of the women were born in Nigeria (94.5%). The mean age at migration to the U.S. was 29.86 years (range 2 to 57 years) and most (77.8 percent) had been in the U.S. more than 10 years. Most claimed to be very religious. The language best spoken was both the indigenous language and English, making the majority of participants bilingual. The English language is the official national language in Nigeria.

Concerning treatment of disease, only 19.5% admitted to using home remedies sometimes or always. Fewer (15.7%) reported using both Western and home remedies for blood pressure, and fewer still (7.2%) would visit a traditional healer for treatment. Some of the participants referred to the fact that they were Christians now and thus would not seek treatment from a traditional healer. Some also thought the question referred to visiting “witch doctors.” Some of those who said they had sought traditional health care givers referred to herbal remedies and foods that are indigenous to Africa and which should not be discounted as effective therapies. Some examples given were the use of alligator pepper and *Ogbono* soup to control blood pressure. *Ogbono* is the dried seed of the African wild mango tree, and it is ground and used as a powerful food-thickener with an earthy flavor. It is popular everywhere for its flavor, if not necessarily for its medicinal use. It is currently advertised as a “weight loss super food” on the Internet

Half of the Nigerian Immigrants scored above 90, the midpoint of the Acculturative stress scale score (36-180). The mean score was 95.09, and the mode, 89. Higher total and subscale scores are indicative of acculturative stress. In the current study, more than half (63.71%) of the participants scored more than 20 (range 8 to 40, with a mean of 23.7, SD 8.67) for Perceived Discrimination, followed by 58.2% scoring more than 10 (range 4 to 20, mean 11.48, SD 4.0) for Homesickness. Perceived Hate also has 53.8% of participants scoring more than 13 (range 5 to 25, mean 14.3, SD 5.6). Scores due to stress as a result of Change/Culture Shock and/or of Guilt were as follows: 35.2% greater than 8 (range 3 to 15, mean 7.6, SD 3.2) and 34.1% greater than 5 (range 2 to 10, mean 7.6, SD 2.3), respectively. Twenty four percent of the participants reported no fear at all, while only 25.3% scored above 10 (range 4 to 20, mean 8, SD 3.96).

Hypotheses Testing

Question A:

Is there a difference in the cognitive representation of hypertension between African Immigrant women and African American women?

The two measures applied to this question were the Knowledge of Hypertension (HTNKNOW) and the Cognitive Representation of Hypertension (CRHTN), as shown in Table 5.5.

The HTNKNOW mean score for the two groups was 9.30, with a standard deviation of 1.38 (minimum score 4 and maximum score 12). A high score is indicative of a high knowledge of hypertension. The individual group mean scores were as follows:

the African American group mean was 9.76 (SD 1.28, minimum score 7 and maximum score 12), with 81.6% scoring 9 or greater out of 12. The Nigerian Immigrant group mean was 9.12 (SD 1.389, minimum score 4 and maximum score 12) with 69.2% scoring 9 or greater out of 12. An independent sample t-test showed that the African American women's higher score was significantly different ($p = .021$) from the Nigerian Immigrant women score.

The cognitive representation scores were as follows: African American women mean score was 33.19 (SD 12.58), and Nigerian Immigrant women's score was 32.18 (SD 15.20). Though the African American women scored higher than the Nigerian Immigrants, the t-test did not show any statistically significant difference between the two groups. It should be noted that most (77.8%) of the Nigerian Immigrants had been in the U.S. more than ten years.

The hypothesis that the Cognitive Representation of Hypertension would be lower in African Immigrant (AI) women than in African American (AA) women was not statistically supported in this sample.

Question B

How does the cognitive representation of lifestyle behavior (DASH diet) differ for African immigrant women and African-American women?

Hypothesis 2: The cognitive representation of lifestyle behavior (DASH diet) would be higher in the African Immigrant women than in the African American women.

The lifestyle Cognitive Representation Scale of the WHEELS survey addressed the cognitive representations of the DASH diet (CRDD). The aggregate score from the three dimensions represents the CRDD.

The mean score for the African Americans was 121.167 (SD 13.01), compared with 125.92 (SD 18.53) in Nigerian Immigrants. The t-test did not show any significant difference between the two groups. However, when broken down by the three dimensions of CRDD represented by three questions on the scale, (“Describes me now” = Perception, “How much does it matter?” = Preference, and “Likely to describe me in the future” = Possibilities), there was a significant difference between the African American and Nigerian Immigrant women with respect to Perception equivalent to knowledge (CRDDPERC). The mean score for African American women 35.30 (SD 5.02) and Nigerian Immigrant women 38.99 (SD 6.30) was significantly different at $p = .002$. No significant difference was observed for the other two dimensions, Preference (CRDDPREF $p = .216$) equivalent to attitude and Possibilities (CRDDPOSS $p = .716$) equivalent to skills.

Though the Nigerian Immigrants mean score for the CRDD was higher than the African American women, the difference was not statistically significant. It is not conclusive that the CRDD of the Nigerian Immigrant women was higher than that of the African-American women. Nevertheless, it can be concluded that the CRDDPERC is significantly higher than the African American women, which reflects comparative knowledge of the DASH diet.

Question C

Does migration have an effect on the cognitive representation of hypertension in the African immigrants?

There was a statistically significant, positive correlation (at $p = .01$) between hypertension knowledge and years of residence in the U.S. Nigerian Immigrants who had been in the U.S. five years or less (0 to 5 yrs.) had a Hypertension Knowledge mean score of 7.56 (SD 1.88), whereas those who had been in the U.S. from 6 to 10 years had scores of mean 9.27, SD 1.01, and those had been in the U.S. more than 10 years had scores of mean 9.31, SD 1.26. The ANOVA (see Table 5.7) showed a significant difference between immigrant groups of $p = .001$. Furthermore, Bonferroni's comparative analysis showed a significant difference between immigrants who had been in the U.S. 0 to 5 years and the others, 6 to 10 years ($p = .013$), greater than 10 years ($p = .001$). There was no significant difference between those who had been in the U.S. for 6 to 10 years and those who had been here for greater than 10 years. To sum up: knowledge about hypertension was significantly higher in Nigerian Immigrants who had been in the U.S. for 6 to 10 years and for greater than 10 years than for those who had been in residence for 0 to 5 years.

There was no significant correlation between years of residence in the U.S. and cognitive representation of hypertension. However, the ANOVA showed a significant difference ($p = .027$) between groups. The multiple comparative analyses revealed a significant difference ($p = .030$) between immigrants with years of residence 6 to 10 years (mean 21.73, SD 8.37) and those greater than 10 years (mean 34.36, SD 15.44).

There was no significant difference between immigrants with 0 to 5 years of residence (mean 28.00, SD 15.61) and the other groups.

There is not enough evidence to support the hypothesis that the Cognitive Representation of hypertension would increase with years of residency in the U.S.; however, the knowledge of hypertension increased significantly with increasing years of residence.

Hypothesis 4:

The Cognitive Representation of lifestyle behavior (DASH diet) would decrease with years of residency in the U.S.

To determine the effect of the years of residence in the U.S. on CRDD, the ANOVA was performed, see Table 5.7. The aggregate CRDD mean scores were not significantly different between Nigerian immigrant women who had been in the U.S. 0 to 5 years and those who had resided in the U.S. 6 to 10 years or greater than 10 years. Neither was there any significant difference in the mean score between those who had been in the U.S. for 6 to 10 years and with residency greater than 10 years. No significant difference was observed with the three dimensions of CRDD. Hence the hypothesis that the CRDD would decrease with years of residency in the U.S. was not supported.

Question D

Is there a difference in the blood pressure readings of hypertension between recent African immigrants (0-5 years) and long-staying African immigrants?

There was no significant correlation between years of residence in the U.S. and systolic or diastolic blood pressure, however the age at which the NI women left home was significantly positively correlated ($p = .027$) to the systolic blood pressure (see figure 2). Further analysis of variance did not show any significant difference between the three groups who had resided in the U.S. for 0 to 5 years (mean SBP 138.78, SD 17.14), 6 to 10 years (mean SBP 135.27, SD 12.78), or greater than 10 years (mean SBP 137.86, SD 13.55).

A statistically significant correlation was found between SBP and BMI ($p = .037$) and age ($p = .025$) when it was treated as a continuous variable

The hypothesis that the blood pressure reading would increase with the years of residency in the Nigerian Immigrant women was not supported with this result.

Although about half of the Nigerian Immigrant women scored more than the midpoint score (90) in the Acculturative Stress Scale, and were expected to have higher blood pressure, there was no significant correlation between the SBP and the Acculturative Stress score. There was also no significant correlation between SBP and the six subscales (Perceived Discrimination, Homesickness, Perceived Hatred, Fear, Stress Due to Change and Culture Shock).

Analysis of variance was performed using the JNC7/ American Heart Association classification of blood pressure levels (normal = less than 120 SBP or less than 80 DBP, prehypertension = 120 to 129 SBP or 80 to 89 DBP, Stage 1 high BP = 140 to 159 SBP or 90 to 99 DBP, Stage 2 high BP = 160 and greater SBP or 100 and greater DBP). There was also no significant difference between groups for the aggregate Acculturative Stress

score, or the subscales. A stepwise regression model using BMI, Age, acculturative stress and years of residence in the U.S. shows no significant contribution by acculturative stress to the model, R^2 remain unchanged (See table 5.16 and 5.17). Age was significant for systolic and BMI for diastolic blood pressure.

Conceptual Framework

The assumption in the conceptual model for this study was that the migration variables would affect the Cognitive Representation of Hypertension (CRHTN and CRDD) and the health behavior, with a subsequent effect on the health status outcome (blood pressure, self-reported health status, and BMI). The interactions between the migration status variables were examined. The migration status (years of residence in the U.S., nativity status, and age at migration) had no significant correlation with acculturation stress (see Table 11). Nativity status was not evaluated since 98% of the immigrants were first-generation immigrants from Nigeria.

The knowledge of hypertension showed a significantly positive correlation ($p = .006$) with the number of years of residence in the U.S. The knowledge of hypertension (HTNKNOW) increased with the years of residence. However, HTNKNOW had no significant correlation with the age at which the immigrant had left her country of origin or with acculturative stress in this sample.

The Cognitive Representation of Hypertension (CRHTN) had no significant correlation with the migration variables.

Although a significant association was demonstrated between hypertension knowledge and years of residence in the U.S. as expected, it was not possible to

demonstrate association with other migration variables in this sample. There was also no demonstration of association with the CRHTN or Cognitive Representation of the DASH diet (CRDD) and its three subscales.

Health Behavior and Migration

None of the 89 NI women who responded to the smoking questions smoked, and only 15.8% of the African Americans smoked. The smoking habit could not be fitted into any test for association with migration since none of the immigrants smoked or chewed tobacco. Alcohol use, however, had a significant negative correlation with age at leaving country of origin ($p = .002$) and a positive correlation with years of residency ($p = .025$).

The alcohol-use variable was reduced to three groups from six. The last three groups were collapsed to one group due to few respondents (Table 9). The analysis of variance was significant ($p = .025$) for years of residence in the U.S. Further, Bonferoni analysis showed a significant difference ($p = .022$) between those who had never had an alcoholic drink and those who had 1 to 2 per week.

There was also a significant ($p = .005$) relationship with ACSTRESS, and further analysis showed a significant difference in stress between those who had three or more drinks per week and the other two groups (never drink $p = .033$ and 1 to 2 drinks per week $p = .005$). The acculturative stress score for those who had three or more drinks per week was significantly higher than the other two groups. It is interesting, though, that the Acculturative Stress score for those who had 1 to 2 drinks per week was significantly less than for those who had never had a drink. There was, however no significant differences in HTNKNOW, CRHTN, CRDD, BMI, or blood pressure between the groups.

The participants were asked to think about exercising three times a week for at least 20 minutes to improve their physical fitness (Table 10). This variable showed a significant difference in CRHTN between the groups, with $p = .001$ for the Nigerian Immigrant women $p = .016$ for the African-American women. The Bonferoni analysis in the Nigerian Immigrant sample showed a significant difference between those who could not answer the question and the other groups (“I cannot do this” $p = .011$, “I should think about this” $p = .028$, “I do think about it some” $p = .000$, and “I always think about this” $p = .002$). In the African-American women, the Bonferoni analysis showed a significant difference between those who “think about it some” and “I should think about it,” ($p = .013$) and a modest result with those who “always think about it” $p = .061$.

The CRDD in the Nigerian Immigrant women had a significant difference ($p = .011$) between groups, and the difference ($p = .013$) was mainly between those who “think about it some” and those who “always think about exercise.” There was no significant difference in CRDD between the groups for the African-American women.

ACSTRESS showed an overall significant difference ($p = .034$) between the groups. Those who “cannot answer” the exercise question had the highest (128.66, SD 30) mean score, followed by those who “cannot do this” (118.1, SD 35). However, the Bonferoni analysis showed no significant difference within groups. There were also no significant differences between groups for the years of residence in the U.S., blood pressure, and BMI.

Health Outcomes

Findings of interest were that the BMI had a significant relationship with HTNKNOW ($p = .024$); the higher the BMI, the less the Knowledge of Hypertension. Women who self defined as having hypertension had a significantly higher CRHTN (Nigerian Immigrant women, $p = .005$ and African American women, $p = .006$). The BMI had a significant correlation with the systolic blood pressure ($p = .037$), while the correlation with diastolic blood pressure was approaching significance ($p = .057$). That is, both the systolic and diastolic blood pressure figures increased with increasing BMI.

The Chi Square test resulted in a significant association ($p < .01$) between blood pressure classification (Prehypertension and Hypertension) and those Nigerian Immigrant women who self-defined as having high blood pressure.

Other Findings

The age at leaving the country of origin was found to have a significant negative correlation ($p = .000$) with years of residency in the U.S. That is, the lower the age at leaving the country of origin, the longer the years of residence in the U.S.

The age at leaving the country of origin also had a significant positive correlation with systolic blood pressure ($p = .027$) and BMI ($p = .029$). That is, the older the individual was at leaving the country of origin, the higher the systolic blood pressure and BMI.

The longer years of residence in the U.S. was found to have a significant positive correlation with the HTNKNOW ($p = .006$). That is, the knowledge of hypertension increased with the years of residence in the U.S.

Table 5.1
Age by Group

Group	N	M	SD	Range	
				Minimum	Maximum
Nigerian Immigrant Women	93	48.80	10.35	18	66
African American Women	38	56.45	8.81	39	74

Table 5.2

Demographic Characteristics of the Sample

Characteristics	<u>Women's Group</u>					
	<u>Nigerian Immigrant</u>		<u>African American</u>		<u>Total</u>	
	N	%	N	%	N	%
Education						
Less than high school	2	2.2	3	7.9	5	3.9
High school only	7	7.7	1	2.6	8	6.2
Some College	21	23.1	20	52.6	41	31.7
College graduate	30	33.0	7	18.4	37	28.7
More than 4 years of College	31	34.1	7	18.4	38	29.5
Marital Status						
Never Married	9	9.9	6	15.8	15	11.8
Married	59	64.8	15	39.5	74	58.3
Divorced	6	6.6	14	36.8	20	15.7
Widowed	8	8.8	2	5.3	10	7.9
Separated	6	6.6	0	0.0	6	4.7
Other	2	2.2	0	0.0	2	1.6
Income						
<\$30,000	22	24.2	8	21.1	30	24.1
\$30,001 - \$60,000	26	28.6	20	52.6	46	37.2
\$60,001 - \$90,000	16	17.6	9	23.7	25	20.2
>\$90,000	22	24.2	1	2.6	23	18.5
Insurance						
Yes	75	84.2	35	94.6	110	87.3
No	14	15.8	2	5.4	16	12.7
Medicare						
Yes	16	18.6	5	13.2	21	16.9
No	70	81.4	33	86.8	103	83.1

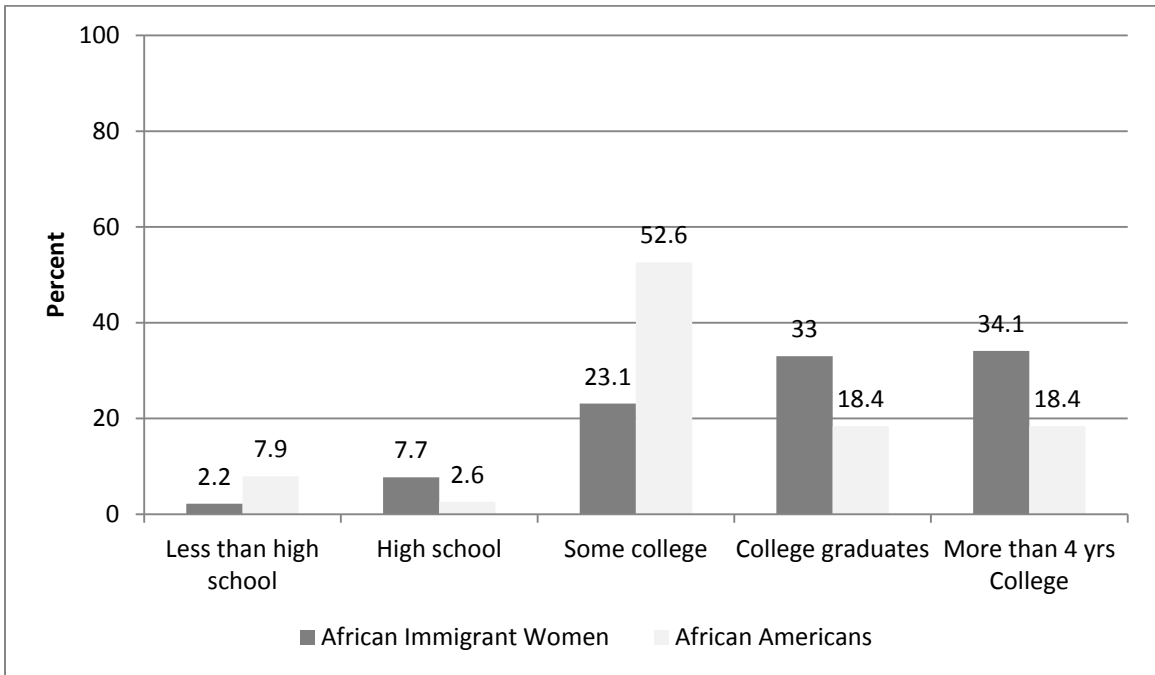


Figure 5.1: Educational Level by Group

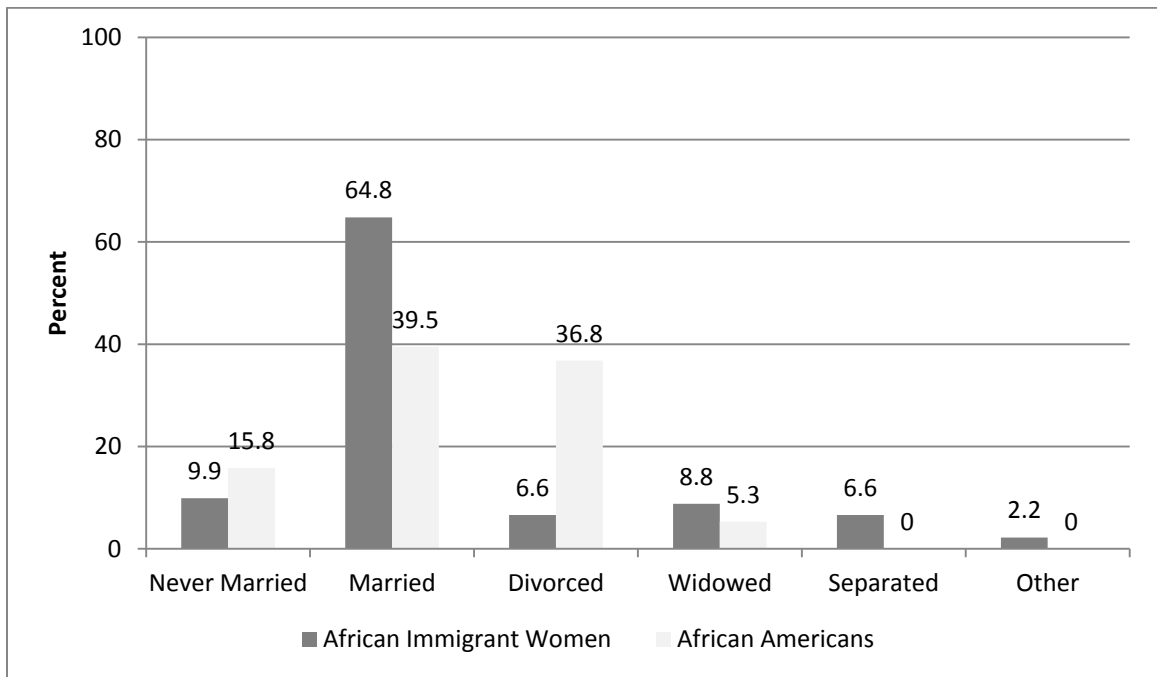


Figure 5.2: Marital Status by Group

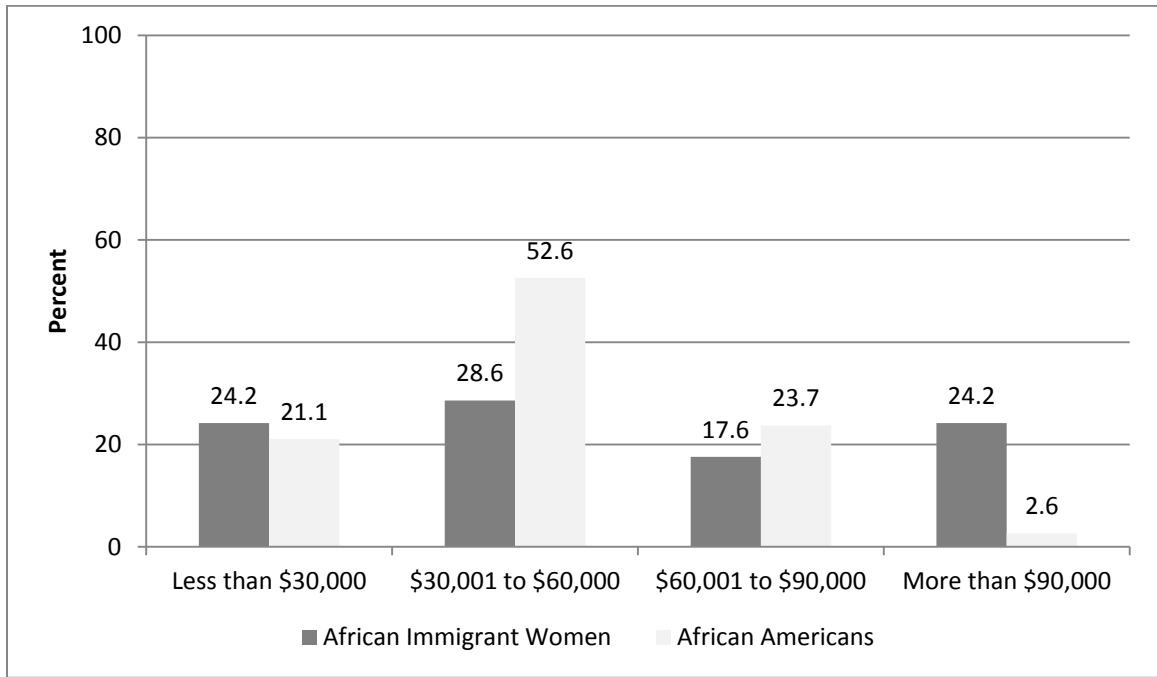


Figure 5.3: Income Levels by Group

Table 5.3

Lifestyle Behavior

Characteristics	<u>Women's Group</u>					
	<u>Nigerian Immigrant</u>		<u>African American</u>		<u>Total</u>	
	N	%	N	%	N	%
Tobacco Chewing						
Yes	0	0.0	0	0.0	0	0.0
No	91	100.0	38	100.0	129	100.0
Smoking						
Yes	0	0.0	6	15.8	6	4.7
No	89	97.8	32	84.2	121	95.3
Alcohol Use						
Never drank alcohol	60	69.0	23	60.5	83	66.4
1-2 drinks/week	23	26.5	9	23.7	32	25.6
3-4 drinks/week	2	2.3	3	7.9	5	4.0
5-6 drinks/week	1	1.1	3	7.9	4	3.2
>6 drinks/week	1	1.1	0	0.0	1	0.8
Exercise						
I can't do this	9	10.0	0	0.0	9	7.4
I should do this	15	16.7	5	16.1	20	16.5
I do think	20	22.2	17	54.8	37	30.6
I always think	43	47.8	9	29.1	52	43.0
Cannot answer	3	3.3	0	0.0	3	2.5
Religiosity						
Very religious	66	77.6				
Somewhat religious	19	22.4				
Body Mass Index (kg/m²)						
Normal (18.5-24.9)	8	8.8	5	13.2	13	10.0
Overweight (25.0-29.9)	25	27.5	15	39.5	40	31.0
Obese (≥ 30)	58	63.7	18	47.3	76	59.0
Systolic BP (mmHg)						
Normal (< 120)	1	1.1	7	19.4	8	6.3
Prehypertension (120-139)	56	61.5	19	52.8	75	59.0
Stage 1 (140-159)	27	27.7	6	16.7	33	26.0
Stage 2 (≥ 160)	7	7.7	4	11.1	11	8.7

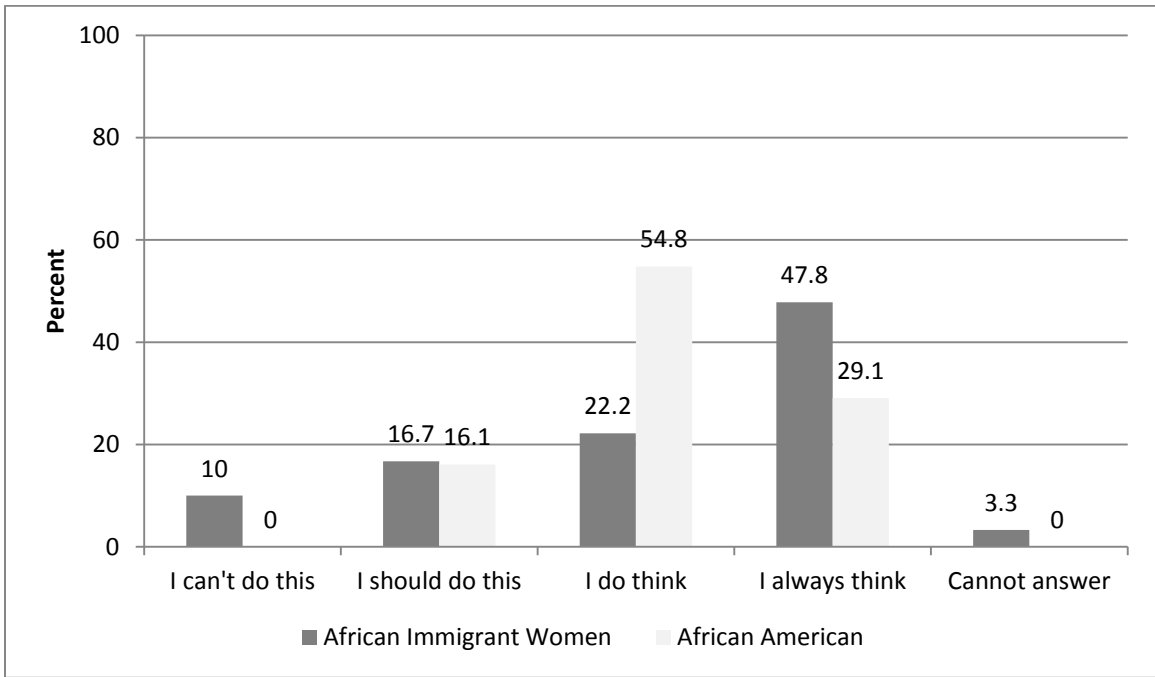


Figure 5.4: Exercise by Group

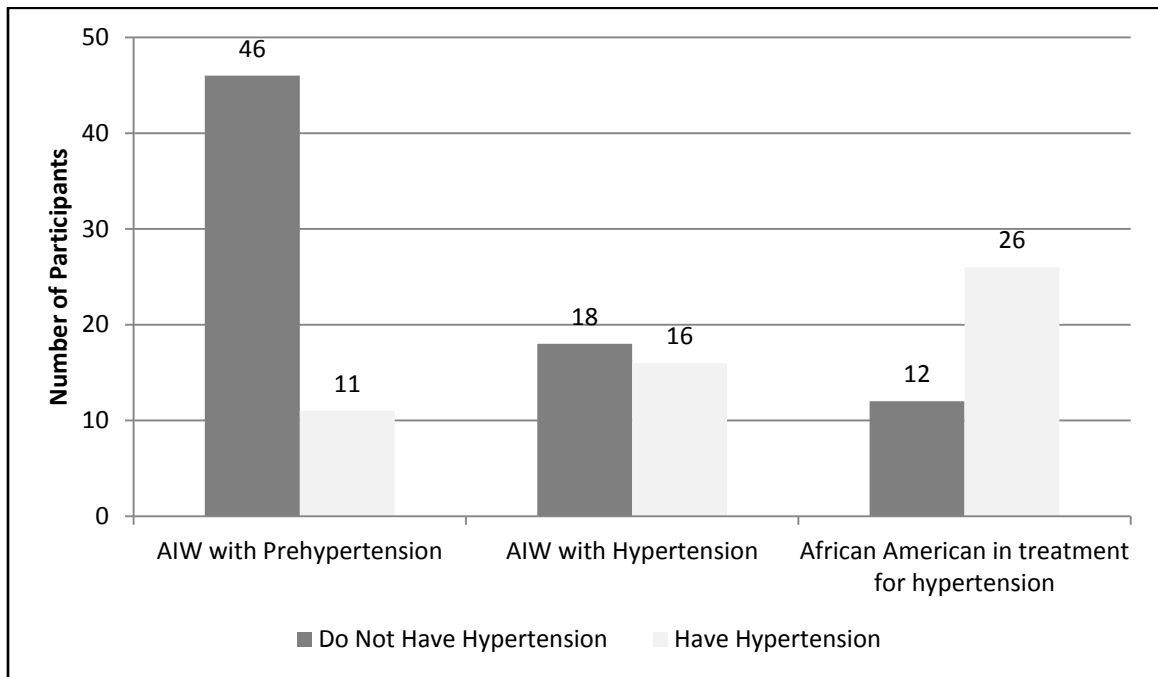


Figure 5.5: Self-Definition of Having Hypertension by Women's Group

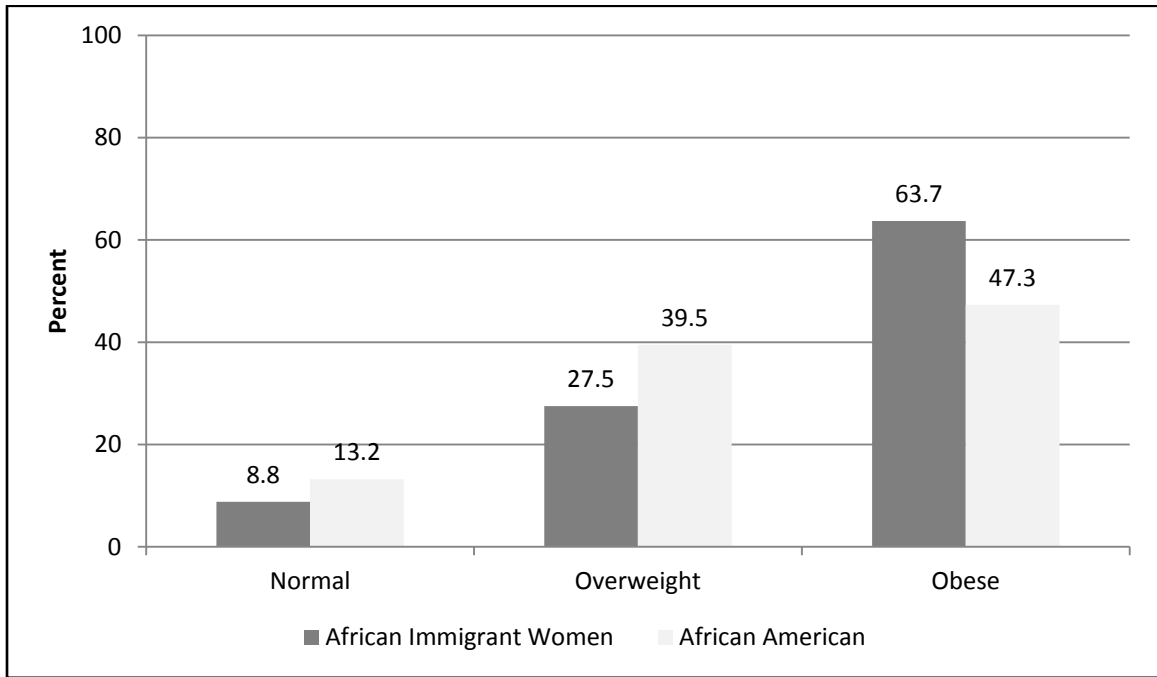


Figure 5.6: Body Mass Index by Group

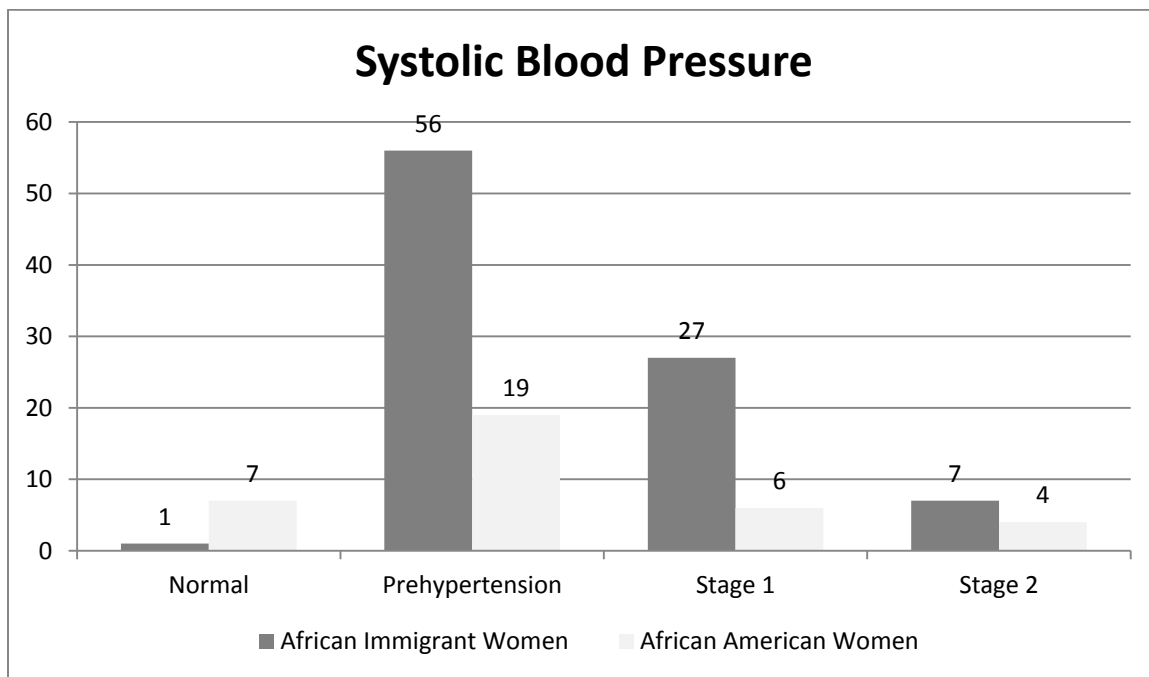


Figure 5.7: Systolic Blood Pressure by Group

Table 5.4

Migration Background Information

Migration Background Information	N	M	SD	Range	
				Minimum	Maximum
Age at coming to the U.S.	91	29.86	10.59	2	57
Years living in the U.S.	91	19.32	10.81	0	44
Acculturation Stress	91				
Total Score	91	95.09	31.83	36	177
Perceived Discrimination	91	23.75	8.67	8	40
Homesickness	91	11.48	4.09	4	20
Perceived hate	91	14.32	5.68	5	25
Fear	91	8.04	3.96	4	20
Culture shock/Stress due to change	91	7.64	3.22	3	15
Guilt	91	4.89	2.33	2	10
Miscellaneous		25.19	9.10	10	50
	N	%			
Years in the U.S.					
0 to 5 years	9	10.0			
6 to 10 years	11	12.2			
>10 years	70	77.8			
Language Spoken at Home					
English	33	36.7			
Native language	17	18.9			
Both	40	44.4			
Nativity					
Nigeria	86	94.5			
Other	5	5.5			

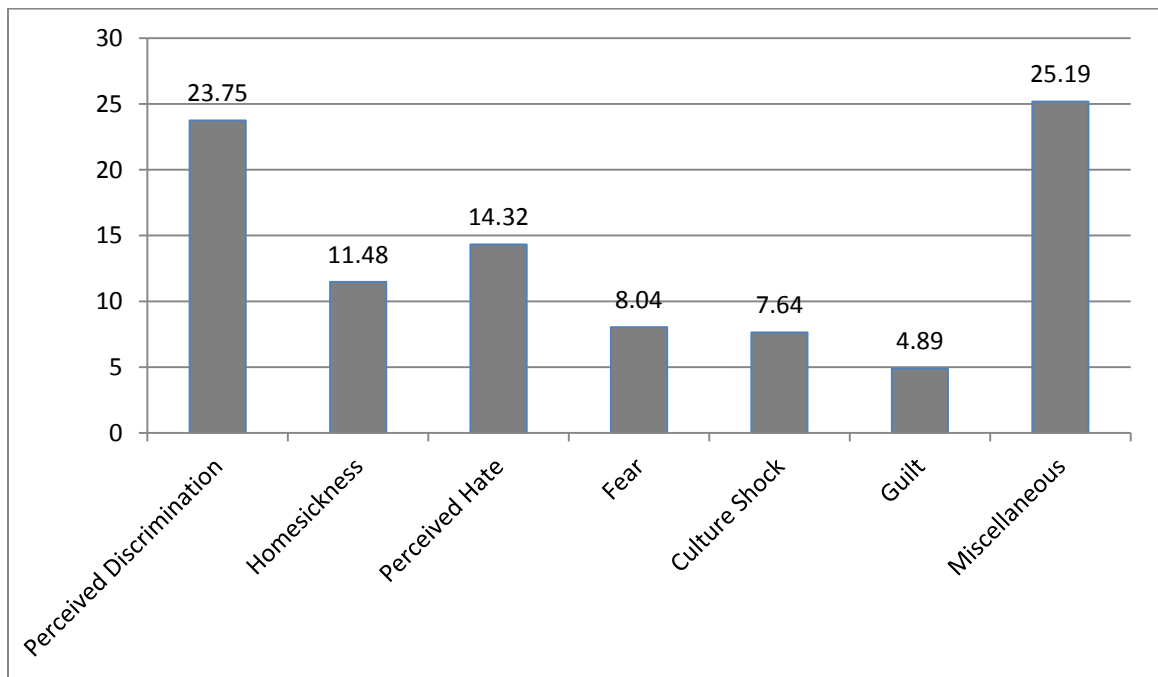


Figure 5.8: Acculturation Stress (African Immigrant Women Only; N = 91)

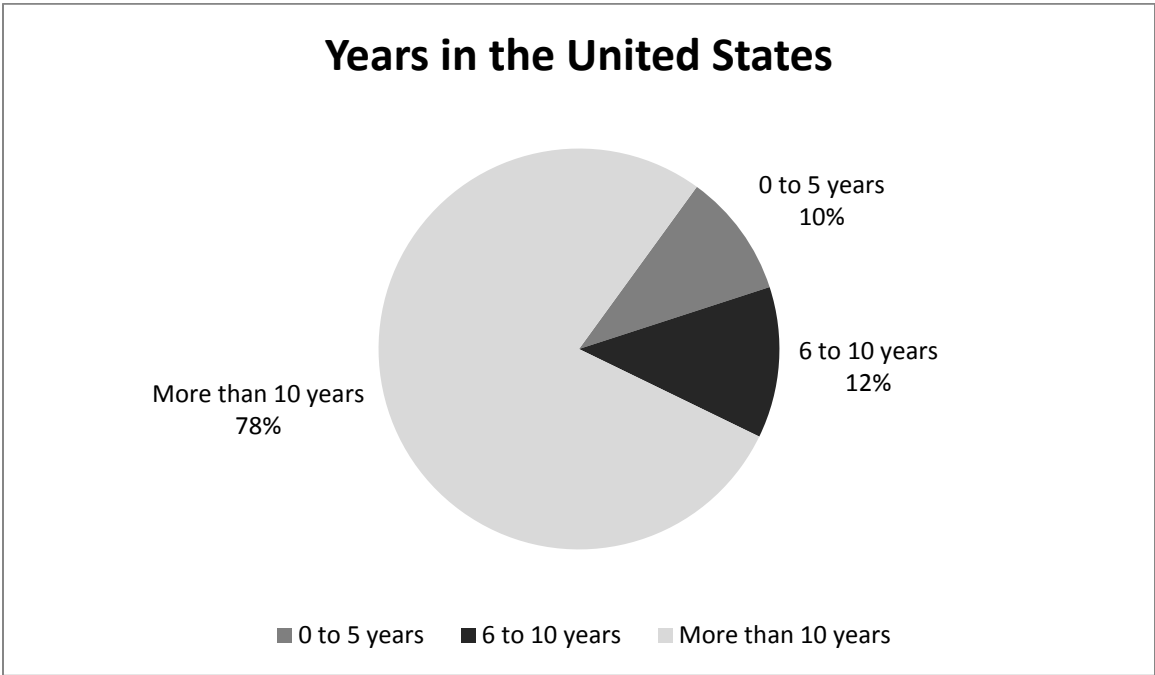


Figure 5.9 Years in the United States (African Immigrant Women only)

Table 5.5
Hypertension Knowledge (HTNKNOW) and Cognitive Representation (CRHTN): A Comparison between African American Women and Nigerian Immigrant Women

	N	Mean	SD	t	DF	Sig
Hypertension Knowledge						
Nigerian immigrant women	91	9.12	1.39	2.34	127	.021*
African American women	38	9.74	1.29			
Total	129	9.30	1.38			
Cognitive Representation of Hypertension						
Nigerian immigrant women	89	32.18	15.20	.36	124	.722
African American women	37	33.19	12.58			
Total	126	32.48	14.44			

*p ≤ .05

Table 5.6
Cognitive Representation of DASH Diet (CRDD): Comparison between African American Women and Nigerian Immigrant Women

	N	Mean	SD	t	DF	Sig
Cognitive Representation of DASH Diet						
Nigerian immigrant women	86	125.92	18.53	-1.40	120	.164
African American women	36	121.17	13.01			
Total	122	124.52	17.18			
Cognitive Representation of DASH Diet Perception						
Nigerian immigrant women	89	38.99	6.30	-3.13	123	.002*
African American women	36	35.31	5.02			
Total	125	37.93	6.17			
Cognitive Representation of DASH Diet Preference						
Nigerian immigrant women	91	44.03	7.36	-1.24	125	.216
African American women	36	42.31	6.19			
Total	127	43.54	7.07			
Cognitive Representation of DASH Diet Possibilities						
Nigerian immigrant women	88	42.97	8.58	.37	122	.714
African American women	36	43.56	6.12			
Total	124	43.15	7.93			

*p ≤ .05

Table 5.7

Cognitive Representations by Years of Residence in the United States (Nigerian Immigrant Women Only)

	N	Mean	SD	F	Sig
Hypertension knowledge					
0 to 5 years	9	7.56 _{a,b}	1.88	7.35	.001**
6 to 10 years	11	9.27 _a	1.01		
> 10 years	70	9.31 _b	1.26		
Total	90	9.13	1.39		
Cognitive representation of hypertension					
0 to 5 years	7	28.00	15.61	3.78	.027*
6 to 10 years	11	21.73	8.37		
> 10 years	70	34.36	15.44		
Total	88	32.27	15.27		
Cognitive representation of DASH diet					
0 to 5 years	9	125.89	23.53	<.01	.997
6 to 10 years	11	125.36	1219		
> 10 years	65	125.78	18.98		
Total	85	125.74	18.57		
Cognitive representation of DASH diet perception					
0 to 5 years	9	37.67	6.96	.18	.834
6 to 10 years	11	39.00	5.42		
> 10 years	68	39.00	6.32		
Total	88	38.86	6.22		
Cognitive representation of DASH diet preference					
0 to 5 years	9	46.00	9.04	.62	.538
6 to 10 years	11	42.27	7.72		
> 10 years	70	44.03	7.17		
Total	90	44.01	7.40		
Cognitive Representation of DASH diet possibilities					
0 to 5 years	9	42.22	9.92	.13	.879
6 to 10 years	11	44.09	6.85		
> 10 years	67	42.87	8.82		
Total	87	42.95	8.63		

**p ≤ .01; *p ≤ .05

Note: Means in a cell sharing the same subscript are significantly different from each other.

Table 5.8

Systolic Blood Pressure (SBP) Compared by Age at Leaving Home, Years in the United States, Current Age, and Acculturative Stress Score

	N	Mean	SD	t	DF	Sig
Age at leaving Home						
SBP \leq 139	56	28.36	10.17	-1.74	88	.085
SBP \geq 140	34	32.32	10.96			
Years in the United States						
SBP \leq 139	57	19.02	10.50	-3.50	88	.727
SBP \geq 140	33	19.85	11.48			
Body Mass Index						
SBP \leq 139	57	31.15	5.35	-1.94	88	.055
SBP \geq 140	34	33.44	5.56			
Current Age						
SBP \leq 139	57	47.37	11.31	-1.78	88	.080
SBP \geq 140	33	51.33	7.99			
Acculturative Status						
SBP \leq 139	57	94.79	32.08	.89	88	.905
SBP \geq 140	34	95.62	31.88			

Table 5.9

Alcohol Use in Nigerian Immigrants Compared to Body Mass Index, Systolic and Diastolic Blood Pressure

	N	Mean	SD	F	Sig
Body Mass Index					
Never drink	60	31.67	5.82	2.11	.128
1 to 2 drinks/week	23	33.42	4.68		
3 or more drinks/week	4	27.65	5.02		
Total	87	31.94	5.58		
Systolic Blood Pressure					
Never drink	60	139.97	14.56	1.75	.180
1 to 2 drinks/week	23	134.57	11.01		
3 or more drinks/week	4	132.00	9.59		
Total	87	138.17	13.68		
Diastolic Blood Pressure					
Never drink	60	88.28	8.39	2	.116
1 to 2 drinks/week	23	84.70	5.95		
3 or more drinks/week	4	83.75	4.11		
Total	87	87.13	7.81		
Years in the United States					
Never drink	59	17.14 _a	11.09	3.88	.025*
1 to 2 drinks/week	23	24.17 _a	8.93		
3 or more drinks/week	4	21.25	4.99		
Total	86	19.21	10.73		
Acculturative Stress					
Never drink	60	96.80 _a	31.08	5.64	.005**
1 to 2 drinks/week	23	83.61 _{a,b}	30.70		
3 or more drinks/week	4	138.00 _b	18.46		
Total	87	95.21	32.23		

**p ≤ .01; *p ≤ .05

Note: Means in a cell sharing the same subscript are significantly different from each other.

Table 5.10

*Exercise by Cognitive Representations, Body Mass Index, and Acculturative Stress
(Nigerian Immigrant Women)*

	N	Mean	SD	F	Sig
Cognitive Representation of Hypertension					
I can't do this	9	32.33 _a	10.30	5.51	.001**
I should do this	15	36.73 _b	12.77		
I do think	19	25.37 _c	10.66		
I always think	42	31.00 _d	15.32		
Cannot answer	3	63.67 _{a,b,c,d}	23.46		
Total	88	32.01	15.21		
Cognitive Representation of DASH Diet					
I can't do this	9	126.67	14.44	3.49	.011*
I should do this	14	127.00	14.63		
I do think	19	113.47 _a	21.86		
I always think	41	129.54 _a	15.87		
Cannot answer	2	145.00	32.53		
Total	85	125.59	18.38		
Body Mass Index					
I can't do this	9	32.16	5.01	.23	.919
I should do this	15	32.99	4.54		
I do think	20	31.69	5.97		
I always think	43	32.10	5.85		
Cannot answer	3	29.97	4.77		
Total	90	32.09	5.49		
Acculturative Stress					
I can't do this	9	118.11	35.07	2.74	.034*
I should do this	15	99.60	32.35		
I do think	20	90.55	19.00		
I always think	43	89.65	32.87		
Cannot answer	3	128.67	30.01		
Total	90	95.66	31.56		

**p ≤ .01; *p ≤ .05

Note: Means in a cell sharing the same subscript are significantly different from each other.

Table 5.11

Correlation Matrix for Nigerian Immigrant Women

	1	2	3	4	5	6	7	8	9	10	11	12	13
1													
2	-.55*												
3	.06	.03											
4	.44**	.50**	.10										
5	-.14	.29**	.02	.14									
6	-.09	.09	.08	.02	.04								
7	-.03	.02	-.04	-.03	-.08	.02							
8	.05	-.01	.01	.03	-.10	.05	.75**						
9	-.10	.05	-.01	-.06	-.09	-.04	.83**	.43**					
10	-.09	.02	-.10	-.09	-.03	.01	.89**	.54**	.63**				
11	.23*	.02	.06	.24*	-.04	.07	.10	.10	.11	.02			
12	.13	-.02	.05	.08	-.13	.15	.04	.07	.07	-.03	.72**		
13	.23*	-.10	-.03	.15	.24*	.16	-.09	.01	-.09	-.14	.22*	.20	

** $p \leq .01$; * $p \leq .05$

Note: 1 – Age at Leave; 2 – Years in United States; 3 – Acculturative stress; 4 – Age; 5 – Hypertension knowledge; 6 – Cognitive representation of hypertension; 7 – Cognitive representation of DASH diet; 8 – Cognitive representation of DASH diet perception; 9 – Cognitive representation of DASH diet preference; 10 – Cognitive representation of DASH diet possibility; 11 – Systolic blood pressure; 12 – Diastolic blood pressure; 13 – Body mass index

Table 5.12

Correlation Matrix for Nigerian Immigrant Women (Prehypertension; n = 57)

	1	2	3	4	5	6	7	8	9	10	11
1											
2	-.36**										
3	.55**	.58**									
4	.21	.04	.22								
5	-.03	.19	.14	-.05							
6	.01	.15	.14	-.04	.01						
7	-.17	.24	.06	.19	.02	-.06					
8	.13	-.19	-.06	-.14	.03	-.12	.11				
9	.13	-.10	.02	.02	-.02	-.15	.05	.70**			
10	.03	-.11	-.07	-.10	-.02	-.12	.08	.81**	.38**		
11	.01	-.15	-.13	-.27	.07	-.05	.04	.90**	.51**	.60**	

**p ≤ .01; *p ≤ .05

Note: 1 – Age at Leave; 2 – Years in United States; 3 – Age; 4 – Body mass index; 5 – Acculturative stress; 6 – Hypertension knowledge; 7 – Cognitive representation of hypertension; 8 – Cognitive representation of DASH diet; 9 – Cognitive representation of DASH diet perception; 10 – Cognitive representation of DASH diet preference; 11 – Cognitive representation of DASH diet possibility

Table 5.13

Correlation Matrix for Nigerian Immigrant Women (Hypertension – Stage 1; n = 27)

	1	2	3	4	5	6	7	8	9	10	11
1											
2	-.76**										
3	.25	.39									
4	.20	-.39*	-.14								
5	.16	-.23	-.04	.06							
6	-.31	.55**	.26	-.55**	-.03						
7	-.09	-.13	-.20	.08	.17	.14					
8	-.26	.21	-.13	-.03	-.18	.01	-.11				
9	.01	.04	-.01	.07	-.03	-.11	.05	.83**			
10	-.41	.27	-.18	-.17	.01	.04	-.26	.86**	.54**		
11	-.27	.21	-.14	.01	-.41	.06	-.07	.90**	.61**	.67**	

**p ≤ .01; *p ≤ .05

Note: 1 – Age at Leave; 2 – Years in United States; 3 – Age; 4 – Body mass index; 5 – Acculturative stress; 6 – Hypertension knowledge; 7 – Cognitive representation of hypertension; 8 – Cognitive representation of DASH diet; 9 – Cognitive representation of DASH diet perception; 10 – Cognitive representation of DASH diet preference; 11 – Cognitive representation of DASH diet possibility

Table 5.14

Correlation Matrix for Nigerian Immigrant Women (Hypertension – Stage 2; n = 7)

	1	2	3	4	5	6	7	8	9	10	11
1											
2	-.93**										
3	.05	.32									
4	.21	-.13	.19								
5	.26	-.20	.14	-.29							
6	-.70	.76*	.27	-.06	.36						
7	.05	.18	.64	-.23	.47	.41					
8	-.23	.49	.75	-.43	.01	.24	.63				
9	-.30	.50	.59	-.62	.34	.44	.58	.89			
10	.05	.06	.30	-.50	-.33	-.44	.19	.69	.46		
11	.46	.83	.05	-.27	.18	.62	.85	.55	.55	1.00	

**p ≤ .01; *p ≤ .05

Note: 1 – Age at Leave; 2 – Years in United States; 3 – Age; 4 – Body mass index; 5 – Acculturative stress; 6 – Hypertension knowledge; 7 – Cognitive representation of hypertension; 8 – Cognitive representation of DASH diet; 9 – Cognitive representation of DASH diet perception; 10 – Cognitive representation of DASH diet preference; 11 – Cognitive representation of DASH diet possibility

Table 5.15

Crosstabulations – Self-Definition of Hypertension by Group

Group	<u>Self-definition of Hypertension</u>					
	<u>Have Hypertension</u>		<u>Don't Have Hypertension</u>		<u>Total</u>	
	n	%	n	%	n	%
AIW with Prehypertension	46	60.5	11	20.8	57	44.2
AIW with Hypertension	18	23.7	16	30.2	34	26.4
African American in Treatment for Hypertension	12	15.8	26	49.0	38	27.4
Total	76	58.9	53	41.1	129	100.0

$\chi^2 (2) = 23.41, p \leq .001$

Table 5.16
 Stepwise Multiple Linear Regression Analysis: Systolic Blood Pressure (African
 Immigrants Only)

Variable	<i>b</i>	SE <i>b</i>	β	Δr^2	<i>t</i>	<i>p</i>
Age	.31	.14	.24	.06	2.28	.025

$R^2 = .06; p < .05$

Table 5.17
 Stepwise Multiple Linear Regression Analysis: Diastolic Blood Pressure (African Immigrants Only)

Variable	<i>b</i>	SE <i>b</i>	β	<i>t</i>	<i>p</i>
BMI	.30	.14	.22	2.11	.038

Note: $R^2 = .04, p < .05$

CHAPTER 6

DISCUSSION

Major Findings Related to Cognitive Representation and Migration

Wyers (2007) asserted that the process of understanding and interpreting a situation is influenced by a person's knowledge about or previous schema or mental representation of the situation. When the situation is a disease, therefore, knowledge about the essential features of the disease informs the individual's cognitive representation of it, as do the person's exposure to and experience with the disease. In this study, the African American women (AAW) had significantly higher knowledge about hypertension than did the Nigerian Immigrant Women (NIW). According to Leventhal and Crouch (1991), illness representations vary over settings and time, and, therefore, some of the factors affecting health and illness behavior are related to a person's age, to their information about the condition, and to their experiences in responding to and managing such factors. Hence the AAW, having been previously diagnosed with hypertension while most of the NIW had not, had more exposure to and knowledge of the disease. However, there was no significant difference in the cognitive representation of hypertension between the two groups, even though the AAW's mean score was higher than the NIW's.

Could this be a result of the fact that 77.8% of the NIW had resided in the U.S. more than 10 years? In the evaluation of the migration effect, using the variable "years of residence in the U.S.," there was a significant difference (.001) in the knowledge of

hypertension (HTNKNOW) between the three NIW groups (0 to 5 years, 6 to 10 years and >10 years). The difference was most significant between those NIW who had been in the U.S. 0 to 5 years and the other two groups (6 to 10 years at .013 and >10 years at .001). One can conclude that the knowledge of hypertension was higher the longer the years of residence. Perhaps the explanation for this is the greater exposure to the disease through diagnosis of hypertension, through knowing someone who has it, and to greater information about the disease via various news media.

Furthermore, the overall Cognitive Representation of hypertension was significantly different (.027) in the NIW between the three groups described above, with the most significant difference being that between NIW with 6 to 10 years of residence and those with greater than 10 years. There was no significant difference, though, between those who had been in the U.S. 0 to 5 years and the other groups. It should be noted that the mean age for those who had been in the U.S. for 0 to 5 years was not significantly different from the other groups, either. Blood pressure in this sample was seen to have a significant correlation with age (.025). This finding corresponded with the literature that has identified increasing age as a risk factor for hypertension (Ong et al., 2007).

Cognitive Representation of Hypertension

Since all the AA women had previously been diagnosed with hypertension, the differences in knowledge of hypertension between AAW and NIW may be attributed to relative exposure to the disease. This conclusion is consistent with the Self-Regulation Model theory that the identity of an illness involves the labeling of the condition and the

experience the patient has with the symptoms. The NIW clearly had varying levels of knowledge of the disease, with those who had been in the U.S. less than five years having the least knowledge; thus, the variation, too, in their degrees of understanding the disease. This finding was consistent with Moscovitz (2005), who states that as individuals encounter new situations, they acquire new information and develop new knowledge that, combined with previous mental representations, influence new understanding and interpretation of a given situation. There was also a significant difference (.027) in the cognitive representations between the NI women groups, with the major difference being between those who had been in the U.S. 6 to 10 years and those longer than 10 years. It can be said that the knowledge of hypertension had increased since migration, but it was not conclusive that the cognitive representation of hypertension had changed significantly with this study population.

As the survey was being completed, numerous anecdotal comments highlighted the constructs of cognitive representation (cause, identity of illness, potential consequences, possibility of control) identified by Leventhal et al. (1983 & 1991). The comment indicated that some of the NIW were aware of possible causes of hypertension. Some mentioned family history; many stated that the stress in their new country of residence as causes of hypertension (“There is too much stress; this America can kill you O”). Others said they feared being hypertensive and would therefore prefer not to have their blood pressure checked (“I don’t want to know, I will worry more if it is high”). Some even admitted that they had been diagnosed with hypertension but refused to have their blood pressure checked because if the measurement was still high, or even higher, it

would upset them. These individuals were also not willing to share further information. While others stated that they saw their physicians regularly, only a few people alluded (“You know where we come from”) to African concepts of the causes of illness (see Chapter 2) as a possible source of their current condition (Airhihenbuwa & Harrison, 1993). In spite of such reluctance by a minority of the NIW, more of them were willing to have their blood pressure checked than to fill out the survey booklets, making it impossible to fully explore the constructs of cognitive representation at this time. In future, the formation of focus group might serve as a more helpful approach in eliciting the full extent of the cultural influences on NIW and similar populations.

Waldron (2003), in a study of African-Canadian immigrants, found that they would seek help according to the degree to which they had been exposed to Canadian culture. Those with the least exposure sought traditional help only; those who had been in Canada longer sought both traditional and Western-oriented help, and those with relatively long residence in Canada consulted only Western health providers. When asked if they used home remedies for blood pressure, 19.5% said they did; 15.7% used both traditional/home remedies and Western medicine, and only 7.2% would consider visiting a traditional healer. A few commented that they were now Christians and thus would not visit traditional healers or use home remedies. Luyckx, Steenkamp & Stewart (2005) reported that there was secrecy around the use of folk medicine in patients who presented to the hospital with acute renal failure for fear of stigmatization and social pressure. Hence, in the present study, some who might be using herbs and spices for the control of their blood pressure might not have admitted doing so. Another reason for the reported

low incidence of use of traditional/home remedies could reflect the fact that a sizable majority (77.8%) of the women had been in the U.S. for more than ten years. Those who admitted to using home remedies, however, were adamant about the beneficial effect of such remedies and the need to scientifically evaluate them.

Cognitive Representation of DASH Diet (CRDD)

The aggregate score of the CRDD was not significantly different for the AA women and NI women, though the mean score for the NI women was higher, as was the standard deviation. However, when the dimensions of CRDD (Perception-Knowledge, Preference-Attitude, Possibilities-Skill) were examined, there was a significant difference in the scores, with the NIW having a significantly (.002) higher knowledge of the DASH diet. The JNC7 recommended the DASH diet (a diet rich in fruits, vegetables, whole grains, low-fat, and nonfat dairy, lean meats, fish, beans, and nuts) along with exercise and lifestyle changes to lower blood pressure and achieve weight loss. Previous research has shown that African immigrants in general consume more fruits and vegetables than African Americans (Agyemang et al 2009). Though the NI women scored higher than the AA women in the preference-attitude component of the diet, it was not a significantly meaningful difference. There was no difference in the skills dimension of the cognitive representation of DASH diet between the two groups. The NI women knew of the efficacy of the appropriate diet and would prefer to follow its recommendations but experienced barriers to adhering to their traditional eating habits.

The aggregate CRDD did not vary significantly among the NIW by years of residence in the U.S., nor did the three cognitive dimensions. While some of the

immigrants ate some “typical” American foods, they did not cook with lard and still retained some other eating habits from their country of origin, a practice that is increasing now since African foods are becoming more available in the U.S., though they are relatively expensive. As some of the participants said, “You cannot joke with African man and his vegetable soup,” exemplifying the preference for and importance of maintaining traditional eating habits. How stable this practice is remains to be seen. Renzaho & Burns (2006) stated that dietary acculturation is characterized by three processes: substitution, supplementation, and modification of recipes, and thus difficulty in locating traditional foods, or finding them costly when they are available, tends to lead immigrants to adopt new diets.

Health Behavior and Migration

None of the NIW in this study smoked, compared with only 15.8% of the AA women who did smoke. Low prevalence of smoking has been found in Sub-Saharan African immigrant women in Europe, and they have been found less likely to smoke in other parts of the world as well (Agyemang et al., 2009, Renzaho et al., 2007, Antecol & Bedard, 2005). Alcohol use was also uncommon in this group of participants. Only 4.4% of the NIW consumed three or more drinks per week. In Europe, too, African immigrants have been found less likely to be drinkers than the general population (Agyemang et al., 2009). The low level of alcohol consumption has been attributed to religious and cultural differences in the perception of alcohol. While some may not drink at all due to religion, others may under-report drinking for fear of the stigma attached to it.

In this study, a significant negative correlation was found between alcohol consumption and age at leaving the country of origin ($p = .002$) and a positive correlation ($p = .025$) with years of residence in the U.S. That is, the younger the women were when they left their country of origin, the more likely they were to use alcohol, and the longer the women had been living in the U.S., the more likely they were to drink.

Acculturative Stress and Health Behavior

There was a significant relationship ($p = .005$) in the ACSTRESS and the use of alcohol in the Nigerian immigrant women. Those who had 3 or more drinks a week had significantly higher stress scores than those who did not drink ($p = .033$) or who had 1 or 2 drinks a week. Those who had 1 to 2 drinks a week had a mean score less than those who did not drink at all. Alcohol use has been associated with stress induced by perceived discrimination (Williams, Neighbors & Jackson, 2003).

Acculturative Stress was also found to be significant ($p = .034$) between groups when the participants were asked about exercising for 20 minutes three times a week. Those participants who opted for “Cannot answer” had the highest mean ACSTRESS score (128.66, SD 30), followed by those who “Cannot do this” (118.1, SD 35).

Anecdotally, some of those who opted for “Cannot do this” stated that they worked two jobs, were too tired at the end of the day, and realistically had no time for exercise.

There was no evidence that the other participants (those who “Should think about it” or who “Do think about it some” or “Always think about it”) actually exercised 20 minutes three times a week. However, they had a significantly higher CRHTN ($p = .001$) and CRDD ($p = .011$) in the NI women and CRHTN ($p = .016$) in AA women. This could be

related to their apparent awareness that increased physical activity was included in the JNC7 recommendation for successful management of hypertension, along with the DASH diet.

Health Outcomes

Renzaho and Burns (2006) identified the adoption of new food habits, such as fast food in African immigrants in Australia, as contributory to increasing BMI. Most of the NI women were overweight or obese, having a BMI >25 kg/m. About 64% were obese, with BMI > 30. The age at coming to the U.S. had a significant correlation (.029) with BMI. Roshania et al. (2008) found duration of residency and overweight prevalence to vary by age of arrival in the U.S., and in the present study, immigrants who were younger than 20 years on arrival in the U.S. were more likely to be overweight.

Increasing BMI is a risk factor for hypertension. BMI in this study sample had a positive correlation with Systolic Blood Pressure. Most of the NIW (61.5%) had Systolic Blood Pressure in the prehypertension range and were therefore at high risk of developing hypertension. It can also be noted that BMI has a correlation with knowledge of hypertension. Those with higher BMI have less knowledge of the disease. There is, one must conclude, an imperative need for more education in this population about their risk for hypertension. Those who self-identified themselves as having hypertension had higher knowledge of the disease, but since most of this group were, themselves, overweight or obese, it is obvious that they need more information about how to achieve and maintain an ideal weight to prevent hypertension.

Acculturative Stress in this sample of Nigerian Immigrant women was high compared with normative values using the same Acculturative Stress Scale ASSIS. The mean score was 94.79 (SD 32.08), compared with 81.39 (SD 24.66) (Constantine, Okazaki, & Utsey, 2004) and 85.7 (SD 22.57) (Porazli, Kavanaugh, Baker & Al-Timimi, 2004). Constantine, Okazaki & Utsey (2004) reported that the African International students in their study scored higher than all the other students, with a mean score of 91.73. This was attributed to the racial discrimination experienced by the students, which corresponded with the experiences faced by African Americans (Constantine, Anderson, Berkel, Caldwell & Utsey, 2005). That finding was consistent with Kent's finding (2007) that African immigrants report difficulty adapting to U.S. society. Though the Acculturative Stress scores were high, no significant association was found with blood pressure in this sample due to lack of variance.

Limitations

Given the cross-sectional nature of the study, it was not possible to draw a cause-and-effect conclusion about migration and health outcomes. There were few recent immigrants (0 to 5 years residence in U.S.) in the study population. It was expected that they would have blood pressure within normal limits; therefore, they were probably eliminated in the screening process. It would have been interesting to evaluate the cognitive representation of hypertension of those recent immigrants at this time. A longitudinal study using the years of residence, rather than the blood pressure, as the

criterion for inclusion in research cohort, would give a better understanding of the cause and effect of migration on cognitive representation and subsequent health outcomes.

The immigrant population is understudied and is thus not very familiar with completing surveys. The NIW in this study were reluctant to provide personal information in spite of reassurances of anonymity as explained in the consent form and despite a discussion of the role of the Institution Review Board in protecting research participants. As a result, much potential data related to acculturation was unobtainable; however, most provided significant information about their age at arrival in the U.S.

The survey elicited key differences between AAW and the NIW but did not address how African cosmological ideas might affect the context in which cognitive representations were formed. Given the several anecdotal comments about this topic, a follow-up qualitative study might be helpful in understanding the ways in which exposure to American culture affects such concepts as the ultimate and proximate causes of disease, and similar ideas.

CHAPTER 7

IMPLICATIONS, SIGNIFICANCE OF STUDY, CONCLUSIONS

Implications for Nursing

The sample for this study was drawn from groups with a high risk for and incidence of hypertension, diabetes, stroke, and cardiovascular events, given the high rate of participants who were overweight/obese or prehypertensive. Health care professionals should be made aware of these factors when treating members of the groups represented in the study and tailor the care of the group to meet distinctive cultural needs. Both the knowledge and cognitive representation of hypertension are seen to increase with the years of residency in the U.S. Therefore, it is important that immigrants are informed about their risk of hypertension as soon as possible upon their arrival. Furthermore, those long-term residents who are members of high-risk populations but may not have been tested for or diagnosed with hypertension, should be educated and examined as well. Such an approach would improve a vulnerable segment of the population's knowledge about and acceptance of hypertension as a disease that can be controlled or even overcome.

The Nigerian immigrant women had knowledge of the DASH diet, but the figures in their BMI did not reflect such knowledge, with a majority being overweight or obese. Keeping up the traditional diet that is high in fruits and vegetables should be encouraged, to be sure. However, it is at least as important to explore any barriers that may be preventing them from adhering to a healthy, traditional diet, such as relative unavailability of traditional ingredients, and when available, the affordability of the

required food items. It is also important to make available recommended dietary guides, such as “Your Guide to Lowering your Blood Pressure.” The problem with these tools is that there are to date no media tailored to ethnic cultures. Very few books or other forms of information address the food preferences of African Immigrants, so it is difficult for them to adapt the information in the prevalent dietary manuals (including “Your Guide...”) to their traditional recipes. Clearly, there is a need to address this issue and incorporate ethnic examples into the meal plans recommended by health-care providers. A multidisciplinary approach, involving nurses, physicians, nutritionists and others working with immigrants, could produce brochures, audiovisual materials and other beneficial sources of information on this topic.

The sample of Nigerian Immigrant Women had a high level of stress and could benefit from some stress management techniques. Promoting exercise and physical activity as a means to weight loss and stress reduction are among the effective concepts that could be included in health promotion activities to be introduced to immigrants not only at health facilities but also through their cultural organizations and churches.

Other implications of this study that could guide further studies include data collection to explore other factors that are likely to be contributing to stress, such as the lack of social support and racism. There is evidence in the literature that cardiovascular disease is becoming an epidemic in Africa. Duplicating the main features of this study with African immigrant groups from other nations and regions of Africa, and pairing such studies with research on Africans living in their countries of origin, would undoubtedly yield improved therapies for all concerned. Since recent immigrants (0 to 5 years

residency in the U.S.) were not well represented in this sample, they could be surveyed more extensively in future studies, and those results could be fruitfully compare with the current cohort.

Conclusion and Future Directions

The purpose of this study was to explore the effect of migration and ensuing acculturation on the perceptions of hypertension, dietary habits, and practices that affect the health trajectory of African immigrant women in the U.S., using a sample of Nigerian immigrant women (NIW). In this study, the African-American Women (AAW) were found to have a higher knowledge of hypertension than NIW but the cognitive representation of hypertension in the two groups was not significantly different.

There was no significant difference in the aggregate Cognitive Representation of DASH diet (CRDD) scores for AAW and NIW. However, there was a significant difference in the knowledge dimension of the CRDD, with the NIW faring better than the AAW. There was no difference in the category of attitude-and-skills, a result that was attributed to some similarities between the DASH diet and the traditional Nigerian diet. Migration had not profoundly changed most Nigerians' food choices, as there was no significant difference in the CRDD and its dimensions with years of residency in the U.S. That is to say, more recent immigrants were not significantly different from longer-staying immigrants. Some of the immigrants, however, were reluctant to answer questions related to attitude (“Does this apply to me now?”) or skill (“Will this describe me in the future?”). Their reluctance seemed to reflect the attitude: If I don't have a problem now, why should I project it onto myself now or onto my future self? One

participant said, “I reject it, this will not be my lot, in Jesus’ name.” This again was a reflection of traditional African beliefs about both the power of words and the importance of protecting one’s future by guarding against the harmful effects of a dangerous use of language. The lack of significant differences between recent and longer-staying immigrants show that the initial knowledge/ representation of diet formed from the country of origin persists even if some modification and adaptation to the current country of residence has occurred. Exploring the extent of changes in the cognitive representations of children who grow up as second-generation immigrants would also be beneficial.

Though the NIW appeared to have a better knowledge of the DASH diet, than AAW, the high BMI, with attendant high prevalence of overweight/obesity, puts them at high risk for hypertension and its complications. There is a need to reinforce the positive aspects of the traditional dietary practices and to encourage increased physical activities in order to help maintain a healthy weight. Also, the high level of acculturative stress experienced by immigrants calls for increased focus. A regimen of stress-management techniques could be especially helpful.

This study demonstrated some of the associations between migration, Cognitive Representations of Hypertension, and DASH diet, and looked closely at health outcomes relating to increased BMI and blood pressure. Further qualitative studies are needed to elicit the contextual aspect of the cognitive representation in order to more fully understand the African immigrants’ perspectives so as to develop improved appropriate hypertension management strategies. Collecting data from the African country of origin

would also shed light on the pre-migration cognitive representations of African Immigrant women.

This study can be repeated with more fine-tuned modifications. In the inclusion criteria, for example, “years of residence in the U.S.” could be substituted for a blood pressure reading of 120/80. This would make it possible to include more recent immigrants in the study, thus providing the variance required to more accurately evaluate the effect of migration, age, and acculturative stress on blood pressure.

As previously indicated, the WHEELS tool does not address the cultural contexts from which the African immigrant’s cognitive representations arise; therefore, a qualitative study is needed to elicit that context and incorporate it into the tool. Furthermore, a longitudinal study, initiated as soon as possible after the immigrants’ arrival in the U.S., will be helpful in understanding the trajectory of chronic illnesses such as hypertension.

APPENDIX A

RECRUITMENT LETTER

Recruitment Flyer

You have been asked to participate in a study exploring African immigrants' concept of health promotion. The primary investigator is Olubunmi Daramola, a doctoral student at the College of Nursing, University of Michigan.

The aim of the study is to understand how migration and living in the United States affects the development of hypertension and compare the perception of dietary behaviors associated with hypertension control in Nigerian women who migrated to the US.

Procedure:

Your blood pressure will be checked and if it is 120/80 and above or you have been told that you have high blood pressure, then you will be eligible to participate in this study.

Your weight will be checked and you will be asked to fill out a survey which will take about 45minutes of your time.

APPENDIX B

STUDY CONSENT FORM

UNIVERSITY OF MICHIGAN

CONSENT TO BE PART OF A RESEARCH STUDY

INFORMATION ABOUT THIS FORM

You may be eligible to take part in a research study. This form gives you important information about the study. It describes the purpose of the study, and the risks and possible benefits of participating in the study.

Please take time to review this information carefully. After you have finished, you should talk to the researchers about the study and ask them any questions you have. You may also wish to talk to others (for example, your friends, family, or other doctors) about your participation in this study. If you decide to take part in the study, you will be asked to sign this form. Before you sign this form, be sure you understand what the study is about, including the risks and possible benefits to you.

1. GENERAL INFORMATION ABOUT THIS STUDY AND THE RESEARCHERS

Study title: The Effect of Migration on the Cognitive Representation of Hypertension

Company or agency sponsoring the study: University of Michigan

Names, degrees, and affiliations of the researchers conducting the study: The principal investigator is Olubunmi Daramola, RN MSN, MPH Doctoral Candidate, School of Nursing, University of Michigan.

The Faculty Advisor is Margaret Scisney –Matlock RN PhD FAAN School of Nursing, University of Michigan

2. PURPOSE OF THIS STUDY

Study purpose: Hypertension was responsible for 1 in 6 deaths in the US in 2005. Hypertension in the black population is among the highest in the world. Migration has also been associated with increased risk of hypertension. The purpose of this study is to find out how migration to and living the United States has affected the development and perception of hypertension and dietary behavior associated with the control of hypertension in Nigerian women immigrants. The information will help in planning necessary intervention for the prevention and control of hypertension in African Immigrant women.

3. INFORMATION ABOUT STUDY PARTICIPANTS (SUBJECTS)

Taking part in this study is completely voluntary. You do not have to participate if you don't want to. You may also leave the study at any time. If you leave the study before it is finished, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled.

You may take part in this study if you are a Nigerian immigrant female 18 years or older, with a blood pressure 120/80 or more, or if you have been told that you have high blood pressure.

150 subjects are expected to participate in this study

4. INFORMATION ABOUT STUDY PARTICIPATION

After you have agreed to take part in the study and signed the consent form, your blood pressure and weight will be measured. If your blood pressure is 120/80 or you have been told that you have high blood pressure, you will then complete the survey. The survey will take about 1 hour to complete and that ends your participation.

5. INFORMATION ABOUT RISKS AND BENEFITS

There are no known or expected risks to you.

The researchers will try to minimize these risks by: You will be referred for a follow up with your physician if your blood pressure is 120/80 and never told you have hypertension or if your blood pressure is over 140/90.

As with any research study, there may be additional risks that are unknown or unexpected.

You may not receive any personal benefits from being in this study.

7. ENDING THE STUDY

You are free to leave the study at any time. If you leave the study before it is finished, there will be no penalty to you. You will not lose any benefits to which you may otherwise be entitled. If you choose to tell the researchers why you are leaving the study, your reasons for leaving may be kept as part of the study record. If you decide to leave the study before it is finished, please tell one of the persons listed in Section 10 "Contact Information" (below).

There is no harm to you if you decide to leave the study before it is finished.

There are many reasons why the researchers may need to end your participation in the study. Some examples are:

- ✓ The researcher believes that it is not in your best interest to stay in the study.
- ✓ You become ineligible to participate.
- ✓ The study is suspended or canceled.

8. FINANCIAL INFORMATION

The study will pay for research-related items or services that are provided only because you are in the study. There is no cost to you for this study. If you get a bill you think is wrong, call the researchers' number listed in section 10.1.

By signing this form, you do not give up your right to seek payment if you are harmed as a result of being in this study.

You will not be paid but given a token for your participation in this study.

9. CONFIDENTIALITY OF SUBJECT RECORDS AND AUTHORIZATION TO RELEASE YOUR PROTECTED HEALTH INFORMATION

The information below describes how your privacy and the confidentiality of your research records will be protected in this study.

Your privacy is protected as follows

There are no personal identifiers on the forms except for those participants who volunteer their names and addresses. Any personal identifiers are removed and stored separately prior to storage of data at the School of Nursing in secured locked fireproof safe.

Signing this form gives the researchers your permission to obtain, use, and share information about you for this study, and is required in order for you to take part in the study.

There are many reasons why information about you may be used or seen by the researchers or others during or after this study. Examples include:

- The researchers may need the information to make sure you can take part in the study.
- University, Food and Drug Administration (FDA), and/or other government officials may need the information to make sure that the study is done in a safe and proper manner.
- Study sponsors or funders, or safety monitors or committees, may need the information to:

- Make sure the study is done safely and properly
- Learn more about side effects
- Analyze the results of the study
- The researchers may need to use the information to create a databank of information about your condition or its treatment.
- Information about your study participation may be included in your regular UMHS medical record.
- If you receive any payments for taking part in this study, the University of Michigan accounting department may need your name, address, social security number, payment amount, and related information for tax reporting purposes.
- Federal or State law may require the study team to give information to government agencies. For example, to prevent harm to you or others, or for public health reasons.

The results of this study could be published in an article or presented at a scientific meeting, but would not include any information that would let others know who you are.

As a rule, the researchers will not continue to use or disclose information about you, but will keep it secure until it is destroyed. Sometimes, it may be necessary for information about you to continue to be used or disclosed, even after you have canceled your permission or the study is over. Examples of reasons for this include:

- To avoid losing study results that have already included your information
- To provide limited information for research, education, or other activities (This information would not include your name, social security number, or anything else that could let others know who you are.)
- To help University and government officials make sure that the study was conducted properly

Your permission expires at the end of the study, unless you cancel it sooner. You may cancel your permission at any time by writing to the researchers listed in Section 10 "Contact Information" (below).

10. CONTACT INFORMATION

Please contact the researchers listed below to:

Obtain more information about the study

- Ask a question about the study procedures or treatments
- Talk about study-related costs to you or your health plan
- Report an illness, injury, or other problem (you may also need to tell your regular doctors)

- Leave the study before it is finished
- Express a concern about the study
 - Principal Investigator: Olubunmi Daramola
 - Mailing Address: University of Michigan School of Nursing, 400 N. Ingalls, Ann Arbor MI 48109
 - Telephone: 1 734 647 0191
 - Study Coordinator: Margaret Scisney-Matlock, PhD FAAN
 - Mailing Address: University of Michigan School of Nursing, 400 N. Ingalls #2176, Ann Arbor MI 48109
 - Telephone: 1 734 647 0191

You may also express a concern about a study by contacting the Institutional Review Board listed below, or by calling the University of Michigan Compliance Help Line at 1-888-296-2481.

University of Michigan Medical School Institutional Review Board (IRBMED)
 2800 Plymouth Road
 Building 200, Room 2086
 Ann Arbor, MI 48109-2800
 Telephone: 734-763-4768
 Fax: 734-763-1234
 e-mail: irbmed@umich.edu

If you are concerned about a possible violation of your privacy, contact the University of Michigan Health System Privacy Officer at 1-888-296-2481.

When you call or write about a concern, please provide as much information as possible, including the name of the researcher, the IRBMED number (at the top of this form), and details about the problem. This will help University officials to look into your concern. When reporting a concern, you do not have to give your name unless you want to.

11. RECORD OF INFORMATION PROVIDED

Your signature in the next section means that you have received copies of all of the following documents:

- This "Consent to be Part of a Research Study" document. *(Note: In addition to the copy you receive, copies of this document will be stored in a separate confidential research file and may be entered into your regular University of Michigan medical record.)*
- Other (specify): _____

12. SIGNATURES

Research Subject:

I understand the information printed on this form. I have discussed this study, its risks and potential benefits, and my other choices with _____. My questions so far have been answered. I understand that if I have more questions or concerns about the study or my participation as a research subject, I may contact one of the people listed in Section 10 (above). I understand that I will receive a copy of this form at the time I sign it and later upon request. I understand that if my ability to consent for myself changes, either I or my legal representative may be asked to re-consent prior to my continued participation in this study.

Signature of Subject: _____

Date: _____

Name (Print legal name): _____

Patient ID: _____ *Date of Birth:* _____

Principal Investigator (or Designee):

I have given this research subject (or his/her legally authorized representative, if applicable) information about this study that I believe is accurate and complete. The subject has indicated that he or she understands the nature of the study and the risks and benefits of participating.

Name: _____ *Title:* _____

Signature: _____ *Date of Signature:* _____

APPENDIX C

BLOOD PRESSURE SHEET

Number	SBP 1	SBP 2	ASBP	DBP1	DBP2	ADBP
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

APPENDIX D

WEIGHT AND BMI SHEET

	Weight	Height	BMI
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

APPENDIX E

STUDY SURVEY TOOL

**WOMEN'S & MEN'S
HYPERTENSION EXPERIENCES
AND EMERGING LIFESTYLES[©]
THE WHEELS Survey**

Created by
Margaret Scisney-Matlock, RN, PhD, FAAN
Associate Professor
School of Nursing
University of Michigan
400 North Ingalls
Ann Arbor, MI 48109
©1998
Revised 1998, 1999, 2000, 2004, 2007, 2008

**PLEASE READ THE SECTION BELOW THIS BEFORE YOU
ANSWER ANY QUESTIONS.**

**Please try to answer every question in the order they are presented.
There are no right or wrong answers, but it is important
that you give the questions careful thought and respond with an
honest answer. We are simply interested in what you think, feel
and do related to your high blood pressure condition.
We appreciate your taking the time to complete this questionnaire.
NOTE: You will receive a gift as a token of
appreciation for participating in our study.
Thank you.**

SECTION A

Please mark the next to your answer.

1. When you hear the words "HIGH BLOOD PRESSURE," what comes to your mind?

a. I HAVE IT

b. I KNOW SOMEONE WHO HAS IT (mother, father, grandparent, someone else)

or

c. TV COMMERCIALS about taking pills, low salt diets, strokes, heart attacks

d. Nothing comes to mind

e. Something else

2. In general, would you say your health is?

The best, totally delighted

Very good, pleased

Good, mostly satisfied

Fair, mixed good and poor

Poor, need major improvement/change

3. How do you feel on most days of the week? Check the **one** that best describes how you feel.

Happy Pleased Calm

Excited Stressed Tired

Bored Sad Angry

Other (write in your feelings):

4. Do you have a history of high blood pressure in your family?

Yes No

5. Do you have diabetes/high blood sugar?

Yes No

6. Do you take prescription medication for diabetes?

Yes No

7. Do you have chronic kidney disease?

Yes No

8. Do you have a history of heart attack, stroke, or kidney failure?

Yes No

9. Do you have any food allergies or dietary restrictions?

Yes No

If "yes", please describe:

10. Are you currently in a weight loss program in which you pay for the program's food?

Yes No

11. How tall are you without your shoes? Example: 5 feet 6 inches
_____ feet? _____ inches?

12. How much do you weigh without clothes? Example: 150 pounds.
_____ pounds?

13. At your last health appointment, what did your doctor or nurse say about your weight?

- Under weight
- Normal weight
- Overweight/told to lose weight
- Never mention weight

14. At your last health appointment, what was your SYSTOLIC or the TOP number of your blood pressure taken?

- Top number, less than 120
- Top number, between 120-129
- Top number, between 130-139
- Top number, between 140-159
- Top number, between 160-179
- Top number, higher than 180
- No blood pressure number was mentioned

SECTION B

Check your high blood pressure prevention knowledge with the following questions.

Please mark the next to your answer.

1. There is nothing you can do to prevent high blood pressure.

True False

2. If your mother or father has high blood pressure, you'll get it.

True False

3. Young adults don't get high blood pressure.
 True False
4. High blood pressure has no symptoms.
 True False
5. Stress causes high blood pressure.
 True False
6. High blood pressure is not life threatening.
 True False
7. Blood pressure is high when it's over 140/90 mm Hg.
 True False
8. If you're overweight, you are two to six times more likely to develop high blood pressure.
 True False
9. You have to exercise vigorously every day to improve your blood pressure and heart health.
 True False
10. Americans eat two to three times more salt and sodium than they need.
 True False
11. Drinking alcohol lowers blood pressure.
 True False
12. High blood pressure has no cure.
 True False

SECTION C

Here are some questions about your blood pressure.

Please mark the next to your answer.

1. Do you worry about having high blood pressure?
 Not at all Fairly often
 Almost never Always
 Sometimes Don't know
2. Do you feel tired a lot due to high blood pressure?
 Not at all Fairly often
 Almost never Always

- Sometimes Don't know
3. Do you have tingling feeling in your body from high blood pressure?
- Not at all Fairly often
- Almost never Always
- Sometimes Don't know
4. Do you have blurred vision/trouble seeing clearly because of high blood pressure?
- Not at all Fairly often
- Almost never Always
5. Do you feel nervous about your present blood pressure condition?
- Not at all Fairly often
- Almost never Always
- Sometimes Don't know
6. Do you have trouble with remembering things because of high blood pressure?
- Not at all Fairly often
- Almost never Always
- Sometimes Don't know
7. Do you have nosebleeds because of high blood pressure?
- Not at all Fairly often
- Almost never Always
- Sometimes Don't know
8. Do you have fear of kidney disease because of high blood pressure?
- Not at all Fairly often
- Almost never Always
- Sometimes Don't know
9. Do you have fear of stroke due to high blood pressure?
- Not at all Fairly often
- Almost never Always
- Sometimes Don't know
10. Do you feel that my blood pressure can cause chest pain /racing heart beats?

Not at all Fairly often

Almost never Always

Sometimes Don't know

11. Do you feel faint when get up on my feet because of high blood pressure?

Not at all Fairly often

Almost never Always

Sometimes Don't know

12. Do you notice swelling in feet and hands because of high blood pressure?

Not at all Fairly often

Almost never Always

Sometimes Don't know

13. Do you have headaches because of high blood pressure?

Not at all Fairly often

Almost never Always

Sometimes Don't know

14. Do you need help to get things done because of my high blood pressure?

Not at all Fairly often

Almost never Always

Sometimes Don't know

15. Do you have problems with sleeping because of high blood pressure?

Not at all Fairly often

Almost never Always

Sometimes Don't know

SECTION H

Here are some questions about what things you do for your health, think are important, and may do in the future. Here are no right or wrong answers.

Please evaluate the following statements and mark the next to your answer.

1. I take over-the-counter medicine (vitamins, herbal products).

a. This describes me now.

- Not at all Fairly often
 Almost never Always
 Sometimes Don't know

b. How much does taking over-the-counter medicine matter to your health now?

- Not at all Quite a bit
 A little Very important
 Somewhat important Don't know

c. Taking over-the-counter medicine is likely to describe me in the future.

- Not at all Fairly often
 Almost never Always
 Sometimes Don't know

2. I decide how much I can eat for each meal.

a. This describes me now.

- Not at all Fairly often
 Almost never Always
 Sometimes Don't know

b. How much does this matter to your health now?

- Not at all Quite a bit
 A little Very important
 Somewhat important Don't know

c. This is likely to describe me in the future.

- Not at all Fairly often
 Almost never Always
 Sometimes Don't know

3. I eat 4-5 servings of fruit each day.

a. This describes me now.

- Not at all Fairly often
 Almost never Always
 Sometimes Don't know

b. How much does this matter to your health now?

- Not at all Quite a bit
 A little Very important
 Somewhat important Don't know
c. This is likely to describe me in the future.

- Not at all Fairly often
 Almost never Always
 Sometimes Don't know
4. I eat 4-5 servings of vegetables each day.
a. This describes me now.

- Not at all Fairly often
 Almost never Always
 Sometimes Don't know
b. How much does this matter to your health now?

- Not at all Quite a bit
 A little Very important
 Somewhat important Don't know
c. This is likely to describe me in the future.

- Not at all Fairly often
 Almost never Always
 Sometimes Don't know
5. I eat 7-8 servings of grains each day such as cereals, whole wheat bread or pasta.
a. This describes me now.

- Not at all Fairly often
 Almost never Always
 Sometimes Don't know
b. How much does this matter to your health now?

- Not at all Quite a bit
 A little Very important
 Somewhat important Don't know
c. This is likely to describe me in the future.

- Not at all Fairly often

Almost never Always

Sometimes Don't know

6. I eat only 2 servings (3 oz., size of deck of cards) of lean meat, fish, or chicken/poultry per day.

a. This describes me now.

Not at all Fairly often

Almost never Always

Sometimes Don't know

b. How much does this matter to your health now?

Not at all Quite a bit

A little Very important

Somewhat important Don't know

c. This is likely to describe me in the future.

Not at all Fairly often

Almost never Always

Sometimes Don't know

7. I eat 1 serving of nuts, seeds, or dried beans/peas/lentils 5 times per week.

a. This describes me now.

Not at all Fairly often

Almost never Always

Sometimes Don't know

b. How much does this matter to your health now?

Not at all Quite a bit

A little Very important

Somewhat important Don't know

c. This is likely to describe me in the future.

Not at all Fairly often

Almost never Always

Sometimes Don't know

8. I limit table salt per day from shaker to 1 teaspoon and sodium in packaged or canned food to 2300 mg each day.

a. This describes me now.

Not at all Fairly often

Almost never Always

Sometimes Don't know

b. How much does this matter to your health now?

Not at all Quite a bit

A little Very important

Somewhat important Don't know

c. This is likely to describe me in the future.

Not at all Fairly often

Almost never Always

Sometimes Don't know

9. I eat or drink 2-3 serving of low-fat dairy foods each day such as 2% milk, low-fat yogurt.

a. This describes me now.

Not at all Fairly often

Almost never Always

Sometimes Don't know

b. How much does this matter to your health now?

Not at all Quite a bit

A little Very important

Somewhat important Don't know

c. This is likely to describe me in the future.

Not at all Fairly often

Almost never Always

Sometimes Don't know

10. I eat fried foods more than 1 time a week.

a. This describes me now.

Not at all Fairly often

Almost never Always

Sometimes Don't know

b. How much does this matter to your health now?

Not at all Quite a bit

A little Very important
 Somewhat important Don't know
c. This is likely to describe me in the future.

Not at all Fairly often
 Almost never Always
 Sometimes Don't know

11. I use lemons, vinegar and spices to flavor food.
a. This describes me now.

Not at all Fairly often
 Almost never Always
 Sometimes Don't know

b. How much does this matter to your health now?

Not at all Quite a bit
 A little Very important
 Somewhat important Don't know
c. This is likely to describe me in the future.

Not at all Fairly often
 Almost never Always
 Sometimes Don't know

12. At my health appointments, I talk about eating healthier foods with the doctor or nurse.

a. This describes me now.

Not at all Fairly often
 Almost never Always
 Sometimes Don't know

b. How much does this matter to your health now?

Not at all Quite a bit
 A little Very important
 Somewhat important Don't know
c. This is likely to describe me in the future.

Not at all Fairly often
 Almost never Always

Sometimes Don't know

13. Please list your blood pressure medications:

1) _____

2) _____

3) _____

4) _____

5) _____

Health Behavior Questions

8. Think about exercising (physical activity) three times a week for at least 20 minutes for physical fitness. *Are you sure that you can do this?*

I know that I cannot do this I always think about this

I should think about this This cannot apply to me

I do think about this some Cannot answer

12. Do you chew tobacco products?

Yes No

13. Do you smoke?

Yes No

15. On the average, how much you drink alcohol each week? This includes beer, wine, coolers, and liquors. Please check only one.

I never drink alcohol

1-2 drinks per week

3-4 drinks per week

5-6 drinks per week

More than 6 drinks per week

An Acculturative Stress Scale

Directions:

As immigrants have to make a number of personal, social, and environmental changes upon arrival in a strange land, this experience might cause them acculturative stress. This scale is designed to assess such acculturative stress you personally might have experienced. There are no right or wrong answers. However, for the data to be meaningful, you must answer each statement given below as honestly as possible.

For each of the following statements, please circle the number that BEST describes your response.

1= Strongly disagree, 2= disagree, 3= not sure, 4 = agree, 5 = strongly agree

Because of my different cultural background as an immigrant, I feel that:

1. Homesickness for my country bothers me. 1 2 3 4 5
2. I feel uncomfortable to adjust to new foods and/or to new eating habits 1 2 3 4 5
3. I am treated differently in social situations. 1 2 3 4 5
4. I feel rejected when people are sarcastic toward my cultural values. 1 2 3 4 5
5. I feel nervous to communicate in English. 1 2 3 4 5
6. I feel sad living in unfamiliar surroundings here. 1 2 3 4 5
7. I fear for my personal safety because of my different cultural background. 1 2 3 4 5
8. I feel intimidated to participate in social activities. 1 2 3 4 5
9. Others are biased toward me. 1 2 3 4 5
10. I feel guilty to leave my family and friends behind. 1 2 3 4 5
11. Many opportunities are denied to me. 1 2 3 4 5
12. I feel angry that my people are considered inferior here. 1 2 3 4 5
13. I feel overwhelmed that multiple pressures are placed upon me after my migration to this society. 1 2 3 4 5
14. I feel that I receive unequal treatment. 1 2 3 4 5
15. People from some ethnic groups show hatred toward me nonverbally. 1 2 3 4 5
16. It hurts when people don't understand my cultural values. 1 2 3 4 5
17. I am denied what I deserve. 1 2 3 4 5
18. I have to frequently relocate for fear of others. 1 2 3 4 5
19. I feel low because of my cultural background. 1 2 3 4 5
20. I feel rejected when others don't appreciate my cultural values. 1 2 3 4 5
21. I miss the country and people of my national origin. 1 2 3 4 5
22. I feel uncomfortable to adjust to new cultural values. 1 2 3 4 5
23. I feel that my people are discriminated against. 1 2 3 4 5
24. People from some other ethnic groups show hatred toward me through their actions. 1 2 3 4 5

- | | |
|--|-----------|
| 25. I feel that my status in this society is low due to my cultural background. | 1 2 3 4 5 |
| 26. I am treated differently because of my race. | 1 2 3 4 5 |
| 27. I feel insecure here. | 1 2 3 4 5 |
| 28. I don't feel a sense of belonging (community) here. | 1 2 3 4 5 |
| 29. I am treated differently because of my color. | 1 2 3 4 5 |
| 30. I feel sad to consider my people's problems. | 1 2 3 4 5 |
| 31. I generally keep a low profile due to fear from other ethnic groups. | 1 2 3 4 5 |
| 32. I feel some people don't associate with me because of my ethnicity. | 1 2 3 4 5 |
| 33. People from some other ethnic groups show hatred toward me verbally. | 1 2 3 4 5 |
| 34. I feel guilty that I am living a different lifestyle here. | 1 2 3 4 5 |
| 35. I feel sad leaving my relatives behind. | 1 2 3 4 5 |
| 36. I worry about my future for not being able to decide whether to stay here or to go back. | 1 2 3 4 5 |

Adapted from An Acculturative Stress Scale for International Students * with permission from Dr Daya Singh Sandhu.

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Personal and family information

- a. Gender
- b. Age ----- Month -----Year
- c. Marital or partnership status
 - i Never married ii Married iii Divorced iv Widowed v Separated vi

Other-----

- d. Number of children
- e. Occupation
- f. Current country of residence -----
- g. Stays abroad in the past (duration and place)-----
- h. Country of birth -----
- i. Age of coming to the current country of residence -----
- j. Country of birth of mother -----
- k. Country of birth of father -----
- l. Ancestors who migrated to the current country of residence
- m. Citizenship
- n. Resident status
- o. Total household income from all sources in the past year was

under 10,000	50,001 to 60,000
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10,001 to 20,000	60,001 to 70,000
20,001 to 30,000	70,001 to 80,000
30,000 to 40,000	80,001 to 90,000
40,001 to 50,000	more than \$ 90,000

Education

a. Years of schooling

What is the highest grade of schooling that you have completed?

Grades in 1st through 12th

01 02 03 04 05 06 07 08 09 10 11 12

Years in college

1 2 3 4 5 6+

Contact to other Black people

a. Frequency of perception of Black people (outside the family)

b. Frequency of contact to Black people (outside the family)

Context of living

a. Place of growing up

i village, ii small town, iii town, iv large city

b. Current place of living

i village, ii small town, iii town, iv large city

c. People living together with when growing up

d. People living together with now

Religion and Religiosity

a. Religiosity or spirituality of family

i Very Religious ii Somewhat Religious iii Not Very Religious
iv Not at all Religious

b. Religiosity or spirituality of participant

i Very Religious ii Somewhat Religious iii Not Very Religious
iv Not at all Religious

c. Religion

i Christian ii Hindu iii Muslim iv other----- v No Religion

d. Attendance of religious services

i Several times a week ii Once a week iii Several times a month
iv Only on special occasions v Usually not/Not at all

Languages

a. Languages spoken at home

English

Native Language -----

b. Languages spoken best

English

Native Language-----

Use of Traditional/ home remedies

a. Do you use home remedies for your blood pressure?

i. always ii sometimes iii not at all

b. Would you visit a traditional healer for treatment of your blood pressure?

i. always ii sometimes iii not at all

c. Do you use both western medicine and traditional/home remedies for your blood pressure?

i. always ii sometimes iii not at all

APPENDIX F

SUPPLEMENT TO SURVEY TOOL

What Is a Serving?

<u>Food group</u>	<u>Serving sizes</u>
Grains	1 slice bread 1oz dry cereal ½ cup cooked rice, pasta or cereal
Vegetables	1 cup raw leafy vegetable ½ cup cut-up raw or cooked vegetable ½ cup vegetable juice
Fruits	1 medium fruit ¼ cup dried fruit ½ cup fresh, frozen, or canned fruit ½ cup fruit juice
Milk and Milk Products	1 cup milk or yogurt 1 ½ oz cheese
Lean meats, poultry, and fish	1 oz cooked meats, poultry, or fish 1 egg†
Nuts, seeds, and legumes	1/3 cup or 1 ½ oz nuts 2 Tbsp peanut butter 2 Tbsp or ½ oz seeds ½ cup cooked legumes (dry beans and peas)
Fats and oils	1 tsp soft margarine 1 tsp vegetable oil 1 Tbsp mayonnaise 2 Tbsp salad dressing
Sweets and Added Sugar	1 Tbsp sugar 1 Tbsp jelly or jam ½ cup sorbet, gelatin 1 cup lemonade

Adapted from DASH Eating Plan: Your Guide to Lowering Blood Pressure with DASH.
National Heart Lung & Blood Institute/National Institutes of Health

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