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Health Disparity in Preventive Care Among Nigerian Immigrants in the United States

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Abstract

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MS. Oklahoma State University, Stillwater, Oklahoma, 1988

BS, Utah State University, Logan, Utah, 1984

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The roles of immigration status in preventive health care services among Nigerian immigrants in the United States were investigated in this quantitative, cross-sectional survey study. About 260,724 Nigerian immigrants reside in the Unites States, but many do not complete lifesaving preventive health services such as immunization and screening, a major factor contributing to the rise in the cost of healthcare resultant from their use of emergency room services. This study investigated the extent to which immigration status independently explains the relationship between health disparities and risks in non-completion of preventive health care among Nigerian immigrants in the United States by comparing data from Nigerian immigrant adults residing in the United States to data from the African American adults in the United States. Socio-cognitive theory and the social behavioral model served as the conceptual framework for this study. There were 291 adult Nigerian immigrants in the cross-sectional survey using a purposive sampling technique. The data were analyzed using the Levene's test for homogeneity of variances, the Pearson's Chi- Square test and the Kruskal-Wallis non-parametric test. The Kruskal-Wallis results showed that there was a significant difference in screening for preventive care services among the 4 immigrant status categories (p = .000) based on length of residency in the United States. Understanding the health disparities of this population according to their country of origin and immigration status will assist health providers with awareness of population-specific health needs, and may be beneficial in designing public health programs for this population group.

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Dedication

I dedicate this work to my Dad, Chief Apollos Manume Amadi, and my Mom Patience Amadi. I also dedicate this work to my great uncles, Chief Loveday Elechi and Fyneface Amadi. Moreover, to my wife and children who motivated me to continue my education, I dedicate this dissertation to you.

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I will like to take this opportunity to thank my Chair, Dr. John Oswald, and Dr. Harold Okere for continuous advising and mentoring in this work. In so many instances when I started to slow own, Dr. Okere would re-assure me. Thank you, Dr. Okere for being patient and understanding. I will have to thank the Nigerian Community in the United States who responded to the invitation, and to my special friend Celestine Njoku and wife, and to my family in Nigeria for encouraging me to pursue this work.

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Chapter 1: Introduction to the Study

Introduction

The African immigrant population in the United States grew from 881,300 in 2000 to 1.6 million in 2010 (American Immigration Council, 2012b). The Nigerian immigrant population was 260,724, according to the 2010 American Community Survey (Ameridian, 2012). By 2015, the number of immigrants from Nigeria, foreign-born and U.S.-born, residing in the United States rose to 376,000 (Migration Policy Institute, 2015). As members of the larger population of African immigrants who expeirence health disparities in the United States, Nigerian immigrants are at risk for failure to seek and receive lifesaving preventive and medical care (Morrison et al., 2012). Health disparity is defined as inequalities in health outcomes among population groups attributable to "social, economic, and/or environmental disadvantage" based on race, religion, gender, sexual orientation, geographical location, or socioeconomic status (Healthy People 2020, 2014b).

Statement of Problem

Health disparity contributes to the high cost of health care. The total cost of healthcare in the United States in 2012 amounted to $3 trillion (Munro, 2013). The Kaiser Family Foundation estimated the combined health care costs of Blacks, Hispanics, and Asian Americans to be $309 billion (Kaiser Family Foundation, 2012). The Kaiser Family Foundation also examined the future impact of current health care policy on access to health services. Its meta-analysis of the outcome of the Affordable Care Act of 2010 indicated that access to care improved following the expansion of coverage among

Black and the Hispanic populations, when compared to the quality of care for their White counterparts. The study also found that private insurance did not serve the Blacks and the Hispanics as well as they did to their White counterparts (The Kaiser Family Foundation, 2015).

Unfortunately, the 2010 United States Census reported only five race categories: White, Black or African American, American Indian or Alaskan Native, Asian, and Native Hawaiian or Other Pacific Islander (Rastogi, Johnson, & Drewery, 2011). African immigrants in the United States thus were not accurately classified according to the country of origin. For health intervention, promotion, and education purposes, foreign-born African immigrants and U.S.-born African Americans are grouped together regardless of the cultural differences and variations in immigration experiences (National Committee on Vital and Health Statistics, 2005). The United States Census Bureau defined "foreign-born" as anyone living within U.S. borders who is not a U.S. citizen at birth (Grieco et al., 2012), and the 2010 Census was non-specific on country of origin for the various population groups. This classification has posed some problems for Nigerian immigrants because the description did not account for cultural differences or methods of acculturation even when genetic differences may not exist.

The country of origin may be a useful indicator of the prevalence of disease among immigrants, and by association, Nigerian immigrants may benefit from studies associating cancer, obesity, and alcohol use with country of origin (Fedewa & Jemal, 2013; Kashima, Kent, & Kashima, 2015; Rodriguez, Hicks, & López, 2012). Fedewa and Jemal (2013) studied the rate for treatment and survival of prostate cancer among U.S.-

born, Jamaican-born, and West African-born Blacks between 2004 and 2009 in U.S. The study showed similarities in advanced Gleason score between the Jamaican-born (61.11%) and West African-born (60.99%) participants, but those scores differed from their U.S.-born (58.26%) counterparts. While those differences were not statistically significant, there was a statistically significant difference between the scores and those of their Whites (55.53%) counterpart. The researchers also reported that the mean prostate-specific antigen (PSA) levels from the Black population groups were slightly higher than those in the White population (Fedewa & Jemal, 2013).

In a recent study using migrant life satisfaction (MLS) index, Kashima, Kent, and Kashima (2015), noted the need to study the health of the population groups in relation to their country of origin. The researchers concluded that culture and genes shared by immigrants according to the country of origin provided wealth of information for adaptation and resilience in the new country for immigrants (Kashima et al., 2015). In another study, researchers correlated country of origin with differences in the prevalence of hypertension and diabetes among Hispanics in the United States. In a self-reported survey of individuals from Hispanic populations from South America, Rodriguez, Hicks, and López (2012) reported the differences in education, income, hypertension and obesity from the different Hispanic population groups by region: Mexican-born Hispanics were less likely to be educated than their U.S.-born counterparts. Also, the Mexican- and Central American-born Hispanics were less likely to be insured than the South American-born Hispanics due to income. In addition, the prevalence of hypertension and diabetes differed according to the country of origin (Rodriguez et al., 2012).

Although researchers have conducted several studies on immigrants' access to health care services and health literacy in the United States, studies on the health disparity in preventive care among Nigerians in the United States are minimal (Montoya, Salinas, Barroso, Mitchell-Bennett, & Reininger, 2011). Argeseanu Cunningham, Ruben, and Venkat Narayan (2008) noted health benefit associated with foreign-born: they "tend to have lower mortality rates and are less likely to suffer from circulatory diseases, overweight/obesity, and some cancers" (p. 623). On the contrary, other researchers have found that these benefits decrease over time as the length of residence in the United States increases (Kaplan, Huguet, Newsom, & McFarland, 2004). Researchers have yet to conduct targeted studies on health disparities among Nigerian immigrants from a preventive care perspective in which they examine the relationship between immigrants and their new environment. The specific problem I sought to address in this study was the paucity of information specific to Nigerian-born immigrants' access to preventative health care in the United States.

Purpose of the Study

The purpose of this study was to discover the differences in the rate of use of preventive health services between Nigerian immigrants and non-Nigerian immigrants in the United States. The Nigerian immigrants in the United States are susceptible to health care disparity and inequalities in the social determinants of health in the United States (Carter-Pokras & Baquet, 2002; Morrison et al., 2012). Social determinants of health include personal, socioeconomic, and environmental variables that affect health outcomes. On a personal level, behavioral choices, gender, and ethnicity affect health

status as much as socioeconomic status such as income. Geographical location and associated economic and political factors including immigration status affect access to health care in the United States and around the world (Healthy People 2020, 2014a).

Theoretical Framework

The theoretical framework I used to guide this study on Nigerian immigrants and preventive health care disparity in the United States included social cognitive theory (SCT) (Bandura, 1989) and the health behavior model (Glanz, Rimer, & Viswanath, 2008). I also included elements from the social behavior theory of Yang, Anderson, and Yang (2014), and McLeod (2011). The social cognitive theory holds that learning occurs in the context of the social interactions between people and their environment. The goal of social cognitive theory is to explain how individuals regulate their behavior through self-control, skills, knowledge, expectations, and reinforcement (Glanz, et al., 2008). The health behavior model advanced by Glanz et al. (2008) emphasizes the motivational factors leading individuals to take action towards their health

Since the publication of Bandura's *Human Agency in Social Cognitive Theory* (1989), social cognitive theory has been used by researchers and scholars in many contexts including health promotion, motivation, self-regulation, and social learning (Bandura, 1989; Bandura, 1999; Malone, 2002; McLeod, 2011). Social cognitive theory embraces acculturation (Patil, Hadley, & Nahayo, 2009) as the confluence of the two theories (SCT and acculturation theory) highlight the health literacy and health awareness concepts in health care studies. When put into action, health literacy may lead to positive outcomes such as health insurance purchase, and seeking and using preventive care

services. Still, juxtaposed in the social learning theory and health behavior model is the self-efficacy theory which depends on expectancy and reinforcement (Rosenstock, Strecher, & Becker, 1988). Padilla and Perez (2003) insisted that the acculturation construct was co-opted to immigration and none the concepts would exist without the other. The researchers maintained that acculturation was the dynamic outlet of immigration status to providing the avenue for cooperation between the two peoples. Further, the researchers reminded the readers of the element of social stigma due to acculturation (p. 36).

Research Question and Hypothesis

This study was guided by the following research question and hypotheses:

RQ1. To what extent does immigration status independently explain the relationship between health disparity and risks in non-completion of preventive health care among Nigerian Immigrants in the United States?

$H1_0$: Immigration status does not independently account for the risk non-completion of preventive health services among adult Nigerian immigrants in the United States after adjusting for other variables.

$H1_{1:}$ Immigration status independently accounts for the risk non-completion of preventive health services among adult Nigerian immigrants in the United States after adjusting for other variables.

Nature of the Study

Using a quantitative cross-sectional survey design and a social cognitive theoretical framework, I examined health care disparity among Nigerian Immigrants in

the United States, with a specific focus on the use of preventive health care services including immunizations, vaccination and screening for cancers and other preventable diseases (see Morrison et al., 2012). I used a quantitative, ex-post facto design in a cross-sectional survey to examine the relationship between risk of non-completion of necessary preventive health care services and immigration status among adult Nigerian immigrants in the United States via a survey in relation to other demographic factors such as gender, age, physical activity, eating habits and acculturation (Creswell, 2009). The ex-post facto design allows data to be collected without the need for a control group (Tuckman, 1999).

Definitions

Socioeconomic status (SES): A measure of an individual's standing in the society based on income, level of education, and occupation.(The Free Dictionary, n.d.).

The Behavioral Risk Factor Surveillance System (BRFSS): A national health-related telephone surveillance system managed by the Centers for Disease Control and Prevention based in each state in the United States and the territories (Centers for Disease Control, 2014).

Immigration status: A legal concept to describe one's status as documented by the United States Citizenship and Immigration Service, the Department of Health and Human Services, and the Congressional Research Service (Association of State and Territorial Health Official, 2010).

Health disparity: Health outcomes closely related to differences in social, economic, and environmental disadvantages of population groups (American Psychological Association, 2016).

Limitations of the Study

The role of the internet in data collection in research such as this requires time management. Depending on the email service, the survey in a self –reported quantitative research was difficult. To verify active, non-active and non-duplicative email addresses could be impossible. Second, in as much as the BRFSS survey instrument provided participants the opportunity for privacy and anonymity, their responses to the questions on the instrument may not reflect the full meaning of the answers provided by the respondents. In addition, the respondents' comprehension of the survey questions may have differed because the questions were not tailored to each individual's level of education.

Third, health data on Nigerian immigrants in the United States are scant and difficult to access, and valuable data may not be available from Nigerian immigrants who share no viable addresses or do not wish to participate in studies. In addition, the participants were not screened for regional differences that can influence the survey data. In addition, the data related to African American database may not reflect the differences in foreign –born and U.S.–born African American immigrants in the United States. Many of the Nigerian immigrants in the United States in the population frame may show variations of acculturation and cultural awareness through education, sports, commerce, and tourism. Although immigration status shapes health disparity in both the Nigerian immigrants and African refugees, the acculturation method differed. The literature on the differences between the population groups is not in the scope of this study.

Fourth, this study contains selection bias, since only Nigerian adults were selected for the study; however, the size of Nigerians population in the United States may mitigate the effect of the age limit in this study. In addition, the target population only related to the Nigerian residents in the United States, regardless of the purpose for emigration. Also, a cross-sectional quantitative survey cannot provide causal relationships among the variables (J. Ade, 2010).

Significance of Study

This research filled the gap in the lack of understanding in designing educational programs and providing preventive care to the 260,724 Nigerian immigrants in the United States (Ameridian, 2012). In addition, this study may assist researchers and practitioners in exploring health issues affecting the Nigerian immigrant population in the United States. The population of Nigerian immigrants will continue to grow and will be affected by the health issues just like their African American counterparts. Understanding how health disparities correlate with the country of origin and immigration status will assist health providers with designing public health programs for this population group in the United States.

Summary

In this study, I examined the relationship between failure to seek and use preventive health services and immigration status among adult Nigerian immigrant in the United States. This research may provide the information needed for designing health promotion programs for both Nigerian immigrants and health providers in the United States. The population of Nigerian immigrants in the United States is growing. Health

disparity resultant from income inequality, lack of health insurance, language barriers, and immigration status stigma may be passed on to the next generation.

In this chapter I have provided the statement of the problem, and discussed the purpose of the study and its theoretical framework. In the next chapter, I offer a review of literature related to health disparity among Nigerian immigrants and their families. In Chapter 3 I discuss the study design, sampling, and the target population. There, I also discuss the criteria for participation, instruments and measures, data collection, and analysis. In Chapter 4, I discuss the results of the study. Finally, in Chapter 5 I present the summary and conclusions, and offer recommendations.

Chapter 2: Literature Review

Introduction

While many countries around the world have experienced increased in life expectancy in the last two centuries (World Health Organization, 2014b), communicable diseases resultant from unsanitary living environment, water, and lack of scientific knowledge continue to afflict countries from Africa, South East Asia, and South America (Olshansky et al., 2005). In developing countries, life expectancy increased, but began to fall as the rate of development could not sustain the rise in living standards, resulting in poor health quality and health inequality among the population groups (Wilkinson & Pickett, 2010). Within each member states of the World Health Organization, disparity in health care delivery are linked to inequalities in the social determinants (Center for Disease Control, 2011).

Health disparity is defined as differences in health outcome between population groups due to differences in "social, demographic, environmental and geographic attributes" (Center for Disease Control, 2011). Further, health disparity is described as the differences in the health outcomes of population groups based on race, sex, education, social status, and geographic location (Bezruchka, 2010; Center for Disease Control, 2011).

Researchers have approached health care disparity from various conceptual frameworks because it is a multifaceted problem facing health care policymakers. Some researchers have reiterated that health disparity may be related to health literacy (Adekeye, Kimbough, Obafemi, & Strack, 2014; Fadare et al., 2014) and lack of income

(DinDinca-Panaitescu et al., 2011). Health disparity is a major problem restricting achievement of optimum health among minorities around the world.

Munro (2013) reported that health care disparity among minorities accounted for $3.8 trillion of total health care costs in 2012, and the cumulative effect of health care disparity varies from one population group to another depending on the social status. To many Nigerian immigrants, immigration status translates to a lack of access to preventive health care services (Morrison et al., 2012). Health disparity among Nigerian immigrants in the United State may mirror health disparity prior to immigration.

In this literature review, I discuss: (a) theories of health disparity , (b) health literacy and African immigrants, (c) social status and health literacy, (d) Africa immigrant health status pre-immigration, (e)African immigrant health status post-immigration, (f) health disparity in the United States , (g) cost of health disparity , (h) social networking and physical health , (i) health disparity in other African countries, and (j) health disparity in comparable populations groups. Throughout this review, I point to a gap in research on the health disparity in access to preventive health services among Nigerian immigrants and the U.S.-born African-American population.

To gather sources for this review, I used the Walden University library to access databases including Academic Search Complete, Health Sciences, ProQuest Central, ScienceDirect, Medline, CINAHL Plus, Health and Medical Complete, Center for Disease Control and Prevention, SAGE, the Journal of the American Medical Association, and PsycInfo. I conducted searches for the following keywords: *health disparity, health literacy, health inequality, health care, preventive care, social cognitive*

theory, self-regulation, health behavioral model, social determinants of health, immigrants, emigrants, immigration, and *Nigeria immigrants*. Other keywords included: *gender, age, social economic status, education,* and *income.*

Theories on Health Disparity

As I attempted to define health disparity, several theories emerged that highlighted the concept of social justice and inequality in access to care. Carter-Pokras and Baquet (2002) explored the conceptual dilemma surrounding the definition of health care disparity as the Department of Health and Human Services (DHHS) prepared to launch Healthy People 2010. Although the goal of eradication health care disparity received widespread support, the organizers still needed a clear definition of health disparity. The differences in the definition started from the use of the terms inequalities or inequities in the United States during a discussion on health disparity. In addition, the two terms tended to assign responsibility to a specific "object of blame" (Carter-Pokras & Baquet, 2002, p. 428). This lag in the agreement in the United States on the definition of healthy disparity was complicated because only the United States used the term "health disparity," while the terms "health inequality" and "health inequity" were used interchangeably in Europe. Also, while the United States related health disparity to inequalities in access to quality care because of ineffectual programs, the Europeans and Canadians approached health disparity in terms of social justice (Vafaei, Rosenberg, & Pickett, 2010). Carter-Pokras and Baquet (2002) ultimately defined health disparity as differences in health outcome between population groups due to "unequal access to

resources such as education, health care, clean air, and water or live or work in unhealthy condition" (p. 428).

One of the problems with the Carter-Pokras and Baquet (2002) definition of health disparity was how to measure it. Measurement of health disparity proved as difficult as the definition itself. Measurement of health disparity required a reference population groups, hence, the measurement of health disparity must rely on relative differences between well-defined population groups and a reference population (Carter-Prokras, 2002). The authors objected to this method because the reference population may become the "the problem" (Carter-Pokras & Baquet, 2002, p. 428). The authors failed to reconcile the European and United States differing points of view. It can be argued that some health disparities were not deliberated, and that neither the United States nor the Europeans or Canadians recognized the effect of immigration on health inequity/disparity.

Access to health care includes access to health education and information. An immigrant's ability to extract useful information from the health information would require cognitive prowess. In the case of preventive health care, the unintended inequalities due to lack of health literacy, low social status, and immigration status increase the odds that immigrants may not receive the preventive health services. This inequity impacts Nigerian immigrants, and requires research to study health care disparity between them and non-Nigeria immigrants.

Further, Pearcy and Keppel (2002) examined the Healthy People 2010 policy on health disparity and determined that it was no longer as urgent as it was in the year 2000

when the original health disparity reduction goals began (Pearcy & Keppel, 2002). This resulted in a change in policy on health disparity in 2010, yet the problem with defining health disparity needed to be resolved. Progress in the reduction of health disparity based on Healthy People 2000 goals depended on the definition of what constitutes health disparity. Pearcy and Keppel (2002) defined health disparity as "marked difference or inequalities between two or more population groups defined on the basis of race or ethnicity, gender, education level, or other criteria" (p.274). Using the index of disparity to measure the difference in heart disease between population groups based on race or ethnicity, gender, and education level, the researchers showed that disparity in health and disease among the groups was on a downward slope (Pearcy & Keppel, 2002). A more robust study would have shown that the uninsured and immigrant groups had extraordinary disparity due to language barriers and lack of insurance (Chaufan, Constantino, & Davis, 2012).

On the global level, Eurohealth (2009) reported that the European countries have been confronted with health inequalities for quite some time, and decided to formulate policies in 2008 to prevent health inequalities. In 2008, the European Commission on Communication renewed the European commitment to the eradication of health disparity. Among the Eurohealth plans was determining the degree of health disparity within the member states, as identified by the differences in life expectancy and infant mortality. The infant mortality rate was higher in Eastern and Central Europe, compared to Western Europe (Eurohealth, 2009).

To measure health disparity in Europe, the researchers need to collect data over a long period across the member states, but that was not easy. In addition, there was no consensus on the best method to conduct the study. Masseria (2009) suggested the need for measurements on life expectancy, infant mortality, and income inequality between and within the countries in Europe. Masseria's theoretical framework echoed Wilkinson and Pickett (2010) theory in measuring inequity in health. Wilkinson and Pickett (2010) argued that a better method for reducing health disparity would be bridging the gap between average income between population groups within countries and less between countries (Wilkinson & Pickett, 2010). One of the weaknesses in the European study was study was a lack of intercontinental scope including non-representation of countries outside Europe (Masseria, 2009). There were many immigrants whose interests were ignored by the study. Populations in transit were affected by health disparities or inequalities. Another shortfall was a lack of data from the various ethnic groups in Europe. Yet, the study showed that health disparity was global (Xavier, Price, & von Nordheim, 2009).

Consequently, Docteur and Berenson (2014) compared health care policies to eradicate health care disparity in the United States and in the European Union. The researchers assessed health care disparity within and among the countries, and despite the fact that these countries recognized health care disparity as a public health problem; they failed to decide on a definition of health disparity. In addition, health disparity, health inequality, and health equity concepts were used by different researchers, depending on the country. While the effect of disparity remained largely the same, the European

countries blame health disparity mainly on socioeconomic differences such as education, income, and poverty that needed to be eradicated by policy makers. This position was congruent to the WHO position on health disparity (Docteur & Berenson, 2014).

In the study, the authors reported that social determinants of health related to health disparity in the European Union countries resulted from differences in behavior related to health literacy and risky behaviors, as well as to decreased investments in social determinants of health, which correlated to low health status. In the United States, the conclusions were different: the USDHHS reached the conclusions that the cause of health disparity in the United States may be related to genetics and racial, gender, and age discrimination (Docteur & Berenson, 2014). This study did not report the effect of a change in social environment related to immigration or poverty, which determine residency status, access to health resources (including health insurance), and safety. Immigrant populations bear the burden of health disparity because of a lack of health literacy.

In the United States, the focus has been on race, ethnicity, and access to quality care since the DHHS (1985) report on health disparity amongst African Americans. Likewise, the Institute of Medicine (IOM)'s 2003 report, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care* provided data indicating disparity in medical procedures due to race and ethnicity regardless of age, income, severity of health condition, or health insurance status (see Docteur & Berenson, 2014). In Europe, the focus was on health disparity in socioeconomic groups and displaced populations (Docteur & Berenson, 2014).

Social Cognitive Theory

Rosenstock, Strecher, and Becker (1988) deduced the theory "Social Cognitive Theory" from social learning theory (Bandura, 1977), in other to explain the relationship between behavior, reward, and motivation (Rosenstock et al., 1988). Social cognitive theory reaffirmed learning as interactive in relation with the social context and environment (Rosenstock et al., 1988). Social cognitive theorists admire how individuals can regulate their behaviors in anticipation of archiving self-efficacy based on their experiences.

Still, the interaction between the individuals and the environment socioeconomically depends on their ability to acquire and process knowledge for meaningful purposes such as reading, calculating and communicating their health problems. In addition, the use of the information depended on the reinforcement, internal or external, but significant enough to ensure future use of the knowledge. The outcome of the experience, also, must agree with the expectation of the learner in other to be repeated (Rosenstock et al., 1988).

The social learning theory has some limitations, and one of the limitations was reliance on assumptions on the relationship between the learner and the environment in a perfect setting, all things being equal, underestimated political, economic, and genetic shortfalls encountered by the learner (Rosenstock et al.,1988). By association, the social learning theory disregarded immigrants' plight on the lack of resources and access in seeking knowledge about their health problems. Many immigrants do not have health insurance or health literacy required for making a decision about health (Kaiser Family

Foundation, 2013). Hence, the Nigerian immigrants are faced with cultural and sociopolitical environment sometimes counterproductive to reach the healthy quality of life (Derose, Bahney, Lurie, & Escarce, 2009; Dinca-Panaitescu et al., 2011). The final analysis rested on the notion that human behavior would be sustained through learning and expectations. In preventive health care, the reward for feeling healthy serves as the motivator and the enabler to seek preventive care.

Another limitation of the social learning theory was a failure to explain why individuals seek preventive care in the first place. Rosenstock (2005) addressed this problem by examining the SCT and health behavior model (Rosenstock, 2005). Health behavior model stated that seeking health services depends on sufficient evidence that health behavior will be effective, that there is an imminent danger, and the motivation factors were relevant. Also, the health belief model takes into consideration the cost of the action and the barriers associated with the action (Rosenstock, 2005). Consequently, motivation to seek preventive health care by the immigrants hinges on the notion that preventive care will be effective and safe. In addition, seeking preventive care hinges on experience, the cost of care, and perceived value of the care (Bandura, 1977).

Health Literacy

Mancuso (2009) linked health literacy to various health care disparity incidences and social cognitive theory (Mancuso, 2009). In addition, health literacy was associated with social cognitive theory, health cost, and health outcomes. The author defined health literacy as the ability to apply "basic skills of reading, writing and numeracy to health-related materials and activities within the health setting" Mancuso (2009, p. 77). In

addition, according to Mancuso, poor health, and physical illnesses were outcomes of poor health literacy, and by association, health disparity, the cost of medical care, quality of care, accesses to medical care, all related to lack of health literacy (Mancuso, 2009).

Mancuso strongly believed on the correlation between poor health literacy and an increase in health care utilization and cost of health care in relation to increasing emergency care. In addition, Mancuso also believed that health literacy accounted for poor medication compliance and treatment errors. In the United States, health literacy embodies a group of skills required by an individual to facilitate usage of health information. Consequently, the National Library of Medicine, cited by Mancuso (2009), defined health literacy as the "degree to which an individual have the capacity to obtain, process and understand basic information and services needed to make appropriate health decisions" (p.77).

In addition, the World Health Organization (2013) examined the relationship between health literacy and health. The authors reported that health literacy enables people to make informed decisions about their health and to participate in health promotion in their communities. Using a thoroughly, peer-review research on 17 articles and a comprehensive health measurement instrument, the researchers reported that in 3 major areas pertaining to health literacy, health care, disease prevention, and health promotion, health literacy provided a greater predictive power on health than income, employment status, education level, and racial/ethnic disparity. This theoretical conceptual framework may not be completely correct in many countries where

employment may be the only source of health insurance employment and health insurance may be interrelated (Ku & Matani, 2001; Pandey & Kagotho, 2010).

In order to fully understand health literacy concepts in a clinical setting, a comprehensive review of the literature using the PubMed, CINNHL, and Web-based databases was analyzed to measure health literacy in the United States from 1991to 2006 (Mancuso, 2009). Still, using the short versions of Rapid Estimate of Adult literacy in Medicine (REALM), the Test of Functional Health Literacy in Adults (TOFHLA), and the Medical Achievement Reading Test (MART), the Newest Vital Sign (NVS), and the Short Assessment of Health Literacy for Spanish-Speaking Adults (SAHLSA), Mancuso found that not all the instruments were helpful outside the clinical setting. The tests did not measure health literacy in the real world. The tests could not measure cultural context, communication, and technological environment of the life outside the clinic. For further studies, Mancuso recommended that health literacy screening must include the cost of testing and training of the administrative staff, methods to measure validity and reliability (Mancuso, 2009).

Kaphingst et al. (2014) examined two categories of households, one about the use of a cellphone and the other on the use of landlines to determine the outcome of patient health literacy and working with the healthcare providers in the State of Missouri. The combined sample size was 3358 English –speaking adults. The result showed that patients that were intellectually engaged with the health professionals beginning with the front desk were more likely to be satisfied with doctor's office visit. The theoretical framework for the study was based on the assumption that patient's ability to interact

with the health care professionals has a greater effect on the outcome of patient care. The results of the study indicated that experienced health care personnel, front desk staff, and professionals, in addition to patient health literacy status increased the quality of care (Kaphingist et al. 2014).

This research has some limitations. The telephone survey was a cross-sectional study without the strength for generalization. Second, the data was self-reported, hence may not withstand validity test as may be necessary. Third, the data may be have been affected by improved physician visits (Frankfort-Nachmias & Nachmias, 2008).

Social Status and Health Insurance Exchange

Kaiser Family Foundation (KFF) (2013) noted the expansion of the Medicaid under ACA 2010, the Health Insurance Exchange for American citizens and the current legal immigrants, although, there were over 40 million immigrants in the United States as of 2013, accounting for 13 % of the United States population (p.1). The authors maintained that not all the immigrants would become citizenship to qualify for Medicaid or the Children Health Insurance Program (CHIP) until after the 5-year length of the residency requirement. The study compared the health insurance between the non-citizen immigrants and the citizens. Kaiser Family Foundation defined the immigrant population as “foreign-born individuals living in the United States, regardless of their immigrant status, including naturalized citizen, lawfully present non-citizens, and undocumented immigrants” (p.3).

The report showed that in 2011, both the non-citizens and the citizen's make-up three-quarters of families with low paying jobs and fall into the low-income category

levels. The average income for the non-citizens living in the United States was $27,000 per year, and this population group was more likely to use the emergency room care at the rate of 14 percent for the adults, and 11 percent for the children. The rate for citizens was higher (20 percent for adult and 19 percent for children). In preventive care services, the numbers were much higher: 87 % for citizen and 71 for the non-citizens (Kaiser Family Foundation, 2013, p.5).

Although many of the non-citizens may qualify for the coverage, but, due to their immigrant status and fear that some members of their families may not be legally documented, some of the immigrants may not apply to use the health care services. In addition, the authors did not report the country of origin of the immigrants or length of stay of the immigrants. In addition, the authors did not give the information on the socioeconomic factors affecting the immigrant population. The authors reported the medium income of the immigrant population which indicated that most of the immigrants fall below the poverty level (USDHHS, 2009; U.S. Department of Health and Human Services, 2014). According to KFF (2011), the majority of the uninsured immigrants depended on the Federal Safety net program through the Community Health Center and Clinics (p.7).

Preventive Health Care

Preventive health in adults encompasses immunization for flu vaccines to health and nutrition education on smoking cessation. The majority of the care service, vaccination of prophylactics are available to those with access to the services, and the outcome varies from individuals to individual providing there was funding. The scope of

the discussion on preventive care would include preventive care pre-immigration and preventive care post-immigration.

Cultural Determinants of Preventive Care

Springer and Mouzon (2011) examined the relationship between motivation to seek and use preventive care and culture. According to hegemonic masculinity theory, men with a strong association of manhood to masculinity as defined by their culture view seeking for prostate cancer screening and preventive care as a weakness (Springer & Mouzon, 2011). Springer and Mouzon (2011) reported that hegemonic masculinity theory was socially preferred for proving manhood in the group resulting to an aversion to using preventive care. The authors, using the Wisconsin Longitudinal Study databases and hegemonic masculinity scale to analyze the males and females who graduated from Wisconsin high school in 1957, 1964, 1975,1992 and 2004, uncovered the relationship between masculinity and seeking for health care (p.219).

The authors admitted that the scale reliability was modest (.65), but the results of the study indicated that the men in this study, in general, did not have a comprehensive preventive health care record (p.219), while masculinity idealists were less likely than moderates received preventive care including prostate cancer examination (Springer & Mouzon, 2011).

Furthermore, the hegemonic theory made reference to the theory of fundamental cause to health (Phelan, Link, & Tehranifar, 2010). The theory of fundamental cause stated that prevention of disease required the understanding of factors that caused the

persistent of the diseases despite all the efforts for the eradication of the disease (Phelan et al., 2010).

Nigerian Immigrant Health Status –Pre-immigration

Idris, Sambo, and Ibrahim (2013) studied barrier to utilization preventive care system in Nigeria. In a cross-sectional study involving 150 mothers in different stages of pregnancy in the Northwestern Nigeria, using structured interviews, the researchers reported that only 2.7 % of the women visited the prenatal care during their pregnancy (p.1).The study also showed that 97.7% of the mothers utilized the antenatal care services (Idris, Sambo, & Ibrahim, 2013).

Also, Abdulraheem, Oladipo, and Amodu (2012) examined the state of healthcare delivery in Nigeria from 2000 to 2010. The researchers indicated that, although the federal government of Nigeria, provided primary care centers (PHC) in all the rural and urban centers, the number of health centers in the rural areas was not proportional, commensurate to the population distribution in the country where the majority of the Nigerians live in the rural areas (Abdulraheem et al., 2012). The researchers noted that the provision of PHC in the nation was a partnership between the federal government and the local government authorities. In addition, at the local government level, there was disparities and inequalities in staffing of the health centers, in spite of the fact that most of the population reside in the local communities. In addition, structural dilapidation of the buildings centers was evident due to lack of funding as donor countries including WHO and USA withdrew due to change in political priorities. In addition, the local centers lack funding for transportation, hence loss of qualified personnel and medical

groups who provided care to the rural communities who bear the burden of care while the urban centers receive care. The life expectancy the Nigeria hovers around 53 years (Central Intelligence Agency, 2015).

Health disparity in Nigeria

Abdulraheem, Oladipo, and Amodu (2012) examined health care services among local and rural areas in Nigeria. Both the local and urban communities received primary care through the primary health care centers (PHC) built with the aids from United Nations Children's Fund (UNICEF), World Health Organization (WHO) and the United States Aids for International Development (USAID).The federal government staffs the PHC with nurses, midwives, community health officers, and health technicians. There were no physicians at the health centers. The health care services through the PHC system only provides 20% of the patient care (Braveman & Tarimo, 2002). Based on the social determinants of health, the burden of care is levied on the population that needs it most (Abdulraheem et al., 2012; Wilkinson & Pickett, 2010).

In comparison to the life expectancy, infant mortality rate, and death due to birth between Nigeria and selected countries in the world, the WHO (2014) indicated that the maternity death due to childbirth was significantly higher in Nigeria (560 per 100,000 births) and the other African countries, and significantly higher when compared with most countries in Europe and Japan. The infant mortality rate and life expectancies were 78 per 1000 births and 54 years respectively (Table 1). This table shows the health disparity among the less affluent countries include high infant mortality rate (table 1).

Table 1
Life Expectancy, Infant Mortality Rate, and Maternal Death Due to Birth for Selected Countries by WHO Regional Divisions

Country	Life Expectancy at Birth (yrs)	Infant Mortality Rate/ 1000 Births	Maternal Death Due to Birth/100,000
China	75	12	32
Cuba	79	4	80
Ghana	62	49	380
India	66	44	190
Iran	74	15	23
Japan	84	2	6
Mexico	76	14	49
Nigeria	54	78	560
Philippine	69	24	120
South Africa	59	33	140
Sweden	82	2	4
U.K.	81	4	8
U.S.A.	79	6	28

Note. World Health Organization: World Health Statistics 2014.

This phenomenon was highlighted by the World Health Organization, World Health Statistics 2014 (World Health Organization, 2014c). Wilkinson and Pickett (2010) also associated inequality and lack of trust to the health care system as a barrier to better population health. Also, inequality between the social class systems increases the level of mistrust and depressive attitude to one another, hence less quality in care Wilkinson & Pickett, 2010).

Also, Wilkinson and Pickett (2010) explored the health disparity on life expectancy and infant mortality rates among the countries. The author's linked life expectancy and mortality rates among these countries to both social determinants of health: social environment, physical environment, and inequality between haves and

have-nots (Wilkinson & Pickett, 2010). The authors did not determine the degree of inequality that necessitated the differences in life expectancy among the countries since money in of itself could not guarantee longer life expectancy (Wilkinson & Pickett, 2010).

In the United States, the Center for Disease Control and Prevention (CDC), Office of Disease Prevention and Health Promotion (2010) also explored the framework on assessing the relationship between population health and socioecological factors by Healthy People 2020 health promotion. Some of the questions to be answered included bridging the gap between people and health care services (Healthy People 2020, 2014c).

In Nigeria context, infant mortality rate was related to inequalities in a social environment, physical environment, individual behavior, access to health services, and health policies (Ogundari & Abdulai, 2014). Using data from the Nigerian Living Standards Survey from 2003 and 2004, the authors linked health inequality of care between rural and urban population centers to federal government neglect.

In addition, Braveman and Tarimo (2002) revealed that infant mortality rate was higher in the less affluent regions in countries such as Nigeria, Ghana, Liberia, Venezuela, and other South America countries according to their status on the social determinant of health. In addition, the authors, citing Kutzin (1993), revealed the inequality of care or health disparity between men and women, and between the female and male infants in Nigeria, Togo, Sierra Leone, Jordan and Egypt in favor of the males.

In Nigeria, particularly, the disparity in life expectancy among the Nigerian population followed regional routes. In the Northeast, life expectancy was 40 years, while

life expectancy in Southern region was 58 years (Braveman & Tarimo, 2002, p.1623). By association, health disparity may affect the Nigerian immigrants and refugees due to change in location, social isolation, language barriers, social status, and past inequality experience.

African Immigrant Health Status-Post-immigration

Luke et al. (1998) studied health disparity among the individuals of African origin from Nigeria, Jamaica, and the United States to determine disparities in body composition of leptin a hormone associated with obesity. With a sample of 363 Nigerians, 372 Jamaicans, and 699 Africa Americans, Luke et al. determined variations in the plasma leptin and adiposity, among the three population groups. The results of the study indicated that the Nigerian group (BMI =17) had lower BMI when compared with the Jamaicans (BMI=26), and the African Americans (BMI=41)(Luke et al., 1998, p.395). Also, the study showed the disparity in percent body fat between the men and the women in the three countries, as the men and the women showed different set point for leptin (Luke et al., 1998,p.395).

The disparity in health was exacerbated by the ambiguities in the definition of the concept (Soskolne, 2015). As a consequence, in the United States discussion on health disparity focused on inequalities in social determinants of health perspective (Center for Disease Control, 2011). In most other countries, the discussion focused on inequity in education, housing, and conditions inherent in the environment where people live, grow and work. (World Health Organization, 2005; World Health Organization, 2012). Social status also play a considerable part in the problem with health care disparity which affect

immigrants in the United States and elsewhere in the world (Soskolne, 2015). According to the researchers, the social conditions included external and internal barriers, personal choices beyond their power (Soskolne, 2015; Vroom & Reid-Martinez, 2011; Wallston & Wallston, 1978; Williams & Jackson, 2005).

As a result, Soskolne (2015), citing the study by Din, Zugman and Khashpar (2014) concluded that the variables embodied in social behavioral models including social status, marital status, age and living with chronic disease influenced decision making to seek and utilize medical services or preventive care (Soskolne, 2015). These variables provided the basis for the present research on how the immigrants seek and utilize preventive care amid barriers presented by the environment or place of residence including the United States (Shmueli, 2014; Terraneo, 2015).

In another study, (Morrison et al., 2012) reported that Somalian refugees and immigrants in the United States were not completing the required preventive care services such as cancer screening, prostate cancer screening, vaccination and immunization due to immigration-related barriers in the social determinants of health. The researchers reported that the Somalians in the U.S might be at risk of a variety of preventable disease due to non-completion of preventable healthcare services due to language and health literacy barriers in the United States.

In addition, the authors noted that most of the immigrants came from non-structured health care system in their motherland only to be entrusted with a new healthcare system, which resulted in failure to receive preventive care such as screening for mammograms, pap smears, colorectal cancer screening, influenza and lipid profile

tests (p.970). In the study, the researchers discovered that Somalian patients only received mammogram (15 percent); pap smear (48.79 percent); and lipid profile screening (41.45percent) (p.970). The main factor determining who received preventive care in this population (N=810) was access to primary care physician (Morrison et al., 2012, p.970).

In general, the Atlanta-based Center for Disease Control and Prevention (CDC) (2013) reported that the compliance rate for preventive care in the United States was about 50 percent attributed to the cost. Also, the rate for women receiving mammograms, according to this account, increased by nine percent only when cost sharing was discontinued (Center for Disease Control, 2013b). In relation to barriers to access to preventive care, factoring the cost of preventive care has been the cause of debate in health disparity among the US populations groups for many years (Maciosek, Coffield, Flottemesch, Edwards, & Solberg, 2010. Furthermore, Maciosek et al. determined that preventive healthcare including childhood immunization series and adult immunization helped with the increase in life years and medical cost for both men and women (Maciosek et al., 2010, p.1659). These findings were consistent with other studies on the minority population groups such as in African America, Asian American and Mexican American, more likely to bear the burden of health care disparity in the United States (Kaiser Family Foundation, 2015; Kaiser Family Foundation, 2014; McMorrow, Kenney, & Goin, 2014).

Also, according to Kaiser Family Foundation (2013), there were 40 million immigrants (US citizen [17.9 million] and non-citizen [22 million] residing in the United

States. The number represents thirteen percent of US population with children and elderly at the risk of "non-insured" persons at a median annual household income of $27,000 (p.4).

Immigrants and the Affordable Care Act 2010

Fox and Shaw (2015) noted the 100,000 potential beneficiaries from the preventive care services, yearly, with the Patient Protection and Affordable Care Act 2010 (ACA 2010). The US Preventive Services Task Force (USPSTF) and the Advisory Committee on Immunization Practices (ACIP) are responsible to ensure delivery of preventive care without extra cost to the patients. The ACA requires " all private health plans to provide the full suite of preventive services with no copays or deductibles, unless the plan has grandfathered status" (Fox & Shaw, 2015, p.e7). Consequently, Medicare and Medicaid are required to cover the patients without copays or deductibles for influenza, Hepatitis B, and pneumococcal shots.

In the contrary, Medicaid or the USPSTF does not cover cancer and breastfeeding counseling, and evaluation for high-risk breast cancer genetic counseling. Medicaid and Children's Health Insurance Program (CHIP) provide payment for all children's preventive care age 18 and under (Fox & Shaw, 2015, p.e8). In addition, while the preventive care services are provided by Medicare and Medicaid, eligibility criteria requirement did not favor many immigrants; only legal immigrants with 5 or more years of residency in the United States are covered by the Medicare /Medicaid health insurance under the ACA 2010 (Kenney & Huntress, 2012). Besides, according to Fox and Shaw (2015), although the ACA 2010 require preventive care coverage by Medicare and

Medicaid recipients, a recent study indicated that only six states out of 47 states in the study provided preventive care services without copay (Fox & Shaw, 2015, p.e8).

According to Kaiser Family Foundation (2013), as of 2012, there were 40 million immigrants (US citizen [17.9 million] and non-citizen [22 million]) residing in the United States. The number represents thirteen percent of US population with children and elderly at the risk of "non-insured" persons at a median annual household income of $27,000 (p.4). Included in this demographic stance were 260,724 (.08 percent of the population) Nigerian Americans in the U.S with diverse cultural beliefs on health (Ameridian, 2012; Doctor et al., 2012; Idris et al., 2013).

There is a compelling reason linking health disparity among Nigeria immigrants to health disparity among African Americans in the United States. Also, in the same conceptual framework, there is also a compelling reason linking risk in non-completion of needed preventive care between the Nigerian immigrants in the U.S. to the use of preventive care among African Americans in the United States through the concept of acculturation (B. L. Beagan & Chapman, 2012) Dean, Sharkey, Johnson, & St John, 2012).

Acculturation

The link between immigration and acculturation may not be clear as the theory tend to espouse, resistance to change or adoption of new health behavior may compound cultural barriers. In one study, Beagen (2011) reported interview result with 13 African Canadians in Nova Scotia. The result of the study indicated that the African Canadians in this study linked to change in food behavior energy and stamina acquisition, and

wellbeing, but associated the change to loss of cultural identity and symbol of racism (B. Beagan L. & Chapman, 2012). Yet, immigrants of African origin were associated with obesity, hypertension and type 2 diabetes associated with eating habits (Montoya et al., 2011).

Further, Bastani et al. (2010) posit that acculturation should be a mitigating factor in discovering the solution to the unequal burden of liver cancer among Asia American population in California, despite cultural differences. Both Beagen (2011) and Bastani et al. (2010) agreed that barrier to acculturation process impedes access to preventive care while the psychosocial effects such as cultural loss and racism continued to influence the process of seeking and using preventive care (Bastani et al., 2010; Beagan & Chapman, 2012).

Juxtaposed in the debate between cultural loss, racism, and acculturation, is the body of literature linking length of time in the United States and obesity among various population groups in the United States. Buscemi, Beech, and Relyea (2011) conducted a study with Latino immigrant and non-immigrant children age 2-17 in the United States on the effect of acculturation and weight gain based on the relationship between food insecurity and obesity. The study showed that the children from highly- acculturated parents were more likely to be classified as obese as children from less acculturated parents were. Acculturation marks the process of adjustment to another culture (Buscemi, Beech, & Relyea, 2011).

In another study, Ade, Rohrer, and Rea (2011) conducted a study on the relationship between immigration status, income, alcohol consumption and obesity

among African American adults in the United States. Using a multiple –regression analysis, the study showed that there was no correlation between obesity and immigration status in African American adults living in the United States, except for alcohol drinking habits. Obesity associated health risks including heart disease, diabetes, and hypertension are well documented, yet little is known if African American immigrants adults are less susceptible to obesity than the non-immigrant African Americans in the United States (J. N. Ade, Rohrer, & Rea, 2011). On the contrary, Antecol and Bedard (2006) reported a progression of obesity among the immigrants to the norms of the host country within ten years after immigration. The authors also contend that the immigrant health may get worse after immigration due to assimilation into improper food habits and lifestyle the longer they stay in the United States (Antecol & Bedard, 2006).

Summary

This literature review provided the comprehensive overview on health inequality and inequities in the United States and in Nigeria. The literature review also showed the relationship between changes in the socioecological context of immigrants and the risk of failure to seek and utilize required preventive health care in people in transit. (Morrison et al., 2012), reported a decrease in compliance in the completion of required preventive care services including cancer screening, prostate cancer screening, vaccination and immunization due to immigration associated barriers in the social determinants of health among Somalian immigrants living in a Midwestern city in the United States. Also, the review revealed the effect of unhealthy acculturation of immigrants (Delavari, Sϕnderlund, Swinburn, Mellor, & Renzaho, 2013; Im, Lee, & Lee, 2014). Although a

causal link between immigration and health disparity was not established, but according to the literature, immigrants do bear a measurable burden of risk in terms of accessing and using preventive care in their new home, hence the need for this study.

The immigrants from the Nigeria and the other parts of the world require scheduled a screening for immunization, colon cancer, depression, HIV/HPV, mammograms, colorectal cancers and pap smears, as well as screening for hypertension and diabetes. In spite of the safety net provided by the Medicare/Medicaid health insurance subsequent to eligibility requirements with the Affordable Care Act of 2010, racial, age, gender, and socioeconomic status disparities persist preventing the Nigerian immigrants from accessing and receiving comprehensive care. Additionally, this review showed that private insurance provided a more comprehensive care for those that can afford it (Bowblis & Yun, 2010).

Furthermore, the review of literature provided the relationship between health literacy and cultural awareness among health providers and the immigrant population as they impact disease outcome in certain disease outbreaks such as Ebola in Dallas, Texas in 2014 (Althaus, Low, Musa, Shuaib, & Gsteiger, 2015; Berman, duLac, Izadi, & Dennis, 2014). Chapter 3 will provide the design and methodology for this study.

Chapter 3: Research Method

Introduction

In this chapter, I discuss research methodology including the study design, population frame, sampling, and data collection and analysis. I also address the ethical issues, and reliability and validity. I employed a cross-sectional survey design to explore the relationships between immigration status and risk for non-completion of required preventive health care services among adult Nigerian immigrants in the United States, and compared the Nigerian immigrants' data to those of U.S.-born African-American adults. A modified, self-administered survey based on the CDC BRFSS questionnaire provided the data needed for this research. The BRFSS is a state-based surveillance system under the supervision of the federal government established in each of the 50 U.S. states, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands (CDC, 2014).

Several studies on health disparity in the United States have relied on the findings of the CDC BRFSS research. Unfortunately, most of these studies are focused only on health disparity among Whites, U.S.-born African-Americans, and non-White Latin American immigrants, regardless of country of origin. For example, the 2010 United States Census reported only five race categories: White, Black or African American, American Indian or Alaskan Native, Asian, and Native Hawaiian or Other Pacific Islander (Rastogi et al., 2011). Because the CDC BRFSS used the racial categories of the Census, Nigerian immigrants were considered African American. Thus, the particular

health information of more than 276,000 Nigerian immigrants was lost (Migration Policy Institute, 2015).

The objective of the BRFSS is to standardize data from each state on preventive health practices and risk behaviors linked to preventable disease, chronic diseases, and injuries in adults living in the United States. Under this premise, data associated with determinants of health and variables including such things as tobacco and seatbelt use are included in the survey. I used the survey to collect data on the preventive health practices and health inequalities affecting Nigerian immigrants in the United States. The cross-sectional survey design is one of the most widely used research design in social sciences to explore the nature of relationships between variables (Frankfort-Nachmias & Nachmias, 2008).

Target Population

The target population for this study was located mostly in the East and West Coasts of United States; another group resided in the Southwest of the country. Participation in the study was voluntary. The letter for the invitation (Appendix A) and Consent Form, which explained to participants that they could opt out at any time during the study, accompanied the survey instrument (Appendix B). I included only foreign-born Nigerian immigrants in this study for comparison, and to test the hypothesis on health disparity and acculturation.

Sampling Method

The sampling method designated for this study was a web-based cross-sectional survey (Creswell, 2009), directed to adult Nigerian immigrants in the United States.

There are two common forms of surveys in the social sciences: questionnaires and interviews (Creswell, 2009). While interviews required direct telephone calls or face-to-face communication between the interviewer and the respondent, questionnaires are self-administered by the participants. I selected the non-probability sample for the cross-sectional survey from names of Nigerian adults as listed on club membership lists, email addresses, telephone books, and cultural-based networks in the United States. After approval by the Walden University IRB, I contacted the participants via email and sent them web-linked fliers that explained the study and informed them that personal identifications would not be required (see Creswell, 2009).

Sample Size

Several factors affected the sample size for this study. I ran a power analysis to determine the effective sample size for this cross-sectional survey research. To determine the effect size for this study, I applied Cohen's standard (Cohen, 1988). With the power set at 80%, the alpha level was 0.05, while the effect size was at standard 50% (medium). Given the fact that every Nigerian immigrant residing in the United States could not possibly participate in this study because of cost and time, I determined that the target population for this study should be 1500 participants. The sample size at this target population was calculated as 315 based on power size .80, alpha 0.05 at 50% effect size (Cohen's *d*) (see Cohen, 1988; Israel, 1992).

Instrumentation

Instrumental to this study was the BRFSS, a survey available in all the 50 states, the District of Columbia, and all U.S. territories (CDC, 2014). The BRFSS is a monthly

automated telephone interview administered by the states for the purpose of the collection of health practices and prevention on adults in the U.S. (Stein, Lederman, & Shea, 1993). In this study, I used a modified survey based on the BRFSS questionnaire to collect the primary data on Nigerian immigrant adults in the United States.

Some researchers have questioned the reliability and validity of data from the BRFSS surveys in the recent years because of declining response rates. Still, many health behavior researchers continue to rely on the BRFSS for an array of studies pertaining to health in the United States (Pierannunzi, Hu, & Balluz, 2013), and have found that the response rates, reliability, and validity are similar to other national surveys using self-reporting questionnaire (Ade, 2010; Pierannunzi et al., 2013).

Operational Variables

Health disparity is a multifaceted health problem facing immigrants in various contexts. In this study, I sought to understand the extent to which immigration status independently explains the relationships between health disparity and risk of non-compliance with preventive health services among Nigerian immigrants in the United States. Health disparity among immigrants can be explained using the conceptual model as shown in Figure 1.

The modified BRFSS survey questionnaire included the core portion (demographics and health insurance), and the optional module, which relates to the dependent variables for this study. The dependent variables included the rates and percentages of use or attempts to use preventable health service including screening for breast, cervical, prostate, and colorectal cancers, as well as testing for diabetes, tetanus-

diphtheria, adult human papillomavirus (HPV), immunizations and treatment when necessary by Nigerian immigrants in the United States. In addition, I used the questionnaire to investigate disparities based on race, ethnicity, and gender after controlling for socioeconomic factors and education. A modified BRFSS web-based survey questionnaire similar to Figure 2 was used in this study.

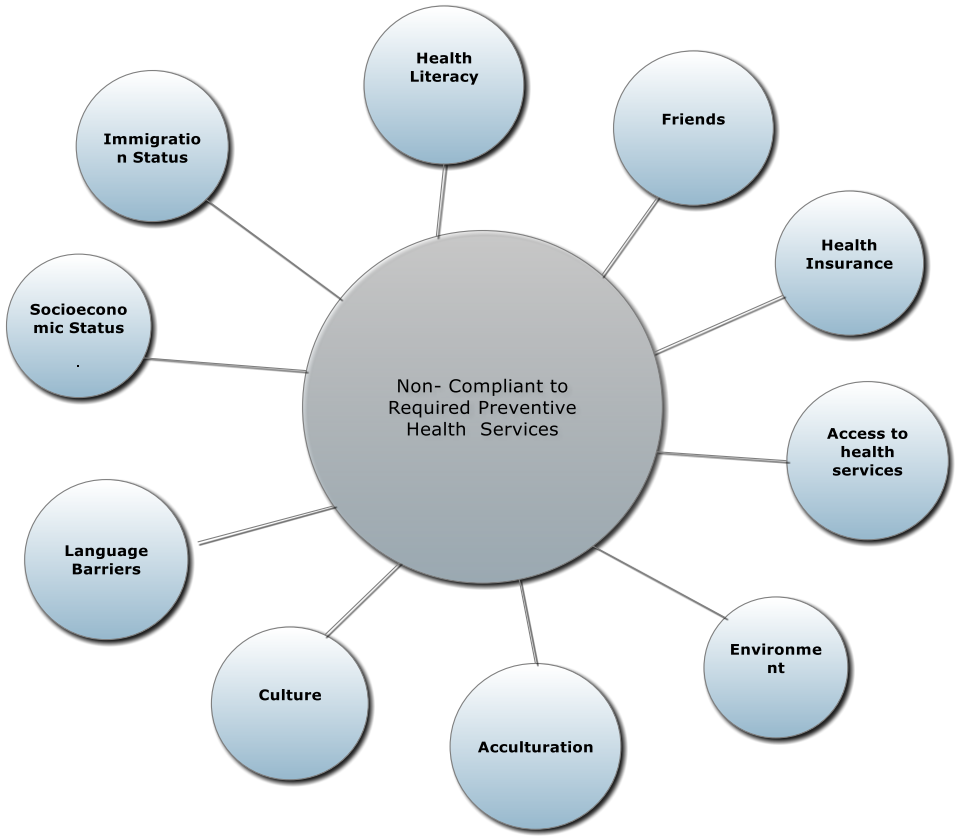

Figure 1. Factors affecting health disparity among immigrants.

Data Collection

The modified BRFSS survey instrument includes two sections: core components and the optional components, which solicit different responses to the instrument (see Figure 2, Appendix C). The core components relate to the demographic data including age, race, gender, educational level, and socioeconomic status while the optional component provided information on the dependent variables including the relationship between immigration status and access to preventative health services. Established in 1984 with data collected from over 400,000 participants annually, the BRFSS has become instrumental in social research data collection (Center for Disease Control, 2014; Pierannunzi et al., 2013). I disseminated the questionnaire containing 15 questions structured to solicit responses to the research question related to immigration status and preventive care to 599 Nigerian immigrants in the United States via emails, snowballing, and direct contact. I entered and cleaned the data in an Excel spreadsheet.

Data Analysis

The data collected from the survey was imported into the IBM SPSS Statistical Analysis Program for statistical analysis. The dependent variables included the frequency of screening for preventive care among the Nigerian immigrants, among which six variables were selected for analysis. The six selections included screening for colorectal, blood pressure, cholesterol, diabetes, HIV, and alcohol. The test for homogeneity among the variables was obtained by Levene's test of homogeneity of variances. The test for analysis of variance (ANOVA) could not be performed due to lack of homogeneity among the population groups, hence, a non-parametric Kruskal-Wallis (Morgan, Leech,

& Barrett, 2013) test was used to determine if there were differences due to an independent variable with two or more groups on a continuous or ordinal dependent variable. The statistical analysis resulted in descriptive statistics such as mean, the standard deviation for continuous variables, frequency, and percentages.

Participant Eligibility

The study sample excluded Nigerian immigrants below the age of 18 and tourists whose residency may not be verified according to the United State Immigration Services.

Potential Error Sources

Self- reported questionnaires are prone to unintended inaccuracies. Due to age and nature of immigration, the error of recollection and bias may affect the quality of the report. Participants may withhold crucial information due to immigration status. The second potential error source relates to the comprehension of questionnaires and omission of important facts on the questions.

IRB and Protection of Human Subjects

Prior to the administration of the modified BRFSS cross-sectional survey for data collection, the Walden University institutional review board (IRB) approved the questionnaire instrument for this study. The data collection excluded personal information capable of identifying participants such as names, date of births, home address, and phone numbers. The data was stored on my personal computer or laptop computer, and back –ups were kept at my home at all time with password protection during the study and for 10 years.

Summary

The third chapter of the proposal discussed the methodological nuances for the study on the relationship between immigrant access and use of preventive health services in the U.S. Ethical issues related to the use of human subjects, and the sample size for a study that includes 315 adults 18 and above were discussed. The data was analyzed using the IBM SPSS Statistical Analysis software and Excel for the test for homogeneity and Pearson's Chi-square test of variability. The analysis also produced descriptive statistics such as mean, the standard deviation for continuous variables, frequency, and percentages.

Chapter 4: Results

Introduction

The objective of this research was to discover the difference in the rate of use in preventive health services between Nigerian immigrants, foreign-born and US-born, residing in the United States. By the virtue of immigration status, Nigerian immigrants are at risk for failure to seek and receive lifesaving preventive and medical care due to health care disparity (Morrison et al., 2012). Preventive health and medical care under investigation in this study included screening for breast, cervical, prostate, and colorectal cancers, as well as screening for diabetes, HIV/AIDS, high blood pressure, diabetes, shingles, and the common influenza virus.

In this chapter, I restate the purpose of the research, present the hypotheses, and finally present a series of descriptive statistics that summarize the results of the non-parametric analysis within the demographic groups. These results are presented in the form of tables and charts. For demographic comparison with the primary data, I have also included the results of reports from the CDC including the Morbidity and Mortality Weekly Report (MMWR), the National Health Interview Survey (NHIS), and the BRFSS.

Restatement of Purpose

The purpose of this study was to discover the differences in the rate of use of preventive health services between Nigerian immigrants in the United States. My objective was to examine the degree of the differences in use of preventive health services by Nigerian immigrants and their African American counterparts. The study

examined the relationship between the immigrants (independent variable) and the use of preventive health care services (dependent variable).

Research Hypothesis

This study was guided by a single research question: "To what extent does immigration status independently explain the relationship between health disparity and risks in non-completion of preventive health care among Nigerian immigrants in the United States? Using the theoretical concept of acculturation, I designed the research question to examine the effect of immigration status on access to and the use of preventive care in the United States. The null hypothesis and the alternative hypothesis were as follows:

$H1_0$: Immigration status does not independently account for the risk non-completion of preventive health services among adult Nigerian immigrants in the United States after adjusting for other variables.

$H1_1$: Immigration status, independently, accounts for the risk non-completion of preventive health services among adult Nigerian immigrants in the United States after adjusting for other variables.

Data Collection

The target population for this research included adult Nigerians, 18 years and older, residing in the United States. Those in this age group will require preventive services including screening for breast, cervical, prostate, and colorectal cancers. Data collection began in August 2016 and concluded in November 2016. Sampling was purposive, and I sent each participant a package that included an invitation letter

(Appendix A), consent form (Appendix B), and the structured, modified, self-administered BRFSS questionnaire (Appendix C). The packages included a self-addressed envelope addressed to me. In total, I distributed 599 packages (174 surveys by email and 424 surveys by direct contact) to qualified Nigerian immigrants from the East to West Coasts of United States.

The participants were instructed to complete the survey instruments after reviewing and consenting to the study and to return the completed form using the self-addressed envelopes. There was no compensation for participating in the survey. The response rate via email failed to meet my expectations. A total of 219 completed instruments were returned, but only 2 responses were returned via the email method. Twenty of the direct contact and snowballing participants' instruments were unacceptable due to the requirement regarding country of origin: only Nigerian immigrants were allowed to participate.

The modified BRFSS survey questionnaire included the demographics, health insurance module, and an optional module related to the dependent variables for this study. The dependent variables include the rates and percentages of use or attempts to use preventable health service including screening for breast, cervical, prostate, and colorectal cancers, as well as testing for diabetes, tetanus-diphtheria, HPV, immunizations, and treatment when necessary. In addition, I used the questionnaire to investigate disparities based on age and gender.

The independent variables included the length of residency in the United States, gender, affordable medical cost, physical activity, alcohol consumption, and smoking. I

coded the variables on continuous, nominal, and ordinal scales. In addition, the data were recorded in Excel spreadsheet and analyzed with the SPSS data analysis software program. In this study, I addressed the relationship between social determinants of health presented by immigrant status on the access and delivery of preventive care services among Nigerian immigrants in the United States.

Table 2 shows the percentage of the respondents by gender, age group, educational level, and income level. The total number of respondents who answered the question varied in each category. Table 2 shows that 52.4% (n = 100) of the respondents were males, while 47.6% (n = 91) were females. Age distribution among all the respondents indicated that the majority was between 40 and 60 years old (59.7%; n = 114), followed by over 60 years old (22.0%; n = 42). Within the 40 and 60 age range, 30.9% (n = 59) of the respondents fell into the 50 to 59 age category, while 28.8% (n = 55) were between 40 and 49. Smaller percentages of the respondents were between 30 and 39 (11.5%; n = 22) and between 18 and 29 years (6.8%; n = 13).

The implication of age as a factor in the disparity in screening for preventable disease among the Nigerian immigrants in this study is significant considering the fact that some cancers are age-related. In addition, one can infer that primary care physicians are discussing the cause of the age-related cancers—especially prostate, breast, and uterine cancers—with the patients.

Other statistically relevant demographic data depicted in Table 2 include the particpants' level of educational achievement. The highest percentage of the respondents had more than a 4-year college degree (42.9%; n = 81), followed by those who had a 4-

year college degree (31.2%). Smaller percentages had some college or a 2-year degree (17.5%; *n* = 33), were high school graduates or had general education (GED; 7.4%; *n* = 14), or some high school or less (1.0%; *n* = 1).

In the 2010 NHIS(Table 3), the percentage of individuals with a college degree or higher without health insurances was 8% (95% ;CL [7.2- 8.8] (Center for Disease Control, 2013a). In addition, among the population group between 18-64 years old, the percentage of uninsured poor and near poor ranged from 34.2% to 41.2%. The data also indicated that the percentage of Hispanics and the Non-Hispanic Blacks without health insurance in 2010 were 41.0% for Hispanics and 26.2% for non-Hispanic Blacks, while the rate for non-Hispanic Whites was 16.1% (see Table 3; Center for Disease Control, 2013a).

Finally, Table 2 shows the percentages of respondents by income. The highest percentage of participants had an income of more than $75,000 (32.3%; *n* = 60). The second largest population group earned $50,000-$75,000 (19.9%; *n* = 37), followed by the $35,000-$50,000 (19.3%; *n* = 36) and $25,000-$35,000 (14.5%; *n* = 27) income brackets. The least of the ordinal, income related population groups earned $20,000 - $25,000 (5.9%; *n* = 11), $15,000-$20,000 (1.6%; *n* = 3), and $10,000-415,000 (6.5%; *n* = 12). Many researchers would link the income status to lack of health insurance.

Table 2

Sample Personal Demographics

Variable	*n*	%[a]
Gender, n = 191		
Male	100	52.4%
Female	91	47.6%
Age, *n* = 191		
18 – 29 years	13	6.8%
30 – 39 years	22	11.5%
40 – 49 years	55	28.8%
50 – 59 years	59	30.9%
60 or more years	42	22.0%
Education Level, *n* = 189*		
Some high school or less	1	1.0%
High school graduate/GED	14	7.4%
Some college/2-year degree	33	17.5%
4-year college graduate	59	31.2%
More than 4-year degree	81	42.9%
Income, *n* = 186*		
$10,000 - $15,000	12	6.5%
$15,000 - $20,000	3	1.6%
$20,000 - $25000	11	5.9%
$25,000 - $35,000	27	14.5%
$35,000 - $50,000	36	19.3%
$50,000 - $75,000	37	19.9%
More than $75,000	60	32.3%

[a]Percents represent the percent of the respondents who answered the question.
*Represents the number of the respondents who answered the question.

Table 3

Percentage Adults Aged 18–64 Years Without Health Insurance in The, US 2010*

	2010 (N=27,157)			
Sex	%	(95% CI)	Absolute Differences (% Points)	Relative difference (%)
Male	24.1	(23.0–25.2)	5.3	28.5
Female	18.8	(17.8–19.7)	Ref.	Ref.
Age group (yrs)				
18–24	29.8	(27.6–31.9)	14.4	93.5
25–34	27.2	(25.6–28.9)	11.8	76.6
35–44	21.4	(20.1–22.7)	6	39
45–64	15.4	(14.5.–16.2)	Ref.	Ref.
Poverty status†				
Poor	41.2	(38.9–43.5)	33.1	410.5
Near poor	34.2	(32.8–35.6)	26.1	323.6
Nonpoor	8.1	(7.4–8.7)	Ref.	Ref.
Race/Ethnicity				
Hispanic§	41	(39.0–43.0)	24.9	154.2
White, non-Hispanic	16.1	(15.3–17.0)	Ref.	—

Percentage of adults aged 18–64 years without health insurance…(cont'd)*

Black, non-Hispanic	26.2	(24.2–28.3)	10.1	62.6
American Indian/Alaska Native	—	—	—	
Asian/Pacific Islander	17.3	(14.7–19.8)	1.2	7.1
Other, non-Hispanic other, and multiple race	21.5¶	—	—	—
Disability status				
Persons with a disability	19.6	(18.4–20.7)	Ref.	—
Persons without a disability	22.3	(21.4–23.1)	2.7	13.7
Educational attainment				
Less than high school	42.8	(40.6–45.0)	34.8	432.2
High school graduate or equivalent	27.5	(26.1–28.9)	19.5	242.5
Some college	20	(18.8–21.2)	12	148.8
College graduate or higher	8	(7.2–8.8)	Ref.	—

Notes. Abbreviations: 95% CI = 95% confidence interval; Ref. = referent.
* Rate of uninsured is the percentage of adults aged 18–64 who did not have health insurance.
† Poor = ≤1.0 times the federal poverty level (FPL), near poor = 1.0–2.9 times FPL, and non-poor = ≥3.0 times FPL. FPL was based on U.S. Census Bureau poverty thresholds, available at http://www.census.gov/hhes/www/poverty/html.
§ Persons of Hispanic ethnicity might be of any race or combination of races.
¶ Estimates are considered unreliable because the relative standard errors are >20%.

The respondents were asked to sum the status of their health on scale giving and assigning the best for the excellent health and the poorest at the other end of the spectrum. The respondents responded to the question on their general health status on a

Likert scale from Excellent, Very Good, Good, Fair, and Poor. In general, the majority of the respondents rated their general health as very good (50.8%) followed by those who rated their health as good (24.9%; n=47) or excellent (18.0%; n=34). The smaller percentages of the respondents rated their health as fair (5.8%; n=11) or poor (0.5%; n=1) (Table 4). This question calls for more studies to evaluate to what extent immigration status determines health status.

Table 4

Sample Health Demographics

Variable	n	%[a]
General Health, n = 189*		
Excellent	34	18.0%
Very good	96	50.8%
Good	47	24.9%
Fair	11	5.8%
Poor	1	.5%
Who pays medical bills (respondent checked all that apply), *n* = 191		
Family	23	12.0%
Job-related health insurance	119	62.3%
Medicare	19	9.9%
Medicaid	13	6.8%
Private insurance	27	14.1%
No insurance	12	6.3%

Sample Health Demographics(Table4)… (Cont'd)

Exercise/Yard work (respondent could check both), n = 191		
Exercise	148	77.5%
Yard work	52	27.2%

Alcohol use, *n* = 191		
Yes	51	26.7%
No	140	73.3%
Cigarette Use, *n* = 191		
Yes	12	6.3%
No	179	93.7%
Worry about health insurance, *n* = 191		
Yes	74	38.7%
No	117	61.3%
Source of information about health (respondent checked all that apply), n = 191		
Physician	146	76.4%
Family	93	48.7%
Internet	90	47.1%
Other	45	23.6%
Place of residence equipped with sidewalks and other recreational services, *n* = 187		
Yes	142	75.9%
No	45	24.1%

[a]percents represent the percent of the respondents who answered the question
* represent the number of the respondents who answered the question

The respondents were asked to indicate their source or sources of funding for health care services. The funding for care by the immigrants mirrors the trend in the NHIS results. The respondents (*n* = 191) checked all that applied from multiple sources including family, job-related insurance, Medicare, Medicaid, and private insurance (Table 4). The majority of respondents indicated that they had job-related health insurance (62.3%; *n* = 119). Fewer used the other sources of payment including private

insurance (14.1%; *n* = 27), family (12.0%; *n* = 23), Medicare (9.9%; *n* = 19), or Medicaid (6.8%; *n* = 13). Only 6.3% (*n* = 12) had no health insurance.

In addition, the respondents, given two kinds of physical activity, physical exercise and yard work per week, responded that physical exercise was the physical activity mostly performed during the week (77.5%, n=141), while 27.2 % (n=52) participated in yard work. This data did not show if the participants combined physical exercise and yard work (Table 4). Physical exercise was recommended for a good number of preventive care including cardiovascular, hypertension and obesity. In 2009, 30% of United State adult population was determined to be obese was (VanWormer et al., 2009). The CDC (2012) reported that the 32.2 % of adults in the US, in a period of 12 months participated in physical exercise as suggested by the health provider (Barnes & Schoenborn, 2012). In 2015, the Division of Health Interview Statistics, National Center for Health Statistic (NCHS), reported an increase in physical activity among adults in the United States from 32.2 (2012) to 47.0% (CI 47.98-49.95%). Subdivided by race and ethnicity the rates of the rate for American adults who participate in the regular aerobic exercise were: Whites (52.9 %[51.64-54.19), Blacks 42.4% (40.43-44.28) and Latino 43.0 %(41.14-44.83) (Ward, Clarke, Nuggent, & Schiller, 2016).

In addition, the respondents were asked how many ounces of alcohol consumed per day or per month, and how many days spent in worrying about health care cost (insurance). In addition, the number of respondents who admitted daily or monthly use of alcohol or cigarettes were 26.7 % (n=51) and 6.3% (n=12) respectively. Respondents

who worried about health insurance was 38.7% (n=74), while 61.3% (n=117) did not worry about health insurance (Table 4).

Further, the participants were asked about the source of information as regards their health. The majority of the respondents indicated they get their health information from their physician (76.4%; n=146) followed by family (48.7%; n=93), and the Internet (47.1%; n=90). About 25 % of the respondents indicated they get their health information from other sources (23.6%; n=45) (Table 4).

In addition, the participants replied to the question on the availability of recreational facilities and sidewalks in the place to live. While the availability of recreational equipment and sidewalks may promote physical exercise, when other variables such as safety and weather conditions were not the problem, the majority (75.9%; n=142) indicated their residence was equipped with sidewalks and other recreational equipment (Table 4). Depending on State of residence about 1 in 4 adults in the United States was not participating in physical activity (Bain W. Ward & Clarke, 2016).

Variable Descriptive (Table 5)

Preventive care: There were six possible selections for preventive screening: colorectal, blood pressure, cholesterol, diabetes, HIV, and alcohol. A total score for preventive screening for each variable was calculated by counting the number of screenings the respondent selected. The total preventive screening score ranged from zero to six with a mean of 1.99, SD = 1.74 (Table 6). The mean indicates that on average the respondents received at least two preventive screenings in the past 12 months. A greater number of

respondents had blood pressure screening (59.2%), cholesterol screening (44.5%), and diabetes screening (39.8%), while the smaller percentages screened for colorectal (27.2%), HIV (19.3%), or alcohol (6.3%) (Table 5).

Table 5

*Total Preventive Screening Descriptives, n = 186**

Scale	*n*	*%*
Individual Screenings		
Colorectal	52	27.2%
Blood pressure	113	59.2%
Cholesterol	85	44.5%
Diabetes	76	39.8%
HIV	37	19.4%
Alcohol	12	6.3%

Table continues

Scale	*n*	*%*

	Total screening
Mean	1.99
Median	2.00
Standard deviation	1.74
Minimum	0.00
Maximum	6.00

*represent the number of the respondents who answered the question

In Table 6, the CDC, BRFSS 2010 report showed the demographic characteristics of men and the women that obtained the fecal occult blood tests (FOBT) and colonoscopy test for colon cancer in 2010. After the slight percentage difference between the two gender groups, the difference between the two groups was 0.9% in 10 years. In addition, there was an increase total percentage of screening for colorectal cancer with an increase in age within the groups (Table 6).

Female only screening: The female score for preventive screening was calculated by counting the number of screenings the female respondent selected. There were three possible selections (mammogram, breast, pap). The female preventive screening score ranged from 0 to 3 with a mean of .89, SD = 1.23 (Table 7). The mean indicates that on average the respondents indicated they had about one female screening in the past 12 months. More than half of the women screened for female preventive care services: mammogram (67.0%), breast (63.4%), or Papanicolaou (pap) smear (57.1). This result

mirrors result from the NHIS 2010 results that show some pattern for improvement on screening for the preventive care among the Nigerian females.

Table 6

Percentage of respondents aged 50–75 years reported up-to-date with colorectal cancer screening United States, 2010*

	FOBT within 1 yr		Colonoscopy within 10 yrs		Total CRC Screening†	
Characteristcs	%	(95% CL)	%	(95% CL)	%	(95% CL)
Sex						
Male	12.4	(12.0–12.8)	59.6	(59.0–60.2)	64	(63.4–64.6)
Female	11	(10.9–11.4)	60.9	(60.4–61.3)	64.9	(64.5–65.4)
Age group (yrs)						
50–64	10	(10.1–10.6)	55.4	(55.0–55.9)	59.7	(59.2–60.1)
65–75	15.1	(14.7–15.6)	71.9	(71.3–72.4)	76.1	(75.6–76.7)
Race						
White, non-Hispanic	11	(11.1–11.6)	62.5	(62.1–62.9)	66.4	(66.0–66.8)
Black, non-Hispanic	15	(14.2–16.1)	59.8	(58.5–61.1)	64.8	(63.6–66.1)
Asian/Pacific Islander	13	(10.5–14.7)	49.3	(45.9–52.6)	54.4	(51.0–57.8)
American Indian/Alaska Native	15	(12.1–17.6)	48.9	(45.0–52.8)	55.2	(51.3–59.1)
Other, non-Hispanic	14	(11.9–15.4)	55.1	(52.4–57.7)	61.3	(58.7–63.8)
Ethnicity						
Non-Hispanic	11.8	(11.6–12.1)	61.6	(61.2–61.9)	65.7	(65.3–66.1)
Hispanic§	10.7	(9.6–11.8)	45.4	(43.6–47.3)	51	(49.1–52.9)
Educational attainment						
Less than high school	8.3	(7.1–9.7)	34.6	(32.2–37.0)	39.2	(36.7–41.7)
Some high school	10.4	(9.5–11.5)	44.3	(42.7–46.0)	49.4	(47.7–51.1)

Percentage of respondents aged 50–75 years…(cont'd)*

High school graduate or equivalent	11	(10.6–11.5)	54.9	(54.2–55.6)	59.3	(58.6–60.0)
Some college/technical school	12.3	(11.9–12.8)	61.2	(60.5–61.9)	65.7	(65.0–66.3)
College graduate	12.5	(12.1–12.9)	68.3	(67.7–68.9)	72	(71.4–72.6)
Income level						
<$15,000	11.2	(10.4–12.0)	42.3	(41.0–43.6)	47.7	(46.4–49.0)
$15,000–$34,999	11.6	(11.1–12.1)	50.9	(50.2–51.7)	56	(55.2–56.8)
$35,000–$49,999	12	(11.4–12.7)	60.5	(59.5–61.5)	65	(64.0–65.9)
$50,000–$74,999	12	(11.4–12.6)	65.1	(64.2–66.0)	68.9	(68.0–69.7)
≥$75,000	12.1	(11.7–12.6)	69.9	(69.2–70.7)	73.4	(72.7–74.1)
Disability status						
Has a disability	12.5	(12.1–12.9)	61.7	(61.1–62.4)	66.3	(65.7–67.0)
Does not have a disability	11.5	(11.2–11.7)	59.7	(59.2–60.2)	63.8	(63.3–64.3)
Health insurance						

status						
Has health insurance	12.2	(11.9–12.4)	63.3	(62.9–63.7)	67.5	(67.2–67.9)
Does not have health insurance	7.9	(6.8–9.1)	31.6	(29.7–33.5)	35.4	(33.5–37.5)
Total	11.7	(11.5–12.0)	60.2	(59.9–60.6)	64.5	(64.1–64.0)

Note. Abbreviations: 95% CI = 95% confidence interval; CRC = colorectal cancer; FOBT = fecal occult blood testing.

* Percentages standardized to age distribution in the 2010 Behavioral Risk Factor Surveillance System.

† Home FOBT within the past year, flexible sigmoidoscopy within the past 5 years with FOBT within the past 3 years, or colonoscopy within the past 10 years.

§ Persons of Hispanic ethnicity might be of any race or combination of races.

Table 7

*Female Preventive Screening Descriptives. n = 91**

Scale	*n*	*%*
Individual Screenings		
Mammogram	61	67.0%
Breast	57	62.6%
Pap	52	57.1%
Total female screening		

Mean	.89
Median	0.00
Standard deviation	1.23
Minimum	0.00
Maximum	3.00

*represent the number of the respondents who answered the question

For comparison, Table 8 shows the CDC-MMWR (2008) prevalence of PAP testing among women > 18years of age in Washington DC, Puerto Rico and two metropolitan cities, Farmington, New Mexico and Dallas-Plano-Irving, Texas in the US in 2006.

Table 8

Prevalence of PAP testing in selected States and Metropolitan Cities age > 18 years in 2006

State/ City	%	95%CL	Median
DC	89.4	(87.5 – 91.3)	
Puerto Rico	72.3	(69.8 – 74.8)	84.0 %
Farmington, New Mexico.	74.7	(67.1 -82.3)	
Dallas-Plano-Irving, Texas	93.9	(90.9 - 96.9)	85.9%

Source: CDC-MMWR (2008)

The rates for mammographic and pap screenings for the female Nigerian immigrants were mammogram 67.0% (n=61) vs 72.4 % (n=4,869) and Pap test 57.1% (n=52) vs 83.0 %(n=8,999) in three years study by the NHIS (Table 7 cf. Table 9).

Table 9

Breast and cervical cancer screening percentages, by demographic and access to care characteristics — National Health Interview Survey, United States, 2010

	Breast cancer			Cervical cancer		
	Mammogram within 2 yrs*			Pap test 3 yrs*		
	No.	%	(95% CL)	No.	%	(95% CL)
Overall†	4,869	72.4	(70.7–74.0)	8,999	83.0	(82.0–84.0)
Race						
White	3,690	72.8	(70.9–74.6)	6,543	83.4	(82.3–84.5)
Black/African American	852	73.2	(69.7–76.3)	1,626	85.0	(82.8–87.0)
American Indian/Alaska Native	54	69.4	(53.4–81.7)	97	78.7	(65.9–87.5)
Asian	258	64.1	(57.6–70.0)	685	75.4	(71.1–79.3)
Chinese	54	68.1	(53.4–80.0)	144	71.6	(62.2–79.5)
Filipino	72	62.1	(48.9–73.7)	175	86.9	(80.2–91.6)

Breast and cervical cancer screening percentages…(cont'd)

Other Asian	132	63.5	(53.4–72.5)	366	70.6	(65.1–75.6)
Ethnicity						
Non-Hispanic	4,200	72.7	(70.9–74.4)	7,021	83.8	(82.6–84.9)
Hispanic	669	69.7	(65.5–73.6)	1,978	78.7	(76.3–80.8)
Puerto Rican	86	74.3	(62.7–83.2)	216	85.5	(77.3–91.1)
Mexican	212	66.4	(59.0–73.1)	794	75.0	(70.9–78.6)
Mexican American	144	66.1	(55.1–75.6)	418	80.1	(74.6–84.6)
Central or South American	105	71.4	(60.7–80.2)	327	79.8	(74.4–84.3)
Other Hispanic	122	76.5	(69.5–82.3)	223	81.5	(75.1–86.4)
Age group (yrs)						
21–30				2,392	84.1	(82.2–85.9)
31–40				2,309	84.7	(82.7–86.4)
41–50				2,018	82.5	(80.2–84.6)
51–65				2280	80.8	(78.8–82.6)
50–64	3,386	72.7	(70.7–74.5)			
65–74	1,483	71.9	(69.0–74.7)			
Length of U.S. residence						
U.S.-born	4,007	73.1	(71.3–74.8)	6,833	85.0	(83.9–86.0)
In United States <10 yrs	61	46.6	(33.5–60.2)	577	67.1	(62.3–71.5)
In United States ≥10 yrs	794	70.3	(66.6–73.8)	1,572	77.8	(74.6–80.7)
Education						
Less than high school	809	58.3	(53.8–62.7)	1,244	69.4	(66.1–72.5)
High school graduate	1,375	69.5	(66.5–72.4)	2,010	77.7	(75.4–79.9)
Some college or associate degree	1,443	73.9	(71.1–76.4)	2,906	85.3	(83.6–86.8)
College graduate	1,229	80.8	(78.0–83.3)	2,818	89.0	(87.5–90.3)

Source: CDC-MMWR (2012)

In the all-male score for preventive screening, the frequency for prostate cancer screening ranged from 0 to 1 with a mean of .27, SD = .44 (n=100)(Table 10). The percentage of the respondents who screened for prostate specific antigen was 51.0% (Table 10).

Table 10

*Male Preventive Screening Descriptives. n = 100**

Scale	*n*	*%*
Individual Screenings		
Prostate	51	51.0%
Total male screening		
Mean	0.27	
Median	0.00	
Standard deviation	0.44	
Minimum	0.00	
Maximum	1.00	

*represent the number of the respondents who answered the question

Table 11

Prevalence of PSA Testing in Selected States and Metropolitan Cities, Age > 40 Years in 2004

State/ City	%	95%CL	Median
Hawaii	40	(37.7- 42.8%)	
Puerto Rico	65.7	(62.5 - 68.9)	53.8 %
San Francisco- Oakland and Fremont CA	39.5	(31.5% - 47.5)	53.8%
Orlando-Kissimmee FL	66.9	(59.1% - 74.7)	

CDC-MMWR (2010)

Immunization: An immunization scores were calculated by counting the number of immunizations the respondent selected. There were two possible selections (flu, shingles). The immunization scores ranged from zero to two with a mean of .77, SD = .62 (Table 12). The mean showed that on average the respondents indicated they had about one of the immunizations in the past 12 months, and about two third (66.5 %) of the respondents had flu shot in the past 12 months. Only 10.5% indicated they had shingles shot in the past 12 months (Table 12).

Table 12

Immunization Score Screening Descriptives. n = 191

Scale	*n*	*%*
Individual Screenings		
Flu	127	66.5%
Shingles	20	10.5%
Total immunization score		
Mean	0.77	
Median	1.00	
Standard deviation	.62	
Minimum	0.00	
Maximum	2.00	

The CDC (2012) recommends that children and the elderly receive influenza shots once a year to prevent hospitalization due to influenza. In 2012 it was estimated that about 226,000 individuals were hospitalized due to flu, and between 3,000 to 49,000 patients died annually due to flu (Center for Disease Control, 2013a). The data for the years 2010- 2011 was shown in Table 13.

Table 13

Seasonal influenza vaccination coverage, by race/ethnicity† — Behavioral Risk Factor Surveillance System, National 2009 H1N1 Flu Survey, and National Immunization Survey, United States, 2009–2010 and 2010–2011*

			2010-2011	
Race/Ethnicity by age Group	%	(95%CL)	Absolute difference§ (percentage) point	Coverage difference from 2009–10 to 2010–11 point
18–49 yrs				
All, including high risk	30.5	(29.9-31.1)		0.6
White, non-Hispanic	31.6	(30.8–32.4)	Ref.	-0.3
Black, non-Hispanic	28.1	(25.7–30.5)	-3.5††	2.8
Hispanic	27.1	(25.1–29.1)	-4.5††	2.4
Asian/Pacific Islander	33.4	(29.5–37.3)	1.8	-2.1
American Indian/Alaska Native	31.3	(25.2–37.4)	-0.3	-8.0††
Other and multiple race	32.1	(27.8–36.4)	0.5	4.2
High risk only§§	39	(36.8–41.2)	0.8	
White, non-Hispanic	39.2	(36.8–41.6)	Ref.	-0.7
Black, non-Hispanic	37.1	(30.2–44.0)	-2.1	2.3
Hispanic	37.3	(30.8–43.8)	-1.9	1.4
Asian/Pacific Islander	34	(21.5–6.5)¶¶	-5.2	-8.9
American Indian/Alaska	40.3	(25.8–	1.1	-5.5

Native		54.8)¶¶		
Other and multiple race	45.5	(35.7–55.3)	6.3	-8.9
50–64 yrs				

Seasonal influenza vaccination coverage, by race/ethnicity…(cont'd)*

Total	44.5	43.9–45.1)		-0.5
White, non-Hispanic	45.7	(44.9–46.5)	Ref.	-0.8
Black, non-Hispanic	38.4	(36.0–40.8)	-7.3††	-1.9
Hispanic	41.9	(38.6–45.2)	-3.8††	1.6
Asian/Pacific Islander	49.3	(43.6–55.0)	3.6	0.5
American Indian/Alaska Native	44.6	(37.9–51.3)	-1.1	-4
Other and multiple race	40.5	(36.2–44.8)	-5.2††	1.3
≥65 yrs				
Total	66.6¶			-3.0††
White, non-Hispanic	67.7¶	(67.1–68.3)	Ref.	-4.0††
Black, non-Hispanic	56.1	(52.8–59.4)	-11.6††	1.0
Hispanic	66.8¶	(63.1–70.5)	-0.9	10.7††
Asian/Pacific Islander	67.9	(61.6–74.2)	0.2	-2.8
American Indian/Alaska Native	68.7	(60.7–76.7)	1.0	7.1
Other and multiple race	60.7	(56.4–65.0)	-7.0††	-3.5

Source: CDC-MMWR (2012)

Note. Abbreviations: 95% CI = 95% confidence interval; Ref = referent.

* Coverage estimates for 2010–2011 are for persons with reported vaccination during August 2010–May 2011 who were interviewed during September 2010–June 2011. Coverage estimates for 2009–2010 are for persons with reported vaccination during August 2009–May 2010 who were interviewed during October 2009–June 2010; estimates for 2009–2010 included data from NHFS; season estimates for 2010–2011 use NIS only for children and BRFSS only for adults.

† Race/ethnicity categories are mutually exclusive; Native Hawaiians, Pacific Islanders, and persons of other or multiple races were classified in the "Other and multiple race" group.

§ Absolute difference (percentage points): (percentage racial/ethnic group of interest) - (percentage white only, non-Hispanic).

¶ Estimated vaccination coverage for the 2010–2011 season is significantly different from the 2009–2010 season (referent) at ($p<0.05$).

** Persons of Hispanic ethnicity might be of any race or combination of races.
†† Estimated vaccination coverage is significantly different from the white only, non-Hispanic population (referent) within age group at ($p<0.05$).
§§ For the 2010–2011 seasons, high-risk conditions included asthma, diabetes, and heart disease. For the 2009–2010 seasons, high-risk conditions included asthma, other lung problems, diabetes, heart disease, kidney problems, anemia, and weakened immune system caused by a chronic illness or by medicines taken for a chronic illness.
¶¶ Estimates might be unreliable because the confidence interval half-width is >10.

Immigration status: Respondents were asked the length of their residency in the United States. The years were divided into four categories: 1 = 0-5 years, 2 = 6-10 years, 3 = 11-15 years, 4 = more than 16 years. The majority (57.1 %) of the respondents have been in the United States more than 16 years. Smaller percentages had resided in the United States 11-15 years (15.0%0, 5-10years (11.8%), and 0-5 years (17.1%) (Table 14).

Table 14

*Immigration Status Descriptives. n = 187**

Scale	*n*	*%*
Immigration Status Categories		
0 – 5 years	32	17.1%
5 – 10 years	22	11.8%
11 – 15 years	28	15.0%
More than 16 years	105	56.1%
Years in the United Stated		

Mean	19.9
Median	18.0
Standard deviation	12.9
Minimum	0
Maximum	60

*represent the number of the respondents who answered the question

Assumptions: An assumption for the normal distribution of the population groups was determined by the use of skewness statistic. If the statistic falls between -1 and +1, the distribution was considered approximately normal. According to Table 15, the distribution of the variables' skewness statistics fell within the -1/+1 interval. The assumption of approximate normality was supported for all the three dependent variables.

Table 15

Skewness and Kurtosis for the Dependent Variables

Scale	Skewness	Kurtosis
Total screening, *n* = 186	.442	-.869
Female screening, *n* = 191	.893	-.958
Immunization, n = 191	.183	-.544

Another statistical test performed with the data was determining the homogeneity of the population variables. The Levene's statistic was applied for the test of homogeneity of variances (Table 16). The variances were not equal, and the null

hypothesis was rejected for total screening (Levene = 3.420, p = .018), female screening (Levene = 9.280, p = .000), and Immunization (Levene = 2.89, p = .040). The null hypothesis was not retained for any of the dependent variables. There was no homogeneity of variance for these three variables. Consequently, the assumption of homogeneity of variance was not supported. In addition, due to the lack of assumption of homogeneity, ANOVA could not be used for the analysis to determine if there were differences in preventive practices due to immigration status.

Table 16

Levene's Test for Homogeneity of Variances

Scale	Levene	*p*
Total screening, *n* = 188	3.420	.018
Female screening, *n* = 191	9.280	.000
Immunization, n = 187	2.819	.040

Consequently, a non-parametric – Kruskal-Wallis analysis (Morgan et al., 2013), (rank-based nonparametric test) was used. Kruskal-Wallis analysis was used to determine if there are differences due to an independent variable with two or more groups on the continuous or ordinal dependent variables, after some assumptions. The assumptions for the Kruskal-Wallis test were:

1. Dependent variable should be measured at the ordinal or continuous level (i.e., interval or ratio). Dependent variables are the counts of the number of prevention practices. These counts are an interval.

2. Independent variable should consist of two or more categorical, independent groups. Independent variable is immigration status, which has four categories: 0-5 years, 6-10 years, 11-15 years, and 16 or more years.

3. Observation as independent – respondents each answered their own surveys

The three assumptions were met paving the way for the Kruskal-Wallis test.

Summary of Results

The aim of this study was to discover the difference in the rates of use in preventive health services between Nigerian immigrants, foreign and US-born, residing in the United States. The dependent variables included screening for breast, cervical, prostate, and colorectal cancers, as well as testing for diabetes, the human immunodeficiency virus, and acquired immunodeficiency syndrome (HIV/AIDS). The other dependent variables including high blood pressure screening, diabetes screening, shingles and common influenza virus, were measured at ordinal and continuous levels as counts in the number of preventive care services received by the participants in the past 12 months. In addition, the independent variables included two or more categories on immigration status among the Nigerian immigrants in the United States. The independent variables were categorized into 4 categories, 0-5 years, 6-10 years, 11-15 years and 16 or

more years. In addition, each of the observed outcomes was independent of each order as required for Kruskal-Wallis test.

The research question and the null hypothesis associated with this study were:

RQ1. Quantitative: To what extent does immigration status independently explain the relationship between health disparity and risks in non-completion of preventive health care among Nigerian Immigrants in the United States.?

$H1_0$: Immigration status does not, independently, account for the risk non-completion of preventive health services among adult Nigerian immigrants in the United States after adjusting for other variables.

$H1_1$: Immigration status, independently, accounts for the risk non-completion of preventive health services among adult Nigerian immigrants in the United States after adjusting for other variables.

The results of the statistical test on Kruskal-Wallis was performed in three consecutive tests for the three types of prevention services: female screening (mammogram, breast, pap), total screening (colorectal, blood pressure, cholesterol, diabetes, HIV, alcohol), and immunization (flu, shingles). Chi-square was an analytical method of choice for the male screening as the dependent variable (prostate) is nominal. The independent variable, immigration status, was coded as follows: 1= 0-5 years in residency in the USA, 2 = 6-10 years in residency in the USA, 3 = 11-15 years in residency in the USA, and 4 = 16+ years in residency in the USA.

Kruskal-Wallis Results (Table 17)

The result from the Kruskal-Wallis tests, one-way analysis of variance, was displayed in Table 17. The results showed that there was a significant difference in total screening among the four immigrant status categories (p = .000). Therefore the null hypothesis was rejected. In the second category (females only), there was a significant difference among the immigration statuses in the female screening at the .10 level, *p* = .058. The null hypothesis could not be retained at the .10 level. When conducting exploratory research, the alpha is often raised to .10 in order to catch any possible relationships. However, there was no significant difference among the immigration statuses in the immunization (p=. 351), hence the null hypothesis was retained (Table 17).

Table 17

Results of Kruskal-Wallis Tests for Differences Due to Immigration Status

Scale	*p*
Total screening, *n* = 188	.000***
Female screening, *n* = 191	.058*
Immunization, n = 187	.351

*$p < .10$ **$p < .05$ ***$p < .01$

Table 18

Total and Female Screening Descriptives by Immigration Status

Scale	0-5 yrs.	6-10 yrs.	11-15 yrs.	16+ yrs.
Total Screening, *n* = 183*				
n	31	21	27	104
Mean	1.55	1.15	1.56	2.40
Median	0.00	0.00	1.00	2.00
Mode	0.00	0.00	0.00	1.00
Minimum	0.00	0.00	0.00	0.00
Maximum	6.00	6.00	5.00	6.00
Female screening, *n* = 89*				
n	14	10	20	45
Mean	1.14	1.30	1.75	2.20

Total and Female Screening Descriptives by Immigration Status…(cont'd)

Median	1.00	1.00	2.00	3.00
Mode	0.00	1.00	3.00	3.00
Minimum	0.00	0.00	0.00	0.00
Maximum	3.00	3.00	3.00	3.00
	Immunization, *n* = 187*			
n	32	22	28	105
Mean	0.66	.73	.93	.76
Median	1.00	1.00	1.00	1.00
Mode	1.00	1.00	1.00	1.00
Minimum	0.00	0.00	0.00	0.00
Maximum	2.00	2.00	2.00	2.00

*represent the number of the respondents who answered the question

The number of non-gender preventative screenings, based on length of residency in the US, ranged from 0 to 6 (only 5 for 11-15 years). The six screenings were colorectal, blood pressure, cholesterol, diabetes, HIV, and alcohol. The median number of screenings increases as the length of residency of the groups increased: 0-5 years (median = 0 screenings), 6-10 years (median = 0 screenings), 11-15 years (median = 1.0 screenings), and longer than 16 years (median = 2.0 screenings) (Table 18).

For the females screenings, the number of preventative female screenings ranged from 0 to 6 (mammogram, breast, pap). The median increases as the length of residency of the groups increased, 0-5 years (median = 1.0 screenings), 6-10 years (median = 1.0 screenings), 11-15 years (median = 2.0 screenings), and older than 16 years (median =

3.0 screenings). Again, the number of immunization ranges from 0 to 2 (flu, shingles). The medians were the same for all four lengths of residency groups (median = 1.0 immunizations).

Chi-Square Results

A measure of variability among the immigrant groups based on length of residency in the United States, Pearson's Chi-square test of homogeneity was performed (Table 17). The length of stay in the United States solicited by the structured question "What is your length of residency in the United States?" The independent variable, immigration status had four categories: 0-5 years, 6-10 years, 11-15 years, and 16 or more years. The dependent variable was screening for prostate cancer. At α=.10, p=.016, there was a significant difference in prostate screening among the men due to immigration status. The percentage of screening for prostate cancer among the men increased with length of residency in the United States: 6-10 years (9.1%), 11-15 years (10.7%), 16 years or older (14.3%). Yet, the 0-5 length of residency group did not fit the pattern (25.0%). (Table 19).

Table 19

Chi-Square Results for Male Screening by Immigration Status

Immigration status		No	Yes
0-5 years	Count	24	8
	%	75.0%	25.0%
6-10 years	Count	20	2

Chi-Square Results for Male Screening by Immigration Status…cont'd

	%	90.9%	9.1%
11-15 years	Count	25	3
	%	89.3%	10.7%
16+ years	Count	69	36
	%	65.7%	34.3%

Note. χ^2 (3, n = 187) = 10.38, p = .016

Summary of Findings

The purpose of this study was to discover the differences in the rate of use in preventive health services between Nigerian immigrants and non-Nigerian immigrants in the United States. The one-way analysis of variance (Kruskal-Wallis test) was used to determine if there were differences due to the independent variables on the use of preventive care services by the adult Nigerian immigrants in the fourr categories of immigration status based on length of residency (0-5 years; 6-10 years; 11- 15 years and 16 years and more) were tested for variability.

The cancer screenings, as well as testing for diabetes, the human immunodeficiency virus, and acquired immunodeficiency syndrome (HIV/AIDS), high blood pressure screening, shingles and common influenza virus, were measured at ordinal and continuous scales. The results showed that there was a significant difference in total screening among the four immigration status categories (p = .000). The null hypothesis

was rejected. In females only screening there was a significant difference among the immigration statuses at α=.10 level, p = .058. Hence, the null hypothesis rejected at .10 levels.

In addition, in male only screening for prostate antigen, the results were significant, χ^2 (3, 187) = 10.38, p =.016, and the null hypothesis was not retained. There is a significant difference among the immigrations status levels in whether or not they did a prostate screening. Generally as the length of residency of the groups increased, the percent of who had prostate screening increased: 6-10 years (9.1%), 11-15 years (10.7%), 16 years or older (14.3%). The 0-5 length of residency group did not fit the pattern. Their percent of who had prostate screening was 25.0%.

Furthermore, the test showed that in the six screenings for colorectal, blood pressure, cholesterol, diabetes, HIV, and alcohol in both males and females, the median number of screenings increased as the length of residency of the groups increased: 0-5 years (median = 0 screenings), 6-10 years (median = 0 screenings), 11-15 years (median = 1.0 screenings), and older than 16 years (median = 2.0 screenings). As the immigrant's length of residency in the USA increases, the number of the preventive health screenings they have increased.

In Chapter 5, I will discuss the findings, conclusions, recommendations and social change relating to this research.

Chapter 5: Discussions, Conclusions, and Recommendations

Introduction

The purpose of this study was to discover the differences in the rate of use in preventive health services between Nigerian immigrants residing in the United States. I compiled the data from the 191 returned instruments in an Excel spreadsheet, and uploaded them to the SPSS version 23 for analysis. This chapter includes the analytical reports and tables derived from the primary data, and supplementary tables from the CDC's, MMWR/BRFSS, and the NHIS. The BRFSS is a state- based surveillance system under the supervision of the federal government established in each of the 50 states, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands (CDC, 2014). The study examined the relationship between immigrants status (independent variable) and the use of preventive health care services (dependent variable).

My objective in this study was to measure the degree of health disparity in the use of preventive health services by Nigerian immigrants in the United States. Health disparity was defined as inequalities in health outcomes among population groups attributable to "social, economic, and/or environmental disadvantage" based on race, religion, gender, sexual orientation, geographical location, or socioeconomic status (Healthy People 2020, 2014b). As members of a larger African immigrant population in the United States, Nigerian immigrants are at risk for failure to seek and receive lifesaving preventive and medical care because of health care disparity (Morrison et al., 2012).

Although the BRFSS and the NHIS did not study health disparity among the African immigrants based on country of origin in order to highlight the inequities in preventive health care services, comparing the data from this study with statistical data from BRFSS and NHIS was necessary and expedient. The differences in the rate of screening for preventive care services among the immigrants of African ancestry in the United States are similar or closely related (Yaeger et al., 2008). Further, even though the acculturative contexts were different, acculturation as a concept explains the extent to which immigration status accounts for Nigerian immigrants' failure to receive preventive health care services in the United States.

Proponents of acculturation theory have reported the interrelationship between immigration status, the length of residency, and the assimilation of cultural values of the immigrants by the host country. According to the theory, acculturation expresses the synergy in the sharing or exchange of cultural beliefs through time, hence, the significance of the length of residency by new immigrants (Bertram, Poulakis, Elsasser, & Kumar, 2014; Capielo, Delgado-Romero, & Stewart, 2015; Cervantes, Cardoso, & Goldbach, 2015). Immigrants move through the acculturation process in search of social recognition and identity (Padilla & Perez, 2003). Consequently, depending on the result of their socialization, immigrants acquire cultural literacy, educational prowess, socioeconomic status, and employment.

Interpretation of Findings

The hypotheses and the 16-question survey based on the CDC's BRFSS questionnaire were instrumental to the data collection process. The null hypothesis,

Immigration status does not independently account for the risk non-completion of preventive health services among adult Nigerian immigrants in the United States, was tested on six dependent variables in four-immigration statuses representing four intervals of the length of residency in the United States.

The results showed significant differences in both gender-specific and total screenings: prostrate screening (men), and pap, mammogram, and breast cancer screening (women).The non-gender specific screenings in this study were colorectal cancer, HIV, cholesterol, diabetes, high blood pressure, and alcohol use. The study showed that the percentage of the men who screened for prostate cancer between November 2015 to November 2016 was 51% (n = 100; Table 10). This result indicated that the difference in screening among the men for prostate-specific antigen (PSA) during the period was significant [χ^2 (3, 187) = 10.38, p = .016], and the null hypothesis was rejected. This conclusion indicates that PSA screening among the men in this study increased as residency in the United States increased. The increase occurred among the men who resided in the United States for 16 years and longer (14.3%), followed by the group who resided in the United States for 11-15 years (10.7%), and third, for those in the 6-10 year group (9.1%). Yet, the upsurge of the rate in screening among the residents in the United States less than 5 years (25%) did not fit in this pattern. One explanation for this variant phenomenon may be related to improved prostate cancer screenings techniques or the change in healthcare laws that increased access to health care in general through Medicaid since many of the respondents would not qualify for Medicare.

In 2008, the CDC reported the prevalence of PSA testing among the men in Hawaii and Puerto Rico, and two selected metropolitan areas including San Francisco-Oakland and Fremont, California, and Orlando-Kissimmee, Florida. The median rates for the prevalence of PSA tests in both metropolitan areas were equal (53.8%) as the prevalence rates were similar (Table 11). Unfortunately, as shown in Table 11, the percentage (51.0%) in prostate screening was different from that of the respondents for this research (CDC, 2006).

On the woman-related preventive screenings, the rate of Pap (57.1%), breast examination (63.4%), and mammogram (67.0%) screenings were statistically significant, as shown in Table 7. The result showed that during the 12 months preceding the survey, more than 50% of the women screened for at least one of the preventive care services (Pap smear, breast examination, and mammogram). Eventually, I rejected the null hypothesis on this basis.

However, the rate for Nigerian immigrant women was not comparable with rates for all U.S. women in 2010 (Tables 8 & 9). When compared with African American women's preventive screenings for the year 2010, the Nigerian immigrants in this study were at a greater risk for failure to complete the gender-specific screening than their African American counterparts.

In the non-gender specific preventive screenings including colorectal, blood pressure, cholesterol, diabetes, HIV, and alcohol use, in a range from zero to six, mean 1.99 (SD=1.74), the mean indicates that on average the respondents had received at least 2 preventive screenings in the past 12 months (Table 5). The highest percentages of

screenings were for blood pressure (59.2%), cholesterol (44.5%), and diabetes (39.8%). Smaller percentages had been screened for colorectal cancer (27.2%), HIV (19.3%), or alcohol use (6.3%; Table 5).

Demographic Implications

Focus on the demographic implication of this research required a referent population group as provided with the results of the BRFSS and NHIS surveys (Table 6). In 2010 (Table 6), the rate for screening for colorectal cancer in the African American men and women was 64.8%, and the rate for the respondents in this study was 27.2% (n = 52; Table 5). Consequently, both the men and women in this study, regardless of the differences in length of residency in the United States, are at risk for non-completion of preventative care services (Center for Disease Control, 2013a; Onyema, 2013; Lemstra, Neudorf, & Opondo, 2006).

The result showed that there was a significant difference in total screening among the four immigrant status categories (p = .000); hence, I rejected the null hypothesis. In females only screening there was a significant difference among the immigration statuses in the female screening at α = .10 level, p = .058. Hence, the null hypothesis was not retained at α = .10 level. In addition, in male only screening for prostate-specific antigen, the results were significant, χ^2 (3, 187) = 10.38, p =.016, and the null hypothesis was not retained either. There was a significant difference among the immigrants in whether or not they received prostate screening. Generally, as the length of residency of the groups increased, the percentage of those who had prostate screening increased: 6-10 years

(9.1%), 11-15 years (10.7%), 16 years or longer (14.3%). The 0-5 length of residency group did not fit the pattern. Their percentage of who had prostate screening was 25.0%.

The result of this research showed that length of residency determines whether a Nigerian immigrant will seek and use preventive health services including screening for colorectal, breast, and prostate cancer, depending on their gender and age. Also, the demographic component descriptive of the study indicated that majority of the respondents have been in the US for more than 50 years.

Further, the results indicated that the age group between 50 and 59 years were highly educated. These findings were congruent with previous studies by Smith (2015) and Ade Rohrer and Rea (2011). These researchers have reported that Nigerian immigrants in the United States are one of the more highly educated in the nation due to the prevailing immigration policies since the 1980s, hence the opportunity to procure high paying jobs. This analogy may be sufficient for a third of the population group. Yet the majority of the immigrants are underemployed and without health insurance despites the number of years required for citizenship (American Immigration Council, 2012). The lack of insurance increases the risk for noncompliant to seeking and use of preventive care services (Betancourt, Green, Carrillo, & Ananeh-Firempong, 2003).

Also, the level of education of the respondents represents the effect of immigration status among the respondents. Many of the respondents emigrated to the US on non –immigrant student visas status before the immigrant status. The notion that 74.1% (n=59+81) of the respondents graduated from four -years college may aid in the discussion on health literacy, and socioeconomic factors and acculturation (Table 2).

In view of the age of the participants, one must recall that the immigrants who were younger and healthier before immigration, now faced with changes in life cycle and lack of health insurance and preventive care due to income level and social capital may no longer be able to afford required medical care for themselves and their families.

One of the earlier researchers attempted to evaluate the relationship between income, health status, and life expectancy. The researcher reported that income inequality had no significant effect on health status and inequality (Biggs, King, Basu, & Stuckler, 2010). In addition, Delavari et al.,(2013) reported a growing evidence in social behavior and health related to acculturation which err in favor of decrease in quality of health and dispel of the "Healthy immigrant effect" phenomenon (Delavari et al., 2013). In collaboration with Delavari and the colleagues, Ade et al. (2011) and Ade, Rohrer, & Merchant (2010) reported that there was no significant difference between obesity and immigration status. Yet, there is a growing body of research on the health care services affordability and treatment of cancers and life expectancy (Fox & Shaw, 2015; Fox & Shaw, 2014; Snyder et al., 2011).

Compared to the result from the 2010 results for the CDC –BRFSS (2013) survey, the respondents in this study, in reference to Table 3 of the NHIS (N=27157), there were differences in the results between the groups: the higher the education, the higher the potential to afford health insurance. This similarity exists between Nigerian immigrants (Table 2) and the NHIS study (Table 3) (Vafaei et al., 2010; Kaiser Family Foundation, 2013 and van Doorslaer, Masseria, & Koolman, 2006).

The Kaiser Family Foundation (2012) noted that expansion of Medicaid under the Affordable Care Act 2010 would benefit the immigrants earning below the federal poverty level (FPL), but most of the Nigerian immigrants may not qualify for the Medicaid based on their income even though majority of the group has resided in the country more than 16 years. The residency requirement to qualify for Medicaid was 5 years (Kaiser Family Foundation, 2012). Low-income immigrants may be at risk of noncompletion of preventive care services such as screening for cancer, diabetes, hypertension or HIV/AIDS, and depending on the State of residence, a large population of the respondents in this study would not have health insurance, hence no access to preventive care (Ku & Matani, 2001).

The relationship between possession of health insurance seeing a physician or provider for immunization and screening for cancer cannot be overstated due to the affordability of copayment and premiums (Pandey & Kagotho, 2010). Pandey and Kagotho (2010) reported that immigrants who were healthy on arrival to the US see their health deteriorated over time due to poverty as health care expenditure on the immigrants plummeted to about 55% lower than per capita expenditure on the US-born citizen (p.267). This phenomenon was described by Abraido-Lanza, Dohrenwend, Ng-Mak, and Turner (1999) in reference to the "Salmon bias theory". The theory asserts the tendency of the new latina population in the US maintaining the pre –immigration health outcome better than the White Americans. Other researchers abbreviated the term as the foreign - born health advantage (Fennelly, 2007).

In Table 3, the NHIS 2010 report indicated that there were significant disparities in possession of health insurance in the US, and by gender, the disparity was statistically significant ($p<.001$) (Center for Disease Control, 2013a). The uninsured rate for between the males and the females was 24.1% and 18.8% respectively. Also, the percentage of the non-Hispanic Black adults without health insurance from the NHIS report was 26.2%; non-Hispanic Whites (16.1%, while the rate for Hispanics was 41%. The rate for the uninsured adults with less than college degree was 70.3% as compared to the 8% for the college graduates (Table 3).

The social determinants of health with regard to socioeconomic status (SES), unemployment, locations where individuals live, grow and work, gender and race or ethnicity indicated a disparity in health care including completion of required preventive care services. The rate of job-related insurance availability 62.3% (n=119) (Table 4) showed a direct association to employment in general as opposed to unemployment (Fox & Shaw, 2015) Fox & Shaw, 2014).

One of the results of this study includes the relationship of alcoholic behavior on the acculturation related obesity. In this study risk of alcoholism was significant as Ade (2010) discovered. The alcohol users in this study appeared to be social drinkers. In the other hand, the results on alcohol use may be a reflection on physician visits through health insurance. Nevertheless, this group may be at risk since due to addictive nature of alcohol. Increasing the awareness of the effect of alcohol on health including liver and heart disease was one of the benefits of this study. The previous researcher reported a growing concern on the Nigerian immigrants and alcohol consumption. In a self-

administered web-based survey to determine whether immigration status, alcohol was related to obesity among both African immigrants and African-Americans. In a sample of 303 participants including 193 African immigrants and 110 African Americans, 151 (56%) participants reported intake of five or less alcoholic drinks per month, while 133 (44 %) consumed 1 to 7% alcoholic drinks per month (Ade et al., 2011, p.661). The study did not find a significant difference between obesity and immigration status among the African American adults. Yet, high mortality due to traffic –related deaths, colorectal cancer and cardiovascular disease are related to over consumption of alcoholic drinks (Kibele, Klüsener, & Scholz, 2014; Vafaei, Rosenberg, & Pickett, 2010).

For as many as 263, 000 Nigerian immigrants in the United States, immigration status translates to the barrier to access to preventive care (Ameridian, 2012). In a study by Morrison, Wieland, Cha, Rahman, and Chaudhry (2012) involving Somalian patients in a midwestern city in the United States, the researchers establish immigrants status as a barrier to use of preventive care. The difference in the completion rate in screening for colorectal cancer, mammograms, and pap smear between the Somalian and non-Somalian patients ranged from 30 to 40 percentage points (Morrison et al., 2012). In this study, the difference in the rate of use of preventive care among the Nigerian immigrants differ in relation to length of residency: The longer the residence in the United States, the more likely the Nigerian immigrant would seek and use preventive care services.

This finding seems to agree with acculturation theory in relation obesity (Ade, 2010; Mendoza, 2009; and Cho, Guallar, Hsu, Shin, & Lee, 2010). Mendoza (2009) reiterated the depressing rate of obesity, asthma and risky health behaviors due to

immigration status among mixed families in the United States which created a paradox of health status opposed to the protective advantage theory for new immigrants. Cho et al.(2010) noted that immigration status also relates to decreasing in the breast, cervical, gastric and colorectal cancer screening among Korean immigrants in the United States. Also, Harcourt et al. (2014) in another study come to the same conclusion.

The finding in this study, also, indicated that many Nigerian immigrants seemed to be motivated to preventive care through health literacy and information available at the physician office visits in the waiting room and social medium. The physician's provide a vast majority of the immigrant the health information (76.4%, n=146) (Table 4) as has been advocated by many researchers in recent years (Wood & Gillis, 2015; Adekeye, Kimbrough,Obafemi, & Strack, 2014; Mancuso, 2009; U.S. Department of Health and Human Services (USDHHS), 2010).

Wood and Gill (2015) stressed the need for a health professional in providing health information to immigrants in Canada including food and nutrition. In the other hand, Adekeye and colleagues (2010) deliberated on the need for a non-complicated health information system including a broad area of alternative medicine. These constructive arguments were supported by both Mancuso (2009) and the USDHHS (2010) as needed service, especially in the African American population groups. This non-parametric population group could have been exposed to a mounting volume of media channels about hypertension, diabetes and prostate cancer that can be associated with the rate of physician-related information source (76.4%) among the respondents in this study (Table 4).

In addition, related to health literacy, the ability to gather and use health information, was congruent to the rate of the respondents who participated in physical exercise during the weeks. Additionally, the demographic distribution of respondents screening for colorectal, cholesterol, mammogram and breast are comparable to the national level, which collaborates with cultural exchange and awareness.

According to acculturation theory, the success of cultural awareness (Padilla & Perez, 2003) depends on the ability to contract the exchange of ideas in an equitable bi-directional process. Social stigmatization and language barriers impede progress already made in this area in the combating health disparity by the Healthy People 2010 and 2020 plan (Healthy People 2020, 2014; Warren & Rios, 2013; Delavari, Sϕnderlund, Swinburn, Mellor, & Renzaho, 2013; Padilla & Perez, 2003).

Limitations of the Study

One of the limitations to this study involved the use of the purposive sample. The use of a purposive sample, restricted by age, increased the probability of bias in the study. The study excluded Nigerian immigrants below the age of 18 years. This study required 315 participants for inferential statistics, based on the power analysis at .05 alpha, and 80% powers, yet only 219 participants responded to the study. The use of emailing network was not effective in recruiting for participants.

Another limitation to research was a lack of reliable email addresses essential to the mailing of the instruments to the participants living in the United States. Many of the participants could not be reached for the study relying on social media and snowballing.

More than half of the instruments were not deliverable resulting to unexpected delays in data collection.

Furthermore, the fact that the respondents relied on their memory to provide the necessary information, despite the educational level of the participants, some of the data may not be accurately reported or calculated in this self-administered survey. The possibility of recall bias and missing essential components of the questionnaire may not be accounted for (Mazzocco & Brunner, 2012; Chenail, 2011).

In addition, although, the BRFSS instrument is used in many research survey studies some researchers question the reliability and validity of the data in quality of life research (Onyema, 2013; Ade, Rohrer, & Rea, 2011). In a quality of life study involving 811 cancer surviving recalls, Kapp, Jackson-Thompson, Petroski, and Schootman (2009) reported a lack of valid and reliable data in the quality of live indicators (k=0.91) (Kapp et al., 2009, p.323). On the contrary, an earlier report indicated that the use of BRFSS surveillance system was reliable and valid (Pierannunzi, Hu, & Balluz, 2013; Stein, Lederman, & Shea, 1993).

Finally, the data related to African American database may not reflect the differences in foreign –born and U.S.–born African American immigrants in the United States, since the BRFSS did not differentiate data from various African countries that constituted the database. Further, many of the Nigerian immigrants in the United States in the population subset possess variations of acculturation and cultural awareness through education, sports, commerce, and tourism. Hence, this cross-section quantitative survey cannot provide causal relationships among the participants (Ade, 2010).

Recommendations

The study showed a significant difference in whether to screen for prostate cancer antigen among the Nigerian immigrant males in the United States. Prostate cancer is one of the major cause of mortality in the United States among African-Americans and other immigrants of the African ancestry in the. Additionally, this population group has the highest mortality rate worldwide (Fedewa & Jemal, 2013). The National Cancer Institute through the Surveillance Epidemiology End Result (SEER) Gleason score record that between 2004 and 2009, the mean age at prostate cancer diagnosis among the African American, Jamaican-, and West African –born immigrants in the United States regardless of the country of birth was from 61.2 to 65.1 years (Fedewa & Jemal, 2013) (p.177). Snyder et al. (2011) presented a similar study with mean age of 74.6 (S.D =5.51) years (Snyder et al., 2011) (p.285). Despite the omnipresent effect of SES, unemployment, lack of education, patient –physician interaction, cultural literacy and communication, removal of the stigma surrounding immigration status and acculturation may be the next method in the policies in the eradication of health disparity among Nigerian Immigrants in the United States.

Implications for Positive Social Change

The findings from this research have numerous significant implication to social change in the formulation, execution and monitoring the effect of public policy in nations health. The research showed that Nigerian immigrants are susceptible to inequality in access to health services, stigmatization due to immigration status, low job opportunities,

and failure to complete or obtain screening in male related preventive care such as prostate cancer screening.

Previous studies on the prevalence of prostate cancer among the individuals within and below the federal poverty level (FPL) are higher than in the upper level of the FPL. Increasing community intervention efforts including collaboration with Nigerian immigrants' social groups will assist in promoting social change in health disparity among the Nigerian immigrants and other marginalized groups in the United States.

There are over fifty Nigerian professional and social organizations in the United States. This research will be shared with the social groups to fill the gap in the lack of understanding in designing educational programs and providing preventive care to the over 260,724 Nigerian immigrants in the United States (Ameridian, 2012). In addition, this study will assist in exploring health issues affecting the Nigerian immigrant population in the United States and their future generations. The population of Nigerian immigrants will continue to grow and will be affected by the health issues just as their African American counterparts. Understanding the health disparities due to the country of origin and immigration status will assist health providers with health awareness, beneficial in designing public health programs for this population group in the United States.

Conclusion

The low rate in screening for prostate cancer among Nigerian immigrants in the may be related to the events of the past related to the 1932-1975 ill-fated Tuskegee syphilis study, when the African American men were prevented from receiving the

proper treatment for syphilis disease due to racism (Brandt, 1978). Yet, according to social cognitive theory, some of the Nigerian immigrants would exchange and extract information from their environment depending on the use of the information and on the reinforcement, internal or external, but significant enough to ensure future use of the knowledge. This outcome or experience must agree with the expectation of the users, if the experiment as in this case, prostate cancer screening would be pursued or repeated (Rosenstock et al., 1988). Reconciling both Brandt (1978) and Rosenstock and collogues can only contribute to the already disadvantaged immigrants in motivation to seek and use preventive care like cancer screening.

The BRFSS and the NHIS surveys did not include health disparity among the African countries based on country of origin, comparing the data from this study with statistical data from BRFSS and NHIS was necessary and expedient. Comparing the results this research to the result from the BRFSS research, also highlight health disparity among immigrants, regardless of the length of residency in the United States.

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Appendix A: Letter of Invitation

Subject: Invitation to Dissertation Research Survey

From : Loveday Nwobilor, Doctoral Student.

You are invited to participate in my study on health inequality among Nigerian immigrant in the United States. Participation in this study is voluntary and anonymous, and you can opt out of the study at any time during the survey. And, I strongly stress that you do no write your name or address on the survey. Also, you can opt out or decline to answers questions that you do not feel comfortable with at any time. The participant must be 18 years and above.

The purpose of this study is to gain knowledge on the barriers facing Nigerian immigrants in relation to health care services in the United State. The questionnaire will require 5 -10 minutes to complete. There will be no direct reward for participating in this study, but the research may help in creating health promotion and awareness for Nigerian immigrants in the area of preventable health issues.

The questionnaire and the Letter of Consent are included with this emailed as an attachment. You are only required to complete the questionnaire and resend it to the address at the bottom of this email as an attachment. Also, the questionnaire can be mailed to you with a self-addressed envelope if you prefer. Please, forward this email with the attachments to all members, brothers, friends, and or any Nigerian immigrants within your social groups. To expedite mailing of the surveys, your reply within the next 7 days will be appreciated.

Thank you for your cooperation.

Sincerely,

Loveday E. Nwobilor

Walden University Doctoral Student.

E-mail: loveday.nwobilor@waldenu.edu

Appendix B: Modified BRFSS Cross-Sectional Survey for the Health Disparity Study

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1. For the sake of this study, are you a Nigerian immigrant? [ ]Yes [ ] No
2. What is your age group?
   ___18 to 29 yrs.
   ___30 to 39 yrs.
   ___40 to 49 yrs.
   ___50 to 59 yrs
   ___60 yrs. and above

3. How do you describe your health in general?
   [ ] Excellent [ ] Very good [ ] Good [ ] Fair [ ] Poor
4. What is your length of residency in the United States?
   ____Months _____Years
5. What is your sex? [ ] Male [ ] Female
6. Who pays most in not all your medical care bills? Choose as applicable
   [ ] Family [ ] Job-related health insurance [ ] Medicare [ ] Medicaid
   [ ] Private Insurance [ ] No insurance
7. Have you received screening for any of these preventive care services in the last 12 months?
   Men only:
   [ ] Prostate cancer
   Women only:
   [ ] Mammogram [ ] Breast exam [ ] Pap test
   Men and Women:
   [ ] Colorectal Cancer screening [ ] High blood pressure screening
   [ ] Cholesterol Screening [ ] Diabetes screening [ ] [ ] HIV/AIDS
   [ ] Alcohol Screening
8. Immunization for [ ] Shingles [ ] Flu shots
9. How many minutes or hours of exercise/work out/ or yard work did you perform during the week?
   _____Mins exercise /week _____Mins Yard work/ week
10. If you drink, how much alcoholic drinks per day or per month?
    _____oz per day ____oz per month
11. If you smoke, how many cigarettes per day or packs per month?
    _____cigarettes per day or ____parks per month
12. In the past months, how many days have you thought about how to get health insurance?

_____days in past 30 days ____ Did not worry about health insurance

13. What is your source of information about health? Check all that apply.

____Your Physician? ___Friends and Family? ___Internet? ____Other?

14. Do you consider your place of residence equipped with sidewalks and other recreational services? ___Yes or ____No

15. What is your annual household income from all sources-

___$20,000 to less than $25,000
___ $15,000 to less than $20,000
___ $10,000 to less than $15,000
___ $25,000 to less than $35,000
___ $35,000 to less than $50,000
___ $50,000 to less than $75,000
___ $75,000 or more

16. What is the highest grade or level of school that you have completed?

___8th grade or less
___Some high school, but did not graduate
___High school graduate or GED
___Some college or 2-year degree
___4-year college graduate
___More than 4-year college degree

Source: CDC (2014) .2014 Behavioral Risk Factor Surveillance System

Appendix C: The Survey, Measurement and the Implications Data Coding

Question No.	Question	Variables	Values	Measurement
1	For the sake of this study, are you a Nigerian immigrant?	Q1Immigrant	Yes or No	Immigration status
2	What is your age group?	Q2age	__1__ 18 to 29 __2__ 30 to 39 __3__ 40 to 49 __4__ 50 to __5__ 60 yrs and above	Age group
3	How do you describe your health in general?	Q3health	[1]Excellent [2] Very good [3]Good [4] Fair [5] Poor	Health Status
4	How long have you lived in the United States?	Q4Months Q4Years	____Months ____Years	Residency status
5	Are you male or female?	Q5gender	____1___Male ____2___Female	Gender
6	Who pays most if not all your medical care bills? Choose as applicable	Q6family Q6job Q6 Medicare Q6Medicaid Q6Private Q6None	1= Checked 0 =Unchecked [ ]Family [ ] Job related health insurance [ ] Medicare [ ]Medicaid [ ] Private Insurance [ ] No insurance	Med bill pay
7	Have you received screening for any of these preventive care services in the last 12 months?	Q7prostate Q7mammogram Q7breast Q7pap Q7colorecta	1= Checked 0 =Unchecked [ ] Prostate cancer [ ] Mammogram [ ] Breast exam [ ] Pap test	Screen for Preventive care variable

		l Q7bld press Q	[ ] Colorectal Cancer screening [ ] High blood pressure screening [ ] Cholesterol Screening [ ] Diabetes screening [ ] HIV/AIDS [ ] Alcohol Screening	
8	Immunization for	Q8shingles Q8Flu	[ ] Shingles [ ] Flu shots	Screen for shingles and Flu
9	How many minutes or hours of exercise/work out/ or yard work did you perform during the week?	Q9Exercise Q9yard	_____Mins exercise /week _____Mins Yard work/ week	Physical exercise per month
10	If you drink, how much alcoholic drinks per day?	Q10daily Q10 oz_day Q10 oz _month	_____oz per day ____oz per month t	Alcohol consumption
11	If you smoke, how many cigarettes per day?	Q11cigs_day Q11Parks_day	_____cigarettes per day or ____parks per month	Smoking
12	In the past months how many days have you thought about how to get health insurance?	Q12though_30days Q12thought_ none	_____days in past 30 days ____ Did not worry about health insurance	
13	What is your source of information about health? Check all that apply.	Q13Physician Q13Family Q13Internet Q13Other	____Your Physician? ___Friends and Family? ___Internet? ____Other?	Health Literacy
14	Do you consider your place of residence equipped with sidewalks and other recreational services?	Q14Rec_service?	__1_Yes or __0__No	Recreation Services
15	What is your annual household	Q15income	_1__$20,000 to less than $25,000	Household income

	income from all sources ?		_2__ $15,000 to less than $20,000 __3_ $10,000 to less than $15,000 __4_ $25,000 to less than $35,000 _5__ $35,000 to less than $50,000 _6__ $50,000 to less than $75,000 _7__ $75,000 or more	level
16	What is the highest grade or level of school that you have completed?	Q16Education	__1_8th grade or less _2_Some high school, but did not graduate _3__High school graduate or GED __4_Some college or 2-year degree __5_4-year college graduate _6__More than 4-year college degree	Education Level

Note.