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African American Women's Perceptions of Personal Risks for Heart Disease

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
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Walden University
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Abstract

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MPH, Armstrong Atlantic State University, 2001

BS, Savannah State University, 1999

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Heart disease has been the primary cause of death among both men and women in the United States. More African American women are developing and dying from heart disease than any other ethnic group; yet, they are less likely than European American women to know that they have the major risk factors for heart disease. The purpose of this study was to determine the overall knowledge and health beliefs about heart disease among African American women. Five health belief model constructs of perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action were applied as the theoretical framework for the study. Linear multiple regression was used to analyze the association between participants' (a) knowledge of heart disease risk factors, (b) knowledge of heart attack symptoms, (c) perceptions of personal risks for heart disease, and (d) demographic background and their awareness of heart disease. Snowball sampling was used to recruit participants. E-mail, LinkedIn, and Facebook invitations with the American Heart Association Women's Health Study Google doc was sent to all family, friends, and associates who met the criteria for participation (N = 389). Results showed that the variables of African American women's knowledge of heart disease risk factors, perceptions of personal risks for heart disease, age, and family history of heart disease were statistically associated with awareness of heart disease. The positive social change implications include bringing more awareness of heart disease to African American women and encouraging them to have heart health dialogue with their friends and family.

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Dedication

My dissertation is dedicated to the late LaSonya Stovall: advocate for college life, big sister, friend, sorority sister, Godmother to my oldest daughter, and my comic relief who died after having heart complications. She serves as my example of how we as women, spend so much time caring, doing for others, and working hard that we sometimes do not realize the clues our body gives us that we are overworking it. This was a woman who lost several pounds, walked 4 miles a day religiously, watched what she ate periodically, survivor of breast cancer, and yet she died… Let this dissertation serve as an eye opener for ALL African American women that we must make a conscious effort to listen to our bodies, educate ourselves on heart disease, and live a HEART HEALTHY LIFESTYLE.

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Chapter 1: Introduction to the Study

Background

In the United States, heart disease is the leading cause of death among men and women of all ethnic groups (Kochanek, Xu, Murphy, Minino, & Kung, 2011). Heart disease is any affliction that impairs the structure or function of the heart (atherosclerotic and hypertensive disease, congenital heart disease, rheumatic heart disease, and cardiomyopathies). The word heart disease is often used interchangeable with cardiovascular disease (United States Department of Health and Human Services [USDHHS], 2003). The National Vital Statistics Report reported that over 616,000 deaths were attributed to heart disease (as cited in Kochanek et al., 2011). Heart disease is commonly thought to be more fatal in men; however, women are twice as likely as men to die within the first week after having a heart attack; 38% of women and 25% of men die within 1 year of having a heart attack (Jones et al., 2010). Nearly every minute, a woman in the United States dies from complications of heart disease (Jones et al., 2006). Mosca et al. (2006) claimed that 36% of women did not perceive themselves to be at risk for heart disease. Moreover, women perceived themselves to be at a greater risk of being diagnosed with cancer than of heart disease (Mosca et al., 2006); yet, five times more women (200,000) die each year from complications of heart disease (heart attacks) when compared to breast cancer (Women's Heart Foundation, 2007). Nearly 300,000 deaths have been attributed to heart disease in women in 2009 (Kochanek et al., 2011). Over the past 15 years, awareness of heart disease as being the leading cause of death in

women has nearly doubled from 30 % to 56% in women (Mosca et al., 2013); but, minority women lack awareness of heart disease.

African American women are markedly more susceptible to developing heart disease when compared to any other ethnicity group and are 35% more likely to die of heart disease (Office of Minority Health [OMH], 2012). The rate of heart disease among African American women is 48.9% compared to 32.4% in European American women (American Heart Association [AHA], 2013a, 2013b). Although African American women are at a greater risk for heart disease, they are less likely than European American women to know the risk factors or know they have the risk factors for heart disease. Approximately 68% of European American women know that heart disease is the leading cause of death in women, compared to 31% of African American women (Christian, Rosamond, White, & Mosca, 2007).

Women have been known to experience some of the traditional warning signs of heart disease, but dismiss the red flags and delay seeking treatment (Sherrod, 2011). The lack of awareness of heart disease by women has been the primary reason in delaying treatment (Rosenfeld, 2006). The controllable risk factors of heart disease include high blood pressure, high cholesterol, cigarette smoking, diabetes, poor diet, physical inactivity, overweight, and obesity (Healthy People 2020, 2013). These risk factors, and having a family history of heart disease, are prevalent in the African American community. Sixty-four percent of African American women do not partake in any physical activity, and 80% of African American women are overweight or obese as compared to 60.2% of European American women (AHA, 2013a, 2013b). The rate of

high blood pressure for non-Hispanic African American women 20 years and older is 47% (Rosamond et al., 2008). When compared to European American women, African American women have an 85% higher rate of ambulatory medical care visits due to high blood pressure (Rosamond et al., 2008).

In 1997, the American Heart Association began conducting national random surveys of women's awareness, knowledge, and perceptions related to heart disease (Mosca, Mochari-Greenberger, Dolor, Newby, & Robb, 2010). Triennial surveys using a different population of women were conducted every 3 years thereafter to determine and follow the trend of awareness and perceptions of heart disease based on the age, race, and ethnic background of the women (Mosca et al., 2010). Data were weighted to reflect the U.S. population of women aged 25 and older. A sample weight is a measure of the number of people in the population represented by that person. A sample weight is created in three steps: (a) the base weight is calculated, (b) adjustments for nonresponses are made, and (c) post stratification adjustments are made to match the U.S. Census population (Centers for Disease Control and Prevention [CDC], 2013). The information was gathered from the U.S. Census Bureau's population survey overall and within ethnic strata (Mosca, Hammond, Mochari-Greenberger, Towfighi, & Albert, 2013).

Women's awareness of heart disease being the leading cause of death nearly doubled from previous surveys from 30% in 1997 to 56% in 2012 (Mosca et al., 2013). Even though there has been a trend of improvement in the past 15 years, there remains a consistent gap in the overall awareness of heart disease risk factors, heart attack symptoms, and heart disease being the leading cause of death among African American

women (Mosca et al., 2013). The results of the Women's Health Study revealed that the awareness level among African American women had improved since 1997 (Mosca et al., 2013) but, their awareness level in 2012 was equivalent to European American women's level of awareness in 1997 (Mosca et al., 2013). African American women are at an increased risk of developing heart disease due to risk factors of higher rates of physical inactivity, hypertension, diabetes, and obesity (Jones et al., 2010). It is important that continued efforts are made to target this population. Increasing African American women's awareness of heart disease can have a positive effect on their decision to make lifestyle changes in an effort to prevent heart disease (Mosca et al., 2006).

Problem Statement

Researchers have made progress in increasing awareness of heart disease in women over the past 15 years (Mosca et al., 2013). Heart disease can be prevented if there is an awareness of the risk factors involved. Most of the risk factors can be controlled by making good lifestyle decisions (Healthy People 2020, 2013). Although progress has been made, African American women's awareness of heart disease being the leading cause of death remains below the awareness level of European American women (Mosca et al., 2013). African American women showed a 36% awareness level of heart disease (Mosca et al., 2013). This is similar to European women's 30% awareness level in 1997 (Mosca et al., 2013). Further research was needed to evaluate the awareness and perceptions of perceived risks for heart disease among African American women of all ages. Because African American women are more susceptible to developing and dying from heart disease compared to men or women of other races (Roger et al., 2012),

surveying this population to determine their perceptions and perceived risks for heart disease was important and will add more insight to heart disease awareness level among African American women.

Nature of the Study

A descriptive, correlational, quantitative survey research design was used to examine African American women's awareness and perceptions of personal risks for heart disease. Cost, time, convenience, and flexibility were the key factors that determined an online survey to be the most beneficial approach in measuring the studied population's awareness, perceptions of personal risks for heart disease, and demographic factors (age, income, education level, and family history) that may play a role in their awareness of heart disease. Online-based surveys have become a new method for survey research (Babbie, 2011). The advantages of an online survey consist of lower cost, automation, time saving, convenience, and flexibility (Babbie, 2011). The survey was administered using an online survey tool called Google docs.

Snowball sampling was used to recruit African American women aged 18 and older in the United States to participate in the study by means of e-mail, LinkedIn, and Facebook. LinkedIn and Facebook are social media websites that connect people. In snowball sampling, I solicited women through an e-mail invitation to complete my research survey who met the criteria (African American women, at least 18 years or older) and asked them to forward the invitation to others they knew who also met the criteria (Trochim & Donnelly, 2008). The criteria for participation were also included in the e-mail invitation.

The survey was administered through Google docs and was completed by the participants. This method made distributing the survey quicker and easier than traditional surveys. Participants were able to complete the survey in their own time and at their own pace. The data were saved in a spreadsheet, and the data were loaded into SPSS for statistical analysis.

In conducting a descriptive, correlational, quantitative study, it is important to calculate the statistical power of the study prior to collecting data. A statistical power assessment is used to determine how likely it is that a statistical significance test will detect a significant difference between two or more groups (Olinksy, Quinn, & Schumacher, 2008). The power analysis in this study was used to determine the number of completed surveys (sample size) needed to accept the outcome of the statistical test with a 95% confidence level. Based on the U.S. Census Bureau (2013a), there are an estimated 15,302,276 African American women aged 18 and older in the United States. Based on a sample size calculator from Creative Research Systems (2012), the recommended sample size for a population of 15,302,276 was 384, with a 95% confidence level and a confidence interval of 5.

All questions from the AHA Women's Health Study were used in conducting the study. Content and wording of the individual questions were not changed from the original survey. The survey is divided into eight sections: (a) general awareness of women's health issues, (b) participants' general health, (c) awareness of heart disease, (d) specific understanding of heart attacks and stroke, (e) communicating about heart disease, (f) behaviors associated with prevention, (g) motivation to change, and (h) custom

demographics. There were 10 open-ended questions in which participants provided their own answer to the questions. The remaining questions of the Women's Health Study were closed-ended questions where participants selected an answer from a list. I added five questions in order to determine whether there was an association among participants based on their age, education, income, state of residency, and family history of heart disease.

Research Questions and Hypotheses

The research questions and hypotheses were developed based on the review of existing research pertaining to the perceptions of heart disease among women. Statistical analyses that were used to address the research questions will be discussed in Chapter 3.

1. Is there an association between African American women's knowledge of heart disease risk factors (diabetes, high blood pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight) and awareness of heart disease?

$H_1$1: There is a significant association between African American women's knowledge of heart disease risk factors (diabetes, high blood pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight) and awareness of heart disease.

$H_0$1: There is no significant association between African American women's knowledge of heart disease risk factors (diabetes, high blood pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight) and awareness of heart disease.

2. Is there an association between African American women's knowledge of heart attack symptoms (chest pain, fatigue, nausea, pain in the shoulders, neck, or arms, shortness of breath, and tightness of the chest) and awareness of heart disease?

$H_1$2: There is a significant association between African American women's knowledge of heart attack symptoms (chest pain, fatigue, nausea, pain in the shoulders, neck, or arms, shortness of breath, and tightness of the chest) and awareness of heart disease.

$H_0$2: There is no significant association between African American women's knowledge of heart attack symptoms (chest pain, fatigue, nausea, pain in the shoulders, neck, or arms, shortness of breath and tightness of the chest) and awareness of heart disease.

3. Is there an association between African American women's perceptions of personal risks for heart disease and awareness of heart disease?

$H_1$3: There is a significant association between African American women's perceptions of personal risks for heart disease and awareness of heart disease.

$H_0$3: There is no significant association between African American women's perceptions of personal risks for heart disease and awareness of heart disease.

4. Is there an association between African American women's demographic background (age, income, education, state of residency, and family history of heart disease) and awareness of heart disease?

$H_1$4: There is a significant association between African American women's demographic background (age, income, education, state of residency, and family history of heart disease) and awareness of heart disease.

$H_0$4: There is no significant association between African American women's demographic background (age, income, education, state of residency, and family history of heart disease) and awareness of heart disease.

Purpose of the Study

The primary purpose of this descriptive, correlational, quantitative study was to determine the relationship between the studied variables (knowledge of heart disease risk factors, knowledge of heart attack symptoms, perceived risk for heart disease) as well as what factors influenced participants' awareness of heart disease. The secondary purpose was to examine the participants' perceptions of their personal risks for heart disease. Individuals' perceptions of heart disease risk factors often impact their behaviors related to health maintenance (Hart, 2005). Through use of a self-reporting tool, individuals provided their overall knowledge and beliefs about heart disease and indicated their perceptions of personal risks for heart disease. A number of variables were investigated in an effort to gain knowledge of African American women's awareness and perceptions of their personal risks for heart disease. The survey used in this study was the American Heart Association's (AHA) Women's Health Study. This tool was used to measure the awareness level and perceptions of personal risks of heart disease among African American women. There were three sets of variables measured in this study: the awareness of seven controllable risk factors of heart disease (diabetes, high blood

pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight), the awareness of six symptoms of a heart attack (chest pain, fatigue, nausea, pain in the shoulders, neck, or arms, shortness of breath, and tightness of the chest), and the perceptions of personal risk for heart disease. Participants' awareness level was the dependent variable for this study. Participants' awareness level was measured by the survey question: How informed are you about heart disease in women? Participants chose *very informed*, *well informed*, *moderately informed*, or *not at all informed*. The independent variables were the participants' perceptions of personal risks for heart disease, knowledge of heart disease risk factors, and knowledge of heart attack symptoms. Age, income, education level, state of residency, and family history were the covariate variables. African American women's awareness and perceptions of personal risks for heart disease were measured using the AHA Women's Health Study.

Social Change

Heart disease among African American women continues to be the primary cause of death. African American women are more likely to experience the risk factors of diabetes, high blood pressure, high cholesterol, poor diet, physical inactivity, and overweight when compared to any other ethnic group (Jones et al., 2010). A lack of awareness of heart disease risk factors increases their risk of developing heart disease. Gaining an understanding of their overall knowledge and health beliefs about heart disease is important information to be added to research about heart disease.

The research study provides insight into African American women's awareness and perceptions of personal risks for heart disease. The research information can be used

to create heart health dialogue within the studied population's circle of people and bring more awareness of heart disease among African American women, which is necessary for the awareness of heart disease to increase.

Theoretical Base

Life decisions are made every day by people and are typically made according to how they will affect their daily routine, family environment, or financial well-being. The main concept of the health belief model (HBM) is that health behavior is influenced by personal beliefs (Glanz, Rimer, & Viswanath, 2008). This model was the most appropriate for this study because the constructs (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action) can be used to examine African American women's perceptions of their personal risks for heart disease. The construct perceived susceptibility in this study referred to an individual's perceptions of the risk of developing heart disease. Perceived severity was the individual's perception of the seriousness of the disease to cause complications of their lifestyle (effects of the conditions on work and family life). An individual's belief of the effectiveness of various actions available in reducing the disease threat was considered their perceived benefit. The perceived barriers were those actions that would make it difficult to make a behavioral change. Events, people, or things that moved an individual to make a behavioral change were considered cues to action. The constructs perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action were measured in this study using questions from the AHA Women's Health Study (see Table 1).

Table 1

AHA Survey Questions that Address the HBM Constructs

Construct	Question(s) from AHA survey	Directions
Perceived Susceptibility	To what extent do you worry about getting each of the following health conditions? Cancer, Heart disease, AIDS, Breast Cancer, Lung Cancer, Smoking, Drug Addiction or alcoholism, Violent crime, Stroke, Alzheimer's, Diabetes, Osteoporosis	Do you worry a lot about this, worry a little, do not worry at all about it?
	How much do you think your overall outlook on life impacts the following? Your likelihood to develop a serious illness like heart disease	Not at all, some, very much, a great deal?
	Which of the following are the biggest barriers preventing you from leading a heart healthy lifestyle? I don't perceive myself to be at risk for heart disease, I don't think changing my behavior will reduce my risk of developing heart disease, None of these, I lead a heart healthy lifestyle	Choose all that apply
Perceived Severity	Which of the following are the biggest barriers preventing you from leading a heart healthy lifestyle? My family/friends have told me that I don't need to change, My health care professional doesn't think I need to worry about heart disease, God or some higher power ultimately determines my health	Choose all that apply
	How much do you think your overall outlook on life impacts the following? Your likelihood to successfully manage a serious illness like heart disease if you develop it	Not at all, some, very much, a great deal?
Perceived Benefits	How likely are you to become involved with "heart health" as an issue if the following kinds of programs existed? A medical research program to ensure that the ways in which women experience heart disease are adequately addressed, A program to educate women that heart health is an issue all women should pay attention to, A program to educate women about how to navigate the health care system to get the best care possible, A program to educate women about how to evaluate their health care provider's ability to treat them if they have heart disease	Definitely would not, Probably would not, Might or might not, Probably would, or Definitely would
Perceived Barriers	Which of the following are the biggest barriers preventing you from leading a heart healthy lifestyle? I'm fearful of change, I'm not confident that I can successfully change my behavior, I am too stressed to do the things that need to be done, I am too depressed to do the things that need to be done, I am too ill/old to make changes, I don't have the money or insurance coverage to do what needs to be done, I have family obligations and other people to take care of, I don't' have the time to take care of myself, My health care professional doesn't speak my language, I am confused by what I'm supposed to do to change my lifestyle, I feel the changes required are too complicated I don't know what I should do, There is too much confusion in the media about what to do, My health care professional doesn't explain clearly what I should do	Choose all that apply
Cues to Action	Thinking about the things you have done to improve your health, please tell us if any of the following prompted you to take action. I saw, heard, or read information related to heart disease, My health care professional encouraged me to take action, A family member or relative encouraged me to take action, A friend encouraged me to take action, A family member/relative developed heart disease, got sick, or died, A friend developed heart disease, to sick, or died, I experienced symptoms that I thought were related to heart disease, I wanted to feel better, I wanted to avoid taking medications, I wanted to improve my health, I wanted to live longer, I did it for my family, I was encouraged to take action during an event or program at my place of worship (church, mosque, or temple), I was encouraged to take action during an event or program at my community center, Something else, I have not done anything to improve my health	Choose all that apply
	Knowing that heart disease is the leading cause of death for women in the U.S. which of the following are you likely to do? Go to the doctor to assess my risk for heart disease, Get more information about heart disease, Research ways to improve my heart health, Talk to my family about our medical history, Talk to my friends about heart disease, Get involved with an organization to help raise awareness about heart disease, Make lifestyle and behavior changes, Other, Nothing	Choose all that apply

Operational Definitions

African American women: Women of any of the Black racial groups of African that indicate their race as Black, African American, or Negro (U.S. Census Bureau, 2013b).

Covariate variables: Variables that influence the dependent variable (Creswell, 2009). The covariate variables in this study were the following:

- Age, income, education level, state of residency, and family history: Was determined by participants' responses to the demographic questions.

Dependent variables: Variables that depend on the independent variables; they are the outcomes or results of the influence of the independent variable (Creswell, 2009). The dependent variable of this study was the following:

- Participants' awareness level: Was determined by participants' response to how informed they were about heart disease in women.

Heart attack: Occurs when the blood flow that brings oxygen to the heart muscle is severely reduced or cut off completely (American Heart Association, 2013c).

Heart disease: Any affliction that impairs the structure or function of the heart (USDHHS, 2003).

Independent variables: Variables that cause, influence, or affect outcomes (Creswell, 2009). In this study, the independent variables were the following:

- Participants' perceptions of personal risks for heart disease (PPRFHD): Was determined by the participants' response to the extent in which they

worry about getting heart disease as well as whether they select as an answer that they do not perceive themselves to be at risk for heart disease

- Knowledge of heart disease risk factors (HDRF): Was determined by participants' response to the major risk factors for heart disease.
- Knowledge of heart attack symptoms (HAS): Was determined by participants' response to the warning signs associated with having a heart attack.

Assumptions

According to Creswell (2009), postpositivist assumptions represent the traditional form of quantitative research. Problems studied by postpositivists "reflect the need to identify and assess the causes that influence outcomes" (Creswell, 2009 p. 231). The knowledge that develops through a postpositivist approach is "based on careful observation and measurement of the objective reality that exists 'out there' in the world. Thus, developing numeric measures of observations and studying the behavior of individuals becomes paramount for a post-positivist" (Creswell, 2009, p. 7). The scientific approach includes the following: the researcher begins with a theory, collects the data that support or refute the theory, and then make the necessary revisions before additional tests are conducted (Creswell, 2009). Using the HBM framework to examine the overall knowledge and health beliefs about heart disease among African American women was an important aspect of this study. For this study, I assumed that the participants completed the survey accurately and honestly and to the best of their ability to reflect their current health behavior and perceptions.

Limitations

All research strategies and statistical procedures have limitations (Creswell, 2009). According to Simon (2011) and Creswell (2009), limitations of a study are potential weaknesses and should be identified at the beginning of a study. Heart disease is the primary cause of death among men and women of all ethnic groups in the United States (Kochanek et al., 2011); but for the purpose of this study, men of all ethnic groups and women of non-African American ethnic groups were not included as part of this study. This study was limited in that I examined African American women's overall knowledge and perceptions for heart disease. Another limitation of this study was the snowball sampling of participants. This study was limited to African American women with access to the Internet; therefore, this study was not representative of all African American women. In an effort to address this limitation, three methods of recruitment were chosen. An e-mail, LinkedIn, or Facebook invitation was sent to all family, friends, and associates who were African American women aged 18 and older, and they were encouraged to forward the invitation to other African American women. The three methods of recruitment targeted a diverse group of women who were both professionally and socially driven. This process also allowed for the recruitment of participants from different areas of the United States; a large population sample; and a wider diversity of African American women of various ages, income levels, and educational backgrounds.

Scope and Delimitations

Delimitation is used to narrow the scope and define the boundaries of a study (Creswell, 2009; Simon, 2011). A researcher's objectives, research questions, variables

of interest, theoretical framework, and the population chosen to examine are delimiting factors (Creswell, 2009). This study was delimited to African American women 18 years of age and older who lived in the United States because these women are at an increased risk for developing heart disease due to risk factors of higher rates of physical inactivity, hypertension, diabetes, and obesity (Jones et al., 2010). The study was also delimited to seven risk factors: (a) diabetes, (b) high blood pressure, (c) high cholesterol, (d) cigarette smoking, (e) poor diet, (f) physical inactivity, (g) and overweight. These are controllable risk factors (National Heart, Lung, and Blood Institute [NHLBI], 2011).

Significance of the Study

Findings from this study will add to existing scholarly research and literature on the awareness of heart disease among African American women aged 18 and older. Heart disease is a major cause of death in women and specifically African American women. African American women have higher heart disease mortality than any other ethnic group (Jones et al., 2010). Heart disease can be prevented and/or controlled if individuals are aware of the major risk factors (Ferris, Kline, & Bourdage, 2012). African American women are less likely than European American women to know that they may have major risk factors for heart disease (Jones et al., 2010). Christian et al. (2007) showed the awareness level of heart disease has increased in women as a whole, but little research has been conducted on the awareness of heart disease risk factors, symptoms of heart attack, and perceptions of personal risks for heart disease among African American women. Studies are needed to evaluate the perceived risks of heart disease among African American women. This study provides insight on African

American women's perceptions and perceived risks of heart disease. Once participants have completed the survey, a message at the end of the survey encouraged participants to begin heart health dialogue among their peers, resulting in spreading awareness of heart disease among African American women and initiating a positive social change.

Summary

In this chapter, information about the impact heart disease among Americans of all races in the United States was presented. The awareness level of heart disease among races and gender were noted. The little known knowledge of awareness level and knowledge gap among African American women was demonstrated through the literature provided in this chapter. The aim of this research study was to determine African American women's awareness level and perceptions of personal risks for heart disease, as well as provide further insight of knowledge in an area of research that has been understudied. In this chapter, the quantitative research design that was used with justification of why it was chosen as well as the research questions that were used to impact this study were presented. Words were defined in an effort to address any terms that may not be understandable for readers of various backgrounds. The focus of the study was the knowledge, awareness, and perceptions of personal risks for heart disease specifically among African American women in the United States.

In Chapter 2, literature will be reviewed related to the findings of studies completed concerning heart disease, heart disease risk factors, symptoms of heart attack, heart disease perceptions, and perceived risks of heart disease among women and African American women will be described. The use of a quantitative method design will also be

discussed. Chapter 3 will include details of the research design, hypotheses, subjects, variables, reliability and validity of the survey instrument, data collection, and statistical analysis. I used a survey design to determine the perceptions of heart disease among African American women. Statistical analysis was computed at the completion of the surveys. Chapter 4 will include data analysis from each research question, and in Chapter 5, an interpretation of the results and recommendations for further research will be discussed.

Chapter 2: Literature Review

Introduction

This literature review is organized in four sections: (a) heart disease risk factors, (b) heart attack symptoms, (c) perceptions of heart disease, (d) and theoretical framework. The sections on heart disease risk factors and symptoms of a heart attack will include an exhaustive review of how these factors contribute to the development of heart disease. In the review of prior research on the perceptions of heart disease among women, I will identify their knowledge of the seriousness and perceived risks of heart disease. The final section will include the theoretical framework. In this section, individuals' perceptions of heart disease and how it influences their health and lifestyle choices will be discussed, as well as background information about the theory. In the concluding portion of the chapter, I will connect the literature reviewed to the problem statement and research questions.

In this chapter, a review of perceptions, perceived risks, and awareness level of heart disease of women from all ethnic backgrounds is presented. The search engines and databases used for the review were Google Scholar, ProQuest, CINAHL, Medline Ovid, PubMed, EBSCO, and Sage. The search of articles was limited to original peer-reviewed journal articles, electronic dissertations, scholarly books, and papers published in English, between the years 2003-2013. Key search terms included *heart disease, women, African American women, black women, perceived risk, awareness, perception, heart disease risk factors,* and *symptoms of a heart attack*. The key search words were

used in various combinations. The search strategy was to identify studies whose main purpose or goal was to explore women and their perceptions of heart disease.

Heart Disease

Heart disease continues to be the primary cause of death among both men and women in the United States (Kochanek et al., 2011). Heidenreich et al. (2011) stated, "By 2030, 40.8% of the U.S. population is projected to have some form of CVD" (p. 1). For many years, heart disease was known as "a man's disease;" but approximately the same number of women and men die each year of heart disease in the United States (Mosca et al., 2010). Women have a greater risk of developing heart disease; yet, they perceive themselves to be at a greater risk of cancer (Mosca et al., 2006). There are more African American women dying from heart disease than any other ethnic group; yet, they are less likely than European American women to know that they may have major risk factors (Jones et al., 2010). High blood pressure, high cholesterol, cigarette smoking, diabetes poor diet, physical inactivity, overweight, and obesity are dominant in the African American community and are also the major risk factors for heart disease (Healthy People 2020, 2013).

Heart disease in women can be prevented if women are aware of the risk factors (Ferris et al., 2012). According to Homko et al. (2008), knowledge of heart disease risk factors is important for a person to make an informed decision about engaging in or continuing certain behaviors that may increase disease risk. If a person has an increased awareness of the risk factors involved in developing heart disease, his or her chances of developing heart disease decreases (Crouch &Wilson, 2010). There is little known about

African American women's perceptions of the seriousness of heart disease, and further research is needed in order to get a better understanding of their knowledge, especially with the high prevalence of heart disease among this group.

Risk Factors

Individuals' behaviors including food choices, sedentary lifestyle, physical inactivity, smoking, and drinking alcohol may have a negative impact on the heart and can increase heart disease risk. There are two categories of risk factors for heart disease: controllable and uncontrollable. The risk factors that cannot be controlled are age, gender, and family history of heart disease (NIH, 2011). Preventive practices can be implemented in order to decrease the chances of developing heart disease with theses uncontrollable risk factors. Most risk factors such as smoking, unhealthy diet, physical inactivity, obesity and overweight, high blood pressure, high blood cholesterol, and diabetes are controllable. Many scholars have confirmed that the controllable risk factors account for the majority of heart disease cases in the United States (Vasan et al., 2005). According to the CDC (2011a), 49% of people in the United States have at least one of the three controllable risk factors for heart disease: high blood pressure, high blood cholesterol, or smoking. Smoking and diabetes put an individual at a greater risk of heart disease and experiencing a heart attack compared to any of the other risk factors (NIH, 2011). African American women have more heart disease risk factors than European American women, higher rate of physical inactivity, hypertension, diabetes, and obesity (Heidenreich et al. 2011); and yet they are unaware of their risk (Christian et al., 2008).

Smoking

Smoking has contributed to 50% of all avoidable deaths and half of those deaths were due to heart disease (Agewall, 2012). There is no safe level of smoking; even smoking one cigarette increases an individual's risk of developing heart disease (Agewall, 2012). Smoking is the single most preventable cause of death and disease in the United States (Healthy People 2020, 2012). Smoking is also the most common modifiable risk factor for heart disease in women (Lefler & Nuss, 2009).

African American women have shown a pattern of smoking similar to European American women. Overall, the prevalence of smoking is lower among African American women (Adams & Schoenborn, 2006); yet, they tend to smoke brands with higher nicotine levels, which makes them more susceptible to developing heart disease (CDC, 2006). Nicotine increases the body's heart rate and blood pressure (Benuck, 2006). In 2010, 23.4% of African Americans aged 18 and older smoked; of that percentage, 16.7% were women (CDC, 2011a). People who smoked were less likely to use health care services (Adab, Hedley, Lam, & McGhee, 2005).

High Blood Pressure/High Blood Cholesterol

Consistent high blood pressure is a risk factor for both heart disease and stroke. Agewall (2012) claimed that increased cholesterol is a contributing factor to heart disease mortality. High blood pressure and high cholesterol often occur concurrently (Feresu, Zhang, Puumala, Ulrich, & Anderson, 2008). As cholesterol levels increase, the chance of having heart disease and stroke also increases. In 2006, approximately 38.8 million women (44.8% African American women) had high blood pressure, and 54.5 million

women (41.8% African American women) had high cholesterol in the United States (Jones et al., 2010).

African Americans have a higher rate of high blood pressure and lower control rates when compared to other ethnic groups in the United States (Yoon, Burt, Louis, & Carroll, 2012). African American women have a higher percentage (45%) of hypertension and death due to hypertension when compared to European American women (Egan, Zhao, & Axon, 2010). Poor knowledge of high blood pressure and its complications of having heart failure, heart disease, or heart attack, false health beliefs that taking medication can cure having high blood pressure, beliefs that nothing can be done to prevent high blood pressure, beliefs that a person can feel when their blood pressure is high and a lack of lifestyle modifications such as weight control and a lack of aerobic exercise have been linked to the high prevalence of hypertension among African American women (Peters, Aroian, & Flack, 2006; Viera, Cohen, Mitchell, & Sloan, 2008; Watt et al., 2008). Guo, He, and Zhang (2012) revealed that there has been an increase in awareness of hypertension overall, but not a significant increase in awareness of hypertension among African American women from 1999 to 2010.

Ford, Kim, and Dancy (2009) conducted a study that consisted of seven talking circles (TC), similar to focus groups, with 25 African American women aged 40-74. The participants' perceptions of hypertension were examined according to their personal and environmental factors that would affect their hypertension. All of the participants felt that hypertension was a common occurrence within the African American community. The women in four of the groups considered hypertension to be a serious disease (Ford et

al., 2009). In four of the groups, the women felt that it was difficult to identify hypertension because it did not have symptoms. Some of the barriers mentioned by the women to following a treatment plan were being of low income, medical expenses, a lack of insurance, or being too tired to exercise or take medication. African American women's personal environmental factors affect their hypertensive status, and educators should focus on these factors when targeting this group of women (Ford et al., 2009).

Diabetes

Diabetes is also associated with an increased risk of heart disease; with lifestyle changes, diabetes can be prevented (Agewall, 2012). According to national survey data from 2007 to 2009, 12.6% of African Americans were diabetics compared to 7.1% of European Americans, 8.4% of Asian Americans, and 11.8 % of Hispanic Americans (CDC, 2011b; Go et al., 2012). The risk of being diagnosed with diabetes in the United States is higher among African Americans (CDC, 2011b; Go et al., 2012). The 2009 overall underlying-cause of death rate attributable to diabetes was 20.9 (CDC, 2011b; Go et al., 2012). Death rates per 100,000 people were 23.3 for European American men and 44.2 for African American men and 15.7 for European American women and 35.9% for African American women (CDC, 2011b; Go et al., 2012). The incidence of diabetes was projected to more than double from 2005 to 2050 in all age, sex, and ethnic groups (CDC, 2011b; Go et al., 2012). The increase is projected to be largest for African Americans and Hispanic Americans (CDC, 2011b; Go et al., 2012).

Diabetes is a major health issue for African Americans, especially African American women (Office of Women's Health [OWH], 2010). African Americans are

disproportionately affected by diabetes (American Diabetes Association, 2013) and are twice as likely to be diagnosed with diabetes when compared to European Americans (OMH, 2012). One in four African American women older than 55 has diabetes (OWH, 2010).

Baptiste-Roberts et al. (2007) conducted a cross-sectional study of 1,122 African American adults without diabetes aged 50 and older who participated in Project Diabetes Interventions Reaching and Educating Communities Together (DIRECT). The majority of the participants were women. Sixty-three percent of the participants had a high school education or less, 63% were employed, and 61% had an annual income below $25,000. The study was conducted to examine the role family history of diabetes had on the participants' awareness of diabetes risk factors and their likelihood of practicing healthier lifestyle behaviors (Baptiste-Roberts et al., 2007). The scholars revealed that having a family member with diabetes was associated with a better awareness of diabetes risk factors, healthier eating habits, and more willingness to participate in diabetic screening than those participants without a family history of diabetes (Baptiste-Roberts et al., 2007). Participants with a family history of diabetes were also more likely than those without a family history to partake five or more servings of fruits and vegetables per day (Baptiste-Roberts et al., 2007). Women were more likely than men to report having a family history of diabetes (Baptiste-Roberts et al., 2007).

Diet, Physical Activity, & Overweight

Excess body weight and physical inactivity are often coexisting risk factors that increase a person's chance of developing heart disease (Li et al., 2006). Eating a diet full

of fruits and vegetables has been shown to be a protection against heart disease (Agewall, 2012). Scholars of a cohort study of 380,296 United States men and women revealed that adherence to a specified diet of higher intakes of vegetables, legumes, nuts, fruits, whole grains, fish, and unsaturated fat and lower intakes of red and processed meat, was associated with a 22% lower heart disease mortality (Mitrou et al., 2007). A similar dietary pattern of increased vegetables, fruits, legumes, fish, poultry, and whole grains study was conducted with women nurses in the United States with results of a 28% lower heart disease mortality; however, a dietary pattern of higher intakes of processed meat, red meat, refined grains, french fries, and sweets/desserts was associated with a 22% higher heart disease mortality (Heidmann et al., 2008).

Scholars in recent studies have also shown that exercising regularly can have a stronger effect on reducing an individual's risk for heart disease when compared to other traditional risk factors for heart disease (Joyner & Green, 2009). A higher BMI and lack of physical activity are strong and independent risk factors for heart disease (Weinstein et al., 2008). Results from the 2011 national health interview survey showed that 32% of adults 18 and older do not participate in leisure activities (Schiller, Lucas, & Peregoy, 2012). Inactivity was higher among women than men; African American women were more likely to be inactive when compared to European American women (Schiller et al., 2012).

Obesity has been associated with the development of heart disease (Brown, Fujioka, Wilson, and Woodworth, 2009). According to data from the 2011 national health survey, African Americans aged 18 and older were less likely to be at a healthy

weight; they were more likely to be obese when compared to American Indians, Alaska Natives, European Americans, and Asian Americans (Schiller et al., 2012). Overall, African Americans are at a higher rate of obesity (36.8%) when compared to European Americans (25.2%), and Hispanic Americans (30.7%). African American women are 80% more likely to be overweight or obese than any other ethnic group of women (Schiller et al., 2012).

Diet, weight, physical inactivity, high blood pressure, and high cholesterol contributes to the development of heart disease or having a heart attack. According to a recent study known as the Jackson Study, those participants that are physically inactive, obese, have diabetes and high cholesterol were more likely to have high blood pressure (Wyatt et al., 2008). A lifestyle change to a healthier diet and exercise can improve weight, blood pressure, and blood cholesterol levels. Typically controlling for two or more risk factors will decrease the chance for the development of heart disease (Godfrey & Manson, 2008).

Awareness of Heart Disease Risk Factors

Scholars revealed a lack of awareness of heart disease risk factors among participants in a number of studies reviewed. In 2008, a sample of 50 Middle Eastern women living in Australia were recruited through a snowball method from community groups in metropolitan Sydney, Australia to determine their awareness and causal attributions of risk factors for heart disease. Body weight and blood pressure were assessed; a questionnaire, and depression, anxiety, and stress scale were administered (Gholizadeh, Salamonson, Worrall-Carter, DiGiacomo, & Davidson, 2009). Although

participants were knowledgeable about the risk factors for heart disease, their awareness of the seriousness of heart disease was low. More than half of the women possessed at least two of the risk factors for heart disease (Gholizadeh et al., 2009).

A randomized trial of 128 African American women from an urban community clinic over a four-month period was conducted (DeSalvo et al., 2005). The participants completed a multipart survey that included demographic information, socioeconomic variables, and self-reported history of chronic conditions and the major heart disease risk factors. Most of the women were middle aged, poorly educated, and below poverty level income. Two-thirds of the women did not perceive themselves to be at risk for heart disease nor did they recognize their risk of heart disease when symptoms occurred (DeSalvo et al., 2005). Seventy-nine percent of the participants had three or more heart disease risk factors; of these, 63% did not perceive themselves to be a risk for heart disease (DeSalvo et al., 2005). The underestimation of heart disease risk factors was associated with those participants who were less educated (DeSalvo et al., 2005).

The awareness of lifestyle risk factors for cancer and heart disease in a single UK representative sample of men and women was conducted by Sanderson, Waller, Jarvis, Humphries, and Wardle (2009). The sample consisted of 1,643 White British, 51 Black British, and 49 Asian British participants between the ages of 16-75 years. Each participant completed the Omnibus Survey, a monthly multipurpose survey for use by government and non-profit making organizations. Age, gender, ethnic group, and education attainment were measured by each participant. A low awareness of lifestyle risk factors for both cancer and heart disease was shown among the participants. Those

individuals with a degree were more aware of the lifestyle risk factors of both cancer and heart disease when compared to those without a degree. Participants under the age of 31 and over 60 years of age knew fewer lifestyle risk factors for heart disease than those middle aged individuals. Men identified more lifestyle risk factors for heart disease than women (Sanderson et al., 2009). Those individuals with a family history of heart disease were able to identify more lifestyle risk factors for heart disease than those without a family history of heart disease. Current smokers knew fewer risk factors for heart disease when compared to nonsmokers. Smoking was identified more as a risk factor for cancer than heart disease (Sanderson et al., 2009).

Lange et al. (2009) conducted a study to assess Puerto Rican women's knowledge of heart disease and the risk factors associated with heart disease. Twelve women aged 36-53 were recruited from two community centers in southern New England. A 16-question interview guide was developed for the two focus groups. Participants believed that stress was the main risk factor for heart disease. The women failed to connect high cholesterol, high blood pressure, smoking, and diabetes as risk factors (Lange et al., 2009).

A cross sectional study of 127 African American men and women aged 21-75 years was conducted to determine the relationship of demographics to opinions and knowledge of heart disease, and their knowledge of a selected number of heart disease risk factors (hypertension, obesity, and dietary intake). These participants completed a 79-item questionnaire about their knowledge of diet, chronic disease associations, perceptions of the impact of chronic disease, and eating behaviors (Pace, Dawkins,

Wang, Person, & Shikany, 2008). Demographic variables (sex, age, race/ethnicity, education, income, employment status, marital status, and number of children) were measured. Of the 127 participants, 82% were women and 18% were men. Over half of the participants had at least some college or a college degree. More women than men were able to correctly agree that heart disease is the leading cause of death in the United States (Pace et al., 2008). Older participants were more aware that high blood pressure and high cholesterol causes heart disease. Most participants believed that overweight increases individuals' chances of high blood pressure, diabetes, and heart disease.

Heart Attack Symptoms

Symptoms of a heart attack among women consists of neck, shoulder, upper back, or abdominal discomfort, fatigue, shortness of breath, weakness, nausea, sweating/hot sensation, and dizziness (AHA, 2012). Women with heart disease have stated that, prior to being diagnosed they had experienced some of these symptoms but often delayed seeking medical attention due to not experiencing the typical symptoms of heart attack such as arm and/or chest pain (Albarran et al., 2007; Gallagher, Marshall, & Fisher, 2010; Godfrey & Manson, 2008). Sometimes symptoms women experience appear to them to be common and less serious health problems such as acid reflux issues, the flu, or normal aging, and they attempted to self medicate themselves without seeking medical attention (Almond, Salisbury, & Ziebland, 2012). Some symptoms of a heart attack experienced by women have been difficult to determine as a cardiac cause. Sweating, for example, is typically associated with menopause for women; but it is also one of the symptoms of a heart attack (Almond, et al., 2012).

Recently a study was conducted with ten women between the ages of 44 and 82 to determine their knowledge of heart attack symptoms (Gallagher et al., 2010). These women were from diverse backgrounds, but majority spoke English and were Australian born. Four of the women were married, four were divorced or separated, and two were widows. The majority of the women were either employed or retired. Most of the women that were interviewed did not recognize the symptoms, mild breathlessness or perceived indigestion during exercise being symptoms of a heart attack until the symptoms progressed into more typical symptoms that they were familiar with like chest pain. A 2005 qualitative study of African American women that were hospitalized for cardiac symptoms revealed that half of the women did not recognize their symptoms as cardiac in nature even when typical symptoms of chest pain or arm pains were included (Banks & Malone, 2005). Women that were interviewed after a cardiac event reported that symptoms were different from what they expected (King & McGuire, 2007). Scholars of previous studies have confirmed that cardiac symptoms have been confused with gastrointestinal causes, respiratory conditions, panic attacks, or stress (Turris & Finamore, 2008; Turris & Johnson, 2008). If women are unaware of all of the symptoms of heart disease, it is a strong possibility that they may be less likely to perceive themselves at risk for heart disease (Almond et al., 2012).

Awareness of Heart Attack Symptoms

Lutfiyya, Cumba, McCullough, Barlow, and Lipsky (2008) conducted a study to examine the knowledge of heart attack and stroke symptoms among African American women. Data from the 2003, 2004, and 2005 Behavioral Risk Factor Surveillance

System (BRFSS) optional module questionnaire on heart attack and stroke were used for analyses. The module included 13 questions focused on ascertaining knowledge on early symptoms of heart attack and stroke. Age, education, and annual household income were recoded for this analysis. All African American women 18 years of age or older were included in the analysis. Well over half of the participants did not recognize some of the attack symptoms (pain or discomfort in the jaw, neck, lightheadedness, or back pain). The women's scores were higher in stroke knowledge than heart attack knowledge. The participants also noted that if they reached out for emergency service help and it turned out to be not serious, they would appear foolish (Lutfiyya et al., 2008).

Albarran et al. (2007), Gallagher et al. (2010), Godfrey and Manson (2008), and Lutfiyya et al. (2008) all suggested that women do not recognize heart attack symptoms, therefore they delay treatment and do not perceive their symptoms to be serious.

Perceptions of Heart Disease

Heart Disease Awareness

Beginning in 1997 and every three years after, the American Heart Association conducted national random surveys of United States women aged 25 years and older to determine and follow the trend of awareness and perceptions of heart disease based on the participants' age, race, and ethnic background (Christian et al., 2007; Mosca et al., 2004; Mosca et al., 2013; Mosca et al., 2000; and Mosca et al., 2010). The most recent results from the Women's Health Study of 2012 were compared with results from similar past triennial surveys conducted in 1997, 2000, 2003, 2006, and 2009 (Christian et al., 2007; Mosca et al., 2004; Mosca et al., 2013; Mosca et al., 2000; and Mosca et al., 2010).

The awareness of heart disease as the leading cause of death in women doubled from 1997 to 2012 (Mosca et al., 2013). Even so, the overall awareness of heart disease had not changed significantly in the past 6 years. "Although the level of awareness among black women has also doubled since 1997, their level of awareness in 2012 is similar to that of white women in 1997" (Mosca et al., 2013, p. 7). Over the past 15 years, improvement of knowledge was noted, but there still remained a gap in awareness among racial/ethnic minority women. European American women were more likely to identify heart disease being the leading cause of death (Mosca et al., 2013). Women between the ages of 25 and 34 had the lowest awareness rate of any age group (Mosca et al., 2013). European American women represented the majority (more than half) of participants in each of the Women's Health Study research (Christian et al., 2007; Mosca et al., 2004; Mosca et al., 2013; Mosca et al., 2000; and Mosca et al., 2010). Mosca et al (2013) concluded that there needs to be more heart disease awareness research conducted in minority women.

Crouch and Wilson (2010) conducted an awareness study among Australian women aged 25-65 years of age. The study evaluated the perceptions of heart disease using an explorative descriptive design (questionnaire). The majority of the participants viewed breast cancer as the greatest health risk and leading cause of death among women. Among the participants only 27% percent of the women noted that heart disease was the most common cause of death in women in Australia (Crouch & Wilson, 2010). One of the potential reasons for this perception provided by Crouch and Wilson (2010)

was the fact that women underestimate the importance of coronary heart disease and it is not discussed as much as breast cancer.

A cross sectional study similar to the AHA Women's Health Study was conducted using college women aged 25-34 from a private university by Munoz et al. (2010). The majority of the 320 women were Hispanic American and only 20 were African American. Each woman completed a 13-item survey on demographic information and awareness of cardiovascular disease. Scholars revealed that slightly more than half of the total sample of students reported heart disease and heart attack as the leading cause of death, and less than one third recognized heart disease as the greatest health problem facing women (Munoz et al., 2010). This scholar as well as Christian et al. (2007), and Mosca et al. (2004 and 2000) revealed very similar results of the perceptions of the leading cause of death and greatest health problem among women. Older African American women had a significantly lower awareness level than European American women in the study (Munoz et al., 2010).

Unlike the other previous mentioned studies conducted evaluating the awareness of heart disease, Winham and Jones (2011) conducted a study to evaluate the knowledge, attitudes, and practices about heart disease among young African American men and women aged 18-29 years. Among the participants, 36% were men and 64% were women and more than half of the participants had some college education. There were more women than men who had completed college. The researchers used the health belief model constructs to guide the study design. Participants completed a questionnaire adapted from the AHA national surveys. Descriptive statistics were used to compare

results by age, gender, education level, and health status variables (body mass index, smoking status, and physical activity). Nearly 40% of the participants had two or more heart disease risk factors. Obesity (27%) was considered the leading cause of death followed by heart disease (16%) according to the participants. Participants' with college degrees and older individuals were more aware of heart disease being the leading cause of death in the United States. Of the participants studied, 24% felt that they were not informed about heart disease. Over 50% of the participants assessed their risk for a heart attack as low to somewhat at risk (Winham &Jones, 2011). The participants were knowledgeable of some risk factors of heart disease. The awareness of many of the heart disease risk factors was higher among men than women. Those individuals with a college education were more aware of the risk factors when compared to those without a college education (Winham & Jones, 2011).

A qualitative descriptive study by Arslanian-Engoren (2007) was conducted among African American, Hispanic American, and European American women from churches and local community centers. The researcher recruited ten participants between 24 and 63 years old (Arslanian-Engoren, 2007). The scholars found that both European American and African American women associated heart disease to be a "man's" disease even with the awareness efforts made by the American Heart Association. Hispanic women associated heart disease to death or dying. In contrast to previous studies reviewed, women from all three races were able to provide the researcher with the risk factors for heart disease (Arslanian-Engoren 2007).

Sadler et al. (2005) conducted a study to determine perceptions of the most serious health threats for African American women. The participants consisted of 1,055 African American women, who were between 20 and 94 years old. The majority of the participants were employed and worked outside of their homes. The majority of the women (80.9%) noted one or more cancers among their top four health problems, while only 31.4% listed heart disease as one of their top four health problems. Heart disease was listed first by less than a fifth of the participants. The women aged 50 and older were more likely to list heart disease as a health problem when compared to women younger than 50 years of age (Sadler et al., 2005). Education attainment was determined to have an impact on how women rated health threats. Women with a higher education were more likely to describe themselves as being well-informed about breast cancer and diabetes (Sandler et al., 2005). Participants were asked their perceptions of their ability to influence their own health. The women perceived themselves to be aware of things they could do to influence their health. Contrary to prior studies conducted by Mosca et al. (2004, 2000, and 2006), more information about a health issue does not cause confusion, worry or disinterest. The women believed that early detection of a disease can make a positive difference in the outcome of a disease (Sandler et al., 2005). Women were also asked to list their sources of information for health information; the majority of the women listed the media as a key source of information for breast cancer. Although the women's list of the top four most serious health problems facing African American women matched the CDC's four most common causes of death report (heart disease, cancer, cerebrovascular disease, and diabetes), the women's level of awareness of the

seriousness of each was low. The women were unaware that heart disease is the number one cause of death among African American women. Only 31% of the women listed heart disease as one of the four most serious health problems (Sandler et al., 2005).

Walter and Emery (2006) conducted a study in which semi-structured interviews were conducted with thirty participants, fourteen men and sixteen women. The participants were recruited from two Cambridgeshire, UK general practices. An electronic search of medical records was used to identify patients 18 years and older, with at least one first degree relative with cancer, diabetes, or heart disease. All but one of the participants was European American. The purpose of the study was to compare and contrast the perceptions of family history across common diseases among patients within a primary care center. Based on what the participants witnessed from their family members living with cancer, their perception of cancer was based on what they experienced with their family members; they perceived cancer as a threat, a serious disease that inevitably leads to death. Heart disease was also perceived to be serious by many of the participants, but not as threatening as cancer. Diabetes was perceived to be a general illness that can be treated with medication management. The cause of cancer was perceived to be genetic; participants with a family history of cancer noted environmental or lifestyle causes a trigger. Some participants felt that there was no way to control for cancer, while others believed that lifestyle and behavioral changes could reduce their risk for cancer. Lifestyle factors were perceived to be the cause of heart disease among those participants with a family history of heart disease. Participants believed that if they modified their lifestyle, they would reduce their risk for heart disease. Participants

viewed family history of cancer to be more serious than a family history of heart disease. Some viewed deaths from heart disease as "a good way to go" (Walter & Emery, 2006, p. 477) and not viewed as a premature death.

Perceived Risks for heart disease

Of the reviewed literature, there were some studies that evaluated the perceived risks of heart disease among participants. Christian, Mochari, and Mosca (2005) evaluated the perceived versus the calculated risk of heart disease among 125 women (45% Hispanic American, 30% European American, 19% African American, and 6% other) aged 38-86 who underwent screening mammography at the Columbia University Medical Center. The scholars revealed that the younger aged women underestimated their risk of heart disease. Half of the women at low risk and two thirds at moderate or high risk of heart disease perceived themselves to be at a high-risk level (Christian, et al., 2005). Similar to the study conducted by Christian et al. (2005), another study was conducted by Smith, Dickerson, Sosa, McKyer, and Ory (2012) to compare 625 college students' perceived risk and actual prevalence rate of heart disease. These students completed a 60-item Internet based survey. The results from the study by Smith et al. (2012) were consistent with prior findings of Christian et al. (2007) and Mosca et al. (2010) in that the participants estimated their risk of developing heart disease as low. Participants perceived themselves to be at a higher risk for breast cancer (Smith et al., 2012). Wendt (2005) also revealed that participants' perceived risk of heart disease was low in a study completed by 133 undergraduate college women students aged 17-46 (49% European American, 19% Hispanic American, 14% African American, 5% Asian

American, 1% NA, 12% other). Participants were more worried about getting breast cancer than heart disease. The findings from the previously mentioned studies are consistent with the findings of the triennial AHA studies conducted (Christian et al., 2007; Mosca et al., 2004; Mosca et al., 2013; & Mosca et al., 2010).

Knowledge of heart disease and risk perceptions of heart disease risk was assessed in a sample of underserved African American men (56%) and women (45%) patients with high heart disease risk at an inner city rural hospital (Homko et al., 2008). There were 465 participants aged 18-85. A 29-item questionnaire was created and used for this study. All participants rated their perception of risk compared with individuals of their sex and age. The scholars found that the participants had limited heart disease risk factor knowledge and a low perceived risk of heart disease (Homko et al., 2008).

The perceived risks for diabetes and heart disease among overweight and obese women was studied by Darlow, Goodman, Stafford, Lachance, and Kaphingst (2012). The sample consisted of 170 African American, 118 Hispanic American, and 109 European American women (Darlow et al., 2012). Participants completed a survey to assess their disease risk perception and weight perceptions, as well as risk perceptions of diabetes and heart disease. There was an overall belief that perceiving oneself overweight, with the belief that overweight is a health problem, and having a family history of diabetes is associated with a greater perceived risk for diabetes. Perceived risk for heart disease was associated with those individuals that perceived themselves to be overweight.

Allen, Purcell, Szanton, and Dennison (2010) conducted a cross-sectional study to determine the perceptions of cardiac risk among 143 low-income predominantly middle-aged diabetic African American women at urban community clinics. In order to participate in the study, the women had to have at least one uncontrolled cardiovascular disease (CVD) risk factor. Age, sex, race, income, years of formal education, medical history, health behavior, depressive symptoms, perception of risk for CVD, physical activity, smoking status, and intake of dietary fat were measured (Allen et al., 2010). The majority of the women had a high school diploma or General Education Diploma (GED); 29% possessed some technical, college or graduate school education and fewer than 5% had less than a high school education. The risk factors for CVD were high among all participants. Almost three-quarters of the participants had three or more out of control CVD risk factors. The self-rated perception of overall health was relatively good. The women perceived that they were at risk for developing heart disease within the next five years (Allen et al., 2010). Those women with poor overall health, greater depressive symptoms, younger in age, and who had a higher intake of dietary fat and higher body mass index were associated with increased level of perceived risk for the development of heart disease (Allen et al., 2010).

In a study by Lefler, Hartford, and Fagan (2009), the perceived risks of heart disease among older high-risk African American and European American women was determined using two self-reported instruments. There were 48 African American women and 48 European American women between the ages of 60-86 in this study. Participants were chosen if a health expert considered them “high risk” as defined by

multiple risk factors for heart disease. Women who experienced histories of previous cardiac events were excluded. Hypertension, high cholesterol, family history of heart disease, and diabetes were the most frequent risk factors presented by the participants (Lefler et al., 2009). African American women had higher body mass index, were less likely to follow a heart smart diet, had lower incomes, and lower education levels compared to European American women (Lefler et al., 2009). European American women perceived themselves to be more at risk for experiencing a heart attack when compared to African American women. Older high-risk women in this study underestimated their risk of a heart attack. Overall, these women did not perceive themselves at high-risk for heart disease and they were more than likely not going to change their lifestyle behaviors (Lefler et al., 2009).

McKenzie and Skelly (2010) conducted semi-structured interviews with African American women aged 30-65 with type 2 diabetes from nine counties in the southeastern United States. The study was conducted in order to determine the participants' perceptions of their risk for heart disease. The participants revealed in the interviews that they did not perceive themselves to be at risk for heart disease. The women were unaware that diabetes enhanced the risk for heart disease. Even when the women were diagnosed with hypertension and medication was prescribed, they still did not perceive themselves to being at risk for heart disease; they thought that if they took the medication, their hypertension would go away and they would be without risk (McKenzie & Skelly, 2010).

Health Belief Model

Theories are used to explain behavior as well as to examine ways to achieve a behavioral change (Glanz, Rimer, &Viswanath, 2008; Hochbaum, 1958; Rosenstock, 1974). Life decisions are made everyday by people and are typically made according to how the decisions will affect their daily routine, family environment, or financial well-being. The main concept of the health belief model (HBM) is that health behavior is influenced by personal beliefs (Glanz et al., 2008; Hochbaum, 1958; Rosenstock, 1974). The HBM consist of six constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self efficacy.

In previous research, the HBM has been used to determine individuals' perceptions of heart disease and its impact on their life (Ford et al., 2009; Jones et al., 2006; & Wang et al., 2009). African American women's perceptions of susceptibility and the seriousness of heart disease were studied by Jones et al. (2006). The association between the women's perceptions of heart disease and their socioeconomic status, age, and knowledge of heart disease risk factors were also examined (Jones et al., 2006). The HBM was used in another study to examine African American women's perceptions of personal and environmental factors of hypertension (Ford et al., 2009). The HBM has shown also to be effective when comparing risk perceptions and beliefs across common chronic diseases among healthy adults from primary care practices (Wang et al., 2009).

I used the HBM constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action to examine African American women's

perceptions of their personal risk for heart disease and their awareness of the seriousness of heart disease (see Table 1). The construct perceived susceptibility in this study referred to an individual's perceptions of the risk of developing heart disease. Three questions from the AHA Women's Health Study were used to measure participants' perceived susceptibility for heart disease. Participants' perceived severity was measured by their perceptions of the seriousness of heart disease to cause complications of their lifestyle (see Table 1). Both perceived susceptibility and perceived severity have strong cognitive components and are partly dependent on knowledge (Rosenstock, 1974; Gautam, 2012).

An individual's belief of the effectiveness of various actions available in reducing the disease threat were measured as their perceived benefits. People tend to make decisions and changes in life based on how they will benefit them. Perceived benefits were measured by the answers received from the participants' feedback on how likely they would be to becoming involved with heart health as an issue if programs existed. Perceived barriers are considered the things or actions that would make it difficult to make a behavior change. Perceived barrier is considered to be the most significant construct in determining behavior change (Janz & Becker, 1984; Champion & Skinner, 2008). Participants were asked what barriers they thought prevented them from leading a heart healthy lifestyle.

Lastly, events, people, or things that will move an individual to make a behavioral change were considered cues to action. This construct was measured by asking

participants what they have done to improve their own health that prompted them to take action. At the end of the survey, participants were told that heart disease is the leading cause of death and were asked what they would likely do next to become better aware of heart disease.

Gap in Research

Researchers have made a great deal of progress in increasing awareness of heart disease in women over the past 15 years (Christian et al., 2007). Heart disease can be prevented if there is an awareness of the risk factors involved. Most of the risk factors can be controlled by making good lifestyle decisions (Healthy People 2020, 2012). Although progress has been made, there is little known about the awareness level of heart disease among African American women of all ages. Based on the population samples of the previous studies reviewed, the majority of the participants was European American women even though, according to Sherrod (2011), African American women are disproportionately at risk for developing heart disease.

Although the existing research results have shown an enhancement of the awareness of heart disease among women, little research has been conducted on the awareness of heart disease risk factors, symptoms of heart attack, and perceptions of personal risks for heart disease as it may relate to the studied variables (age, income, education, state of residency, and family history) among African American women. Further research is needed to determine the relationship between the studied variables and what factors influence the awareness and perceptions of perceived risk for heart disease among African American women of all ages. This study will add to previous research

studies conducted. An online survey potentially attracted larger participation due to convenience of not having to set a time or place to complete the questionnaire. Because African American women are more susceptible to developing and dying from heart disease compared to men or women of other races (AHA, 2012), surveying this population to determine their perceptions/perceived risks of heart disease was important and adds more insight to heart disease awareness level among African American women.

Summary

In this literature review, I explored research on heart disease risk factors, heart attack symptoms, perceptions, perceived risks, and awareness level of heart disease. I also explored studies involving women specifically African American women and their perceptions of heart disease. Heart disease is the number one cause of death among United States women. There have been a number studies conducted on the perceptions of heart disease among women since the AHA Women's Health Study started in 1997. Over the past 15 years, heart disease knowledge has improved among women overall, but there remains a gap of awareness among racial/ ethnic minority women (Christian et al., 2007; Mosca et al., 2004; Mosca et al., 2013; & Mosca et al., 2010).

Although there have been a number of studies conducted examining heart disease knowledge and awareness, what seems to be missing from the literature were studies conducted specifically with African American women. African American women have more heart disease risk factors than European American women (Heidenreich et al., 2011) and are at a greater risk for developing and dying from heart disease (OMH, 2012). The majority of the participants of the previously reviewed studies were European

American women. According to Mosca et al. (2013) there needs to be more heart disease awareness conducted in minority women.

The perceptions of heart disease among African American women were examined in this study. In this study snowball sampling through emails, LinkedIn, and Facebook were chosen to recruit African American women aged 18 and older in an effort to have a: (a) sample of participants from different places of residence and regions, (b) large number of participants, and (c) wider diversity of African American women of various ages, income levels, and education backgrounds. Because there is little known about the awareness level of heart disease among African American women of all ages, it was important to target this group of individuals. I discuss the research design and rationale, setting and sample, instrumentation and materials, data collection, and data analysis in detail in Chapter 3.

Chapter 3: Research Method

Introduction

The perceptions of heart disease among African American women as it pertains to risk factors and heart attack symptoms were examined in this research study. The increased morbidity and mortality rate of heart disease among African American women justified the need for more focus on this population. In this chapter, I provide a description of the research design and justification for why the design was chosen. Next, I provide a description of the sample, with selection criteria of the study participants. I also provide an overview of the instrument chosen, as well as a detailed description of each variable in the study. Lastly, the data collection process, data analysis, and ethical consideration are discussed.

Research Design and Rationale

A descriptive, correlational, quantitative, survey research design was used for this study. Data were collected using a self-administered online survey. According to Babbie (2011), surveys are used for collecting original data and measuring orientations of a population. Quantitative studies have been consistently used to examine awareness of heart disease among women (Adams et al., 2010; Christian et al., 2005; Christian et al., 2007; Crouch & Wilson, 2010; Guo, He, Walton, & Zhang, 2012; Jones & Winham, 2011; Mosca et al., 2004; Mosca et al., 2013; Mosca et al., 2000; Mosca et al., 2010; Wendt, 2005).

A quantitative survey design was chosen based on the research problem, the purpose, and research questions of this study. The purpose of this research was to

determine the overall knowledge and health beliefs about heart disease among African American women. A quantitative survey research study is the most appropriate approach to use when characteristics, opinions, attitudes, or behaviors of a population are being studied. Quantitative survey research is also used when descriptive information is being gathered in a survey/questionnaire format (Babbie, 2011). A quantitative design is also generally chosen when a researcher wants to do a correlational study to examine relationship/associations between variables (Babbie, 2011). The independent variables heart disease risk factors, heart attack symptoms, and perceived risk for heart disease were tested to determine whether there was an association with the dependent variable of heart disease awareness among the participants. The covariate variables age, income, education, and family history of heart disease are descriptive information that allowed me to gain more information about the association each may have on the awareness of heart disease among the participants. The advantages of a descriptive correlational quantitative survey design is that researchers can collect large amounts of data and this method provides an evaluation of strength and direction of association between the variables being studied (Babbie, 2011). Additionally, this design provided the advantage of low cost, convenience for participants, and flexibility of completion time.

A quantitative questionnaire was used to collect data regarding African American women's overall knowledge and perceptions of heart disease. Descriptive data analysis was calculated to determine participants' knowledge of risk factors for heart disease, symptoms of a heart attack, awareness of heart disease, and demographics. Data analysis

was also calculated to determine a correlation coefficient that may exist between the variables of the study.

Setting and Sample

Snowball sampling was used to recruit participants for this study. Snowball sampling is defined as "a sampling method in which you sample participants based upon referral from prior participants" (Trochim & Donnelly, 2008, p. G-8). Snowball sampling is a method of recruiting that is usually used when the researcher is trying to reach a population that is hard to find (Trochim & Donnelly, 2008). I chose snowball sampling to connect to participants through the use of online tools alone. These women were African American, English speaking, 18 years and older, had an e-mail address, and had access to an electronic device with Internet connection. This sample was chosen because (a) African American women are more susceptible to developing heart disease when compared to any other ethnic group, (b) African American women have a higher prevalence of heart disease, (c) African American women are less likely to be aware of the risk factors for heart disease and symptoms of a heart attack, and (d) there is little known about African American women's awareness and perceptions of their personal risk for heart disease.

According to the U.S. Census Bureau (2013), there are an estimated 15,302,276 African American women 18 years of age or older residing in the United States. A power analysis was conducted to determine the sample size needed for this study. Probability level alpha confidence interval was set at 0.05 level of significance with a confidence level of 95%. This means that there is a 5% chance of making a Type I error or rejecting

a null hypothesis when it is in fact true. The power of a statistical test (1-β) was set at 0.80. This means there is a 20% chance of making a Type II error or incorrectly accepting a null hypothesis when in fact it is false. The effect size (degree of association between two variables (population and sample) was set between 0.2 – 0.4. A sample size calculator from Creative Research Systems (2012) indicated that the sample size for a population of 15,302,276 was 384.

The recruiting process of participants consisted of using e-mail, LinkedIn, and Facebook to connect with potential women participants in the United States who met the inclusion criteria. E-mail, LinkedIn, and Facebook invitations were sent to all of my family, friends, and associates who meet the criteria for participation in the study. This e-mail contained the Google docs web link. I included my study on my LinkedIn and Facebook page and encouraged eligible participants to respond to the online survey, as well as forward my invitation to other potential eligible participants.

Instrumentation and Materials

The American Heart Association 2012 Women's Health Study survey (see Appendix B) was used to determine participants' overall knowledge and beliefs about heart disease. Permission to use this survey was obtained from the author (K. Robb, personal communication, June 9, 2013; see Appendix A). The survey addressed the four research questions. Participants' knowledge of heart disease risk factors and heart attack symptoms was measured by the participants' answers to questions in Section 3 of the survey. Their perceptions of personal risks for heart disease were measured by the participants' answers to questions in Section 6 of the survey. The awareness level of

heart disease was measured by participants' answers to questions in Section 3 of the survey. Each variable was measured by separate survey questions (see Table 2; see Appendix B).

Table 2

Summary of Survey Questions that Address Variables

RQ Variables	Question(s) from AHA survey	Directions
Independent Variable: Knowledge of heart disease risk factors	Based on what you know, what are the major causes of heart disease?	List your answer.
Independent Variable: Knowledge of heart attack symptoms	Based on what you know what warning signs do you associate with having a heart attack?	List your answer.
Independent Variable: Participants' perceptions of personal risks for heart disease	Please tell me the extent to which you worry about getting heart disease. Do you worry a lot, worry a little, or do you not worry at all about it Which of the following are the biggest barriers preventing you from leading a heart healthy lifestyle? (If participants select this answer)	Do you worry a lot, worry a little, or do you not worry at all about it? Select if apply: I don't perceive myself to be at risk for heart disease.
Dependent Variable: Participants' awareness level	How informed are you about heart disease in women?	Very well informed, well-informed, moderately informed, not at all informed.
Covariate Variables: Age, income, Education level, state of residency, and family history	What is your age? What is the highest level of education you have completed? Which of the following best clarify the income of your family household? Do you have a family history of heart disease?	List your answer.

The AHA Women's Health Study has been used in previous studies from the AHA and other researchers. Although the reliability and validity has not been reported in the literature, the survey has been repeated with consistent results over a 15-year time span with the majority of the studies conducted using only women as participants (Adams et al., 2010; Albert et al., 2013; Christian, Mochari, & Mosca, 2005; Christian, Mosca, Rosamond, & White, 2007; Crouch & Wilson, 2010; Dolor, Mochari-Greenberger, Mosca, Newby, & Robb, 2010; Fabunmi et al., 2012; Jones & Winham, 2011; Thanavaro, 2005; Wendt, 2005). Stability and consistency of results can be considered measures of reliability (Donnelly & Trochim, 2008). The survey has substantial content and face validity of awareness, perceptions, and knowledge of heart disease in women (McCoy, 2008).

Data Collection

An online survey of 44 questions from the Women's Health Study was conducted using Google docs to collect the data. Participants' awareness of heart disease was the dependent variable and was collected in this study. Participants' knowledge of heart disease risk factors (diabetes, high blood pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight), heart attack symptoms (chest pain, fatigue, nausea, pain in the shoulders, neck, or arms, shortness of breath, and tightness of the chest), and the perceptions of their personal risks for heart disease were the independent variables that were collected in this study. The demographic variables that were collected were age, income, education, state of residency, and family history. These variables were the covariate variables of this study.

Participants completed the survey at a computer and location of their choice. This method of distribution was chosen to make it more convenient for women to complete on their own time. An introductory page was included in my e-mail, LinkedIn, and Facebook page that, explained my study, informed individuals that their participation was voluntary, included the online survey, and included my contact information (see Appendix C).

The responses were anonymous and kept securely. The completion and return of the survey indicated consent to participate in the study and acknowledgement that the participant met the inclusion criteria. On the concluding page of the survey, there were links to relevant information on the American Heart Association, Centers for Disease Control and Prevention, and National Heart, Lung, and Blood Institute web pages to encourage participants to increase their awareness of heart disease. Google docs stored the data and the results were transferred to SPSS for data analysis.

Data Analysis

Participants inputted their responses using the online survey developed in Google docs. The data results collected from Google docs were exported to an Excel spreadsheet and coded by each survey item and then transferred into the Statistical Package for the Social Science (SPSS) software for data cleaning. Statistical analysis was completed using version 21 of SPSS (SPSS, Inc., 2010). Descriptive statistics was calculated for mean, standard error, and minimum and maximum values for each item of the survey and for all demographic and personal variables. Each of the HBM constructs was calculated using descriptive statistics as well. The linear multiple regression test was used because:

(a) it is often used when association between variables are needed to be determined, (b) there are more than two independent variables (heart disease risk factors, heart attack symptoms, and perceptions of personal risks for heart disease), (c) the independent variables were considered either nominal or interval data, (d) the dependent variable (heart disease awareness) was interval (Triola, 2008). The importance of interval data is that the numbers have real meaning, the numbers have a real order, and the difference between the numbers are measurable (Triola, 2008). Self reported awareness of heart disease was scored on a four point Likert scale (*very well informed*, *well informed*, *moderately informed*, *not at all informed*). This was meaningful for the determination of the awareness level of participants and in analyzing the association between the independent and dependent variables.

Table 3

A List of Criterion and Predictor Variables with Level of Measurement

Dependent variable	Independent variables	Level of Measurements
Self- reported awareness of heart disease (Interval)	Knowledge of heart disease risk factors	Nominal
	Knowledge of heart attack symptoms	Nominal
	Perceptions of personal risks for heart disease	Interval
	Age	Interval
	Income	Interval
	Education	Interval
	State of residency	Nominal
	Family history	Nominal

I used linear multiple regression to analyze the association linking the independent variables heart disease risk factors, heart attack symptoms, and perceptions

of personal risks for heart disease, and the dependent variable heart disease awareness. For coding purposes, the AHA provided a list of risk factors and heart attack symptoms; this is how I knew that the selected items were indicators of the variables. I determined the mean average of the dependent variable scores from the four point Likert scale in the statistical analysis based on the range of scores. Then I determined low, medium, or high level of awareness of heart disease. An alpha level of 0.05 was set to determine the level of statistical significance. The general formula for linear multiple regression is as follows:

Awareness of heart disease = $a + b_1HDRF + b_2HAS + b_3PPRFHD + b_4age + b_5income + b_6education + b_7family\ history$

Research Question 1

Is there an association between African American women's knowledge of heart disease risk factors (diabetes, high blood pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight) and awareness of heart disease? This question was measured by item 23 of the Women's Health Study survey, which measures the participant's knowledge of heart disease risk factors. Participant's awareness of heart disease was measured by item 15 of the survey. A linear multiple regression test was performed to determine the association between knowledge of risk factors and awareness of heart disease.

Research Question 2

Is there an association between African American women's knowledge of heart attack symptoms (chest pain, fatigue, nausea, pain in the shoulders, neck, or arms, shortness of breath, and tightness of the chest) awareness of heart disease? This question was measured by item 17 of the Women's Health Study survey, which measures the participant's knowledge of heart attack symptoms. Participant's awareness of heart disease was measured by item 15 of the survey. A linear multiple regression test was performed to determine the association between knowledge of heart attack symptoms and awareness of heart disease.

Research Question 3

Is there an association between African American women's perceptions of personal risks for heart disease and awareness of heart disease? This question was measured by items 3 and 31 of the Women's Health Study survey, which measures the participant's perceptions of personal risks for heart disease. Participant's awareness of heart disease was measured by item 15 of the survey. A linear multiple regression test was performed to determine the association between perceptions of personal risks for heart disease and awareness of heart disease.

Research Question 4

Is there an association between African American women's demographic background (age, income, education, state of residency, and family history of heart disease) and awareness of heart disease? Items 40-44 from the Women's Health Study

measured this research question. Participant's awareness of heart disease was measured by item 15 of the survey. A linear multiple regression was performed to determine the association between covariate variables and awareness of heart disease.

Threats to Validity

The lack of randomly selecting the sample of participants was a potential threat to external validity; there was no guarantee that the sample would draw a fair representative sample of African American women aged 18 and older. The need for participants to have access to electronic devices and Internet availability to complete the survey was potentially a threat to external validity because this method eliminates women without access to electronic devices and Internet availability from participating in the study. Therefore the results could not be generalized to all African American women. According to Trochim and Donnelly (2008), one way to improve external validity is to conduct the study in a variety of places, with different people, and at different times. In an effort improve external validity, snowball sampling through e-mails, LinkedIn, and Facebook were chosen to recruit participants from different places of residence and regions, to recruit a large number of participants, and to recruit a wider diversity of African American women of various ages, income levels, and education backgrounds.

Protection of Human Participants

In this study, the responses from each participant were kept confidential. Each participant received a link to the survey either through an e-mail, LinkedIn, or Facebook

invitation. The survey did not record the participants' names or any other personal information to ensure that privacy was maintained. Participation was voluntary; participants could stop participating at any time. The completion and return of the survey online indicated acknowledgement from the participants that they were consenting to participate in the study. Google docs maintained the data drawn from the survey. The link to the data from Google docs was limited to my access only. The e-mail link with the survey was available for completion for four weeks or until a sample size of 384 was reached. Once the desired sample size was obtained, the e-mail link with the survey was removed. I obtained Walden Institutional Review Board approval prior to conducting this research to ensure that all ethical issues had been addressed. It is recommended that analyzed data be kept between five to ten years (Creswell, 2009; Sieber, 1998). I will shred and destroy the data after six years. A copy of the approval notification is included in the appendices (see Appendix F).

Summary

In this quantitative study, I used a descriptive correlational survey design. The AHA Women's Health Study was the survey instrument used to examine the awareness, perceived risk, and perceptions of heart disease among African American women. A snowball sampling of African American women aged 18 and older were recruited for this study. The target sample number was 384. After receiving approval from the Walden Institutional Review Board; data collection for this study began. For data analysis, descriptive statistics was conducted for all of the variables. To answer the first research question (Is there an association between African American women's knowledge of heart

disease risk factors [diabetes, high blood pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight] and awareness of heart disease?); a linear multiple regression test was conducted to analyze the association between participants knowledge of heart disease risk factors and awareness of heart disease. To answer the second research question (Is there an association between African American women's knowledge of heart attack symptoms [chest pain, fatigue, nausea, pain in the shoulders, neck, or arms, shortness of breath, and tightness of the chest] and awareness of heart disease) linear multiple regression test was conducted to analyze the association between participants knowledge of heart attacks symptoms and awareness of heart disease. A linear multiple regression test was also conducted to analyze the association between participant's perceptions of personal risks for heart disease and awareness of heart disease, in order to address research question three (Is there an association between African American women's perceptions of personal risks for heart disease and awareness of heart disease?). Lastly, to answer research question four (Is there an association between African American women's demographic background [age, income, education, state of residency, and family history of heart disease] and awareness of heart disease?) a linear multiple regression test was conducted to analyze the association between the covariate variables (age, income, education, state of residency, and family history of heart disease) and awareness of heart disease. In the next chapter, the results of the data analysis are presented.

Chapter 4: Data Analysis

Introduction

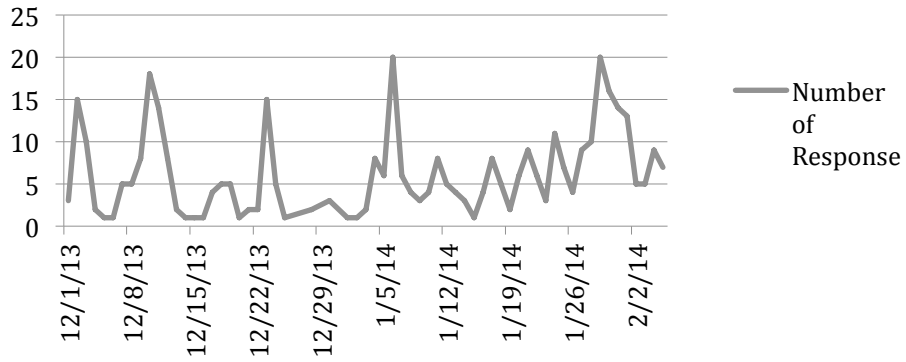
The purpose of this study was to determine the overall knowledge and health beliefs about heart disease among African American women within the United States. In this chapter, I will provide the data results from the participants' completion of the Women's Health Study survey. First, I will describe the data collection process and provide descriptive data of the participants. Next, I will provide the results of participants' knowledge of heart disease risk factors, heart attack symptoms, perceptions of personal risks for heart disease, and awareness of heart disease based on the AHA Women's Health Study survey. I will also provide an overview of how the HBM constructs perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action) were measured in this study. Lastly, I will describe how the statistical test linear multiple regression was used to answer the research questions: Is there an association between African American women's knowledge of heart disease risk factors (diabetes, high blood pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight) and awareness of heart disease? Is there an association between African American women's knowledge of heart attack symptoms (chest pain, fatigue, nausea, pain in the shoulders, neck, or arms, shortness of breath, and tightness of the chest) and awareness of heart disease? Is there an association between African American women's perceptions of personal risks for heart disease and awareness of heart disease? Is there an association between African American women's

demographic background (age, income, education, and family history of heart disease) and awareness of heart disease?

Data Collection

On December 1, 2013, e-mail, Facebook, and LinkedIn invitations of the survey were sent to female family, friends, and associates who were African American, English speaking, 18 years of age or older, had an e-mail address, and had access to an electronic device with Internet connection. The invitation also encouraged invitees to forward the invitation to other potential eligible family, friends, and associates. The snowball sampling helped in recruiting participants. On February 5, 2014, the survey link was deactivated due to reaching the target sample size of 384. The data collection process took 8 weeks and 2 days with a final number of 389 survey responses (see Figure 1). The data results were exported to an Excel spreadsheet, coded by each survey item, and transferred into version 21 of SPSS software for data cleaning.

Figure 1. Number of Daily Completed Responses



Descriptive Data of Participants

There are approximately 15,302,276 African American women 18 years of age or older residing in the United States (U.S. Census of Bureau, 2013a). A power analysis was conducted, and I determined the sample size needed for this study was 384 participants, in order to accept the outcome of the statistical test with a 95% confidence level and confidence interval of 5. The demographic variables in the study were age (18-29, 30-49, 50-69, and 70 and older), education (some high school, high school graduate, trade/technical/vocational/training, college graduate, some postgraduate work, and postgraduate degree), income (less than $10,000, $10,000-$29,000, $30,000-$49,000, $50,000-$69,000, and $70,000 and greater), family history (yes or no), and state of residency within the United States.

The age group between 30- and 49-years-old represented the majority of the participants (63%). There were 23.4% of the women between the age of 50-69, 11.3% of the women were between the age of 18-29, and only 2.3% of the women were aged 79 and older (see Table 4). Over 80% of the participants were highly educated with 50% of the women obtaining a postgraduate degree and 20.8 % of the women obtaining a college degree (see Table 5). The range of income of the women was less than $10,000 to $70,000 or greater, with 39.8% of the women' household being $70,000 or greater (see Table 6). There was at least one representative from 33 states within the United States that completed the survey. Nearly 60% of the women were residents of Georgia (see Table 7). There were 211 (54.2%) women who reported having a family history of heart disease (see Table 8).

Table 4

Age

Age	Frequency	Percent
18-29	44	11.3
30-49	245	63.0
50-69	91	23.4
79 and older	9	2.3
Total	389	100.0

Table 5

Educational Level

Education Level	Frequency	Percent
some high school	2	.5
high school graduate	31	8.0
trade/technical/vocational/training	40	10.3
college graduate	81	20.8
some post graduate work	39	10.0
post graduate degree	196	50.4
Total	389	100.0

Table 6

Household Income

Household Income	Frequency	Percent
less than $10,000	8	2.1
$10,000-$29,000	45	11.6
$30,000-$49,000	87	22.4
$50,000-$69,000	94	24.2
$70,000 and greater	155	39.8
Total	389	100.0

Table 7

State of Residency

State of Residency of Participants	Frequency	Percent
Alabama	28	7.2
Arizona	2	.5
Arkansas	1	.3
California	7	1.8
Colorado	4	1.0
Connecticut	1	.3
Delaware	1	.3
District of Columbia	5	1.3
Florida	8	2.1
Georgia	232	59.6
Illinois	6	1.5
Indiana	6	1.5
Iowa	1	.3
Kentucky	5	1.3
Louisiana	5	1.3
Maryland	9	2.3
Massachusetts	3	.8
Michigan	8	2.1
Mississippi	7	1.8
Missouri	3	.8
New Hampshire	1	.3
New Jersey	1	.3
New York	5	1.3
North Carolina	7	1.8
Ohio	13	3.3
Oregon	2	.5
Pennsylvania	3	.8
South Carolina	4	1.0
Texas	3	.8
Virginia	4	1.0
Virgin Island	2	.5
Washington	1	.3
New Mexico	1	.3
Total	389	100.0

Table 8

Family History of Heart Disease

Family History of HD	Frequency	Percent
Yes	211	54.2
No	178	45.8
Total	389	100.0

Results of Knowledge, Perceptions, and Awareness of Heart Disease

The American Heart Association Women's Health study survey was developed for the purpose of determining U.S. women's awareness, knowledge, and perceptions of heart disease. In this study, survey questions from Sections 3 and 6 (see Appendix B) were used to evaluate participants' knowledge of heart disease risk factors, knowledge of heart attack symptoms, perceptions of personal risks for heart disease, and awareness of heart disease. The seven controllable risk factors identified in this study (diabetes, high blood pressure, high cholesterol, smoking, poor diet, physical inactivity, and overweight) were used to measure the participants' knowledge of the risk factors for heart disease

Knowledge of Heart Disease Risk Factors

The results showed that 24% of the women listed either diabetes, high blood pressure, high cholesterol, smoking, poor diet, physical inactivity, or overweight as a risk factor for heart disease. Almost 39% of the women listed at least two of the risk factors for heart disease, 14.9% of the women listed three of the risk factors, 6.2% of the women listed four of the risk factors, and 4.1% of the women listed five of the risk factors for heart disease. Less than 1% of the women were able to list all seven of the controllable heart disease risk factors. Over 10% of the women either did not know any risk factors or

listed other factors for heart disease. Some of the factors that were mentioned by less than 5.7% of the women were hereditary, drinking alcohol, stress, blockage, clogged arteries, and depression (see Table 9).

Table 9

Knowledge of Risk Factors for Heart Disease

Risk Factors	Frequency	Percent
Diabetes	2	.5
High Blood Pressure	7	1.8
High Cholesterol	14	3.6
Smoking	5	1.3
Poor Diet	38	9.8
Physical Inactivity	5	1.3
Overweight	22	5.7
Listed 2 of the Risk factors	151	38.8
Listed 3 of the Risk factors	58	14.9
Listed 4 of the Risk factors	24	6.2
Listed 5 of the Risk factors	16	4.1
Listed 6 of the Risk factors	1	.3
Listed 7 of the Risk Factors	1	.3
Listed other Risk Factors	22	5.7
Don't Know	23	5.9
Total	389	100.0

Knowledge of Heart Attack Symptoms

The knowledge of six symptoms of a heart attack (chest pain, fatigue, nausea, pain in the shoulder, neck, or arm, shortness of breath, and tightness of chest) was measured by the identified heart attack symptoms on the original AHA Women's Health Study. Chest pain, fatigue, nausea, pain in the shoulder, neck, or arm, shortness of breath, or either tightness of chest were listed among 32.6% of the women. Most of the women (34%) listed two of the heart attack symptoms, 16.3% of the women listed three of the heart attack symptoms, 2.8% listed four of the heart attack symptoms, and less than 1% (1) of the women listed all six of the heart attack symptoms. Only 4.1% of the

women didn't know any of the heart attack symptoms. Some of the women (9.5%) referenced other symptoms to having a heart attack (see Table 10).

Table 10

Knowledge of Heart Attack Symptoms

Heart Attack Symptoms	Frequency	Percent
Chest Pain	61	15.7
Fatigue	7	1.8
Nausea	4	1.0
Pain in shoulder, neck, or arm	21	5.4
Shortness of breath	21	5.4
Tightness of chest	13	3.3
Listed 2 of the HA symptoms	134	34.4
Listed 3 of the HA symptoms	63	16.2
Listed 4 of the HA symptoms	11	2.8
Listed 5 of the HA symptoms	1	.3
Listed other HA symptoms	37	9.5
Don't Know	16	4.1
Total	389	100.0

Perceptions of Personal Risks for Heart Disease

The women's perceptions of personal risks for heart disease was measured by the survey question: tell me the extent to which you worry about getting heart disease. The women selected worry a lot, worry a little, or do not worry at all. Nearly half of the women (46.5%) worry a little about getting heart disease, 29.6% worry a lot about getting heart disease, and 23.9% of the women do not worry at all about getting heart disease (see Table 11).

Table 11

Perceptions of Personal Risks for Heart Disease

Perceptions of Personal Risks for Heart Disease	Frequency	Percent
Worry a lot	115	29.6
Worry a little	181	46.5
Do not worry at all	93	23.9
Total	389	100.0

Awareness of Heart Disease

The awareness of heart disease among the women was measured by their answer to the survey question: how informed are you about heart disease in women? The variables for this question were recoded as very/well informed to be considered high level of heart disease awareness, moderately informed to medium level of awareness, and not at all informed to low level of heart disease awareness. Half (50.6%) of the women have a medium level of heart disease awareness. Slightly under half of the women have a high level (32.1%) compared to 17.2% of the women with a low level of heart disease awareness (see Table 12).

Table 12

Awareness of Heart Disease

Awareness of Heart Disease	Frequency	Percent
1.00	125	32.1
2.00	197	50.6
3.00	67	17.2
Total	389	100.0

Health Belief Model Constructs

Generally, people make life decisions according to how they impact their daily routine, family environment, or financial wellbeing. The main concept of the HBM is that health behavior is influenced by personal beliefs (Glanz et al., 2008); for this reason the HBM constructs perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action were measured in this study. The five constructs were evaluated using questions from Sections 1, 2, 6, and 8 of the survey (see Appendix B). A more in depth discussion of each construct will be discussed in Chapter 5.

Perceived Susceptibility

The women's perceptions of their risks of developing heart disease was measured by participants' responses from three of the survey questions and was considered their perceived susceptibility. Only about 30% of the women worried a lot about getting heart disease indicating that most of the participants were not seriously concerned about their risk (see Table 13).

Table 13

HBM Perceived Susceptibility Construct

Please tell me the extent to which you worry about getting each of the following health conditions: Heart Disease	Frequency	Percent
Worry a lot	115	29.6%
A little	181	46.5%
Not at all	93	23.9%
Total	389	100.0
How much do you think your overall outlook on life impacts the following: your likelihood to develop a serious illness like heart disease	**Frequency**	**Percent**
A great deal	30	7.7
Very much	53	13.6
Some	194	49.9
Not at all	112	28.8
Total	389	100.0
Which of the following are the biggest barriers preventing you from leading a heart healthy lifestyle? Please only select up to 5 barriers	**Frequency**	**Percent**
I don't perceive myself be at risk for heart disease	56	14.4
I don't think I need to changing my behavior will reduce my risk of developing heart disease	6	1.5
None of these, I lead a heart healthy lifestyle	123	31.6

Perceived Severity

Perceived severity was considered the women's perception of the seriousness of heart disease to cause complications of their lifestyle. The construct was measured by the women's answers to two questions (see Table 14). Overall 60% of the women thought either a great deal or very much of how successfully managing heart disease would impact their overall outlook on life if they developed heart disease. This is an indication that the majority of the women thought that heart disease would have an altering impact on their lifestyles.

Table 14

HBM Perceived Severity Construct

How much do you think your overall outlook on life impacts the following: your likelihood to successfully manage a serious illness like heart disease if you develop it	Frequency	Percent
A great deal	98	25.2
Very much	138	35.5
Some	111	28.5
Not at all	42	10.8
Total	389	100.0
Which of the following are the biggest barriers preventing you from leading a heart healthy lifestyle? Please only select up to 5 barriers	**Frequency**	**Percent**
My family/friends have told me that I don't need to change	3	.8
My health care professional doesn't think I need to worry about heart disease	13	3.3
God or some higher power ultimately determines my health	26	6.7

Perceived Benefits

The women's perceived benefits of reducing the threat of heart disease was measured by the answers received on how likely they would become involved with heart health as an issue if programs existed. Over 50% of the women chose the response that if a medical research program existed, they would become involved. Even more women (60%) said they would become involved in a program that educated women about heart disease. A program that educated women on how to get the best care possible from the healthcare system appeared to be more important than a medical research or heart disease education program among 70% of the participants (see Table 15). Overall, more than half of the women felt that they would become involved with heart health programs if they existed as a way to reduce the threat of heart disease.

Table 15

HBM Perceived Benefit Construct

How likely are you to become involved with "heart health" as an issue if the following kinds of programs existed: A medical research program to ensure that the ways in which women experience heart disease are adequately addressed	Frequency	Percent
Definitely would	73	19.0
Probably would	154	40.0
Might or might not	102	26.3
Probably would not	47	12.1
Definitely would not	10	2.6
Total	389	100.0
How likely are you to become involved with "heart health" as an issue if the following kinds of programs existed: A program to educate women that heart health is an issue all women should pay attention to	Frequency	Percent
Definitely would	90	23.2
Probably would	154	40.0
Might or might not	98	25.2
Probably would not	40	10.3
Definitely would not	5	1.3
Total	389	100.0
How likely are you to become involved with "heart health" as an issue if the following kinds of programs existed: A program to educate women about how to navigate the health care system to get the best care possible	Frequency	Percent
Definitely would	120	31.8
Probably would	142	36.7
Might or might not	77	19.9
Probably would not	38	10.1
Definitely would not	6	1.5
Total	389	100.0

Perceived Barriers

The women were asked a question regarding barriers they thought prevented them from leading a heart healthy lifestyle. Over 60 % of the participants selected monetary reasons, personal confidence, available time, or other obligations as their barriers. Nearly 32% of the women selected that they already lead a heart healthy lifestyle. This indicates that less than half of the women felt there were no barriers to preventing them from living a heart healthy lifestyle while the majority of the women have other obstacles that hindered them from a healthy lifestyle (see Table 16).

Table 16

HBM Perceived Barriers Construct

Which of the following are the biggest barriers preventing you from leading a heart healthy lifestyle? Please only select up to 5 barriers	Frequency	Percent
I'm fearful of change	11	2.8
I'm not confident that I can successfully change my behavior	46	11.8
I am too stressed to do the things that need to be done	47	12.1
I am too depressed to do the things that need to be done	12	3.1
I am too ill/old to make changes	2	.5
I don't have the money or insurance coverage to do what needs to be done	47	12.1
I have family obligations and other people to take care of	47	12.1
I don't have the time to take care of myself	50	12.9
I am confused by what I'm supposed to do to change my lifestyle	24	6.2
I feel the changes required are too complicated	18	4.6
I don't know what I should do	44	11.3
There is too much confusion in the media about what to do	30	7.7
None of these, I lead a heart healthy lifestyle	123	31.6
Total	389	

Cues to Action

Lastly, participants were asked to think about things they have done to improve their own health. They were then asked to select the reason(s) they took action. This question was used to measure their cues to action. Nearly 30% of the women selected I saw, heard, or read information related to heart disease or my healthcare professional encouraged me to take action. Participants were also asked "what would you likely do after knowing that heart disease is the leading cause of death." After finding out that heart disease was the leading cause of death, 92% of the participants selected that they would make lifestyle and behavior changes in their lives (see Table 17). Overall the majority of the women chose to make a positive behavioral change so that they could live a longer and healthy life.

Table 17

HBM Cues to Action Construct

Thinking about things you have done to improve your own health, please tell us if any of the following prompted you to take action. Please select all that apply	Frequency	Percent
I saw, heard, or read information related to heart disease	94	24.2
My health care professional encouraged me to take action	114	29.3
A family member or relative encouraged me to take action	74	19.0
A friend encouraged me to take action	49	12.6
A family member/relative developed heart disease, got sick, or died	75	19.3
I experienced symptoms that I thought were related to heart disease	31	8.0
I wanted to feel better	235	60.4
I wanted to avoid taking medications	138	35.5
I wanted to improve my health	291	74.8
I wanted to live longer	262	67.4
I did it for my family	102	26.2
I was encouraged to take action during an event or program at my place of worship (church, mosque, or temple)	22	56.6
I was encouraged to take action during an event or program at my community center	12	30.8
Something else	29	74.6
I have not done anything to improve my health	10	25.7
Total	389	

The leading cause of death for all women in the U.S. is heart disease. Knowing that information, which of the following are you likely to do?	Frequency	Percent
Go to the doctor to assess my risk for heart disease	52	13.4
Get more information about heart disease	64	16.5
Research ways to improve my heart health	71	18.3
Talk to my family about our medical history	14	3.6
Talk to my friends about heart disease	7	1.8
Get involved with an organization to help to raise awareness about heart disease	6	1.5
Make lifestyle and behavior changes	144	37.0
Other	11	2.8
Nothing	20	5.1
Total	389	100.0

Statistical Testing of Hypotheses

Frequency, crosstab, mean, standard error, standard deviation, minimum, and maximum scores were calculated for each variable in this study. Linear multiple regression was used to determine the association between the independent variables knowledge of heart disease risk factors, knowledge of heart attack symptoms, perceptions of personal risks for heart disease, and demographic backgrounds (age, income,

education, family history, and state of residency) and the dependent variable awareness of heart disease. Descriptive statistics for all the measures in the study are presented in Table 18. Each of the hypotheses was tested at the 0.05 level of confidence and a confidence interval of 5. The power of the statistical test (1- β) was set at 0.80. The effect size (degree of association between two variables, population and sample) was set between 0.2 – 0.4.

Correlation Analyses: Pearson R

Pearson R was also run when selecting multiple regressions. Pearson R measured the strength of the linear relationship between each of the independent variables individually (heart disease risk factors, heart attack symptoms, perceptions of personal risks for heart), and demographic background (age, education, income, state of residency, and family history of heart disease) and the dependent variable (awareness of heart disease). The Pearson R analysis revealed a weak linear relationship between the independent variables and the dependent variable.

When the independent variables were measured collectively (R), the result was 0.385. This means that only 14.8% (R^2) of the awareness of heart disease was attributed to each of the independent variables collectively; the women's knowledge of heart disease risk factors, heart attack symptoms, perceptions of personal risks for heart disease, and their demographic backgrounds. The variables have a very low correlation collectively. Even still, for the purpose of this study's focus on the variables participants' knowledge of heart disease risk factors, knowledge of heart attack symptoms, perceptions of personal risks for heart, and demographic backgrounds were slightly dependent upon

their awareness of heart disease. Of the independent variables, perceptions of personal risks for heart disease, participant's age, and family history of heart disease were mostly associated with awareness of heart disease.

Table 18

Descriptive Statistics for the Variables in the Study

	N	Range	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Knowledge of Risk factors	389	14.00	.00	14.00	7.4216	.14904	2.93962
Knowledge of Heart Attack Symptoms	389	12.00	.00	12.00	5.5733	.16814	3.31630
Perceptions of Personal Risks for Heart Disease	389	2.00	.00	2.00	.9434	.03701	.72998
Awareness	389	2.00	1.00	3.00	1.8509	.03485	.68743
Age of participants	389	3.00	.00	3.00	1.1671	.03257	.64244
Education of participants	389	5.00	.00	5.00	3.8303	.06987	1.37803
Income of participants	389	4.00	.00	4.00	2.8817	.05689	1.12213
Family history of HD	389	1.00	.00	1.00	.4576	.02529	.49884
State of Residency	389	32.00	.00	32.00	10.7892	.32922	6.49320
Valid N	389						

(Age code: 18-29 was coded 0; 30-49 was coded 1; 50-69 was coded 2; 70 and older was coded 3)
(Education level code: some high school was coded 0; high school diploma was coded 1; trade/technical/vocational training was coded 2; College graduate was coded 3; Some post graduate work was coded 4; Post graduate degree was coded 5)
(Income code: less than $10,000 was coded 0; $10,000-$29,000 was coded 1; $30,000-$ 49,000 was coded 2; $50,000-$69,000 was coded 3; $70,000 and greater was coded 4)
(States code: the states were coded from 0-31 alphabetical Alabama –Washington; and New Mexico is coded 32)
(Family History of HD code: Yes was coded 0; No was coded 1)

Table 19

Regression Coefficient to Explain Awareness of Heart Disease from the Independent Variables

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Knowledge of risk factors	.021	.011	.092	1.922	.055	.000	.043
Knowledge of heart attack symptoms	-.015	.010	-.071	-1.486	.138	-.034	.005
Perceptions of Personal Risks for Heart Disease reported	.215	.048	.228	4.462	.000	.120	.309
Age	-.184	.053	-.172	-3.450	.001	-.289	-.079
Education	.009	.025	.019	.374	.708	-.040	.058
Income	-.043	.031	-.071	-1.400	.162	-.105	.018
Family history of HD	.167	.070	.121	2.404	.017	.030	.304
State of Residency	-.007	.005	-.065	-1.333	.183	-.017	.003

Research Question 1

The first research question was: is there an association between African American women's knowledge of heart disease risk factors (diabetes, high blood pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight) and their awareness of heart disease. Approximately 30% of the women knew at least one risk factor, 23.9% knew two or more, 12.6% knew three or more, 5.4% knew four or more, and 2.1% knew five risk factors for heart disease and also displayed a high level of awareness of heart disease. Nearly half (45.2%) of the women knew at least one risk factor for heart disease and had a medium level of awareness of heart disease. Among

those women, 31.9% knew two or more risk factors, 10.8% knew three or more risk factors, 4.6% knew four or more risk factors, and 2.1% knew five risk factors for heart disease. Women with a low level of awareness and a little knowledge of heart disease risk factors represented approximately 10% of the studied population. *Hypothesis 1* was that there is an association between African American women's knowledge of heart disease risk factors (diabetes, high blood pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight) and their awareness of heart disease. This hypothesis is supported by the data. The linear multiple regression analysis computed a significance level of 0.055 (see Table 19). This value indicates strong evidence against the null hypothesis; therefore the null hypothesis is rejected meaning that there is statistically a significant association between African American women's knowledge of heart disease risk factors (diabetes, high blood pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight) and their awareness of heart disease.

Research Question 2

The second research question was: is there was an association between African American women's knowledge of heart attack symptoms (chest pain, fatigue, nausea, pain in the shoulders, neck, or arms, shortness of breath, and tightness of the chest) and their awareness of heart disease. Women with a high level of awareness for heart disease and knowledge of at least one symptom of a heart attack represented 29.0% of the women in the study. Within that group of women, 20.1 % knew two or more heart attack symptoms, 8.2% knew three or more heart attack symptoms, 1.9% knew four or more

heart attack symptoms, and less than 1% knew five heart attack symptoms. Women with a medium level of awareness of heart disease as well as their knowledge of at least two heart attack symptoms made up 25.2% of the studied population. Less than 15% of the women with a low level of awareness knew more than one symptom of a heart attack. *Hypothesis 2* was that there is an association between African American women's knowledge of heart attack symptoms (chest pain, fatigue, nausea, pain in the shoulders, neck, or arms, shortness of breath, and tightness of the chest) and their awareness of heart disease. This hypothesis was not supported by the data. The linear multiple regression analysis computed a significance level of 0.138 (see Table 19). The data supports the null hypothesis, indicating that there is no statistically significant association between African American women's knowledge of heart attack symptoms (chest pain, fatigue, nausea, pain in the shoulders, neck, or arms, shortness of breath, and tightness of the chest) and their awareness of heart disease.

Research Question 3

The third research question was: is there was an association between African American women's perceptions of personal risks for heart disease and their awareness of heart disease. Among 389 women, 28.0% of the women worry about their risk for heart disease and showed a high level of awareness for heart disease. Less than 5 % of the surveyed women do not worry about their risk for heart disease and showed that they have a high level of awareness for heart disease. Women with a medium level of awareness and worry about their risk for heart disease represented 38.3% of the studied population. *Hypothesis* 3 was that there is association between African American

women's perceptions of personal risks for heart disease and their awareness of heart disease. This hypothesis was supported by the data. The linear multiple regression analysis computed a significance level of 0.000 (see Table 19). This value indicates strong evidence against the null hypothesis; therefore, the null hypothesis is rejected showing that there is statistically a significant association between African American women's perceptions of personal risks for heart disease and awareness of heart disease.

Research Question 4

The fourth and final research question consisted of 5 variables and the question was: is there an association between African American women's demographic (age, education, income, family history of heart disease, and state of residency) and their awareness of heart disease. Women in the age group 30-49 represented majority of the sample size (63.1%) and 20.3 % of them showed a high level of awareness of heart disease. This age group of women also represented 31.6% of the studied population who had a medium level of awareness for heart disease. Among the women with a low level of heart disease awareness, 4.6% are between the age of 18-29, 11.1% between the age of 30-49, 1.5% between the age of 50-69, and no woman in the age group of 79 and older showed a low level of awareness of heart disease. *Hypothesis 4* was that there is an association between African American women's demographic: (a) age, (b) education, (c) income, (d) family history of heart disease, (e) state of residency, and their awareness of heart disease. *Hypothesis 4(a)* was supported by the data. The linear multiple regression analysis computed a significance level of 0.001 as it pertains to the variable age (see

Table 19). Therefore the null hypothesis 4(a) is rejected; there is statistically a significant association between African American women's age and their awareness of heart disease.

More women with a postgraduate degree had either a medium level (26.2%) or high level (15.9%) of awareness of heart disease. Regardless of educational background, women were more likely to have a medium level of awareness (50.7%) compared to high (31.6%) and low (17.2%) levels of awareness of heart disease. *Hypothesis 4 (b)* was not supported by the data. The linear multiple regression analysis computed a significance level of 0.708 as it pertains to the variable education (see Table 19). Therefore the null hypothesis 4(b) is supported; there is no statistically significant association between African American women's education and their awareness of heart disease.

As the income of the studied population increased, so did their awareness level of heart disease. The percentage of women with a high level of awareness of heart disease in the income range of $70,000 and more doubled when compared to those making $30,000-$49,0000 and $50,000-$69,0000 (14.7% vs. 7.2% and 7.2%). Among the women that earned between $10,000-$29,000, 2.8% had a high level of awareness of heart disease and only one person (less than 1%) that earned less than $10,000 had a high level of awareness of heart disease. Less than 20% of the women showed a low level of awareness for heart disease. *Hypothesis 4 (c)* was not supported by the data. The linear multiple regression analysis computed a significance level of 0.162 as it pertains to the variable income (see Table 19). Therefore the null hypothesis 4(c) is supported; there is no statistically significant association between African American women's income and their awareness of heart disease.

More women with a medium level of awareness (24.9%) had a family history of heart disease compared to women with a high level of awareness (22.1%). Slightly more women without a family history of heart disease (25.7%) showed a medium level of awareness of heart disease compared to those with a family history of heart disease (24.9%). Less than 10% of women with a family history of heart disease had a low level of awareness of heart disease. *Hypothesis 4 (d)* was supported by the data. The multiple regression analysis computed a significance level of 0.017 as it pertains to the variable family history (see Table 19). Therefore the null hypothesis 4(d) is rejected; there is statistically a significant association between African American women's family history of heart disease and their awareness of heart disease.

Among the thirty-three states the women reside within, 32.1% have a high level, 50.9% have a medium level, and 17.2% have a low level of awareness of heart disease. More than half of the women were from Georgia (59.6%) and most of these women displayed a medium awareness of heart disease. Alabama and Ohio had the next highest representation (7.2% and 3.3% respectively) and the majority of them showed a medium level of awareness of heart disease as well. *Hypothesis 4 (e)* was not supported by the data. The linear multiple regression analysis computed a significance level of 0.183 as it pertains to the variable state of residency (see Table 19). Therefore the null hypothesis 4(e) is supported; there is no statistically significant association between African American women's state of residency and their awareness of heart disease.

Summary

In this chapter, I presented the results of the study. This included descriptive statistics of the variables heart disease risk factors, heart attack symptoms, perceptions of personal risks for heart disease, demographic background, and awareness of heart disease. The majority of the women was between the ages of 30 and 49, highly educated, and earned $70,000 or more a year. Participation was represented from 33 states within the United States. Almost 60% of the women resided in Georgia. Over half of the women had a family history of heart disease. The majority of the women listed two risk factors for heart disease and two symptoms of a heart attack. More women worried about their personal risk for heart disease than those that do not worry at all about their personal risk for heart disease. Half of the women showed a medium level of awareness of heart disease.

Descriptive statistics were also calculated for the HBM constructs used in this study. Most of the women thought that their overall outlook on life impacts their likelihood for developing and managing heart disease (perceived susceptibility and severity). The majority of the participants selected that they would participate in programs to educate women about heart health and how to navigate the healthcare system to get the best care possible if the programs existed (perceived benefits). Less than half of the women feel that that lead a healthy lifestyle (perceived barrier). Most of the women would get regular exercise, lose weight, reduce stress, pray or meditate, or visit a doctor to monitor or improve their health. Nearly almost all the women participants

chose to make lifestyle and behavior changes once they were told that heart disease was the leading cause of death in the U.S. (cues to action).

I conducted correlation analysis among the women's knowledge of risk factors for heart disease, knowledge of heart attack symptoms, perceptions of personal risks for heart disease, and demographic background to evaluate the association with their awareness of heart disease. Results showed that African American women's knowledge of heart disease risk factors, perceptions of personal risks for heart disease, age, and family history of heart disease are statistically associated with awareness of heart disease.

In the next chapter, results and the connection to the review of literature will be discussed. The association of the health belief model will be discussed as well as the positive social change and implications of the study. The conclusion of Chapter 5 will include limitations and recommendations of the study.

Chapter 5: Summary, Conclusion, and Recommendations

Introduction

The objective of this study was to examine the association, if any, between knowledge of heart disease risk factors and awareness of heart disease, knowledge of heart attack symptoms, perceptions of personal risks for heart disease, and demographic background and awareness of heart disease among African American women within the United States. I examined the participants' knowledge of seven controllable heart disease risk factors (diabetes, high blood pressure, high cholesterol, cigarette smoking, poor diet, physical inactivity, and overweight), knowledge of six heart attack symptoms (chest pain, fatigue, nausea, pain in the shoulders, necks, or arms, shortness of breath, and tightness of the chest), yes or no perceptions of personal risks for heart disease, and five demographic background qualities (age, income, education, family history, and state of residency), as well as key predictor variables of awareness of heart disease. Linear multiple regression analysis was used to address the research questions and hypotheses. Five of the health belief model constructs (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action) were also measured in this study using descriptive statistics. In this chapter, I will provide an interpretation of the findings, limitations of the study, recommendations, implications for social change, and conclusion.

The Women's Health Study survey was used in developing the Internet survey using Google docs. I recruited participants who met the inclusion criteria through e-mail, LinkedIn, and Facebook invitations. The invitation encouraged invitees to forward the invitation to other potential eligible family, friends, and associates. Snowball sampling

was used to recruit participants for 8 weeks and 2 days with a final number of 389 completed surveys.

The data results were exported to an Excel spreadsheet, coded by each survey item, and transferred into SPSS software for data cleaning. A Pearson correlation was used to evaluate the strength of the linear relationship between each of the independent variables individually and collectively with the dependent variable. Descriptive statistics were calculated for each survey variable in the study. I addressed the research questions using multiple regression analysis to determine the association between independent variables (knowledge of heart disease risk factors, knowledge of heart attack symptoms, perceptions of personal risks for heart disease, and demographic background qualities) and the dependent variable of heart disease awareness.

Interpretation of Findings

Knowledge of Heart Disease Risk Factors

Poor diet (31%), physical inactivity (22.6%), and overweight (21.9%) were listed the most as risk factors for heart disease among the women. These results are consistent with previous findings by Pace et al. (2008) in which most of the studied population of African American women listed over eating and a lack of physical activity as a contributing factor for heart disease. Less than 10% of my studied participants considered stress a risk factor for heart disease; yet, in a previous study, stress was consistently noted as a risk factor for heart disease (Delsalvo et al., 2005). High blood pressure was considered one of the risk factors for heart disease by less than 15% of the women in my study. This finding is consistent with prior literature where researchers

revealed a low awareness of high blood pressure being a risk factor for heart disease among African American women (Guo et al., 2012).

Knowledge of Heart Attack Symptoms

Chest pain (25%) and pain in the shoulder, neck, or arms (24%) were the two most common symptoms of a heart attack that were noted by the participants. These findings are consistent with the women in the study by Gallagher et al. (2010) in which most of the women recognized chest pain as a symptom of a heart attack. However, Lutfiyya et al. (2008) found that participants did not think that pain or discomfort in the neck was a symptom of a heart attack. Nausea and fatigue were acknowledged by less than 5% of the participants in my study as symptoms of having a heart attack. Most women, according to Gallagher et al. (2010) and Banks and Malone (2005), do not recognize or associate nausea, shortness of breath, or tightness of the chest as a symptom of a heart attack.

Perceptions of Personal Risks for Heart Disease

Nearly half of the participants worried just a little about getting heart disease, and 14.9% of the women selected that they did not perceive themselves to be at risk for heart disease. This is consistent with previous literature where most of the women considered themselves to be low to no risk for heart disease (Christian et al., 2007; DeSalvo et al., 2005; Gallagher et al., 2010; Homko et al., 2008; Lefler et al., 2009; Lutfiyya et al., 2008; McKenzie & Skelly, 2010; Mosca et al., 2010). Christian et al. (2005) found that women were calculated to be at moderate to high risk for heart disease perceived themselves to be at a low risk for heart disease. When breast cancer and heart disease were compared,

women were more concerned with developing breast cancer than heart disease. This is consistent with previous findings in which participants perceived themselves to be at a higher risk for breast cancer than heart disease (Christian et al., 2007; Mosca et al., 2004;Mosca et al., 2013; Mosca et al., 2010; Smith et al., 2012, Wendt, 2005; Winham & Jones, 2011). Women in the study by Homko et al. (2008) showed a limited knowledge of risk factors for heart disease, and they also perceived themselves to be at low risk for heart disease. Yet, in the study conducted by Allen et al. (2010), women perceived themselves to be at higher risk for developing heart disease.

Awareness of Heart Disease

Heart problems, including heart attacks and heart disease, were reported the most by participants (43.1%) as the leading cause of death among women, with cancer including breast, lung, and ovarian cancer being reported by 18.1% of the women as the leading cause of death. Based on the results, this means that 56.9% of the women did not know that heart disease is the leading cause of death among women. These findings are similar to the most recent AHA Women's Health study (2012). The AHA Women's Health study showed that, among the African American women, heart disease was considered the leading cause of death among women by 36% of the women and cancer was thought to be the leading cause of death among women by 38% of the women (Mosca et al., 2013). In each of the triennial AHA Women's Health Study, more African American women chose cancer as opposed to heart disease to be the leading cause of death (Christian et al., 2007; Mosca et al., 2004; Mosca et al., 2013; Mosca et al., 2000; Mosca et al., 2010); yet, in my study, heart disease was reported more than cancer.

I found that knowledge of heart disease risk factors and perceptions of personal risk for heart disease, age, and family history were statistically associated with the women's awareness of heart disease. Knowledge of heart attack symptoms, education, income, and state of residence findings, however, were not statistically associated with the women's awareness of heart disease. The variables collectively yielded weak linear correlation (14.8%). DeSalvo et al. (2005), Homko et al. (2008), Lefler et al. (2009), and Winham and Jones (2011) examined similar variables and similar sample sizes between 128 - 465 and also yielded weak linear correlation. More investigation is needed beyond the studied variables in order to improve African American women's awareness of heart disease.

Health Belief Model

Perceived susceptibility. Perceived susceptibility is described as an individual's perceptions of the risks of developing a health disease (Glanz et al., 2008). The probability that individuals will participate or engage in preventive measures for heart disease depends on their perception of being at risk for heart disease. People tend to underestimate their own susceptibility to heart disease (Christian et al., 2005). Only about 30% of the women worried a lot about getting heart disease, indicating that most of the participants were not seriously concerned about their risk for heart disease. This finding is consistent with previous literature that most participants estimated their risk for developing heart disease as low (Christian et al., 2007; Mosca et al., 2010; Smith et al., 2012; Wendt, 2005). Yet, approximately 88% of the women in my study experienced one or more of the risk factors for heart disease. In order for individuals to make an

accurate perception of their risk for heart disease, it is important to know the risk factors and symptoms of a heart attack that contribute to the development of heart disease (Lefler et al., 2009). More research is needed to determine why women with one or more risk factors for heart disease do not perceive themselves to be susceptible to the disease. More education is needed to explain how specific health issues (high blood pressure, high cholesterol, smoking, overweight, and physical inactivity) can serve as a catalyst to the development of heart disease.

Perceived severity. Perceived severity is described as individuals' perceptions of the seriousness of a disease to cause complications of their lifestyles (Glanz et al., 2008). Life decisions are made everyday by people and typically made according to how they will affect their daily routine, family environment, or family well-being. The majority of the women in my study thought that heart disease would have a negative impact on their lifestyles. According to Glanz et al. (2008), if individuals perceive a health condition to have negative and serious consequences to their lifestyle, they are more likely to change their health behavior in order to reduce their risk for the disease. The women's perception that heart disease would have a negative impact on their life is a potential indicator that the women would possibly consider improving their personal behavior.

Perceived benefits. Perceived benefits are described as an individual's belief of the effectiveness of various actions available in reducing the disease threat (Glanz et al., 2008). More than half of the women indicated that they would participate in heart health programs if they existed. This confirms that the women consider heart health programs effective; and, the majority of the women in this study felt that there was a need for

further education in improving their knowledge of heart disease. In analyzing these results, further research should be conducted to determine what exact measures women are willing to consider or take to prevent heart disease in their own lives.

Perceived barriers. Perceived barriers are those issues that would make it difficult to make a behavioral change (Glanz et al., 2008). My study showed that over 60% of the women felt that there were barriers in their life that hindered them from leading a heart healthy lifestyle. Family obligations, lack of money or lack of insurance, low self-confidence, and stress were noted the most. Further research should be conducted to determine procedures and techniques that will enhance African American women in areas that often hinder them from leading a heart healthy lifestyle.

Cues to action. Cues to action are described as events, people, or things that move an individual to make a behavioral change (Glanz, et al., 2008). Over 60% of the women chose to make a behavioral change in order to feel better, to improve their health, or to live longer. An event or program at the women's place of worship was selected by over 50% of the women as a reason that encouraged them to take action; as well as, over 20% saw, heard, or read information related to heart disease that prompted them to make a behavioral change. Over 35% of the participants chose to make lifestyle and behavioral changes after learning that heart disease was the leading cause of death for all women in the U.S. In knowing this, continued empowerment of these women is needed to ensure that increased heart health knowledge and behavioral changes are taking place.

Limitations of the Study

There were a number of limitations noted in this study that impacted the findings and the ability to generalize the results to all African American women. The first limitation is the data collected were self-reported and only reported by African American women with email and Internet access. Second, the majority of the participants were residents of the state of Georgia. Third, over half of the participants were middle aged (30-49 years of age) with a very small percentage of participants being between the ages of 18-29 and 79 and older. Fourth, over half of the participants were educated with a postgraduate degree. Nearly half of the participants had an income greater than $70,000. Because of the small percentage of representation of women within the 33 states in the U.S., the 18-29 age group, the less than $30,000 group, and the some high school and high school graduate groups, the results cannot be generalized to all African American women in the United States.

Despite these limitations, the study yielded valuable findings. The information from the study is valuable because it demonstrated the level of heart disease knowledge among the women. When answers from each age, education, and income groups of heart disease awareness were compared more women in the age group of 18-29 showed a low level of heart disease awareness (40%) when compared to any other age group (age group 30-49: 17.6%; age group 50-69: 6.6%; age group 79 and older: 0%). More high school graduates showed a low level of awareness of heart disease (29%) when compared to any other level of education among the women (trade/technical/vocational/training, 10%; college graduate, 18.5%; some post graduate work, 17%; post graduate degree, 16%).

More women with an income of $10,000 and less showed a low level of awareness of heart disease (22%) when compared to any other income level among the women ($10,000-$29,000, 15.5%; $30,000-$49,000, 21%; $50,000-$69,000, 20%; $70,000 and more, 14%). Statistically these findings suggest further research should be conducted with a focus on reaching the younger age, less educated, and low-income group of African American women.

A low correlation of the African American women's awareness of heart disease was displayed. A larger sample size, a longer recruitment period, or even providing other methods of completing the survey may have yielded a stronger linear correlation. Suggesting that the strength of the linear relationship between the variables (heart disease risk factors, heart attack symptoms, perception of personal risk for heart disease, and demographic backgrounds) is affected by the sample size and recruitment period were consistent with prior studies conducted. Similar to my study, Homko et al. (2008) examined similar variables and sample size in order to determine heart disease knowledge and risk perceptions among underserved individuals. A low correlation between the variables heart disease risk factors, age, income, and education (Homko et al., 2008) were shown. Lefler et al. (2009) also conducted a study to determine the perceived risk of heart disease among older high risk African American and European women. The sample size and variables were similar. In comparison to my study, Lefler et al. (2009) found that the variables (age, educational level, and income, family history of heart disease, and risk factors for heart disease) yielded a weak linear relationship. Winham and Jones (2011) also yielded a low correlation with similar variables (age,

education, risk factors for heart disease, and household income) with a sample size of 172 when determining the knowledge of heart disease among young African Americans.

Yet Wang et al. (2009) conducted a study with a larger sample size (2,362) and longer recruitment period (2 years) with similar variables (age, education, income, family history of heart disease, and perceived risk for heart disease) to evaluate participants' risk perception of heart disease and other chronic diseases. Strong linear relationships between the variables were shown (Wang et al., 2009). Lutfiyya et al. (2008) also conducted a study with a larger sample size (11,269), similar variables (age, education, and income), and longer recruitment period (2 years) that resulted in a strong correlation. Consistent with the previously mentioned studies, studies by Christian et al. (2007), Mosca et al. (2013), and Mosca et al. (2010) yielded a stronger linear relationship between the variables than in my study. Each of the previous scholars conducted their study with a larger sample size (greater than 1,000), similar variables (age, race, education, income, and history of heart disease), and different methods for survey completion (telephone and online survey). My sample size of 389 could be the cause of the weak linear relationship between the variables. According to Goodwin and Leech (2006), a low correlation between variables can be affected by a small sample size.

Additionally, in determining why a correlation might be lower than expected to be, Goodwin and Leech (2006) recommended examining the variability of the research data. According to Glass and Hopkins (1996) and Goodwin and Leech (2006), the correlation between the variables will be stronger if there is more variability among the data. As in my study for example, a different format to my survey may have yielded

different results. Providing the participants with a range of choices to select for heart disease risk factors and heart attack symptoms may have resulted in a different relationship among the variables. Changing the demographic background questions to be more specific to the participants may have been helpful. For example with the education variable, if I had asked the participants to provide the type of degree they had, this may have provided more range of variability and may have had an impact on the correlation. This would suggest that further research should be conducted building upon what was revealed in this study.

Recommendations for Dissemination

As heart disease awareness among women continues to be observed yearly, incorporating public health awareness that links key indicators of heart disease knowledge (heart disease risk factors, perceptions of personal risks for heart disease, age, and family history) with women's individual awareness of heart disease would be helpful in improving heart disease knowledge among African American women. Enhancing education among African American women by presenting this information in various settings would be helpful. For example, presenting this information at undergraduate and graduate level African American sorority meetings are good venues to reach women of various ages and economic backgrounds. Other potential avenues to reach this population of women would be to present this information to African American women's civic and church groups; as well as, providing this information on individual Facebook pages.

I would disseminate these findings by sharing with my Facebook, LinkedIn, and email contacts. Dissertation results will be disseminated through publications in peer reviewed journal articles and poster presentations at health conferences. These results will also be made public knowledge through access to the Google docs result link that was provided to the participants after they completed the survey. Dissemination of the information and results would increase awareness and educate women on the importance of leading a heart healthy lifestyle.

Recommendations for Further Study

Based on the barriers (family obligations, lack of money or lack of insurance, low self confidence, and stress) that were selected by the women as reasons they do not lead heart healthy lifestyles, there is a need for African American women to learn to prioritize rest and relaxation into their schedule. Over 60% of the women agreed to the statement "I don't get enough sleep on a regular basis" and nearly half of the women (47%) agreed to the statement "I'm so busy taking care of everyone else, I don't take care of myself." Twenty four percent of the women selected that half of the time to all of the time "my life is chaotic," 27% of the women selected that half of the time to all of the time "I feel like I am running on empty," 29% of the women selected that half of the time to all of the time "I feel overwhelmed," and 36% of the women selected that half of the time to all of the time "I have too many responsibilities." There is also a need for motivational/inspirational sessions and healthcare availability education seminars that will enhance African American women's health knowledge, time management, and self-confidence. Further research is needed to determine the best methods in reaching African

American women, especially the younger age group in order to gain better knowledge of heart disease. Some potential ideas would be the development and implementation of prerecorded messages sent over the phone, text message, email, or even daily heart health information on individuals' Facebook page.

Implications for Social Change

The purpose of this study was to determine the overall knowledge and health beliefs about heart disease among African American women within the United States. Through analyzing participants' responses to the Women's Health Study questions, the women's overall knowledge and perceptions of heart disease were determined. By utilizing the results from this study with regard to, a) the women's knowledge of heart disease risk factors; b) the women's knowledge of heart attack symptoms; c) the women's perception of the leading cause of death among women; d) the women's perceptions of their personal risks for heart disease; e) issues that prompted women to improve their health; f) barriers the women felt prevented them from leading a heart healthy lifestyle; g) what the women felt they needed to know or learn to believe that heart health is an issue for all women, creating social change within the African American women community should be possible. Although the awareness of heart disease has increased in African American women, the young age group (18-29), less educated (high school and less), and low income (less than $30,000) women were poorly represented in the study. There is a need to strategize ways to reach these groups of women. In addition to providing prerecorded heart health messages to social media links (email, Facebook, and LinkedIn), other potential ways to reach these groups of women

would be to provide heart health education at nontraditional places that are potentially frequently visited by the women such as their place of worship, place of employment, their child(ren)'s school, hair salons, grocery stores, pharmacies, and nail salons.

The information gained in this study can be used for future studies that will have a positive impact on heart disease knowledge among African American women. The women were told that heart disease was the leading cause of death for all women in the U.S. at the end of the survey, thus bringing more awareness of heart disease among at least 389 African American women. Also some of these women selected to talk to their family and friends about heart disease, thus creating heart health dialogue within their circle of people as well as bringing more awareness of heart disease among African American women, in this I accomplished my social change goal set for this study.

Conclusion

Heart disease awareness among African American women has improved significantly since the initial study in 1997 was conducted to determine women's awareness of heart disease. In previous years, most women that were studied considered cancer to be the leading cause of death; yet, more women (43.1%) in my study believed that heart disease as opposed to cancer was the leading cause of death among women in the United States. The least amount of responses was from the young, low income, and less educated African American women. These findings suggest that future educational efforts should target these groups of women to determine their overall knowledge of heart disease. More than half of the women reported that they were prompted to take preventive measures for heart disease at their place of worship. This supports the

recommendation from AHA (Mosca et al., 2012), that more faith-based interventions are also needed to increase awareness among African American women.

The participants provided suggestions of things that they need to know or learn in order to believe that heart health is an issue of all women, a) hearing or reading personal stories from African American women who live with heart disease; b) simple detailed information of heart disease; c) statistics on the prevalence of heart disease among African American women; d) more research and surveys; e) education classes; f) community based programs that promote women wellness in rural areas; g) ways to become healthy and stay healthy; h) how to incorporate maintaining good health into your busy daily schedule; i) ways to control your weight; j) stress management; k) ways to motivate yourself; and l) daily reminders. Researchers can use these suggestions to design future studies and programs that will encourage women to make heart health a priority and enhance their heart disease knowledge. Despite the variables yielding a weak correlation to awareness of heart disease, the variables in this study provided valuable insight to the participant's awareness of heart disease among African American women based on their current knowledge of heart disease risk factors, knowledge of heart attack symptoms, perception of personal risk for heart disease, and demographic backgrounds. These variables in my opinion could be used as a building block foundation to furthering the study of African American women and potentially conduct Heart Health focus groups among the younger age, less educated, and low- income group of women in order to determine what the other key variables are that may play an important role in increasing African American women's awareness of heart disease.

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Appendix A: Permission Letter

Holt,Fecelia <fholt@divineepiphany.com> Jun 8 (3 days ago)

to Lori, Karen, Lisa

Thank you Dr. Mosca for your reply and guidance with the use of the survey. I recently was informed by my chair, that I need to get permission to use the most recent AHA Women's Health Study survey even though I previously received permission from you and Ms. Robb to use of the 2009 AHA Women's Health Study.

I humbly ask permission to use the most recent 2012 AHA Women's Health Study to conduct my research study. My focus is on African American women aged 18 and older perceptions of heart disease.

Humbly yours,
Fecelia Holt, MPH

Karen Robb Jun 9 (2 days ago)

to me, Lisa, Lori

Fecelia
Thank you for your continued interest in women's health and the AHA Women's Health Study instrument as a source for your ongoing work. You do have the permission of the American Heart Association to use the 2012 AHA Women's Health Study survey. As before, if you do choose to use any part of the survey instrument we do appreciate appropriate reference. Do you have a copy of the 2012 instrument?
Best,
Karen

Karen Robb

Manager, Customer and Marketing Research
American Heart Association/American Stroke Association
Office: 214-706-1409, karen.robb@heart.org

Appendix B: AHA Women's Health Study

Thank you for participating in this survey about women's health. Our first few questions are for classification purposes and they will help us properly analyze your responses to this survey.

Section 1: General Awareness of Women's Health Issues

Our next few questions are about your views on women's health issues today.

1. What do you think is the one greatest health problem facing women today?

2. As far as you know, what is the leading cause of death for all women?

3. Please tell me the extent to which you worry about getting each of the following health conditions. Do you worry a lot about this, worry a little, or do you not worry at all about it?

    1. Not at all
    2. A little
    3. Worry a lot

        1. Cancer
        2. Heart Disease
        3. AIDS

4. Breast Cancer
5. Lung Cancer
6. Smoking
7. Drug addiction or alcoholism
8. Violent crime
9. Stroke
10. Alzheimer's
11. Diabetes
12. Osteoporosis

Section 2: Respondent's General Health Section

4. In general, would you say your overall outlook on life is…?
    1. Poor
    2. Fair
    3. Good
    4. Very good
    5. Excellent
5. Which of the following have the biggest impact on your overall outlook on life? Please select the top 2 or 3 things that have the greatest impact.
    1. My ability to manage my work commitments
    2. My ability to manage my family commitments

3. My physical health
4. My emotional health
5. The health of my family
6. Concerns about my financial stability
7. Concerns about not having enough time to do everything I need to do
8. Caring for children, young or old
9. Caring for a disabled or older adult family member
10. My spiritual life
11. My support system, like spouse, friends and family

6. Which of the following do you currently experience? Please [SELECT/TELL ME] all that apply even if it is controlled or managed by medication.
    1. High blood pressure
    2. High cholesterol
    3. Family history of heart disease or stroke
    4. Smoking habit
    5. Weigh 20 pounds or more over ideal for your height and build
    6. Physical inactivity (i.e., exercising less than 20-30 minutes per day, 5 or more days of the week)
    7. Depression
    8. None of the above
7. Has a doctor, nurse, or other health professional ever told you that you had any of the following?

1. Yes
2. No
    1. Heart attack
    2. Stroke
    3. Diabetes

8. Please indicate how much you agree or disagree with the following statements.
    1. Strongly disagree
    2. Somewhat disagree
    3. Somewhat agree
    4. Strongly agree
        1. I don't get enough sleep on a regular basis
        2. I am taking care of my health
        3. My health is a priority for me
        4. I'm so busy taking care of everyone else, I don't take good care of myself
        5. I usually follow recommended healthy eating habits (i.e. low sodium intake, low fat intake, eat fruits and vegetables, etc…)
        6. When life gets busy, exercising is one of the things I skip
        7. My muscles and joints ache on a regular basis
        8. I am concerned about my alcohol intake
9. In general, would you say <u>physical</u> health is…

1. Poor
2. Fair
3. Good
4. Very good
5. Excellent

10. In general, would you say your emotional health is…
    1. Poor
    2. Fair
    3. Good
    4. Very good
    5. Excellent
11. How much influence does how you feel physically impact how you feel emotionally?
    1. Not at all
    2. Some
    3. Very much
    4. A great deal
12. How much influence does how you feel emotionally impact how you feel physically?
    1. Not at all
    2. Some
    3. Very much

4. A great deal

13. How often do each of the following statements describe you?

    1. None of the time
    2. Some of the time
    3. Half of the time
    4. Most of the time
    5. All of the time

        1. My friends and family are a significant drain on my emotional energy.

        2. I know how to successfully "recharge my battery" when I am feeling low on energy

        3. I feel like I am "running on empty"

        4. I take "me time" when I need to recharge my physical and emotional energy

        5. My life is chaotic

        6. I have too many responsibilities

        7. I feel overwhelmed

        8. I have so many things to do, I feel like I don't do anything well

        9. I feel good about my life

        10. I feel blue or down

        11. I feel as if I'm letting others down

        12. I consider myself an optimist

13. I feel conflicted between my work and family responsibilities

[FOR EMPLOYED PARTICIPANTS ONLY]

14. How much do you think your overall outlook on life impacts the following?

    1. Not at all
    2. Some
    3. Very much
    4. A great deal

        1. Your likelihood to develop a serious illness like heart disease
        2. Your likelihood to successfully manage a serious illness like heart disease if you develop it

Section 3: Awareness of Heart Disease

15. How informed are you about heart disease in women? Would you say you are:

    1. Very well informed
    2. Well informed
    3. Moderately informed
    4. Not at all informed

16. How informed are you about stroke or "brain attack" in women? Would you Say you are:

    1. Very well informed
    2. Well informed

3. Moderately informed

4. Not at all informed

Section 4: Specific Understanding of Heart Attacks and Stroke

17. Based on what you know what are the warning signs do you associate with having a heart attack?

18. If you thought **someone** was having a heart attack, what is the first thing **you** would do?

19. If you thought **you** were experiencing signs of a heart attack, what is the first thing **you** would do?

20. Based on what you know what warning signs do you associate with having a stroke or "brain attack"?

21. If you thought **someone** were experiencing signs of a stroke or "brain attack", what is the first thing **you** would do?

22. If you thought **you** were experiencing signs of a stroke or "brain attack", what is the first thing **you** would do?

23. Based on what you know, what are the major causes of heart disease?

24. Do you have a health care professional who you see on a regular basis?

1. Yes
2. No

25. Have any of your doctors ever discussed the following with you when discussing your health? Please select all that apply.

1. High blood pressure
2. Cholesterol
3. Family history of heart disease
4. Your risk for heart disease
5. Your risk for stroke

6. Weight
7. Stop smoking
8. Appropriate heart healthy diet and nutrition
9. Exercise
10. None of these

26. For each of the following, please indicate how much you agree or disagree.

1. Strongly disagree
2. Somewhat disagree
3. Somewhat agree
4. Strongly agree

01 Women are as likely as men to participate in medical (or clinical) research related to the treatment and prevention of heart disease.

02 What is good for my heart is good for my brain.

03 The care I receive for my health care provider treats the whole person, not just my disease or symptoms.

04 My health care provider takes my lifestyle habits into account when making recommendations about my health care.

05 My health care provider is sensitive to my culture when making recommendations about my health care.

06 My health care providers do not communicate with each other enough about my health care.

07 My health care provider considers cost saving options when managing my health care.

08 I trust my health care provider so much that I always try to follow her/his advice

09 I don't think my health care provider cares about me as a person

10 I trust my doctor to put my medical needs above all other considerations when treating my medical problems

27. Who have you talked to about your family's medical history as it relates to heart disease?

1. Have talked to
2. Have not talked to
3. Not applicable

1. My parent(s)
2. Siblings
3. Children
4. Other relatives

Section 6: Behaviors Associated with Prevention

28. Have you done any of the following things to monitor or improve your health in the last year?

1. Yes

2. No

3. N/A

    1. Quit smoking

    2. Get regular physical exercise

    3. Take special vitamins like E, C, or A

    4. Lose weight

    5. Reduce dietary cholesterol intake

    6. Reduce stress

    7. Take multivitamins with folic acid

    8. Take hormone-replacement therapy

    9. Reduce sodium or salt in the diet

    10. Reduce animal products in my diet (such as meat, whole milk, butter and cream)

    11. Aromatherapy

    12. Take aspirin

    13. Maintain a healthy blood pressure

    14. Maintain a healthy cholesterol level

    15. Eat foods or take supplements that contain fish oil/Omega 3 fatty acids

    16. Increase fiber intake

    17. Eat foods containing antioxidants

    18. Eat plant stanols and sterols

19. Floss my teeth regularly
20. Pray or meditate
21. Get adequate sleep
22. A doctor's visit
23. Reduce my sugar intake

29. Thinking about the things *you* have done to improve *your own* health, please tell us if any of the following prompted you to take action.
    1. I saw, heard, or read information related to heart disease.
    2. My health care professional encouraged me to take action.
    3. A family member or relative encouraged me to take action.
    4. A friend encouraged me to take action.
    5. A family member/relative developed heart disease, got sick, or died
    6. A friend developed heart disease, got sick, or died
    7. I experienced symptoms that I thought were related to heart disease
    8. I wanted to feel better
    9. I wanted to avoid taking medications
    10. I wanted to improve my health
    11. I wanted to live longer
    12. I did it for my family
    13. I was encouraged to take action during an event or program at my place of worship (church, mosque, or temple)

14. I was encouraged to take action during an event or program at my community center
15. Something else
16. I have not done anything to improve my health

30. Thinking about the following activities, are you doing these more often, less often or about the same amount of time as you did one year ago?
    1. More often
    2. Less often
    3. About the same amount of time
        1. Getting at least 20-30 minutes of vigorous exercise daily where you are winded, that is you can still talk, but not sing
        2. Eating meals away from home at restaurants, fast food, quick serve, etc.
        3. Cooking meals at home with fresh ingredients
        4. Eating prepackaged boxed, refrigerated or frozen meals
        5. Drinking sugar-sweetened beverages (i.e. non diet beverages)
31. Which of the following are the biggest barriers preventing you from leading a heart healthy lifestyle?
    1. I don't perceive myself to be at risk for heart disease
    2. I don't want to change my lifestyle
    3. I don't think changing my behavior will reduce my risk of developing heart disease

4. I'm fearful of change
5. I'm not confident that I can successfully change my behavior
6. I am too stressed to do the things that need to be done
7. I am too depressed to do the things that need to be done
8. I am too ill/old to make changes
9. I don't have the money or insurance coverage to do what needs to be done
10. I have family obligations and other people to take care of
11. My family/friends have told me that I don't need to change
12. I don't have the time to take care of myself
13. My health care professional doesn't think I need to worry about heart disease
14. My health care professional doesn't speak my language
15. I am confused by what I'm supposed to do to change my lifestyle
16. I feel the changes required are too complicated
17. I don't know what I should do
18. There is too much confusion in the media about what to do
19. My health care professional doesn't explain clearly what I should do
20. God or some higher power ultimately determines my health
21. Other
22. None of these, I lead a heart healthy lifestyle

Section 8: Motivation to Change

32. How likely are you to become involved with "heart health" as an issue if the following kinds of programs existed?

1. 1. Definitely would not
2. Probably would not
3. Might or might not
4. Probably would
5. Definitely would

01 A medical research program to ensure that the ways in which women experience heart disease are adequately addressed

02 A program to educate women that heart health is an issue all women should pay attention to

03 A program to educate women about how to navigate the health care system to get the best care possible

04 A program to educate women about how to evaluate their health care provider's ability to treat them if they have heart disease

33. What would you need to know or learn to believe that heart health is an issue for all women?

34. Earlier you mentioned you thought [INSERT RESPONSE FROM Q2] was the leading cause of death for all women in the U.S. The leading cause of death for women in the U.S. is heart disease. Knowing that information, which of the

following are you likely to do?

1. Go to the doctor to assess my risk for heart disease
2. Get more information about heart disease
3. Research ways to improve my heart health
4. Talk to my family about our medical history
5. Talk to my friends about heart disease
6. Get involved with an organization to help to raise awareness about heart disease
7. Make lifestyle and behavior changes
8. Other
9. Nothing

35. Which of the following currently live in your household?

1. Parents/in-laws
2. Siblings/in-laws
3. Grandparents/in-laws
4. Children under 18
5. Children over 18
6. Other relatives over 18
7. Other relatives under 18
8. None of the above

36. Do you currently care for a disabled, chronically ill, or aging family member?

1. Yes

2. No

37. In total, how many generations currently live in your household?

For example, if you live alone or only with a spouse or roommate, that would be one generation. If you live with your parents or your children, that would be two generations. If you live with your parents and your children, that would be three generations.

38. Next, I have a few more general questions.

Which of the following types of health insurance, if any do you currently have?

1. Health insurance provided by [WEB: my] employer or school
2. Health insurance through a family member's employer or school
3. Private insurance coverage that you pay for out-of-pocket
4. Medicare
5. Medicaid or other public insurance
6. Veteran's Affairs (VA)
7. Some other type of insurance
8. No insurance coverage

39. Which of the following best describe you? For the purpose of this question please use the following definitions:

- Perimenopause: the years prior to a women's last menstrual period, which can be characterized primarily by erratic/irregular menstrual cycles, but may also include

PMS-like symptoms, hot flashes or night sweats, sleep disturbance, decreased sex drive and changes in mood.

- Menopause: process by which menstruation and fertility permanently end; it is defined as not having a menstrual period in 12 consecutive months, and can be accompanied by hot flashes and night sweats, sleep disturbances, vaginal itching and dryness. Menopause is considered completed when a woman has been without her period for one full year. Menopause may also be induced by surgery such as a hysterectomy, and can also be referred to as "surgical menopause".

    1. I am pre-menopausal and have not experienced symptoms of menopause yet.

    2. I am in perimenopause.

    3. I am post-menopausal.

40. What is your age?

°18-29
°30-49
°50-69
°70-older

41. What is the highest level of education you have completed?

°no high school
°some high school
°high school graduate
° trade/technical/vocational training
° college graduate
° some post graduate work
° post graduate degree

42. Which of the following best classify the income of your family household?

° less than $10,000
° $10,000 - $29,999
° $30,000 - $49,999
° $50,000 - $69,999
° $70,000 and greater

43. Do you have a family history of heart disease?

° yes
° no

44. What state within the United State do you live in?

- Alabama
- Alaska
- American Samoa
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- District of Columbia
- Florida
- Georgia
- Guam
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa
- Kansas
- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi

- Missouri
- Montana
- Nebraska
- Nevada
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Carolina
- North Dakota
- Northern Marianas Islands
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Puerto Rico
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Texas
- Utah
- Vermont
- Virginia
- Virgin Islands
- Washington
- West Virginia
- Wisconsin
- Wyoming

Appendix C: Introductory Page

My name is Fecelia Holt, I am a Walden University Doctoral student in Public Health. I am emailing you to ask for your participation in my research study. The purpose of my study is to determine the overall knowledge and health belief of heart disease among African American women. This research can help create heart health dialogue within the African American women's community that will increase knowledge of heart disease.

Your participation would assist me in my research. 384 African American women are needed for my study. Participants must: **be African American Women, 18 years of age and older, English speaking, Reside within the United States, have an email address, have access to an electronic device with Internet connection**. Participation is strictly voluntary. You have the option to stop participating at any time. If you do not wish to participate, simply discard the questionnaire. This is an online survey; the risks of the study are minimal. The survey is administered through Google docs. It should take less than 10 minutes to complete. Please read carefully all the questions and give your best response. There is no incentive for participating in this study.

Responses will be completely anonymous; neither your name nor anything else that could identify you will be anywhere on the survey or in any report of the study. The researcher will not use your information for any purposes outside of this research project. By completing and returning the questionnaire you are acknowledging that you are 18 years of or older and are consenting to participate in this study as well as consenting to have your confidential responses published.

Instructions for participation:

1. Click on the Google docs link below or copy and paste the link into a web browser.

2. Follow the instructions, answer each question carefully.

3. Click submit at the end of the survey when you are finished.

Eligible Criteria:

Must be 18 years or older, African American woman, English speaking, reside within the United States, have an email address, have access to an electronic device with Internet connection.

Survey Link:

https://docs.google.com/forms/d/17ypLA_uhjyDQ9TZovYyW3kwoGsHlv6oHn94j7dtHdZI/viewform

Questions and concerns:

If you have any questions regarding the study, you may contact Fecelia.holt@waldenu.edu, concerning your rights as a participant please contact the Walden representative Dr. Leilani Endicott, 800-925-3368, ext. 1210

Thank you for taking the time to assist me in this research. I greatly appreciate your feedback in this endeavor.

Fecelia Holt, MPH, Doctoral Candidate

Walden University, College of Health Sciences

Appendix D: Confirmation page of the survey

The confirmation page of the survey will read:

Your response has been accepted. Thank you again for your participation. A summary of the results will be posted on the link below:

RESULT link:
https://docs.google.com/forms/d/1v1XtHShSufEq6nFqkjL83UX-0fma7l0alc7KBkuoXZM/viewform

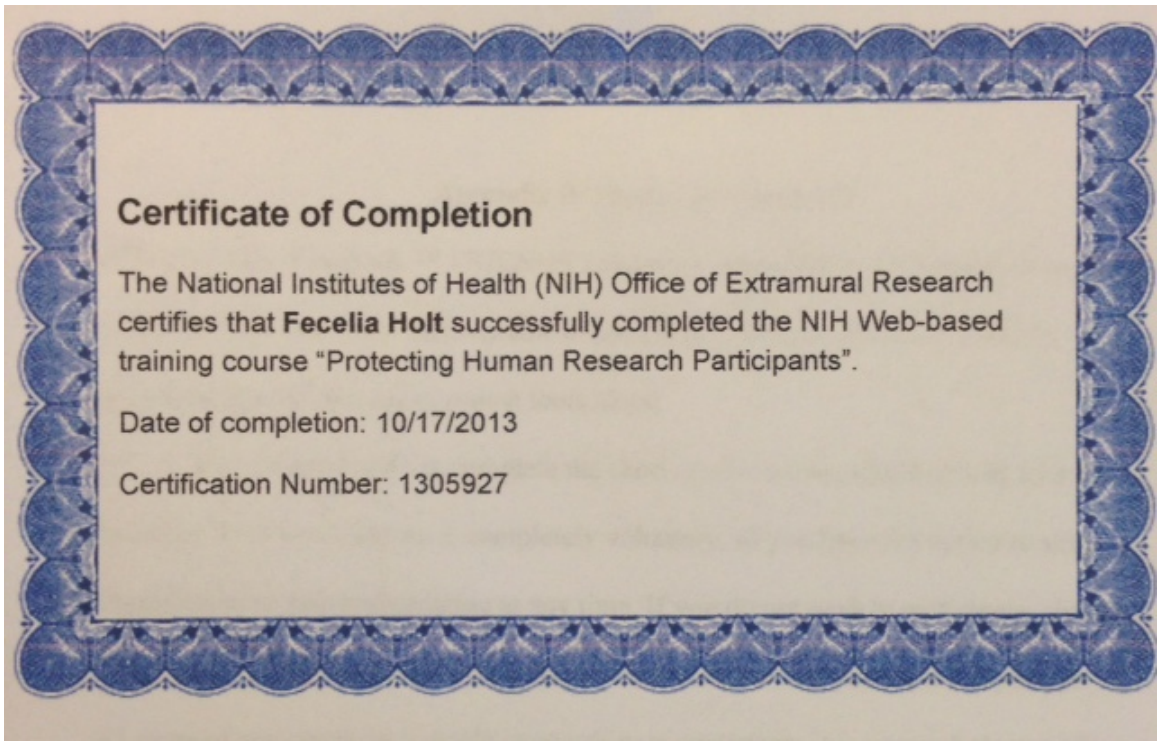
Below are links that will provide more information about heart disease:

Centers for Disease Control and Prevention: http://www.cdc.gov/heartdisease/facts.htm

National Heart, Lung, Blood Institute: http://www.nhlbi.nih.gov/

American Heart Association: http://www.heart.org/HEARTORG/

Appendix E: Certificate of Completion



Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Fecelia Holt** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 10/17/2013

Certification Number: 1305927

Appendix F: Notification of Approval to Conduct Research

Subject : **Notification of Approval to Conduct Research-Fecelia Holt**

Date : Tue, Nov 26, 2013 03:47 PM CST

From : **IRB <IRB@waldenu.edu>**

To : Fecelia Holt <fecelia.holt@waldenu.edu>

CC : Walden University Research <research@waldenu.edu>, Jacquie Fraser <Jacquie.Fraser@waldenu.edu>

Dear Ms. Holt,

This email is to serve as your notification that Walden University has approved BOTH your dissertation proposal and your application to the Institutional Review Board. As such, you are approved by Walden University to conduct research.

Please contact the Office of Student Research Administration at research@waldenu.edu if you have any questions.

Congratulations!

Jenny Sherer
Associate Director, Office of Research Ethics and Compliance

Leilani Endicott
IRB Chair, Walden University

Appendix G: Curriculum Vitae

Fecelia Holt

Summary of Qualifications:

Public Health Doctoral Degree. Ten years work experience in community public health social service settings.

Passion/Objective:

To help others through the implementation of programs that will educate people and allow them to live up to their full potential.

Dissertation Title:

African American Women's Perceptions of Personal Risks for Heart Disease

Education

Ph.D. Walden University. Doctor of Philosophy in Public Health. Concentration in Community Health Promotion and Education. 2014

MPH. Armstrong Atlantic State University. Master of Public Health. 2001

BS. Savannah State University. Bachelor of Science. Major in Biology and Minor in Chemistry. 1999

Professional Experience

CEO
Divine Epiphany, LLC
- Program Development Consulting (2008-Present)

Intake Coordinator
Multi-Agency Alliance for Children, Inc. (2007-2008)
- Managed the referral process for admissions to partnering agencies
- Networked with community agencies/providers and family members to communicate, build team, gather and share information, etc.
- Participated in treatment planning and special meetings to address client needs
- Attended and participate in Clinical Team meetings
- Maintained a positive working relationships the MAAC Clinical Team Members
- Supported the Statewide Youth Leadership group

Twin Cedars Youth Services
Coordinator
Live Oaks Shelter (2005-2007)

- Spearheaded and completed all requirements/application for ORS and LOC licensing for program
- Ensured the operation of the shelter are conducted in a professional manner
- Ensured shelter maintains licensure
- Hired/Managed all staff for Advocate and Case Manager positions
- Ensured implementation of treatment plan/plan of care is done
- Managed budget of $400,000 for shelter
- Ensured that the shelter is kept up physically
- Developed and submit monthly reports
- Assumed on-call responsibilities as needed
- Ensured accurate MAR documentation is evident
- Supported the philosophy that promotes strength-based, community-based and family focused activities

Twin Cedars Youth Services
Community Residential Assistant
Cedars Home (2003-2005)

- Managed the referral process for admissions from start to finish
- Reduced the number of vacancies by creating an effective direct mail campaign that resulted 40% increase in occupancy
- Implemented various programs that promotes strength-based, family focused, community-based philosophies
- Conducted treatment planning meetings that resulted in the highest family reunification
- Spearheaded Network with community agencies and family members
- Served in rotation of "on-call" for crisis prevention and emergency admissions
- Supervised Community Residential Advocates and Community Residential PRN's

Social Worker/ Activity Coordinator
Housing Authority City of LaGrange (2001-2003)

- Conducted housing inspections to ensure compliance with Housing and Urban Development
- Directed staff in delivering quality services and documenting efforts
- Initiated and coordinated activities for specific populations
- Assisted with the preparation of grant requests and in the preparation of budget for Tenant Services
- Maintain a positive working relationships with federal, state, and local agencies providing services to low-income residents
- Supervised and evaluated participants in K-12 incentive award program

Research Experience

- African American Women's Perceptions of Personal Risks for Heart Disease
- Adolescent Obesity

Teaching Experience

CEO
Divine Epiphany, LLC
- Child Care Director/Provider (2008-2012)

Comprehensive Awareness Program Instructor
Twin Cedars (2001-2007)
- Taught Parenting classes and coping skills to youth and their parents in the juvenile court system

Parenting Instructor
One Hundred Black Men of West Georgia Inc. (2002- 2003)
- Taught Parenting classes quarterly to parents of youth that are in the juvenile court system

Certification

- CPR and First Aid Certified trainer

Technical and Research Skills

- Proficient in Microsoft Office Suite: Word, Excel, Outlook, and Power Point
- Ability to conduct literature reviews, data collection and analysis

Affiliations/Memberships

- Alpha Kappa Alpha Sorority, Inc.
- American Public Health Association
- Golden Key Honor Society

Honors/Awards

- Walden University, Presentation Honoraria recipient
- 100 Black Men of West Georgia, Inc. Service Dedication recognition

- Alpha Kappa Alpha Sorority, Inc. Community Service Award