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Educational Intervention: Effects on Heart Disease Risk Factor Knowledge Among African Americans

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Walden University
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Abstract

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Dissertation Submitted in Partial Fulfillment

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Abstract

Fatal coronary heart disease among African Americans is associated with a disproportionate burden of cardiovascular disease (CVD) risk factors. Research has indicated that CVD risk factor knowledge and the prevalence of ideal CVH both persist at suboptimal levels. However, few researchers have investigated the relationship between culturally-tailored community-based heart health sessions, short-term knowledge acquisition of CVD risk factors, and the awareness of the American Heart Association's (AHA's) CVH construct. The purpose of this cross-sectional, secondary analysis study was to examine the interplay between these variables in an urban African American sample. Guided by social cognitive theory, the study analyzed de-identified data (data sets of demographic characteristics and Heart Disease Facts Questionnaire) from participant responses collected at multiple community sites to assist in the planning of future health programs. Multiple community sites were randomized into an intervention (n = 50) or comparison group (n = 57). Pearson's correlation and multiple regression were used to analyze data. Knowledge was higher for intervention group participants (β = .44, p = .001) and tended to be higher for those with more education (β = .20, p = .06) and those with less income (β = -.22, p = .07). Notably, most participants (73%) reported awareness of the AHA construct, CVH. The results support culturally-tailored interventions as a useful strategy for CVD risk reduction. The implication for social change is that initiatives at the community-level may positively impact CVH in minority/ethnic communities and subsequently impact CVD disparities.

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Dedication

This dissertation study is dedicated to my parents, the late Ervie Lee Williams and the late Louella Williams, both of whom planted the seed for me to embark upon this academic journey while providing words of encouragement and belief in my ability to achieve my educational goals. I thank you for your abundant giving of yourself, through your prayers and inspirational words that encouraged me, until you had to succumb to illness. I will always cherish the foundation you provided that propelled me to endure this journey. Also to the late Sydney Sanders, whose belief in my journey was shown by your generous financial contribution to assist me in continuing the journey.

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Chapter 1: Introduction to the Study

Introduction

Cardiovascular disease (CVD), commonly known as heart disease, is one of the main sources of early deaths in the United States, leading to an estimated 800,000 deaths every year as indicated by the American Heart Association (AHA, 2011) and Center for Disease Control and Prevention (CDC, 2013a, 2013b). Preventable deaths are classified as those deaths that result from heart conditions such as ischemia (lack of oxygen flow), stroke, hypertension (high blood pressure), or heart diseases in persons aged ≤75 years (CDC, 2013c). There has been a decline in avoidable deaths resulting from stroke, heart disease, and high blood pressure during the years 2001 to 2010 in all races/ethnicity groups. Preventable mortality has decreased steadily in individuals belonging to the 55 to 64 age group; however, the rate of decline was minimal among the 35 to 54 age group (CDC, 2013c). Despite the overall decline, African Americans exhibit the highest number of avoidable deaths attributed to stroke, heart disease, and high blood pressure with statistics indicating it to be nearly twice in comparison to European Americans (CDC, 2013c). In 2010, the rate of avoidable deaths for particular groups per 100,000 is African Americans (107.3), Hispanic (45.3), American Indian/American Native, non-Hispanic (66.9), Asian/Pacific Islander (33.6), and White, non-Hispanic (57.8). For African American men, the rates are elevated 80% in contrast to African American women and White men (CDC, 2013c).

Deaths ascribed to an absence of precautionary care, such as targeting cardiovascular risk factors to prevent a cardiovascular event or efficient and judicious

medical attention (for example, treating cardiovascular conditions), are referred to as avoidable (Macinko & Elo, 2009). According to the United States Census Bureau (2013), individuals of working age (18-64) are projected to increase by 42 million between 2012 and 2060. Unless measures are taken to reduce preventable diseases, the costs, measured in terms of loss of life, quality of life, and medical care, will increase.

Cardiovascular health (CVH) is a national health priority, as evidenced by the number of national programs introduced in recent years. The U.S. Department of Health and Human Services, Healthy People 2020 (USDHHS, 2013) and the National Prevention Council have developed strategies for national prevention plans to enhance the well-being and health status in the United States (National Prevention, Health Promotion and Public Health Council, DHHS of the Surgeon General, 2011). A public initiative includes the Community Health Worker Health Disparities Initiative, which was developed by the National, Heart, Lung, and Blood Institute. It is comprised of a set of tailored, evidence-based curricula designed to improve heart health specifically for minority groups: African Americans, Filipinos, Latinos, Alaska Natives, and American Indians (USDHHS, National Heart Lung and Blood Institute, and National Institutes of Health, 2014). Finally, the AHA 2020 Strategic Impact Goals focused on "improving the CVH of all Americans by 20% while reducing the deaths as a result of CVD and stroke by 20% by the year 2020" (Lloyd-Jones et al., 2010, p. 608).

The AHA has redefined CVH and proposed the use of positive terminology such as *health behaviors* instead of *risk behaviors.* The four health behaviors are physical activity, diet, smoking, and managing body weight. The term *health factor* is also used

instead of *risk factors*. The three health factors are cholesterol, blood glucose, and blood pressure. These health behaviors and factors comprise the seven CVH components and are scored on a matrix at levels of low, intermediate, or poor (Huffman et al., 2012; Lloyd-Jones et al., 2010). According to Shay et al. (2012), the ideal is defined as the simultaneous occurrence of the subsequent factors:

- The clinical absence of CVH (e.g., heart attack, heart disease, stroke, heart failure) and all seven CVH components at ideal levels.
- CVH behaviors (body mass index of 25 or less, nonsmoking, adoption of dietary approaches to stop hypertension [DASH], a healthy eating pattern, engaging in physical activity according to suggested levels).
- CVH factors (untreated fasting blood glucose <100 mg/dL), nonsmoking (also a health behavior), untreated blood pressure <120/<80 mm Hg, untreated total cholesterol < 200 mg/dL).

Background of the Problem

Evidence exists supporting the link between ideal CVH and decreased risks and incidences of CVD (Dong et al., 2012; Folsom et al., 2011; Lloyd-Jones et al., 2010). However, less than 1% of adults in the United States have ideal CVH status in all seven health components (Shay et al., 2012). Estimates of the prevalence of all seven typical levels of CVH are lower in African American and Mexican adults relative to European Americans (Shay et al., 2012). Low prevalence of CVH in adults in the United States is consistent in the literature, particularly among African Americans as compared to European Americans (Bambs et al., 2011; Fang, Yang, Hong, & Loustalot, 2012;

Folsom et al., 2011). In fact, African Americans have the highest prevalence of poor CVH relative to other populations (Bambs et al., 2011; Fang et al., 2012; Folsom et al., 2011). However, total cholesterol health factors are reported as being more favorable and occur more often in African Americans comparative to European Americans (Bambs et al., 2011; Dong et al., 2012).

Knowledge of CVD risk factors is necessary for making informed decisions regarding participation in or maintaining behaviors that may increase the risk of CVD (Stroebele et al., 2011). Bandura (2004) noted, "Knowledge of health risks and benefits creates the precondition for change" (p. 144). However, despite aggressive public health efforts to augment knowledge and awareness of CVD risk factors in the general public of the United States, ethnic disparities and racial inequalities in CVD awareness and knowledge associated with CVD risk are evident in the research (Mosca, Mochari-Greenberger, Dolor, Newby, & Robb, 2010; Pace, Dawkins, Wang, Pearson, & Shikany, 2008; Stroebele et al., 2011). Specifically, the African American population's knowledge of CVD risks is insufficient (Mochari-Greenberger, Mills, Simpson, & Mosca, 2010; Stroebele et al., 2011).

CVD prevention interventions have been shown to increase knowledge of risk modification strategies (excluding obesity), together with positive shifts in the stages of change for CVD risk factors, creating a large impact on clinical outcomes among African Americans (Lemacks, Wells, Ilich, & Ralston, 2013; Villablanca et al., 2009). Successful interventions carried out at the individual level as well as population-wide have worked to diminish an individual's contact to two of the most prevalent risk factors, high blood

pressure and smoking. Despite these efforts, these two risk factors have been accountable for the largest number of deaths in the United States (Danaei et al., 2009). Future efforts aimed at improving individual and community health are needed to emphasize education and counseling when addressing lifestyle modifications (Ahmed et al., 2013). Studies incorporating secondary analysis of data to examine cardiovascular risk factors and heart-healthy lifestyle are emerging (Arslanian-Engoren, Eastwood, De Jong, & Berra, 2014; Frierson, Howard, DeFina, Powell-Wiley, & Willis, 2013).

In a secondary analysis evaluation, Frierson et al. (2013) assessed differences in cardiovascular risk factors and the burden of chronic disease in European Americans and African Americans. This was achieved by conducting secondary data analysis using a cross-sectional study design, known as the Cooper Center Longitudinal Study. This study involved African Americans (762) and European Americans (40,051) who had undergone a medical examination during the years 1970 to 2010 at the Cooper Clinic, with results indicating a higher prevalence rate of risk factors associated with CVD among African Americans relative to European Americans. Interestingly, the presence of the risk factors such as smoking, obesity, and physical fitness were absent in the European Americans whereas all three risk factors existed among the African Americans under study. The findings of the study indicated that a large number of disparities exist in the health status and presence of risk factors among African Americans in comparison to Caucasians (Frierson et al., 2013).

Problem Statement

Research has shown that identifying individual predictors of successful or unsuccessful adherence and efficacy of preventive intervention expectations can facilitate the development of relevant approaches of preventive medicine (Bambs et al., 2011). Such individual predictors include genomics, lifestyle behavior modifications, and physical and social environments (Bambs et al., 2011). The use of community-based CVH interventions, participation in heart health knowledge and heart healthy behaviors programs, and the importance of evaluating strategies in the promotion of health has been documented in the research (Arslanian-Engoren et al., 2014; USDHHS, National Heart, Lung, and Blood Institute (NHLBI), National Institutes of Health (NIH), 2012 & Walton-Moss et al., 2014). However, secondary research regarding the relationship between CVD risk factor knowledge, demographic characteristics, an awareness of the term CVH, and tailored educational interventions, exclusively among urban African American sample, is scant. Additional research needs to focus on educational strategies to increase risk factor knowledge (Aycock et al., 2014) and awareness among high-risk groups (Homko et al., 2008); as such, higher rates of CVD exist in African Americans relative to European Americans, which attribute to a lower frequency of ideal CVH metrics (Folsom et al., 2011). Research analyzing cardiovascular interventions in vulnerable populations is credited with gaining understanding in the current literature focused on intervention research (Walton-Moss et al., 2014).

The reviewed literature provides an in-depth look at prior research and justifies the application of a culturally responsive educational intervention approach in

understanding African American knowledge of CVD risk factors and awareness of CVH as recently defined by the AHA. Evidence supports use of a secondary analysis approach for examining CVH behaviors and related factors such as dietary intake, smoking cessation, and medication adherence in a cohort of hypertensive African Americans (Arslanian-Engoren et al., 2014; Bagheri et al., 2015; Knafl, Schoenthaler, & Ogedgbe, 2012).

Disparities in CVD morbidity (experience or diagnosis of chronic heart diseases such as angina pectoris, heart attack, and coronary heart disease) among adults in Douglas County, Nebraska revealed results of 6% of African Americans, compared to 5.8% of White non-Hispanics (Healthy Communities Institute, 2014). It is unclear which factors present the biggest challenge to CVD prevention efforts aimed at this community. Inadequate knowledge of CVD risk factors; lack of awareness of AHA CVH factors; lower education, which hinders the understanding of the medical-related material; and the relationship of these factors to demographic characteristics of the targeted population may impact CVD prevention strategies aimed at African Americans. An understanding of the knowledge of CVD risk and community awareness of tailored educational resources available to address health disparities in minority and underserved communities is needed. This is imperative because CVD risk awareness has been associated with preventive action (Willock, Mayberry, Yan, & Daniels, 2015). Moreover, the need to determine the role of nontraditional healthcare settings is integral in targeting health disparities (Crook et al., 2009).

Therefore, a secondary analysis was conducted on existing de-identified data sets (paper CVD risk knowledge questionnaire and demographic forms) obtained from multiple community sites who provided brief (1-hour tailored heart health education sessions to 107 African American respondents for the purpose of collecting information to enhance future programming). The purpose of this secondary data analysis was to describe relationships between effects of culturally tailored educational interventions, short-term knowledge acquisition (based on heart disease risk factor questionnaire responses), demographic characteristics, and awareness of term CVH from respondents. Through this analysis, I worked to address CVD risk factor reduction by possibly increasing short-term knowledge of CVD risk factors as a precondition for change (Bandura, 2004). Such research may ultimately provide insight into the development of culturally tailored, relevant approaches to design of CVD prevention programs targeting at-risk populations.

Purpose of Study

The predefined objectives of this analysis of secondary quantitative data were threefold. The first objective was to describe the relationship between the effects of educational intervention and short-term knowledge acquisition related to CVD risk factor knowledge scores in participants who attended a culturally tailored educational heart health intervention. The second objective was to compare differences in heart health-knowledge responses between the groups (intervention and comparison group). The third objective was to determine levels of awareness of the American Heart Association term *CVH* in an urban African American sample.

As part of the efforts to reduce significant health disparities and improve access to healthcare for the various ethnic minority groups, the design and evaluation of culturally tailored interventions have become important in the public health system (Nam, Janson, Stotts, Chelsa, & Kroon, 2012). Culturally appropriate strategies aimed to improve lifestyle behaviors are the first step in the management of risk factors (Kountz, 2012). Examples of culturally appropriate strategies may include the use of ethnically matched educators and culturally tailored health education geared to ethnic minority groups (Nam et al., 2012).

According to Bandura (2004), the individual distinctiveness of cognitive knowledge and environmental as well as biological aspects influence action. Therefore, an understanding of these factors may assist public health practitioners and educators in designing CVH promotion interventions that target the CVH of African American adults. These interventions can potentially influence CVD outcomes of this at-risk population and thus have a positive impact on existing health disparities. Results from this study could provide insight into the effects of culturally relevant education intervention on personal characteristics such as knowledge of CVD risks and awareness of health-associated terminologies, which may contribute to the existing body of knowledge targeting CVH among African Americans. Second, the perceptiveness of the consequences of a culturally tailored educational intervention on CVH knowledge acquisition, along with the application of behavioral research, may foster the development of culturally tailored interventions (e.g., using ethnically matched educators

or selecting instructors from the community itself) aimed at improving CVH in at-risk populations.

Research Questions and Hypotheses

RQ1. Will participants who receive a culturally tailored educational intervention have higher levels of knowledge compared to participants who have not received the intervention?

$H_0$1. Participants who receive a culturally tailored intervention will have similar levels of knowledge compared to participants who have not received the intervention.

H_a1. Participants who receive a culturally tailored intervention will have higher levels of knowledge as compared to participants who have not received the intervention.

RQ2. Will participants who receive a culturally tailored educational intervention have higher levels of knowledge than participants who have not received the intervention, after controlling for the participants' demographic characteristics?

$H_0$2. Participants who receive a culturally tailored educational intervention will have similar levels of knowledge as participants who have not received the intervention, after controlling for the participants' demographic characteristics (age, gender, marital status, education, employment, and income).

H_a2. Participants who receive a culturally tailored educational intervention will have higher levels of knowledge compared to those who have not received the intervention, after controlling for participants' demographic characteristics (age, gender, marital status, education, employment, and income).

Theoretical Foundation

Bandura's (1971) social cognitive theory (SCT) acted as the basis for the research hypotheses. SCT provided insights into patient-related interventions (Bandura, 2004) and informed the proposed culturally relevant educational intervention and its effects on increasing knowledge acquisition of CVD, related risk factors, and awareness of CVH as outlined by the AHA. Social cognitive approaches include educational interventions to "promote effective self-management of health habits that keep people healthy through their life span" (Bandura, 2004, p. 144). SCT addresses determinants including (a) information on health hazards and benefits of various healthy activities; (b) apparent self-efficiency; (c) outcome expectations, including costs and benefits of the health practice; (d) goals, including development of a strategy and action plan to reach said goals; and (e) supposed facilitators and communal and structural obstacles or barriers to desired transformations (Bandura, 2004). The application of a personal factor, short-term knowledge acquisition of CVD risks, related risk factors, and awareness of the possible benefits of adopting CVH behaviors and health factors, provide the variables presented in this dissertation research, as knowledge of health risks and benefits are considered a precondition to change (Bandura, 2004).

Nature of Study

This secondary analysis was based on secondary data (paper responses to knowledge of CVD risk questionnaire and demographic survey) from 107 African American participants attending one community site (three churches and one clinic) heart-healthy educational session conducted by the site as a part of program evaluation,

with long term goals of expanding health programs. Four community sites yielded me existing data, which included datasets (de-identified paper questionnaires assessing knowledge of CVD risk factors and demographic surveys including characteristics age, gender, marital status, education, employment, and income) from 107 African Americans respondents. The secondary analysis study was based on secondary data (data sets-paper responses collected by four community sites for enhancing future programing). The purpose of this secondary analysis study was to describe relationships between CVD knowledge acquisition, demographic characteristics, and awareness of the AHA's term CVH in a sample of African Americans who completed community site paper questionnaires and demographic surveys (instruments), either before attending (comparison group) or after attending (intervention group) a culturally tailored group educational session. Each site chose the Heart Disease Fact Questionnaire (HDFQ), a 25-item questionnaire to assess CVD risk factor knowledge, and a demographic data form adopted by the community sites collected demographic characteristic data. Each site chose an ethnically matched interventionist (presenter) to deliver the educational heart health sessions with experience ranging from community health educator, registered dietitian, and registered nurses. A health ministry director at one community site (a church) holds a PhD. Each site based their community delivered culturally tailored heart health educational program on the NHLBI's Community Health Worker Health Disparities Initiative's Heart Health Program, a tailored evidence-based heart health program designed by the NHLBH ultimately to reduce heart health disparities (USDHHS, National Institutes of Health, National Heart Lung and Blood Institute, 2014).

Definition of Terms

Each technical field uses words and phrases that may not be readily understood by all readers. However, each person who reads this study must be able to comprehend all terminology used (Baltimore County Public Schools, 2010). The following operational definitions of certain phrases and terms are used throughout this study.

African Americans: For the purposes of this study, the term African American adults will be used to refer to individuals of African descent who are more than 18 years of age (Sawyer, 2008). According to Sawyer (2008), Black and African American are interchangeable terms. For the purposes of this study, the term African American will be used.

Avoidable deaths from heart disease, stroke, and high blood pressure disease: Any death occurring in individuals <75 years of age combined with an underlying cause of ischemic heart disease, stroke, high blood pressure, or chronic (greater than 6 months) rheumatic heart disease (CDC, 2013c).

Cardiovascular disease risk-reducing behaviors: Used interchangeably with the CVH-promoting behaviors of maintaining appropriate weight, nutritional diet, and participation in physical activity (Sacco, 2011).

Culturally-tailored intervention: Defined by Pasick, D'Onofrio, and Otero-Sabogal (1996) as the development of interventions, training practices, and materials to conform to particular characteristics.

Dietary Approaches to Stop Hypertension (DASH)-like eating plan: Consumption of a diet that is high in fruits and vegetables, moderate in low-fat dairy items, and low in

animal protein, along with a significant intake of plant protein from legumes beans and nuts (Fung et al., 2008).

Health education: The action of sharing educational information related to health, which may include information about lifestyles to guard against illness and information promoting the engagement in preventive services (World Health Organization [WHO], 2012).

Health promotion: A combination of planned activities developed to improve individual and public health, including implementation of behavior change strategies, health education, detection of risk factors, health protection, and health improvement and maintenance (Kline & Huff, 2007).

Intervention: Planned set of strategies with objectives aimed at bringing about a change or producing recognizable outcomes. Interventions may include policy, regulatory initiatives, single strategy projects, or multicomponent programs (Rychetnik, Frommer, Hawe, & Shiell, 2002).

Knowledge acquisition: Knowledge is information, understanding, or skills obtained from experience or education (Knowledge, 2014). The acquisition is something gained (Acquisition, 2014). For the purpose of this study, knowledge will be defined as information that is acquired by a sample of African American adults who attended a culturally tailored educational intervention.

Lifestyle: The patterns of choices made by an individual, which include food, physical activity, substance use, and sexual behavior (Freudenberg, 2007).

Physical activity: A regimen of the routine exercise of 150 minutes of moderate-intensity exercise per week (American College of Sports Medicine, 2013).

Public health intervention: Action performed with the intention of health promotion, health protection, and the prevention of illness in communities or populations (Rychetnik et al., 2002).

Risk (health) factors: Bambs et al. (2011) defined these factors as (a) ideal levels of blood pressure, (b) total cholesterol, and (c) fasting blood glucose.

Assumptions, Limitations, Scope, and Delimitations

In this study, I assumed that participants reported honest and accurate information. Community sites required participants to divulge paper, self-reported demographic information pertaining to age, gender, marital status, education, income, and employment, responses to questionnaires regarding knowledge of heart disease risk factors, and awareness of the AHA construct term CVH. There is a possibility that participants may have had some awareness and knowledge of CVD risk factors, which may have limited reliability.

This study has several major limitations. In this secondary analysis study, I evaluated effects of culturally tailored interventions. This study showed that culturally tailored interventions can have a positive effect on CVD risk knowledge; however, a comparison of this type of (culturally tailored interventions) to a group who received no intervention might have shown significant differences between the groups, thereby limiting availability of data in the data sets used to conduct this secondary analysis. The community sites provided secondary data (data sets consisting of paper instruments, CVD

risk knowledge questionnaires, and demographic data) collected from African American participants of community sites (three churches and one clinic) that conducted heart health educational interventions. Secondary data derived from the community sites were used to examine the relationship among variables (heart health knowledge scores and demographic characteristics) from an urban sample of African Americans served by the community sites, which have limited generalizability of study results. Each community site was located within close proximity of the African American participants, limiting the generalizability of the results to this population.

Conducting secondary analysis presented a challenge, which was attributed to my lack of training on how to conduct graduate level secondary analyses using existing data sets (Mueller & Hart, 2010). To address this challenge, I used existing literature as a reliable reference point; however, errors may have occurred during data collection, coding, preparation for analysis, or data entry process to the extent it could affect the accuracy, reliability, or validity of data reported. Self-reported data instruments were used to obtain knowledge scores and required the scores to be interpreted as an estimation of knowledge (Lemmens & Huijsman, 2008).

Culturally tailored heart health educational community interventions provide a feasible and useful approach for CVD prevention efforts. The scope of this study was to describe the relationships between levels of heart disease risk knowledge scores and demographic characteristics (age, gender, education, marital status, and income) among African Americans who participated in community-based culturally tailored heart health educational interventions aimed at CVD prevention.

Significance of the Study

Researchers agree that community-wide approaches to CVH promotion are essential aspects for primary prevention of CVD and targeting of high-risk populations to engage individuals in community prevention efforts (Bryant et al., 2010; Nguyen et al., 2012; Sin, Fitzpatrick, & Lee, 2010; Strasser, 1978). In addition, emerging evidence supports community-based prevention initiatives consisting of risk-reducing disease prevention strategies to support healthy behaviors that can be easily accessed by the targeted community (Fletcher et al., 2011). Finally, individual and population-based interventions are necessary in support of attaining AHA's 2020 Impact Goals for CVH (Bambs et al., 2011). Although belief in the significance of a light diet and the capacity to consume a low-fat diet exists among most African Americans (Watters & Satia, 2009), every component of CVH, with the exception of total cholesterol, indicated a poorer health status for African Americans relative to European Americans (Bambs et al., 2011).

Results from this study may provide insight into appropriate CVD prevention strategies addressing knowledge of CVD risks, and awareness of the AHA construct, CVH, contributing to the current body of knowledge related to CVH and at-risk populations, particularly urban African Americans. Results obtained with the help of this research could provide a helpful guide for public health professionals to use in developing and implementing culturally relevant CVH educational interventions for at-risk groups. The implications for social change include data obtained from this secondary analysis study that may serve as a guide for developing community tailored hearth health interventions and may potentially impact health behaviors (Joseph et al., 2013; Utz et al.,

2008; Whitt-Glover, 2013) in at risk populations, such as African Americans. Results from this study may lead to a better acquisition of knowledge on CVD risks and correlated risk features. These results may ultimately be used to guide the development of public health strategies aimed at improving CVH in African American populations, thus affecting disparities in avoidable death rates from CVD, high blood pressure, and strokes as well as CVH disparities.

Summary and Transition

Ideal CVH's association with decreased risks and incidence of CVD are well documented (Dong et al., 2012; Lloyd-Jones et al., 2010); however, low pervasiveness of model cardiovascular fitness persists across all groups (Bambs et al., 2011; Dong et al., 2012; Fang et al., 2012). European Americans met ideal levels of each metric relative to African Americans in all areas of the metric except for total cholesterol (Bambs et al., 2011; Folsom et al., 2011). Multilevel and multidisciplinary approaches to CVD prevention and CVD self-management programs are needed to (a) prevent development of risk factors in the onset, (b) tailor programs to the needs of individuals, and (c) incorporate a theoretical foundation for behavior change (Fang et al., 2012; Katch & Mead, 2010; Lloyd-Jones et al., 2010). Overall, CVD prevention interventions, such as culturally tailored interventions, have shown promise as a useful strategy aimed at at-risk populations. Cardiovascular disease preventative modalities have been shown to minimize risks for CVD, as evidenced in studies where participants continued healthier lifestyles. Health behavior changes include weight loss (Svetkey et al, 2008) and weight loss maintenance (Tussing-Humphreys, Fitzgibbon, Kong, & Odoms-Young, 2013). This

increased knowledge may not result in sustained heart healthy behaviors (Konicki, 2012); however, there is considerable variation in how knowledge of CVD risk translates to behavior change among African Americans. The use of a culturally-tailored approach to health promotion in addressing the knowledge of CVD risk to influence health behaviors is increasing. Consideration of the cultural needs and experiences of individuals is vital when working with diverse populations, as "culture is an important factor in explaining and intervening in human behaviors" (McCullough Chavis, 2011, p. 472).

Chapter 2 provides a literature review of key concepts pertaining to avoidable deaths related to heart disease and stroke, including risk factors for CVD and national goals for preventing CVD and highlights the AHA's concept of CVH in the United States and in Nebraska. Chapter 2 also includes the use of programs and interventions targeting CVD risk factors and related CVD preventive behaviors. In Chapter 3, I describe the secondary analysis methodology for the study and a description of the data collection procedures. Next, in Chapter 4, I discuss the relationships results in relation to the research questions, hypothesis, sample characteristics, descriptive analysis, and description of data sets, demographic and knowledge questionnaire instruments administered by the community sites to obtain participant responses, and measurements of variables and differences in the variables between intervention and comparison group responses in this study. Finally, Chapter 5 addresses the results in relation to previous empirical literature, theoretical and methodical implications of this study, limitations in the current study, implications for social change, and suggestions for future research

Chapter 2: Literature Review

Introduction

In 2012, heart disease was selected as one of the leading causes of death for African Americans in Douglas County, Nebraska (Douglas County Health Department [DCHD], 2013). Disparities in CVD risk factors for diabetes, stroke, obesity, and physical inactivity were, and still are, apparent. According to Healthy Communities Institute (2014), data for Douglas County indicated that the percentage of African Americans adults diagnosed with stroke was 3.4%, compared to White non-Hispanics at 1.8%. Diabetes was diagnosed in African Americans at 20.0% and only 9.0% in White, non-Hispanics, and 39.3% of African Americans were diagnosed with obesity compared to 28.9% of White non-Hispanics (Healthy Communities Institute, 2014). In addition, behavioral data in Douglas County indicated that physical activity at recommendation levels for African Americans was 36.5%, but for White non-Hispanics was 54.3% (Healthy Communities Institute, 2014). Finally, consumption of five or more vegetables and fruits each day was rated at 23.7% for African Americans and 37.7% for White non-Hispanics (Healthy Communities Institute, 2014). These disparities between African Americans and their White, non-Hispanic counterparts in Douglas County, Nebraska indicate a need to understand the knowledge of CVD, risk factors, and awareness of CVH and related potential benefits in the targeted community.

One goal for this study was to initiate an initial step in targeting the knowledge of CVD risk factors and awareness of AHA terminology, such as CVH, among African Americans. Bandura's (2004) SCT was used to examine heart health risk factor

knowledge scores and differences in demographic characteristics and knowledge between intervention (participating, completed paper heart-knowledge questionnaire and demographic from *after* hearing a culturally-tailored educational intervention) and comparison (nonparticipating , completed paper heart-knowledge questionnaire and demographic form *before* hearing a culturally tailored heart health educations session) groups.

In Chapter 2, I present a detailed empirical overview of issues regarding CVD as it relates to the CVH among African Americans. Specifically, avoidable deaths from heart disease and heart disease risk factors among African Americans are discussed. The emphasis was on (a) CVH's (CVH) definition, metrics, and prevalence; (b) CVH behaviors and health factors; (c) knowledge of CVH, health behaviors, and health factors; (d) epidemiological perspective on health factors for CVH; (f) challenges to CVH promotion efforts; and (f) health promotions like community programs and interventions. Next, SCT is used to explain personal characteristics, specifically knowledge, in relation to health. Evidence exists to support the use of SCT in empirical research involving African Americans and includes culturally tailored interventions, health behaviors, physical activity, and the DASH eating plan (Quinn & Guion, 2010; Utz et al., 2008; Whitt-Glover et al., 2013). Finally, global and national attention to the CVD epidemic is warranted, as CVD and related conditions such as diabetes impede socioeconomic advancements, particularly among disadvantaged segments of the population (WHO, 2012). Thus, there is a dire need to emphasize the recently defined concept of CVH as

one approach to the prevention of CVD, potentially impacting the prevalence of CVD risk factors in African American and at-risk communities.

Challenges remain despite the existence of effective interventions for high blood pressure and smoking, as both have contributed to the leading cause of deaths in the United States. Sedentary lifestyle, poor nutritional habits, and metabolic risk factors associated with chronic conditions are responsible for a significant rate of mortality in the United States (Danaei et al., 2009). African Americans have a higher prevalence of preventable deaths compared with European Americans because of heart conditions, elevated blood pressure, and stroke (CDC, 2013c). African Americans have also been linked to disproportionate risk factors of CVD such as diabetes, high blood pressure, obesity, sedentary lifestyle, inadequate intake of fruit and vegetables, and poor low-density lipoprotein cholesterol control (Covelli, Wood, & Yarandi, 2012; Go, Mozaffarian, & Roger, 2013; Kershaw et al., 2011; Taylor et al., 2010).

In the current research study, I highlight national approaches to CVD prevention aimed at enhancing the CVH of all populations in the United States (Lloyd-Jones et al., 2010; USDHHS, 2012). As the researcher, I reviewed the existing empirical literature that addresses national attention to various topics: CVD prevention interventions, avoidable deaths related to heart disease and stroke, CVH and the status of CVH in the United States, knowledge of the associated risk factors, coronary heart disease (CHD) mortality linked to increased risk factors among African Americans, and the relationships between variables in the study. Finally, I noted the role of the NHLBI's Community Health Worker Health Disparities Health Initiative as a viable resource and educational tool for

programs aim at improving health in minority and underserved communities (Hurtado et al., 2014).

Search Strategy

The main topics researched for this review included African American adults, African American CVH, CVD, risk factors knowledge, behaviors, and interventions. A comprehensive electronic search of the literature in the EBSCOhost database was undertaken. In addition, databases accessed in this search included (a) CINAHL Plus with full text, (b) ProQuest, (c) SAGE Journal Online, (d) Academic Search Complete, (e) PsycINFO, (f) SOCINDEX, (g) PUBMED, (h) Science Direct, (i) Google Scholar, and others to access peer-reviewed journals, reports, and publications. Key terms were searched singularly or combined and included the following: *American Heart Association and CVH, cardiovascular disease (CVD), CVH and African Americans, coronary heart disease (CHD), CVD mortality and African Americans, African Americans and CVD risk factors, knowledge, prevention, risk factors, African Americans and strokes, coronary artery disease (CAD), health behaviors, heart disease, lifestyle behaviors, health promotion, perceptions, health disparities, CVH disparities, barriers, beliefs and attitudes, cultural, social ecological factors, African Americans, Blacks, minorities, hypertension, high blood pressure, stroke, culturally tailored interventions and African Americans, African Americans and educational interventions, African Americans and CVH interventions, health literacy, social cognitive theory, social learning theory and African Americans, social cognitive theory, secondary data analysis,* and *secondary analysis interventions and African Americans.* Secondary sources included textbooks

addressing health promotion in African American populations and quantitative research methods.

Relationship of Literature to the Problem

The literature is replete with evidence demonstrating that consistent declines in preventable death rates due to stroke, heart conditions, and high blood pressure persisted in all groups during the years 2001 to 2010. However, declines in avoidable death rates have been minimal among African Americans, which is significant because African Americans have the most elevated age-adjusted toll of preventable death as a result of heart-related diseases (CDC, 2013a, 2013b). Deaths that occur because of a lack of preventive care measures and inaccessibility of timely and efficient medical care services are avoidable (CDC, 2014).

African Americans' increased risk of fatal coronary heart disease relative to European Americans is associated with higher prevalence of CVD risk factor burden (Safford et al., 2012). Prior studies (Akintunde, Akintunde, & Opadijo, 2015; Konicki, 2012; Safford et al. 2012; Taylor et al., 2010) indicated CVD risk factor knowledge among African Americans and Africans, relative to European Americans, are more likely to exists at suboptimal levels and that culturally tailored educational CVD preventive strategies may improve heart health knowledge and behaviors in minority populations (Eshah, Bond, & Froelicher, 2010; Hurtado et al., 2014; Parra-Medina et al., 2011). Other researchers (Omolafe, Mouttapa, McMahan, & Tanjasri, 2010; Willock et al., 2015) reported a sufficient knowledge of CVD risk factors such as diabetes among African Americans and other populations. The evidence suggests educational community-based

initiatives may be a viable role aimed at CVD risk reduction to target CVD disparities. Limited data have addressed the relationships between a culturally tailored educational community based heart health interventions, quantitative measures of CVD knowledge of risk factor scores, demographic characteristics, and awareness of the American Heart Association term CVH among an urban Midwestern African American sample.

CVH: A National Priority

The national priority to address cardiovascular physical conditions in the United States is evidenced by the CDC (2013a) Division for Heart Disease and Stroke Prevention's release of a Public Health Action Plan to Prevent Heart Disease and Stroke. This directive highlighted CVD (specifically heart disease and strokes) as a public health priority. Moreover, it identified various approaches that could be effective in controlling this public health problem. It is necessary to acknowledge the reality of the CVD crisis and envision the future of optimal conditions that can result from using effective public health actions (CDC, 2013a).

Healthy People 2020

The *Healthy People 2020* goal is to "improve CVH and quality of life through prevention, detection, and treatment of risk factors for heart attack and stroke; early identification and treatment of heart attacks and strokes; and prevention of repeat cardiovascular events" (USDHHS, 2012, p. 1). The recognition of the role of educational and community-based programs as favorable strategies in disease prevention efforts has been gaining favorability. Educational and community-based programs and strategies played a major role in reaching the objectives of the *Healthy People 2010* (U.S.

Department of Health & Human Services, Office of Disease Prevention & Promotion, 2015). The AHA, whose goals have broadened from the reduction of CVD to the adoption of improvement in CVH across all populations, shares this emphasis (Lloyd-Jones et al., 2010).

CVH: An Approach to CVD Prevention

One of the most pivotal health apprehensions in the United States is the low prevalence of ideal CVH. The AHA defines CVH as meeting a total of seven components: four health behaviors--physical activity, nonsmoking, basal mass index (BMI), and diet. CVH also focuses on three health factors: blood cholesterol, fasting blood glucose (sugar), and blood pressure at the ideal stage of metrics in adult populations (Bambs et al., 2011; Dong et al., 2012; Fang et al., 2012; Folsom et al., 2011; Shay et al., 2012), particularly for minority groups (Fang et al., 2012; Shay et al., 2012). African Americans have the highest incidence rate for poor CVH (Fang et al., 2012; Shay et al., 2012), and "disparities in CVH cannot be eliminated without preventing the emergence of differences in the rates of the risk factors for CVD" (U.S. Commission on Civil Rights, 2010, p. 50).

CVH: Prevention Concepts

Concepts of Prevention in CVH

The success rate for prevention of any disease in a population is measured based on increasing health measures in that population and the decline in the health disparities across different communities or ethnicities within the population. The success of the prevention is not measured based on standard criteria for self-care (Starfield, Hyde,

Gervas, & Health, 2008, p. 582). Rather, the concepts of prevention in CVH referenced in the literature include primary, secondary, and primordial prevention (Kones, 2011; Lloyd-Jones et al., 2010; Weintraub et al., 2011; WHO, 2007). Primary and primordial levels of prevention are associated with sustained reduction in mortality (Fang et al., 2012). In this study, I aimed to address primary and primordial levels of prevention referenced in this study.

Primary and Primordial Prevention

Primary prevention of CVD is concerned with prevention and impediment of any primitive events, which might occur among individuals who have not been medically diagnosed with any heart-related condition (Kones, 2011). Strasser (1978) defined primordial prevention by expanding the concept of primary prevention to describe efforts to prevent the penetration of risk factors into populations. Hence, primordial prevention focuses on the avoidance of risk factors (Berry et al., 2012; Lloyd-Jones et al., 2010).

High-Risk and Population-Wide Approaches to Prevention

Rose (as cited in McLaren, McIntyre, & Kirkpatrick, 2010) coined population strategy prevention as the relationship between high-risk strategy, involving individuals at highest risk, and population-wide strategy, or risk distribution in the whole population, across populations. McLaren et al. (2010) argued that the particular assumptions underlying Rose's expressed advantages of a community approach cannot be applied anymore. Despite this, the concept still bears significant value because of the curtailing of social disparities and improvement in the health of the population (McLaren et al., 2010). Notably, it has been argued that some clinical events can be avoided by discovering and

caring for individuals vulnerable to actions resulting from substantially eminent risk-factor height (Lloyd-Jones et al., 2010).

Culturally Tailored Intervention

Support for culturally relevant interventions are evidenced in the literature (Covington et al., 2010; Mudd-Martin, Martinez, Rayens, Gokun, & Meininger, 2013; Murphy & Williams, 2013; Nam et al., 2012; Parra-Medina et al., 2011; Peterson & Cheng, 2011; Willock et al., 2015) as the first step in managing risk factors such as diabetes (Kountz, 2012). In considering care needs of minority populations, varied methods can be implemented to tailor the intervention to the targeted population. For instance, cultural tailoring may include the use of a health educational source, which emphasizes how to prepare a traditional food (popular in the targeted population) using a healthier method of preparing food, while considering the family as well (Rosal et al., 2011).

Prior researchers have identified several key components for effective tailored CVD prevention programs. CVD prevention programs incorporating the community health workers in conjunction with the use of culturally tailored evidenced-based curricula are consistent in reporting positive program outcomes (Hurtado et al., 2014; Mudd-Martin et al., 2013). Faith-based interventions, which address CVD risk factors such as physical activity, have yielded results of increased physical activity and reduction in systolic (bottom number) blood pressure (Duru, Sarkisian, Leng, & Mangione, 2010; Peterson & Cheng, 2011); finally, evidence exists that interventions conducted in community health centers can yield improvement in CVD risk reduction such as

improved dietary intake and leisure time physical activity (Parra-Medina et al., 2011). Whitt-Glover et al. (2013) evaluated a culturally modified version of the Dietary Approaches to Stop Hypertension (DASH) eating plan among urban African Americans, increased confidence in the individual ability to reduce salt and fat intake and consume healthier snacks as compared to a control group are noted.

Culturally tailored community interventions have been shown to increase heart health knowledge in African Americans and diverse populations (African Hispanic, African American, Filipino, American Indians; Daniels et al., 2012; Hurtado et al., 2014; Willock et al., 2015), and Jordanian adults (Eshah et al., 2010). Culturally tailored interventions are emerging as favorable strategies aimed at CVD prevention. Culturally tailored strategies have shown promise in targeting CVD risk related behaviors such as dietary (e.g., salt and fat intake), physical activity, clinical outcomes-weight management, and high-density lipoprotein (Daniels et al., 2012; Hurtado et al., 2014; Parra-Medina et al., 2011).

Theoretical Framework

A single framework guided the current study, which was Bandura's (2004) social cognitive theory, or SCT. This theory provided a framework to explain the interactions between educational interventions involving interactive learning and cognitive influence knowledge acquisition in a sample of African Americans residing in a high disparity urban area. SCT evaluated the outcomes of a culturally tailored education intervention on increasing CVH knowledge in a sample of African American adults. Bandura's SCT puts forth that knowledge regarding health risks and advantages can act as the precursors for

change. Bandura noted, “If individuals lack knowledge about how their lifestyle habits affect their health, they have little reason to put themselves through the travail of changing the harmful habits they enjoy” (Bandura, 2004, p. 144). Therefore, the relationship between African American adults’ knowledge acquisition and an educational intervention approach using SCT to address CVH knowledge may provide insights into CVH promotion targeting African Americans. This, in turn, may contribute to overall CVH research focused on tailored interventions aimed at health disparities.

Bandura’s (1971) social learning theory (SLT), which is another term for SCT, is considered one of the most influential theories of learning and human development (McCullough Chavis, 2011). SLT is widely based on the fundamental concepts of traditional education. SLT emerged as an approach to addressing the needs of the population, examining issues faced by individuals in a social context, and allowing social elements to be taken into consideration for learning (McCullough Chavis, 2011). The applicability of SLT as an approach to changing human behaviors was realized in the 1950s. At that time, SLT gained popularity in the social and behavioral sciences as a mental health intervention in response to interest in an insight-oriented approach. According to Bandura (1997), individuals learn from direct experiences, which occur in several ways including vicarious experience by observing and imitating others. Bandura contributed to behavior theory by exploring the role of cognition with emphasis on vivid learning. SLT postulates that individuals can learn new information and behaviors by observing others (McCullough Chavis, 2011). Finally, Bandura (2001) noted that cognitive factors can predict human behavior and guide effective interventions. Success

through the complexities of challenges and hazards are attainable when individuals make good judgments about their capabilities, expect consequences from their course of action, weigh the socio-structural benefits and contraindications, and govern their behavior accordingly (Bandura, 2001).

Cardiovascular Health (CVH)

In expanding its impact goals, the AHA defined CVH and developed metrics to identify and observe the status of CVH in Americans (Shay et al., 2012). The AHA also devised new terminology: health factors related to CVH, instead of risk factors for CVD; and health behaviors encouraging CVH, instead of risk factors that increase the chances of CVD and stroke or precursor illnesses, for instance high blood pressure and diabetes (Lloyd-Jones et al., 2010). The metric is comprised of defined components of CVH behaviors and health factors scored on a spectrum as having poor, intermediate, or ideal CVH as identified in the AHA 2020 Strategic Impact Goals (Shay et al., 2012). These factors include (a) smoking; (b) BMI; (c) physical activity; (d) fasting blood glucose; (e) blood pressure; (f) total cholesterol; and (g) diet and health. In highlighting the importance of nonsmoking and smoking cessation in preventive health measures, smoking is listed both as a health factor and health behavior component. Thus, the advantages of promoting the aspects of health affiliated with each of the seven health factors and health behaviors can be documented. Ideal CVH is described as possessing ideal levels of all of the seven listed components (Lloyd-Jones et al., 2010). A score health value is obtained from health metrics defined by the AHA (2012) to guide the

determination of CVH. The aim of the AHA is to transform individuals and populations from poor to ideal CVH (Lloyd-Jones et al., 2010).

Ideal CVH

Ideal CVH, a construct defined by the AHA, is the synchronized presence of all four idealistic health factors, which follows:

- Never smoked, or absence of smoking within the past year.
- Ideal BMI.
- Participation in recommended levels of physical activity.
- Dietary intake conducive to CVH (DASH).

For another opinion, Lloyd-Jones et al. (2010) noted that ideal CVH is the simultaneous existence of all four typical health factors, which follow:

- never smoked, or absence of smoking within the past year
- untreated total cholesterol < 200 mg/dL
- untreated blood pressure <120/<80 mm Hg
- no diagnosis of fasting blood sugar or diabetes <100 mg/dL, along with the absence of symptoms of CVD (for instance, coronary heart failure, stroke, or heart disease).

CVH: Prevalence in United States

The presence of limited or decreased ideal CVH among Americans, as defined by the AHA, is consistent in the literature (Bambs et al., 2011; Dong et al., 2012; Fang et al., 2012). Data from the 2009 Behavioral Risk Factor Surveillance Systems of 356,441 participants in the United States without a history of heart condition or stroke revealed

that about 3.3% of participants had ideal CVH. A perfect score was defined as meeting all seven factors at ideal levels. However, poor CVH, or zero to two ideal cardiovascular metrics, occurred in nearly 9.9% of participants (Fang et al., 2012). In the same study, Fang et al. (2012) found that significant variations in CVH metrics are reported across states. The percentages of adult individuals with ideal CVH ranged from low, about 1.2% in Oklahoma, to high, at 16.2% in West Virginia.

CVH: Relationship to Cardiovascular Disease Events

Folsom et al. (2011) investigated the incidence rate of ideal CVH, as defined by the AHA in Atherosclerosis Risk in Communities (ARIC), a cohort study from 1987 to 1989, along with 20 years of incidence rates of CVD. Participant exclusions were, at baseline, a history of heart malfunction, coronary heart illness (a part of CVD), or stroke, or the inability to classify by history. In the same study, Folsom et al. looked at CVD incidence rates during 18.7 years (median duration, with 21.1 years maximum) of follow-up. The total number of CVD events, which occurred during this period, was 3,063. However, no CVD events were reported in the 17 participants who met all seven factors rated at ideal levels. CVD incidence rates for those with intermediate CVH was 7.5 for about 1,000 person-years with a confidence interval of 95% (6.4 to 8.4), and for the individuals with poor CVH, the incidence rate of CVD was 14.6 with a confidence interval of 95% (14.0 to 15.2). (Person-years are defined as the incidence rate expressed as the number of new cases per population at risk in a given period [R. Sacco, personal communication, March 31, 2014]). Disparities in overall occurrence of CVD between African Americans were measured as 16.5 per 1,000 person-years, and European

Americans were 12.2 per 1,000 person-years, as noted by Folsom et al., (2011). Huffman et al. (2012) found similar results when they analyzed the data from the 1988 to 1994 and 1999 to 2008 National Health and Nutrition Examination Surveys (NHANES) on ARIC participants and illustrated the prevalence of ideal CVH (all seven CVH metrics) among only 0.1% (*n*=17).

CVH: Disparities

According to Fang et al. (2012), the pervasiveness of CVH by age indicated that ideal CVH percentages were lowest in the 65-year-old age group, and poor CVH was highest. Those aged 18 to 34 years old indicated poor CVH. The largest percentage of ideal CVH was found in adults 35 to 54 years old.

Fang et al. (2012) found notable disparities in CVH by gender, race/ethnicity, and education. Women fared better (4.6%) in ideal CVH than did men (1.9%). Ideal CVH was noted for Asian/Pacific Islanders/Native Hawaiians (4.8%), non-Hispanic Whites (3.7%), Hispanics (2.0%), African Americans (1.6%), and American Indian/Alaska Natives (1.5%). In contrast, poor CVH was noted for African Americans (15.1%), American Indian/Alaska Natives (12.2%), Hispanics (11.2%), non-Hispanic Whites (9.2%), and Asian/Pacific Islanders/Native Hawaiians (7.7%), In addition, higher levels of ideal CVH occurred among college and postgraduate degree participants (Fang et al., 2012). Finally, another study indicated the presence of family history regarding heart conditions and stroke can be indicative of a weak risk factor for the development of CVD (Aycock et al., 2014).

CVH: Trends and Projections

Huffman et al. (2012) examined 1988 to 2008 NHANES data obtained from 33,059 participants with an absence of CVD (e.g., self-reported history of heart attack, angina, stroke, or heart failure) in adults aged 20 years and older (mean age 44.4 years). Huffman et al. examined current trends in composite CVH metrics and estimated future levels of CVH behaviors and factors in the United States to evaluate whether the AHA 2020 projected goals will be met. CVH efforts were challenged. Declines in the occurrence rate of smoking, as well as high blood pressure in men, were reported. Conversely, significant increases in the overall incidence rates of obesity and blood glucose, minimal changes in health diet scores, and decreased trends in physical activity were also apparent (Huffman et al., 2012).

In addition, adverse population level shifts in each metric were evidenced by increased body mass index scores and abnormal blood glucose levels when matched by simultaneous reductions in prevalence of normal weight and normal glucose (Huffman et al., 2012). However, Huffman et al. highlighted that their projections could have overestimated the future prevalence of impaired prevalence (intermediate CVH). They explained this was because certain individuals are likely to develop diabetes mellitus at the fasting glucose level threshold of 126 mg/dL and will not advance these projected mean values. Huffman et al. concluded that if current trends continue, the AHA 2020 goal of improving CVH by 20% by 2020 will not be reached.

Challenges to CVH Promotion

Low Prevalence of CVH

Low prevalence of CVH in the United States, as defined by the AHA, is substantial (Fang et al., 2012; Folsom et al., 2011; Huffman et al., 2012; Shay et al., 2012). Shay et al. examined prevalence of the new concept of CVH based on age, sex, and race/ethnicity of adults in the United States using NHANES data obtained from 2003 to 2008, and found that ideal CVH in all seven metrics was noted in less than 1% of participants. However, of the cardiovascular behaviors, a high prevalence (60.2% to 90.4%) in nonsmoking, the most prevalent ideal CVH component, was reported. In contrast, the lowest incidence (0.2% to 2.6%) for typical healthy diet scores existed among participants (Shay et al., 2012).

Bambs et al. (2011) conducted a study of participants in the Heart Strategies Concentrating on Risk Evaluation (HeartSCORE) study of community-based African American and European American participants. These researchers found only 0.1% (one individual) out of 2,981 had ideal CVH, meeting all seven components, and less than 10% had five or more components of ideal CVH. In middle-aged cohorts, the prevalence of ideal CVH was low. Significantly, fewer ideal CVH components were found among African Americans (2.0) than among European American (2.6). More importantly, following adjustments by sex, age, and income level, African Americans had 82% fewer odds of having five or better components of ideal CVH than did European Americans (Bambs et al., 2011). Interestingly, African Americans were significantly lower than European Americans in each component of CVH except total cholesterol (Bambs et al.,

2011). This finding is consistent with the literature (Bambs et al., 2011; Dong et al., 2012; Folsom et al., 2011). As reported by Dong et al. (2012), the prevalence of ideal total cholesterol was lower for European Americans (35.3%) and elevated among African Americans (46.0%).

Dong et al. (2012) examined the relationship of ideal CVH metrics and cardiovascular risks among 2,981 community-based multiethnic cohorts (African Americans, European Americans, and Hispanic Americans). Each participant was without a history of heart attack or stroke at baseline in the Northern Manhattan Study; however, none of the participants exhibited all seven ideal CVH factors. Among the participants, 4.4% had five to six CVH factors, while the majority (62.4%) had two to three ideal factors. In the same study, disparities in the prevalence of ideal CVH were noted, with five to six ideal CVH factors among European Americans (7.7%), compared to African Americans (4.3%), and Caribbean Hispanics (3.2%). Researchers noted that similarities in these disparities remained even after adjusting for age and sex (Dong et al., 2012). For instance, disparities existed in the prevalence of ideal levels of blood pressure, fasting glucose (blood sugar), non-smoking behavior, ideal BMI, and physical activity. African Americans' ideal cardiovascular metrics were lower than were European Americans' scores. However, typical diet definitions and diet components were reported in only 0.4% of total cohorts and equally poor in all three racial/ethnic groups (Dong et al., 2012).

In their study, Dong et al.'s (2012) median 1-year follow-up of 2,981 participants showed 722 participants suffered a CVD event, including a stroke, heart attack, or

vascular death. The incidence rate of CVD was 24.0 per 1,000 person-years in the total cohort. The incidence rate of CVD in the total cohort was lower among individuals with higher numbers of ideal CVH metrics, after adjusting for age, sex, and race/ethnicity (Dong et al., 2012).

Age Variations in CVH

Shay et al. (2012) noted variations in the prevalence of cardiovascular behaviors by age. Shay et al. indicated that, among the younger adults (aged 20 to 39 years), the maximum incidence of ideal levels were noted in blood pressure, cholesterol, and fasting glucose (blood sugar, compared to middle aged (aged 40 to 64 years) and older (aged 65 and above) groups. A high prevalence was particularly observed among African American women. Some of the young men and women, had an ideal BMI, but over two-thirds of the middle aged and older adults were found to be overweight or obese. Inadequate physical activity levels were noted in older (aged 65 and above) participants, particularly, non-Hispanic White women. The highest prevalence of ideal healthy diet scores were observed in older adults (age 65 and above), in comparison to young and or middle age participants (Shay et al., 2012).

Shay et al. (2012) also noted variations in prevalence of CVH behaviors by race/ethnicity, with the maximum prevalence of poor BMI exhibited by African American women and with the lowest and intermediate prevalence of BMI exhibited by non-Hispanic White women. Notably, the same study indicated ideal physical activity levels were more often reported by young adults (aged 20 to 39 years), specifically African American men; however, across the higher age groups, prevalence was lower

(Shay et al., 2012). Of particular interest, more than 99% of young men (aged 20 to 39 years) participants were reported to exhibit intermediate or poor healthy diet score ranges; none of the young men scored an ideal healthy diet score. Finally, Shay et al. reported that overall ideal healthy scores were at lower prevalence, indicating poorly met CVH. This finding is consistent with the literature (Bambs et al., 2011; Dong et al., 2012; Folsom et al., 2011).

Fang et al. (2012) used 2009 BRFSS data to examine variations in cardiovascular metrics in a population of 356,441 adults, and found the prevalence of ideal CVH was reported in 3.3% of participants, and 9.9% of participants had poor CVH. In the same study, CVH factors indicated the highest occurrence rate of ideal levels for blood pressure, total cholesterol, and fasting glucose in the 20 to 39 age group when compared with the middle-aged (40 to 64 years of age) and older (65 and older) participants, which was specifically found among African American women. Despite this finding, 13.4% to 48.7% of young men and women's CVH factors ranged from intermediate to poor (Fang et al., 2012).

CVH: Prevalence of Health Behaviors

Fang et al. (2012) indicated that optimal levels of smoking were evident in of all ideal CVH components among men and women, which is consistent in the literature (Shay et al., 2012). However, fewer than half of participants had an ideal BMI. Overweight or obesity was reported in more than two-thirds of middle-aged (40 to 64 years of age) and older (65 and older) participants. More importantly, the highest prevalence of intermediate and poor BMI was noted in African American women

compared with European-American women, who had the lowest prevalence of intermediate and poor BMI (Shay et al., 2012). Another group of researchers also found a low prevalence of current and former smoking, high cholesterol, and high blood pressure as factors; however, increased prevalence of obesity and abnormal glucose was noted (Huffman et al., 2012). This is significant, given that culturally tailored curricula aimed at CVD prevention may improve CVH- knowledge and behaviors (Hurtado et al., 2014; Katch & Mead, 2010; Parra-Medina et al., 2011).

Disparities: Ideal CVH Metrics and African Americans

Significant disparities exist between African Americans and European Americans for the prevalence of ideal CVH components (Bambs et al., 2011; Fang et al., 2012; Folsom et al., 2011). Ideal CVH (all seven health metrics in the ideal range) existed in only 0.1% (n = 17) of ARIC participants; five to seven ideal health parameters were reported in 12.2%. Variations were noted according to age, race, and sex as follows: 15.2% among 45 to 54 year-olds and 8.8% among 55 to 64 year-olds, 3.6% for African American men and 4.2% for African American women, and 10.5% for European American men and 18.7% for European American women (Folsom et al., 2011).

The frequency of ideal CVH metrics at suboptimal levels among African American populations is supported by the literature (Bambs et al., 2011; Fang et al., 2012; Folsom et al., 201). Dong et al.'s (2012) analysis of the four health behaviors showed that the definition of an ideal diet was met by only 0.4% of total participants, and the diet components of ideal CVH were poor across all race/ethnic group participants. Specifically, African Americans lagged behind European Americans in ideal BMI (30.3%

and 47.2% respectively) and ideal physical activity (37.6% and 45.2%), and although ideal nonsmoking behaviors were high among participants, African Americans exhibited the lowest levels of ideal nonsmoking behaviors (Dong et al., 2012).

CVD Mortality Disparities and African Americans

African Americans experience disproportionate burdens of CVD mortalities (Agency for Health Research and Quality [AHRQ], 2007; CDC, National Center for Chronic Disease Prevention and Health Promotion, & Division for Heart Disease and Stroke Prevention, 2011) and prevalence of CVD mortality risk factors (Lloyd-Jones et al., 2010; & Taylor et al., 2010). Higher risks of CVD mortality are experienced by African Americans at an earlier age than are experienced by other ethnic groups (Hurley, Dickinson, Estacio, Steiner, & Havranek, 2010). Disparities in the prevalence of CVD risk factors among African Americans have been attributed to an engagement in behaviors such as dietary risk and inadequate fruit and vegetable intake (Paschal, Lewis-Moss, Sly, & White, 2010). Other dietary risk factors include insufficient or high fat (Di Noia, & Contento, 2010; Kershaw et al., 2011), current smoking (Kershaw et al., 2011), and physical inactivity (AHA, 2009). CVD risk factors, including high blood pressure, are also pronounced in African-Americans (Kershaw et al., 2011; Mujahid, Roux, Cooper, Shea, & Williams, 2011). Researchers are examining (a) CVD mortality rates, (b) high blood pressure, (c) links to race/ethnicity, (d) disparities between African Americans and European Americans, (e) socioeconomic status, and (f) geographic variations such as metropolitan-level segregation (Allen, Purcell, Szanton, & Dennison, 2010; Homko et al., 2008; Hurley et al., 2010; Kershaw et al, 2011).

CVD and related conditions, such as diabetes, impede socio-economic advancements, specifically among disadvantaged segments of the population (WHO, 2010). Therefore, it is imperative that public health professionals align with these efforts in improving CVH in all populations, specifically regarding at-risk minority groups such as African-Americans. In this study, I attempted to align with the current national approaches targeting CVD prevention to improve CVH in all Americans (CDC, 2013c; Lloyd-Jones et al., 2010; U.S. Department of Health and Human Services, 2012).

Epidemiological Perspective: CVD Risk Factors and African Americans

Emerging evidence suggest that epidemiological influences, such as the interplay between risk factors in African Americans, are documented. Several studies reporting interactions and risk factors, such as body mass index (BMI) on health of populations, reveal differences particularly in African Americans (Covelli et al., 2012; Edwards et al., 2011; Taylor et al., 2010). In an epidemiological study, Covelli et al. (2012) examined biological measures (blood pressure, salivary cortisol, and height) and risk for essential hypertension (high blood pressure) in urban African American adolescents (n = 106, aged 14 to 18 years). Covelli et al. found high and continual interactions of biological measures including African American race/ethnicity, prehypertension (41% of participants), cortisol, over-responsive blood pressure, cortisol, and a family history of hypertension were attributable to the development of elevated blood pressure. Given this, Lloyd-Jones et al. (2010) suggested that, regardless of being a young adult or middle-aged, occurrence of severe risk factor levels can significantly elevate the long-term and lifetime risks of CVD and stroke. Hence, this warrants prevention targeting at all levels of

risk (Doug et al. 2012), as well as defining ideal CVH metrics resulting from evidence obtained from Caucasian cohorts (Lloyd-Jones et al., 2010). Finally, the epidemiological perspectives mentioned lend support for the need to evaluate tailored community educational interventions and CVD risk factor knowledge among African Americans.

Prevalence of Modifiable Risk Factors

Modifiable risk factors, or those within the individual's control, account for numerous premature and preventable deaths. Examples of modifiable risk factors are obesity or being overweight; both can reduce life expectancy. Modifiable risk factors can be grouped into three categories: (a) lifestyle risk factors, which include tobacco use and physical inactivity; (b) dietary risk factors, including excess salt consumption and inadequate consumption of fruit and vegetables; and (c) metabolic risk factors, which augment the threat of increasing CVD (heart problems and strokes), reducing life expectancy. Examples of metabolic risk factors include increased blood pressure or elevated cholesterol, and being obese or overweight (Danaei et al., 2009). Although declines in tobacco use have been noted, it is still among the leading causes of avertable mortality and morbidity. Smoking contributes to the substantial burden of lung cancer and chronic lung disease (Huffman et al., 2012).

Despite the existence of effective interventions for high blood pressure and smoking, both contribute to the highest mortality in the United States. In addition, nutritional habits, lifestyle, and metabolic risk factors for persistent medical conditions are responsible for increasing the rate of mortality in the United States (Danaei et al., 2009). High blood pressure, overweight/obesity, diabetes and physical inactivity are

modifiable risk factors, which are pronounced among African Americans (AHA, 2009; Covelli et al., 2012; Fryar, Chen, & Li, 2012; Go et al, 2013; Mathieu et al., 2012; Taylor et al, 2010).

Data from the National Health and Nutrition Examination Survey indicated about 47% of adults in the Unites States possessed at least a single risk factor out of the three for CVD in 2009 and 2010. These risk factors include uncontrolled high levels of low-density lipoproteins (LDL) cholesterol, uncontrolled high blood pressure, or current smoking (Fryar et al., 2012). A decline in the levels of minority populations who experienced at least one of the three risk factors has been observed from 1999 and 2000 through 2009 and 2010 in Mexican-American and non-Hispanic White adults; however, this decline has not been evident among non-Hispanic, African American adults (Fryar et al., 2012).

Disparities in Risk Factor Knowledge

The literature is inconsistent in reporting CVD knowledge among African American populations. This exists at suboptimal levels in several studies (Homko et al., 2008; Mochari-Greenberger et al., 2010); in contrast, African Americans with knowledge of CVD risk factors has also been reported (Daniels et al., 2012; Winham & Jones, 2011). Winham and Jones studied knowledge of CVD among African American young men and women aged 18 to 26 and found the majority of participants possessed knowledge regarding the risk factors for the heart-related diseases. The participants indicated CVD risk factors as being overweight, having high blood pressure, and a family history of heart disease. The participants also reported knowledge of CVD risk-reducing behaviors,

which included exercising, weight reduction, stress reduction, and abstinence from smoking. I found few studies that examined the effects of a culturally tailored educational intervention on knowledge of the American Heart Association, the new concept of CVH, and the seven health behaviors and health factors among African American adults residing in an urban community. The need to examine African Americans exists, as their preventable death rates from heart disease, stroke, and high blood pressure are almost two times that of European Americans (CDC, 2013a).

Therefore, research, which addresses CVD, risk factors for CVD, and interventions pertaining to CVD, can be used to gain insight regarding single or combinations of CVH metrics (Shay et al., 2012). Efforts to promote and attain ideal CVH in minority populations will be challenging (Dong et al., 2012); however, interventions targeting health behaviors and health factors among African Americans and minority populations have shown promising results (Duru et al., 2010; Parra-Medina et al., 2011; Peterson & Cheng, 2011; Treadwell et al., 2010). In addition, nurse-led interventions addressing health prevention in general and diverse populations have reaped positive health results, such as marked decrease in body mass index (BMI) (Buchholz, Wilbur, Miskovich, & Gerard, 2012).

Aggressive public health efforts to augment public understanding and awareness of CVD risk factors in the United States currently exist. However, ethnic differences in CVD awareness and knowledge of CVD and CVD risk factors are recognized in the literature (Homko et al., 2008; Mosca et al., 2010). A survey conducted by the AHA at the national level showed that results from the initial 1997 survey compared to the 2009

survey showed that the understanding of heart disease and heart attack as the foremost causes of mortality has tripled among African Americans. Research reveals that individuals at high risk for CVD are expected to have limited CVD risk factor awareness and reduced perceptions of these risks. Assessment findings show a high risk for CVD exists particularly among inner-city residents (Homko et al., 2008). Awareness by racial and ethnic groups remains a problem. African American, Hispanic, and Asian women were not able to recognize heart disease and heart attack as the most prevalent cause of death, in comparison to European American women (Mosca et al., 2010). Educational interventions to increase risk factor knowledge and awareness among at-risk populations are needed (Homko et al., 2008). However, knowledge of educational strategy alone may not be a viable strategy for behavior change. Therefore, this research was an initial step as it examined an interactive learning group approach.

National Initiatives for CVD Prevention

National efforts aimed at improving heart health knowledge among diverse populations developed and implemented at the population-level include initiatives such as (a) the National Heart, Lung, and Blood's (NHLBI's) Community Health Worker Initiative (USDHHS, NHLBI, NIH, 2014), designed to improve heart health in minority and underserved communities; (b) the Racial and Ethnic Approaches to Community Health (REACH) (CDC, 2013), this CDC administered program is created to reduce racial and ethnic health disparities; and (c) Million Hearts™ Initiative (CDC, n.d.). In addition, technological interventions, such as smartphone applications or text messaging, are emerging, which include educational support or added interventions to combat certain

CVD risk reduction. These innovative interventions offer promise in affecting health issues such as weight loss or physical inactivity (Stephens & Allen, 2013).

Community Health Programs and Interventions

Disparities persist as a priority health concern for African Americans, which will require public health professionals to collaborate with African American churches (local and national), and neighboring communities (Cook, 2010). CVH behaviors and health factors may be addressed as single or a combination of variables in research evaluating interventions among African Americans. Researchers seek to improve knowledge of diabetes and cardiovascular risk factors including physical activity, diet (the DASH diet), obesity, management (self-care) related to diabetes control, and high blood pressure (Daniels et al., 2012; Kountz, 2012; Peterson & Cheng, 2011; Quinn & Guion, 2010; Resnick et al, 2009; Whitt-Glover et al., 2013; Zenk et al, 2009).

Other studies, including pre-or post-educational CVD prevention interventions, have been initiated with high-risk populations, such as racial and ethnic minority women over the age of 40 or Black college students (Joseph et al., 2013; Villablanca et al., 2009). Overall, research is consistent in reporting improvements in knowledge of diabetes (Kountz, 2012), CVD risk factors (Konicki, 2012; Villablanca et al., 2009), and, in some instances, knowledge of effective CVD risk modification strategies (Villablanca et al., 2009). Previous studies have reported improvement in body weight, blood pressure, diet intake (Resnick et al., 2009; Whitt-Glover, 2013), and CVD risk scores (Ma et al., 2009). Although improvements have been achieved with some programs in the short-term, significant changes have not been reported in other programs (Kountz, 2012). In fact,

studies have reported that increased knowledge of CVD risk factors is not linked to sustaining heart healthy behaviors (Konicki, 2012).

The Heart and Soul Physical Activity Program was a pilot study of a behavioral, church-based physical activity program conducted in an urban African American church. This pilot study's aim was to incorporate the church-based Heart and Soul Physical Activity Program to evaluate the impacts of spirituality and social support in order to increase physical activity in African American women (Peterson & Cheng, 2011). In this study, African American women aged 35 to 65 who were physically inactive attended two-hour group sessions. These were conceptualized in the domains of social support, including tangible belonging, appraisal, and self-esteem. Physical activity and social support increased during the six weeks.

Church-based interventions have been successful in health promotions efforts aimed at positively affecting certain health and health behaviors (physical activity and CVD risk factor knowledge) among African Americans (Daniels et al., 2012; Peterson & Cheng, 2011) and in other populations. Research suggests that the social context of the church environment offers a support that is essential to the success of health behavior changes. The social background of the church setting can be perceived as a place that provides the intrinsically shared sustenance needed for the successful promotion of changed health behavior in African American women (Peterson & Cheng, 2011).

Community Interventions: Health Promotion and African Americans

Interventions targeting population-wide behavior change to entire communities are needed and should occur often. However, when determining the specific needs of

targeted underserved populations (such as racial and minority populations, children, youths, and the elderly), it is essential to design interventions aimed at the underserved populations (Pearson et al., 2013; Peterson & Cheng, 2011). The AHA Community Guide supports the implementation of community-wide interventions that are culturally and socially appropriate (Stuart-Shor, Berra, Kamau, & Kumanyika, 2012). The persistent health disparities impacting African Americans necessitates the need for collaboration between public health professionals, African American churches (local and national), and neighboring communities (Cook, 2010).

Numerous interventions and programs addressing CVD risk factors (obesity, diabetes, high blood pressure, cholesterol, and depression) and health behaviors (physical activity, diabetes, and diet management) among African Americans have been conducted in community and church-based settings (Daniels et al., 2012; Kountz, 2012; Lemacks et al., 2013; Murphy & Williams, 2013; Peterson & Cheng, 2011; Resnick et al., 2009; Whitt-Glover et al., 2013). The feasibility of such programs are established with African Americans in the United States (Peterson & Cheng, 2011; Resnick et al., 2009) and ethnic populations (South Asians) in other countries, specifically Canada (Jones et al., 2013).

Schneider et al. (2012) carried out a research study in which a selected mind-body intervention, together with a Transcendental Meditation (TM) program, was applied within the African American individuals in a selected community. The results of the study indicated that such an intervention can be helpful in reducing the risk factors for myocardial infractions, mortality due to CVD, and stroke among heart patients. These

interventions improved the awareness level of the patients by reducing CVD risk factors. Hence, community-based interventions can be implemented successfully as a secondary preventive measure against CVD (Schneider et al., 2012).

Interventions have addressed CVH behaviors and health factors with African Americans. Primarily, researchers sought to improve knowledge of diabetes, physical activity, diet, obesity, management (self-care) related to diabetes, and high blood pressure (Daniels et al., 2012; Kountz, 2012; Peterson & Cheng, 2011; Resnick et al., 2009; Zenk et al, 2009). Studies report participant satisfaction with programs aimed at improving knowledge and control of diabetes (Kountz, 2012; Utz et al., 2008). In addition, prior studies have reported short-term improvement in body weight, blood pressure, and physical activity (Lemacks et al., 2013; Peterson & Cheng, 2011; Shlay et al., 2011), achieved through some programs and interventions (Joseph et al., 2013). With other programs, significant changes were not evident (Kountz, 2012).

The Heart Healthy and Ethnically Relevant (HHER) Lifestyle Trial was a randomized trial of a community-based cardiovascular risk reduction intervention conducted in two federally funded community health care centers (Parra-Medina et al., 2011). The study involved 266 financially disadvantaged African American women, aged 35 to 64, who were patients of South Carolina community health centers. Participants were randomized to the trial's standard care (n = 130) or comprehensive (n = 136) interventions. Interventions comprised a standard care intervention, which included motivational stage-based behavioral counseling by the primary care provider and goal setting with assistance from a nurse; a community resource guide containing free or low

cost programs, including facilities; and ethnically tailored educational materials. Participants of the comprehensive intervention received standard care in addition to the following: 12 motivational stage-matches, ethnically tailored care extending over one year, introductory telephone check-ups, and up to 14 brief, motivationally tailored telephone counseling calls from research staff for over one year. At the six-month mark, improvement in leisure-time physical activity was more likely in the comprehensive intervention group (44%) than in the standard care group (22%). Diet and exercise both showed significant improvements between baseline and the 6-month interval, with a change attenuating slightly by 12 months (Parra-Medina et al., 2011).

Lemacks et al.'s (2013) systematic review of the literature on articles published from January 2000 through December 2011 revealed that interventions aimed at improving nutrition and physical activity behaviors in adult African Americans show promise in decreasing risk for chronic diseases and improving clinical outcome measures. The researchers indicated clinical relevant outcome measures such as (a) weight loss, (b) decreased waist circumferences, (c) blood pressure, (d) fasting blood sugar, (e) percentage of body fat, (f) hemoglobin A1c in the prior three months (U.S. National Institutes of Health, 2014; U.S. National Library of Medicine, 2014; National Institutes of Health (NIH), National Heart, Lung, and Blood Institute (NHLBI), 2015), (g) blood lipids (fats), (h) high-density (HDL), and (i) low-density lipoprotein (LDL) (Lemacks et al., 2013). However, the researchers noted one study was published in two different articles, as dietary and physical outcomes, and they did not show noteworthy results in two medical findings: decreasing waist circumference and BMI.

Nurse-Led Interventions

Lofton (2012) conducted a nurse-led intervention with 128 African American, self-reported single women between the ages of 45 to 64 (Baby Boomers) to help the women understand the dangers of HIV/AIDS and sexually transmitted diseases (STDs) and infections among African-American women in the United States. Lofton has indicated that this age group and ethnicity was chosen because the incidences of HIV/AIDS are rising among older, African American women. In addition, "In the US, African American women have the maximum incidence of STDs of all female ethnic groups" (CDC, 2009, as cited in Lofton, 2012, p. 1). According to Lofton (2012), reported highest rates of HIV in the United States are found in the southern region of the country, and highest HIV mortality are found African Americans relative to their white counterparts.

The women completed a demographic and a sexual history questionnaire. Instruments used included (a) General Self-Efficacy Scale, (b) Brief HIV-Knowledge Questionnaire, (c) Health Protective Sexual Communication Scale, and (d) Theory of Choice Questionnaire. Women from four organizations from a rural section of southern Louisiana participated in the nurse-led intervention. After completion of the questionnaires, the nurse explained to the women the dangers of unprotected sex and the signs and symptoms of sexually transmitted diseases and infections. For data analysis, the researcher used a non-equivalent Solomon Four-Group, an analysis of variance (ANOVA), an analysis of covariance (ANCOVA), a *t* test, and Pearson product-moment correlation coefficient (*r*) (Lofton, 2012). The results of the analysis indicated that single

African American female Baby Boomers who received the nurse-led educational intervention scores improved in sexual health knowledge, self-perceived risk awareness, and personal choice position. However, the nurse-led intervention (treatment) was not effective in improving self-efficacy levels; that may indicate that the intimate partner may be in control related to sexual practices in the relationship (Lofton, 2012).

Lofton (2012) recommended, "Nurse Educators must expand and promote cultural competence that is consistent with the growth of minority populations . . . Nurses must continue to create and implement culturally sensitive educational interventions that target high-risk populations" (p. 78). Evdokimoff (2012) explained, "Rehospitalization rates of 20% within 30 days of hospital discharge and 27% within 60 days are one of the highest strains on the federal Medicare budget" (p. 1). To address this problem, Evdokimoff conducted a quasi-experimental comparative design involving nurse-led intervention. "The study sample consisted of 70 adults, 65 years of age and older, with a need for skilled nursing services, dwelling in a community serviced by the participating agencies" (p. 86). Evdokimoff based her intervention on The Four Pillars® of Eric Coleman's Care Transition Intervention®, which include nurse-led instructions on medication usage, bandage care when applicable, possible red flags (problems), and regular communication with nursing facility staff and the lead nurse. Results indicated, "While there was not a significant difference in rehospitalizations between the intervention and comparison groups, there was a greater percentage of the comparison group participants hospitalized for sixty days" (Evdokimoff, 2012, 47).

Constantine (2013) conducted a descriptive, retrospective design involving a nurse-led intervention to improve palliative care for a select group of participants receiving intensive medical care. Constantine wrote, "Twenty percent of all Americans die in an intensive care unit (ICU) or shortly after that" (2013, p. 1). Constantine conducted the study in a rural Appalachian Mountain area of West Virginia. She used the nine palliative measures of the *Communication and Care Bundle* and a pre and post-test to determine the effectiveness of the intervention. Constantine explained that even though this was a nurse-led intervention, to be successful all stakeholders were involved. In all, 128 families participated, with each family representing a patient in ICU.

An independent *t* test was used to evaluate data. The patients' ICU length of stay was an average of 10.69 days during the pre-intervention period and an average of 4.89 days in the post-intervention period. This change represents a significant difference ($p < 0.001$) in the length of stay between the pre-intervention and post-intervention periods. There was no significant difference ($p = 0.155$) in mortality between the pre-intervention and post-intervention periods.

Harbman (2011) explained she was compelled to conduct a nurse-led pilot study because "Patients with acute myocardial infarction (AMI) are at high risk of reinfarction and death, with the highest rate of death and reinfarction occurring within 30 days of AMI" (p. 1). Harbman used a prospective cohort design to compare the achievement of target scores from patients who had a nurse-led intervention against those patients who did not have the benefit of a nurse-led intervention after suffering AMI. Sixty-five patient participants were included in the study. "Data on practice activities and implementation

of secondary prevention by the NP [nurse practitioners] was collected before discharge from hospital and one week, two weeks, six weeks and 3 months after discharge" (Harbman, 2011, p. 3). For data analysis, Harbman used a *t* test, multiple regression analysis, and logistic regression analysis. Results indicated the following: examination of NP practice activities as predictors of successful outcome revealed that achievement of recommended triglyceride levels was associated with the NP practice activity of lipid teaching, and shorter weeks of cardiac rehabilitation was related to the NP practice activity of physical activity assessment.

Noble, McCrone, Seed, Goldstein, and Ridsdale (2014) explained no studies existed to explain the emergency care visits for patients suffering from epilepsy. Noble et al. called such hospital visits costly and unnecessary because of the frequency of emergency room visits in this care group. Noble et al. conducted a nurse-led intervention among 85 adult participants with a diagnosis of epilepsy in London, England. The participants were randomly divided into two groups with one group receiving one year of nurse-led intervention, which included instructions on when an epileptic seizure constituted an emergency room visit. All participants completed pre and post-tests. "Logistic regression tested for the significance of any differences between the groups" (Noble et al., 2014, p. 5). No significant differences were found between the two groups except regarding the length of hospital stay, with the experimental group requiring shorter hospital time than the control group. Recommendations included involving significant others in future studies, as they are the ones who ultimately make the decision to transport to the hospital when a patient suffers an epileptic seizure (Noble et al., 2014).

Another group of researchers indicated that nurse-led heart failure programs (HFPs) could improve the adherence to the medicine and reduce the level of hospital readmission. The researchers carried out a review consisting of 413 consecutive patients admitted to the hospital for heart failure during the period of 2008 to 2009. All of these patients were called upon for their participation in the nurse-led HFP. The results of the study revealed that the intervention improved the patients' survival rate and enhanced the physical conditions of the patients (Bdeir et al., 2014). Similarly, another study was carried out to improve the awareness of the individuals regarding diabetes and CVD. The primary objective of the study was to measure the management of CVD with the help of a nurse or community health worker-led community-based interventions. The outcomes of the study showed that the interventions carried out by nurses or CHWs are cost effective and should be preferred by community health care facilities for future interventions in African American communities (Allen, Himmelfarb, Szanton, & Frick, 2014).

Summary and Transitions

African Americans, especially those considered vulnerable and at risk, are disproportionately burdened with low prevalence of ideal CVH (Bambs et al., 2011; Dong et al., 2012; Shay et al., 2012) and unequal burdens of multiple CVD risk factors (Covelli et al., 2012; Taylor et al. 2010) relative to European Americans. In fact, African Americans are more likely to report one potential risk factor when in actuality, two or more CVD risk factors are present (Hamner & Wilder, 2008; Winham & Jones, 2011). Knowledge of CVH factor levels and heart healthy levels of HDL and LDL are often reported as insufficient among African Americans relative to European Americans

(Hamner & Wilder, 2008; Homko et al., 2008; Mochari-Greenberger et al., 2010). However, inconsistencies in the knowledge of CVD risk factors have been noted. Studies indicate that African Americans have knowledge of certain CVD risk factors (Winham & Jones, 2011; Winston et al., 2014); however, improved awareness of cardiovascular risk factors will not necessarily result in the adoption or the sustaining of healthy lifestyle behaviors (Konicki, 2012). Programs encouraging social and information share component (Arslanian-Engoren et al., 2014), which are multidisciplinary tailored educational community-based programs. In contrast, studies indicate that African-Americans engage in CVD preventive behaviors such as the avoidance of unhealthy foods, weight loss, and increased fruit and vegetable intake (Mochari-Greenberger et al., 2010; Whitt-Glover et al., 2013). Mochari-Greenberger et al. (2010) investigated CVD awareness, precautionary action, and obstacles to prevention among women, and revealed that 59% of the African-Americans cited physician encouragement as the reason for engaging in preventive action (compared to 54% of Hispanics and 43% of Whites/others). Cultural beliefs not only influence perceptions of health and illness; but also can influence recognition and interpretation of symptoms, healthcare system utilization, and the making of healthcare decisions as well (Homko et al., 2008).

Although, the provision of education alone is not sufficient for behavior change, it is an initial step in moving forward. It is paramount that any interventions implemented are effective in addressing health knowledge, behaviors, and attitudes of African-Americans (Lewis-Moss, Paschal, Sly, Roberts, & Wernick, 2009). Research examining culturally tailored interventions and social cognitive theory among African Americans is

evidenced in the literature (Joseph et al., 2013; Utz et al., 2008). This secondary analysis study was intended as an initial step toward impacting individual knowledge of heart disease risk and CVD preventive behaviors, which could ultimately result in a change in actual risk, improve the opportunity to live a CVD-free life, delay the onset of CVD, or lessen the severity of CVD (Hamner & Wilder, 2008).

Chapter 3: Research Method

Introduction

The purpose of this secondary analysis was to measure the effects of a culturally tailored educational intervention regarding short-term knowledge acquisition pertaining to CVD risk factors and awareness of the AHA construct CVH among an urban African American sample. In this chapter, I describe the research design and rationale, methodology, threats to validity, and ethical considerations for this dissertation study.

Research Design and Rationale

This secondary analysis was conducted using de-identified data collected by multiple community sites (three churches and one clinic) as a part of the entities health program assessment, with the long term goal of developing community relevant heart health programs for members of the congregation and clinic patients. Secondary data analysis provided the central research method in this study. It allowed me to carry out a study by using the data of any previously conducted study or by extracting the data from any database. Secondary data analysis is an efficient and timesaving method of analysis, in which research questions that have not been previously addressed in the parent study are answered. High quality data sets and extracted data can be easily analyzed with the help of secondary data analysis (Goodwin, 2012).

Community sites conducted heart health-education sessions between March 2015 and May 2015 to gather information regarding knowledge of CVD risk among African Americans as a part of a program evaluation to aide in the planning of future health programs. The community sites administered paper, heart knowledge questionnaires and

demographic data surveys to 107 African American participants. Thus, I had no contact with participants.

This secondary analysis was conducted using de-identified data collected as a part of a program evaluation undertaken by multiple community sites (three churches and one clinic). Each community site administered paper, heart-knowledge questionnaires and demographic forms (data sets) to 107 African American participants. Two of the community sites (churches) delivered a culturally tailored heart-healthy educational session to 50 participants and collected data heart knowledge questionnaires and demographic data from participants after the session, coded as the intervention group in this study. Two additional community sites (one church and one clinic) collected paper heart-knowledge questionnaires and demographic data from 57 participants before delivering a heart health educational session to respondents (church site), or (clinic) posted dates, times, and locations for participants to attend a future heart health session by providing information regarding location, date, and times of upcoming heart health sessions.

Upon receiving IRB approval to collect data from the community sites datasets, de-identified instruments, which consisted of paper questionnaire and demographic data responses, were obtained from each community site for the purpose of secondary analysis. Data preparation consisted of a review of instruments for missing data; I prepared data (assigned number codes for each participant and site, developed excel spreadsheet), and organized data. All information was downloaded into an Excel file for

statistical analysis. Details of the analysis are provided in the data analysis section of this dissertation.

Variables in this study included groups (intervention versus comparison) and participant knowledge scores. Group (intervention versus comparison) was the independent variable. Participant scores was the dependent variable. Covariates included the demographic variables: age, gender, marital status, education, employment status, and income. The secondary analysis was based on data sets (de-identified paper knowledge questionnaire and demographic survey) obtained from the four community sites for the purpose of evaluating relationships between groups, participant knowledge scores, and a culturally tailored educational intervention in a secondary analysis of data from data sets of internal sources. An examination of CVH knowledge deficits and the impact of educational community programs on heart health knowledge are needed to gain a better understanding of use of CVD prevention strategies targeting an African American community.

Community Sites and Setting

Community organizations targeted for this study included churches, clinics, and community centers located in the targeted urban Midwestern African American community. Inclusion criteria were (a) entity located in and service provider for the targeted community; (b) experience (past or present) in conducting health programs, health related services, or events (e.g., health fairs) with the targeted community; (c) a church congregation membership of at least 50 members comprised of predominantly (90%) African American church congregation; and (e) willingness to sign the Data Use

Agreement for release of de-identified data. Community sites excluded were outside of the targeted area, church congregation < 50 and/or comprised of a predominantly non-African American members sites without a history of conducting a health event or related health service involving the African American community, and sites unwilling to sign the Data Use Agreement.

The community sites are centrally located in a predominantly African American urban Midwestern community. Demographic information contained in databases at community sites include age, gender, birthdate, race/ethnicity, insurance status (specific to clinics), and income. While church sites may have limited data regarding congregation members regarding date of birth, marital status, and medical conditions, the community clinic provides free or low cost health screening, health education, and resource support to underserved (uninsured, homeless) diverse groups, predominantly urban African American residents.

Multiple church denominations are centrally located in the urban African American community. The churches in the targeted community have active health ministries and have shown support for the overall health of the targeted community by providing health promotion activities, including health fairs and health education, and resources in the community. In the church settings, congregation members who are health professionals, such as nurses, dietitians, and community health educators, are used as directors and coordinators of the health ministry. In this role, the individual is involved with the planning, organizing, and implementation of health focused activities. Specifically, the coordinators were experienced as interventionist (presenters), health fair

organizers, health screenings for blood pressure and blood (glucose) sugar finger sticks, and health education programing, including the selection of topics and health education materials, training of lay members (nonmedical), and program evaluation.

There were challenges in identifying community sites. A great deal of time and effort was spent planning and developing a plan to facilitate a collaborative partnership with potential community sites. Varied measures were taken in an attempt to identify potential community sites, including a local directory search to secure contact information (telephone and address) for community organizations. In addition, I solicited site contact information from public agencies and public health professionals involved with services to the targeted community.

Power Analysis

Power analysis was performed using a multiple regression model and the G* Power 3.1 software program (Faul, Erdfelder, Buchner, & Lang, 2009); the multiple regression model was used to determine the needed sample size (n = 103). Using seven predictors (group, age, gender, marital status, education, employment status, and income) based on a medium effect size (f^2 = .15) and an alpha level of α = .05, a sample size of 103 participants was needed for this study to detect with sufficient power (.80). A nonprobability convenience sample of (n = 107) African American participants were included in this study, in either the intervention group (50, or 46.7%) or the comparison group (57, or 53.3%). Participants were a nonprobability convenience sample of African Americans.

Initially, a study was proposed to evaluate CVD interventions and African Americans using primary data; however, after undergoing Walden University's IRB process, I opted to conduct a secondary analysis of the relationships between culturally tailored educational interventions and knowledge acquisition of CVD risk factors in an African American sample. As such, this study received IRB approval from Walden University. The IRB approved of the use of the Data Use Agreement as a contractual agreement between the student researcher and community site, denoting the role of the researcher, data collection process, and use and release of the data set (pencil and paper demographic data and questionnaire responses) to the researcher. Each community site provided signatures on the Data Use Agreements. Upon receiving the signed Data Use Agreements, I electronically submitted each signed Data Use Agreement to the Walden University IRB and a copy to the Data Use Agreement (Appendix A) signer for each entity, per Walden University IRB requirements. Walden University IRB approved data collection for each community site.

For this study, each community site coordinator or director was asked to ensure that de-identified data collected would not link individuals to the data. De-identified data sets (pencil and paper demographic data and questionnaire responses) were provided for this study. To de-identify data from each community site, the actual names of the community sites are not presented or published with study findings. This measure was taken to respect the privacy of community sites and respondents.

Evidence for partnership of faith-based organizations (churches) and community based health promotion initiatives are supported, as shown by the involvement of these

organizations in both health education and health screening activities including high blood pressure, diabetes, obesity, tobacco use, and cholesterol management (Fletcher et al., 2011). Given this, health ministry coordinators and clinic staff verbalized concern to me regarding CVD risk factors, specifically diabetes, as it relates to CVD is a cause for concern in the African American community. Thus, this indicates a valuable role that public health professionals can play in assisting entities in developing and implementing CVD prevention strategies. Community site health coordinators and clinic staff spearheaded the heart health educational sessions for identifying heart health educational needs related CVD risk factors to inform the design of future health programs offered onsite.

In the targeted community, I was often called upon to provide volunteer public health nurse consultant services in the targeted community. Given this, on the onset, I disclosed to potential community site health coordinators and clinic staff that my role as a volunteer public health nurse consultant is separate from my role as that of the researcher for this study. In clarifying my role, emphasis was placed on my role as a researcher, which may involve my consulting the health coordinators for clarification related to the Data Use Agreement or questions regarding this study.

Each site selected a protocol and modeled their community educational group intervention after the NHLB Community Health Worker Health Disparities Initiative Heart Health program (USDHHS, NHLBI, & NIH, 2014) and adapted (brief 1-hour sessions) to facilitate introducing the curricula to program participants. After conducting a review of the NHLB's Community Health Worker Initiative program evaluation tool

and prior to implementing the community heart health sessions, several health coordinators (a PhD graduate and a registered dietitian) expressed interest in integrating an evaluation tool to assess the congregation members' understanding of diabetes as a risk factor for heart disease. The sites chose to use the HDFQ to assess level of CVD risk factor knowledge. Evidence supports the utility of the HDFQ to measure heart disease risk factor knowledge and the association between with diabetes and CVD (Wagner, Chyun, Lacey, & Abbott, 2005). This was in lieu of one of the church sites scheduling and conducting monthly blood pressure checks and blood (glucose) sugar testing immediately after church worship services every third Sunday. In place of this being a secondary analysis study, I was granted permission for use of the HDFQ in any presentation or publication.

Instruments

I used data sets (pencil and paper demographic information and HDFQ and risk factor knowledge questionnaire responses) obtained from multiple community sites (three churches and one clinic) to answer the research questions. Secondary data analysis permitted the examination of alternative relationships among variables (Windle, 2010), in this case, demographic data (age, gender, marital status, education, income, employment, and income of self-reported responses) collected from each site.

CVD Risk Factor Knowledge

The use of a cognitive measurement, such as a questionnaire, is one vehicle for evaluating CVD risk factor knowledge as reported in the literature. While the content may vary, primary focus is centered CVD risk factor such as diabetes, high blood

pressure, cholesterol, physical activity, and nutrition, with score results indicating low level to good level of knowledge. For instance, the HDFQ is a 25-item questionnaire that assesses knowledge of risk factors for the development of CVD (Wagner et al., 2005). Scale responses include *true*, *false*, or *I don't know*. Scores of the HDFQ are calculated in percentages attained by summing each correct response, ranging from 0 to 25 with higher scores indicating a higher level of knowledge. Previous use of the HDFQ to assess knowledge of CVD risk factors have been conducted using primary data to survey participants without the intervention component (Akintunde et al., 2015; Konicki, 2012). Knowledge scores related to heart health are consistently reported in studies aimed at CVD prevention (Akintunde et al., 2015; Hurtado et al., 2014; Konicki, 2012). The HDFQ (Wagner et al., 2005) was selected and administered at the community sites to determine future education programing needs pertaining to knowledge of CVD risk factors and the association between CVD knowledge and diabetes.

Covariates

In this study, control variables included age, gender, marital status, education, employment, and income. Covariates may affect the dependent variables (Creswell, 2009). Previous studies have shown that CVD knowledge scores may differ for individuals with a higher education, prior experience teaching a heart health topic, financial strain, or differences in employment, age, or race (African American or European American; Akintunde et al., 2015; Konicki, 2012; Willock et al., 2015).

Intervention

The intervention, which provided the focal point of this study, was a result of relentless effort exhibited by the four community sites in their quest to conduct educational heart health-group sessions to address the health challenges in an urban African American community. The community sites (three churches and one clinic) were randomly assigned to either the intervention or the comparison group, with which the intervention site conducted a tailored 1-hour heart health educational group session consisting of group education and collecting demographic data and heart disease knowledge questionnaires from African American participants after exposure to the intervention. The comparison group completed demographic and knowledge questionnaires before being exposed to the same group educational session tailored educational intervention. The program group educational sessions implemented by the community sites consisted of a one session delivered over a 1-hour period from March 2015 through May 2015. The session times and dates varied. One church opted for Wednesday evening during the usual Bible study period, while other churches preferred the weekend, either Saturday afternoon or Sunday immediately following the morning worship service. The clinic sessions were offered at a local public library, centrally located in the targeted community on varied dates, weekday and weekend, day and evening hours, to ensure ease of accessibility to the educational sessions. Each site selected interventionists to deliver the educational intervention and administer the pencil and paper questionnaires (demographic data and heart knowledge) provided in this study.

Community sites compiled curricula content and adapted (and condensed for the one-hour session) from the National Heart, Lung, and Blood Institute's (NHLBI's) Community Health Worker Health Disparities Initiative, Heart Health Program health educational material for site use. The rationale provided content and implemented a site-selected presenter who used the NHLBI's Community Health Worker Health Disparities Initiative, Heart Health Program materials to deliver tailored evidenced-based curricula with emphasis on improving heart health in minority and underserved communities (USDHHS, NHLBI, & NIH, 2014). Source selected by the community sites, the "With Every Heartbeat is Life" curricula sessions for African Americans, included (a) risk for heart disease, (b) physical activity, (c) high blood pressure, (d) cholesterol, (e) weight, (g) diabetes, (h) heart healthy eating, and (i) smoke free living.

In selecting the NHLBI's curricula, emphasis was placed on using the NHLBI's Community Health Worker Health Disparities Initiative Heart Health (USDHHS, NHLBI, & NIH, 2014) materials to incorporate into future heart health educational programs offered by the site. Particularly, the community sites expressed interest in determining knowledge relating diabetes to heart disease in the African American community. The community sites opted to administer the Heart Disease Fact Knowledge Questionnaire (HDFQ) (Wagner et al., 2005) to address this concern. The HDFQ is a valid and reliable 25-item questionnaire that numerically assesses heart disease risk factor knowledge and the correlation between diabetes and heart disease.

Research Questions and Hypotheses

RQ1. Will participants who receive a culturally tailored educational intervention have higher levels of knowledge than participants who have not received the intervention?

$H_0$1. Participants who receive a culturally tailored intervention will have similar levels of knowledge as compared to participants who have not received the intervention.

H_a1. Participants who receive a culturally tailored intervention will have higher levels of knowledge in comparison with participants who have not received the intervention.

RQ2. Will participants who receive a culturally tailored educational intervention have higher levels of knowledge than others who have not received the intervention, after controlling for the participants' demographic characteristics?

$H_0$2. Participants who receive a culturally tailored educational intervention will have similar levels of knowledge to participants who have not received the intervention, after controlling for the participants' demographic characteristics (age, gender, marital status, education, employment, and income).

H_a2. Participants who receive a culturally tailored educational intervention will have higher levels of knowledge compared to those who have not received the intervention, after controlling for participant's demographic characteristics (age, gender, marital status, education, employment, and income).

Data Analysis

Data were analyzed using descriptive and inferential statistics. Descriptive statistics included means, standard deviations, frequencies, and percentages. Hypothesis 1 (simple knowledge differences between the groups) was tested using a *t* test for independent means. Hypothesis 2 (knowledge differences between the groups regarding the CVD-related terminologies and physiological measures) was assessed using a paired *t* test.

Reliability and Validity

Reliability

Two types of reliability exist: internal and external. McLeod (2013) explained that external reliability is the amount of variability from one use of an instrument to another use of the same instrument, and internal reliability refers to the consistency of the results across items of the same instrument. In this study, internal reliability was applicable to study, in that the HDFQ has demonstrated superior test-retest reliability (Lacy, Dixon, & Chyun, 2001). In addition, the HDFQ was administered to the two separate intervention groups (at different dates and times) and two separate control groups (at different dates and times), with resulting HDFQ scores being higher each of the intervention groups versus the comparison groups. Internal consistency reliability is the level to which diverse test items on the same test measure a particular construct (McLeod, 2013; Phelan & Wren, 2006), as suggested based on the results in this study (McLeod, 2013; Phelan & Wren, 2006).

Validity

The construct, knowledge, should be operationally defined and quantified, and it is considered the core of measurement (Kimberlin & Winterstein, 2008). For instance, the ability to improve heart health in the community was assessed by measuring the knowledge of heart disease risk factors that attribute to the development of CVD among the targeted community. Thus, there is a need for interpretation of results of the knowledge questionnaire, in this case to measure the level of knowledge of heart disease risk factors (Kimberlin & Winterstein, 2008).

Ethical Considerations

Permission to conduct this study was obtained from Walden University's IRB prior to recruitment and data collection efforts (IRB Approval Number 02-11-15-0109018). The primary investigator (PI) secured and safeguarded the physical transport of data to the double locked physical residence occupied by the PI. Data were placed in a fireproof file box to safeguard and prevent unauthorized viewing. All data related to the dissertation study will be securely stored for a minimum of 5 years according to Walden University's policy. In addition, at the end of 5 years, all dissertation research, including paper and electronic materials, will be disposed of in accordance with the policy.

Participants in this study were urban African Americans. Therefore, consideration of socioeconomic, lifestyle, and environmental factors that may influence on the health status in the targeted African American community was paramount; and the sensitivity to day-to-day challenges faced by this community was important as well. Given this, in

reporting and publishing of study findings, study participants are referred to as an urban African American in a Midwestern city, to minimize stereotyping of this community.

Dissemination of Findings

I plan to disseminate the findings to public health professionals, government agencies, academia, churches, and health systems via any publications that result from the study after the dissertation has been successfully defended. I will approach each community site health representative, and request a date and time to share study findings with community members. In addition, I will contact community leaders to obtain other sources for disseminating results.

Transition and Summary

This chapter discusses the design and methods used to conduct this secondary analysis dissertation research. The study process began with a discussion about the purpose, recruitment, and identification of potential community partners, ethical considerations, data collection instruments and procedures, and data analysis. Finally, a discussion regarding reliability and validity, ethical considerations, and plans for dissemination of findings are provided.

Chapter 4 discusses results obtained by collecting and analyzing data. The relationship between the hypothesis and theoretical framework are provided. All other relevant data related to participants are described as well. Finally, Chapter 4 contains a summary of the results and the significance of this dissertation study.

Chapter 4: Results

Introduction

The purposes of this secondary analysis were to measure the effects of a culturally tailored educational intervention regarding CVD risk and awareness among an urban African American sample in Omaha, Nebraska. Data from 107 participants were used to address the following research questions and hypotheses:

RQ1. Will participants who receive a culturally tailored educational intervention have higher levels of knowledge compared to the participants who have not received the intervention?

$H_0$1. Participants who receive a culturally tailored intervention will have similar levels of knowledge as compared to participants who have not received the intervention.

H_a1. Participants who will receive a culturally tailored intervention have higher levels of knowledge as compared to participants who have not received the intervention.

RQ2. Are participants who will receive a culturally tailored educational intervention have higher levels of knowledge than other participants who have not received the intervention after controlling for the participant's demographic characteristics?

$H_0$2. Participants who will receive a culturally tailored educational intervention will have similar levels of knowledge as participants who have not received the intervention after controlling for the participant's demographic characteristics (age, gender, marital status, education, employment, and income).

H_a2. Participants who receive a culturally tailored educational intervention will have higher levels of knowledge as compared to those who have not received the intervention after controlling for participant's demographic characteristics (age, gender, marital status, education, employment, and income).

In this chapter, I discuss the results of this study in relation to the research questions, hypothesis, sample characteristics, and descriptive analysis used in this study.

Data Collection

Secondary data analysis was conducted using de-identified data (data sets of demographic characteristics and HDFQ) participant responses collected by multiple community sites (three churches and one community health clinic) as a part of an evaluation to determine community health education needs to assist in planning future health education programs. The community sites were randomized into an intervention or comparison group. The study received IRB approval from Walden University.

Description of Sample

Table 1 displays the frequency counts for selected variables. Of the 107 participants, 57 were assigned to the comparison group (53.3%), and 50 were assigned to the intervention group (46.7%). The participants ranged in age from 19 to 88 *(M* = 49.42, *SD* = 15.52). Thirty-six were male (33.6%), and 71 were female (66.4%). A third were married (33.6%) with other common categories being divorced/separated (23.4%) or never married (25.2%). The median level of education in the sample was some college or vocational training. Over half were employed (60.7%) and another 23.4% were retired.

Income levels ranged from under $20,000 (19.6%) to above $100,000 (3.7%). The median income was $35,000. Most (73.8%) had heard of the term CVH.

Table 1

Frequency Counts for Selected Variables (N = 107)

Variable	Category	*n*	%
Group	Before	57	53.3
Group	After	50	46.7
Age [a]	19 – 37	27	25.2
Age [a]	38 – 50	28	26.2
Age [a]	51 – 62	29	27.1
Age [a]	63 – 88	23	21.4
Employment status	Employed	65	60.7
Employment status	Retired	25	23.4
Employment status	Unemployed	6	5.6
Employment status	Homemaker	2	1.9
Employment status	Student	9	8.4
Income c	Under $20,000	21	19.6
Income c	$20-$30,000	23	21.5
Income c	$30-$40,000	19	17.8
Income c	$40-$50,000	13	12.1
Income c	$50-$60,000	7	6.5
Income c	$60-$70,000	8	7.5
Income c	$70-$80,000	7	6.5
Income c	$80-$90,000	3	2.8
Income c	$90-$100,000	2	1.9
Income c	Above $100,000	4	3.7
Marital status	Married	36	33.6
Marital status	Widowed	15	14.0
Marital status	Divorced/Separated	25	23.4
Marital status	Partnered but not married	4	3.7
Marital status	Single/Never married	27	25.2
Education [b]	8th grade or less	1	0.9
Education [b]	Some high school	4	3.7
Education [b]	High school graduate/GED	19	17.8
Education [b]	Some college/ vocational training	41	38.3
Education [b]	Associate degree	15	14.0
Education [b]	Baccalaureate degree	11	10.3
Education [b]	Some graduate school	3	2.8
Education [b]	Graduate or professional degree	13	12.1

Note. [a] Age: M = 49.42, SD = 15.52.
[b] Education: Mdn = Some college/Vocational training
[c] Income: Mdn = $35,000
CVH-CVH

Table 2 displays the frequency counts for correct responses per question sorted by highest frequency. The most frequently chosen correct responses were to Item 12, “Being overweight increases a person’s risk for heart disease” (96.2%) and Item 4, “Smoking is a risk factor for heart disease” (94.4%). The least frequently chosen correct responses were to Item 22, “People with diabetes tend to have a low HDL (good) cholesterol” (21.5%) and Item 25, “Men with diabetes have a higher risk of heart disease than women with diabetes” (29.9%).

Table 2

Frequency Counts for Correct Responses per Questions Sorted by Highest Frequency (N = 107)

Item	*n*	%
12. Being overweight increases a person's risk for heart disease.	103	96.2
4. Smoking is a risk factor for heart disease.	101	94.4
6. High blood pressure is a risk factor for heart disease.	99	92.5
24. A person who has diabetes can reduce their risk of developing heart disease if they keep their weight under control.	98	91.6
8. High cholesterol is a risk factor for developing heart disease.	98	91.6
1. A person always knows when they have heart disease.	97	90.7
13. Regular physical activity will lower a person's chance of getting heart disease.	97	90.7
7. Keeping blood pressure under control will reduce a person's risk for developing heart disease.	96	89.7
14. Only exercising at a gym or in an exercise class will help lower a person's chance of developing heart disease.	95	88.8
9. Eating fatty foods does not affect blood cholesterol levels.	95	88.8
15. Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease.	93	86.9
23. A person who has diabetes can reduce their risk of developing heart disease if they keep their blood pressure under control	91	85.1
2. If you have a family history of heart disease you are at risk for developing heart disease.	90	84.1
16. Diabetes is a risk factor for developing heart disease.	87	81.3
19. A person who has diabetes can reduce their risk of developing heart disease if they keep their blood sugar levels under control.	87	81.3
5. A person who stops smoking will lower their risk of developing heart disease.	86	80.4
11. If your "bad" cholesterol (LDL) is high you are at risk for heart disease.	84	78.5
21. If a person has diabetes, keeping their cholesterol under control will help to lower their chance of developing heart disease.	83	77.6
17. High blood pressure puts a strain on your heart.	81	75.7
18. If your blood sugar is high over several months it can cause your cholesterol level to go up and increase your risk of heart disease.	70	65.4
10. If your "good" cholesterol (HDL) is high you are at risk for heart disease.	66	61.7
20. People with diabetes rarely have high cholesterol.	66	61.7
3. The older a person is, the greater their risk of having heart disease.	61	57
25. Men with diabetes have a higher risk of heart disease than women with diabetes.	32	29.9
22. People with diabetes tend to have a low HDL (good) cholesterol.	23	21.5

Table 3 displays the frequency counts for number of correct knowledge answers. There were 25 knowledge questions on the test. The actual number of correct answers ranged from 10 to 25 (M = 19.43, SD = 3.84).

Table 3

Frequency Counts for Number of Correct Knowledge Answers (N = 107)

Variety	Category	*n*	%
Knowledge [a]			
	10 – 16	25	23.4
	17 – 20	28	26.2
	21 – 22	27	25.2
	23 – 25	27	25.2

Note.[a] Knowledge: M = 19.43, SD = 3.84.

Testing the Hypotheses

The null hypothesis for Research Question 1 predicted no significant difference in levels of knowledge whether participants received the culturally tailored intervention. The *t* test for independent means in Table 4 found a significant difference (p = .001) between the knowledge of the comparison (M = 17.86) and intervention (M = 21.22) groups. This finding provided support to reject the null hypothesis and accept the alternative hypothesis (see Table 4).

Table 4

Comparison of Knowledge Based on Group. t Test for Independent Means (N = 107)

Variable	Group	*n*	*M*	*SD*	*η*	*t*	*p*
Knowledge					.44	5.01	.001
	Comp	57	17.86	3.90			
	Inter	50	21.22	2.88			

Note. Comp=*comparison*
Inter=*Intervention*

The null hypothesis for Research Question 2 predicted no significant difference in levels of knowledge whether participants received the culturally tailored intervention and controlling for age, gender, marital status, education, employment, and income. As a preliminary analysis, Table 5 displays the Pearson product correlations for participant group and each of the six demographic variables with the participant's knowledge score. For the seven correlations, only participant group was significant ($r = .44$, $p = .001$) with participants in the Intervention Group having higher levels of knowledge.

Table 5

Pearson Correlations for Selected Demographic Variables with Knowledge Score (N = 107)

Variable	Knowledge	
Group [a]	.44	****
Age	.00	
Sex [b]	-.15	
Married [c]	.15	
Education	.15	
Employed [c]	.00	
Income	.01	

Note. * $p < .05$. ** $p < .01$. *** $p < .005$. **** $p < .001$.
[a] Coding: 1 = *Comparison* 2 = *Intervention*
[b] Coding: 1 = *Male* 2 = *Female*
[c] Coding: 0 = *No* 1 = *Yes*

Table 6 displays the results of the multiple regression model that predicted knowledge based on participant group and six demographic variables. The overall seven-variable model was statistically significant ($p = .001$) and accounted for 23.8% of the variance in the dependent variable. Specifically, knowledge was higher for intervention group participants ($\beta = .44$, $p = .001$) and tended to be higher for those with more

education (β = .20, p = .06), and those with less income (β = -.22, p = .07). This combination of findings provided support to reject the null hypothesis and to accept the alternative hypothesis.

Table 6

Prediction of Knowledge Based on Selected Variables (N = 107)

Variable	*B*	*SE*	*β*	*p*
Intercept	12.14	2.47		.001
Age	0.03	0.03	.13	.22
Sex [a]	-0.31	0.76	-.04	.68
Married [b]	0.56	0.81	.07	.49
Education	0.46	0.24	.20	.06
Employed [b]	0.48	0.79	.06	.55
Income	-0.34	0.19	-.22	.07
Group [c]	3.37	0.76	.44	.001

Note. Final Model: F (7, 99) = 4.41, p = .001, R^2 = .238.
[a] Coding: 1 = *Male* 2 = *Female*
[b] Coding: 0 = *No* 1 = *Yes*
[c] Coding: 1 = *Comparison* 2 = *Intervention*

In summary, I used data from 107 participants to measure the effects of a culturally tailored educational intervention regarding short-term knowledge acquisition pertaining to CVD and related risk factors, and awareness of AHA terminology, CVH among an urban African American sample. Hypothesis 1 (knowledge differences between groups) was supported (Table 4). Hypothesis 2 (knowledge differences between groups controlling for demographics) was also supported (Table 6). In the final chapter, these findings will be compared to the literature, conclusions and implications will be drawn, and a series of recommendations will be suggested.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purposes of this secondary analysis study were to describe (a) relationships between a community-based heart health educational interventions on short-term knowledge acquisition of CVD risk factors, (b) demographic characteristics (age, gender, marital status, education, employment, and income), and (c) awareness of the AHA's construct cardiovascular heath among African Americans participating in tailored community-based heart health educational sessions (interventions) and comparison groups. The SCT (Bandura, 2004) predates social cognitive approaches to promote individual management of health habits to sustain health throughout the lifespan. As such, the SCT addresses determinants such as knowledge of health risks and benefits of health practices (Bandura, 2004). In this chapter, I discuss findings relating to prior theoretical and empirical literature, theory application, interpretations of findings, limitations, recommendations, implications for this study, and conclusions.

There was a significant correlation between higher heart disease risk factor knowledge scores and culturally tailored heart health educational intervention attendance in the intervention group. The multiple regression model was used to predict knowledge based on participant group and six demographic variables. The overall seven-variable model was statistically significant ($p = .001$) and accounted for 23.8% of the variance in the dependent variable. Specifically, participants who attended (intervention group) a 1-hour heart health educational session knowledge was high ($\beta = .44$, $p = .001$). Knowledge

also tended to higher for those with more education (β = .20, p = .06), and those with less income (β = -.22, p = .07).

Interpretation of Findings

A prior study examining the effect of a community-based CVH intervention involving participants reported improved heart health knowledge among Jordanian adults (Eshah et al., 2010). The use of the NHLB's heart health content was not reported in Eshah et al.'s (2010) study. However, community-based heart health interventions using the NHLBI's heart health content have reported increased heart health knowledge among diverse populations-Hispanics, African Americans, Filipino, and American Indian (Hurtado et al., 2014).

This study adds to the analysis of other researchers (Hurtado et al., 2014; Willock et al., 2015) in that community-based heart health educational interventions are associated with increased heart health knowledge among participants (Hurtado et al., 2014; Willock et al., 2015). Further, this study and others (Hurtado et al., 2014; Willock et al., 2015) involved the NHLBI's Community Health Worker Health Disparities Initiative Heart Health, an evidence-based culturally tailored community-based heart health program toolkit designed to raise awareness of heart disease risk factors in underserved and minority communities (USDHHS, NHLBI, & NIH, 2014) as a source for intervention content.

Process evaluation provides an understanding of how and why particular aspects of the intervention were met with success and what mechanisms facilitate a successful intervention (Linnan & Steckler, 2002). Having been effectively used in other community

health education programs (Wennerstrom, Bui, Hardin-Barrios, & Price-Haywood, 2015), a process of evaluation may provide insight as to why intended results were obtained by some interventions, whereas others did not, and may provide valuable insights as to the significance, modest, or null findings that are observed (Linnan & Steckle, 2002). To this end, the community partners for this study were primarily church-based, involving PI coordination and support to the community partners, as needed, which may have contributed to the success of the intervention (e.g., pastors/ministry leaders support of heart health educational sessions-reflected in congregation program attendance).

There was a significant correlation between being in the intervention group and heart disease risk factor knowledge scores after controlling for demographics. Results from this secondary analysis dissertation research are consistent with prior research in that community-based CVH tailored educational interventions was associated with improved knowledge of heart disease risk factors after controlling for demographics. Descriptive statistics from the demographic data form items as per Table 1 revealed age ranges of participants (Gumbs, 2012).

Limitations of the Study

This secondary data analysis study was based on secondary data (data sets-consisting of completed pencil and paper of de-identified demographic data forms and HDFQ questionnaires) collected by multiple community sites (churches and clinic) or the purpose of evaluating future health programming needs for urban African American participants in one Midwestern community. The community sites were located within an

urban Midwestern African American community. The sample in this study consisted of volunteers and may not be representative of all African Americans, which limited generalizability of the results of the study to this population. As for the research design, it is unclear as to how much participant knowledge gained was due to it being a culturally tailored educational intervention and how much less (if any) participants would have learned had their presenter taught the material in a manner that was more for another audience, for instance, White Anglo Saxon Protestants.

It is important to note that interpretation of this study is limited by the fact that a comparison group was not used in this study, and results reported are based on participants who received culturally tailored training and scored higher than a group without the benefit of a culturally tailored educational session (something is better than nothing). Other limiting factors include lack of data regarding race/ethnicity, recent exposure to heart-health education information, and health literacy, in which all may affect the interpretation of study results. Furthermore, during the data collection and data entry process, errors may have occurred, which limited accuracy, reliability, and validity of the results. I was not involved in the data collection. However, the extent of my experience in documentation as a nurse may have prepared me to pay attention to details and thus minimize data entry discrepancies. In addition, the use of a small convenience sample of participating community sites consisting of three churches and one clinic and the inclusion criteria mandating that each community site sign the Data Use Agreement prior to data collection, although necessary, may have contributed to the few community sites agreeing to participate in the study, more so with the targeted population.

Recommendations and Implications for Future Research

This secondary analysis study was conducted on data sets (de-identified paper instruments of CVD knowledge questionnaires and demographic data form) responses collected by multiple community sites from African American participants who attended culturally tailored heart health educational sessions from March 2015 to May 2015. The major limitation of this study of lacking a comparison group is acknowledged. I found participants who received the culturally tailored heart health educational session showed greater knowledge of heart disease risk factors on a paper heart heath questionnaire afterwards compared to the group without the benefit of a culturally tailored heart health educational session. However, as a recommendation for future research, there is a need to compare these gains for respondents who received this culturally sensitive intervention as compared to gains received by individuals who received a nonculturally sensitive intervention. A limiting factor for the study results was that half of the participants (50.4%) had 21 or more answers correct (84+% correct), which would suggest that the test might have been too easy and not have a high enough knowledge standard to better differentiate the two groups. This further substantiates the need to include a comparison group in future research involving this population.

In addition, future studies incorporating other types of interventions (nonrelevant to culture, worksite setting) incorporating community health workers (CHW's) to address CVD risk factor knowledge in underserved communities are needed, to include measurable clinical objectives-blood pressure and blood sugar measurements. Although not used in this study, CHWs play an integral part of community health education and

promotion strategies aimed at health disparities. Research examining the use of CHWs and heart health knowledge improvement in minority and underserved communities are documented (Hurtado et al., 2014; Willock et al., 2015). For instance, CHWs were used to address knowledge of cardiovascular risk factors in a peer-to-peer training model with the use of the NHLBI's With Every Heartbeat Is Life: A Community Health Worker's Manual for African Americans aimed at improving heart health among African Americans (Willock et al., 2015). The study supported the effectiveness of the use of CHW in community CVD prevention strategies aimed at health disparities. Finally, in implementing these interventions, consideration that community site awareness of the availability of evidence-based resources to incorporate into community health program curricula may be limited. Therefore, it is paramount that collaboration occur with community partners, such as churches, organizations, clinics, community liaison, public health professionals, health systems, community leaders, and the local health department prior to implementation of community-based health promotion efforts aimed at underserved and minority populations. Efforts to incorporate members of the targeted community into all phases of community-wide planning, training, implementation, and process evaluation aspects are suggested to address the feasibility, program objectives, and for positive outcomes.

In summation, a disproportionate CVD risk factor link to increased fatal coronary heart disease among African Americans (Safford et al., 2012) underscores the need to implement evidence-based culturally tailored interventions tailored to the heart health interventions targeting African Americans. According to Walton-Moss et al. (2014),

interventions aimed at progression toward the AHA's ideal CVH metrics show promise. Walton-Moss et al. also noted that although the systolic blood pressure is subject to greater variability than the diastolic blood pressure, interventions appeared to more effective at reducing systolic blood pressure. Among low-income and persons residing in socially disadvantaged communities, interventions targeting BMI and physical activity appear to be more effective, regardless of race or ethnicity.

This secondary analysis of existing data showed effects of community-based culturally tailored heart health-education interventions on the knowledge of CVD risk factors among African American participants who received a culturally tailored educational intervention. Knowledge of health risks and benefits is essential as a precondition for change (Bandura, 2004). Moreover, culturally tailored intervention is the first step in the management of CVD risk factors such as diabetes (Kountz, 2012). I examined the relationship between demographic characteristics (age, gender, marital status, education, employment status, and income) and knowledge of CVD risk factors. Individuals who are unaware of CVD risk factors may bear an increased burden of CVD. Monitoring of health outcomes of individual and community level factors will assist with identifying CVD disparities patterns (Walton-Moss et al., 2014).

This study supports the significance of a culturally tailored community-based heart health intervention in improving heart health knowledge among participants who received a culturally tailored heart health intervention. An understanding of the level of CVD risk factor knowledge may guide the development of tailored educational interventions, which may result in the implementation of interventions that may improve

heart health knowledge among African Americans. The use of the NHLBI's tailored heart health curricula is also supported because the NHLBI's Community Health Worker Initiative Heart Health program curricula (USDHHS, NHLBI, & NIH, 2014) were the content source selected and used by the community sites mentioned in this study. This evidence-based culturally tailored tool was developed by the NHLBI to target heart health disparities in underserved and minority communities (USDHHS, NHLBI, & NIH, 2014). The use of a culturally tailored intervention attributed to improved CVD knowledge scores, suggesting implementation of community-based culturally tailored interventions into public health strategies to progress toward attainment of attainment of the AHA ideal CVH metric goal, thus influencing CVD disparities.

Although there were major limitations to this secondary data analysis study, the findings support the use of culturally tailored interventions targeting CVD risk reduction as a useful strategy to consider for programs targeting African Americans. This study indicated that culturally tailored educational intervention can have a positive effect on CVD risk factor knowledge scores in an urban African American sample.

Implications for Social Change

This study was an initial step in my effort to bring about positive social change by addressing a gap in the literature regarding the use of tailored educational and community heart health interventions and CVD risk factor knowledge among an urban African American sample in Douglas County, Nebraska. This objective was met. Second, research on knowledge of CVD risk in the targeted community was scarce, yet disparities in CVD morbidity existed among adults in Douglas County, Nebraska. In this

community, research showed that 6% of African Americans, compared to 5.8% of White non-Hispanics, had some form of CVD (Healthy Communities Institute, 2014). This is of great concern because awareness of CVD risk is linked to preventive actions (Willock et al., 2015). It was unclear which factors were major challenges to CVD prevention efforts aimed at this community. The intent was to impart information to affect social change in a community; therefore, this study contributed to positive social change. Findings from this study revealed that tailored community based heart health interventions were associated with higher knowledge of CVD risk scores in the sample.

This finding will be used to inform the members of the targeted community, government agencies, community leaders, organizations, health systems, and academia to support the need for community partnership aimed at CVD prevention. In addition, this study will address gaps in knowledge related to CVD prevention by implementing community based heart health programs relevant to targeted communities. This measure will bring about social change by improving community access to evidence-based tailored CVD prevention education, which could promote and establish collaborative partnerships to ensure sustainability of such programs in light of limited funding and community resources. Social change could result because my recommendations to program planners were to ensure surveillance, evaluate, and report health outcomes. These concepts should be implemented to support the need to continue and expand programing, inform policy makers, and obtain funding support for the program. Third, community-wide focus and action to target disproportionate CVD risk factors in African Americans are implications for social change. These factors may serve as a call for public

health professionals regarding the need actively to seek out entities including faith-based organizations to offer assistance and resource support to implement educational health programs. Given this, the health program coordinators expressed appreciation in having the support of a public health nurse for encouragement and resource support, which contributed to success of overcoming the barriers that were encountered in their efforts to launch the educational programs.

Other contributions to social change are the findings of the applicability of educational and community based heart health programs in CVD prevention in a variety of settings. This has resulted in my being invited and involved in community meetings where the central discussion was centered on meeting the educational health needs of targeted groups such as African American, Hispanics, and the refugee population. Finally, the use of the NHLB's community intitiative (USDHHS, NHLBI, & NIH, 2014) was integral to improving knowledge of CVD risk in this sample. This contribuited to social change as the awareness of the role of and existance of tailored health education materials in affecting health disparities were realized and verbally expressed by several of the health program coordinators. One of the individuals was a PhD prepared health director in a faith-based organization, who informed me that she will share the NHLBI's Community Initiative (USDHHS, NHLBI, & NIH, 2014) resourses with health ministry directors and educators in the targeted community.

Conclusions

Culturally tailored educational interventions are associated with improved CVD knowledge scores among an African American sample. The results of this study showed

that after controlling for age, gender, marital status, education, employment, and income, participants who received a community-based culturally tailored heart health intervention (intervention group) scored higher on the HDFQ relative to participants who did not receive same intervention (comparison group). These findings suggest that community-based culturally tailored heart health educational interventions are an essential strategy to address CVD educational needs, which could potentially decrease disparities in CVD risk factors, thus CVD mortality. Moreover, educational and community-based programs and strategies played a major role in reaching the Healthy People 2010 objectives (USDHHS, 2015).

These programs will continue to contribute to the improvement of health outcomes over the next decade (USDHHS, 2015). Future research should examine the impact of educational and culturally tailored community-based programs in settings such as worksites and health care systems. With the inclusion of other settings, it is crucial that public health professionals provide guidance and support to facilitate successful implementation and ultimately positive health outcomes.

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Appendix A: Data Use Agreement

Intervention/Program/Intervention Oversight and Data Use Agreement when Researcher has Dual Roles

Site Name
Administrator/Pastor Name
Address
City/State Zip code
Telephone:

Date

Linda Smith is involved in the National Heart, Lung, and Blood Institute's Community Health Worker Health Disparities Initiative, Heart Health program, coordinating educational sessions and a program evaluation under our organization's supervision within the scope of our standard operations. We understand that Linda Smith seeks to write about this initiative as part of a doctoral study for Walden University. To this end, we agree to share a de-identified dataset with the student for research purposes, as described below.

I approve for Linda Smith to modify our typical data collection practices as follows:
a). Timing of data collection: Data will be collected from our clients either *prior* to or *after* exposure to a *Site Name* sponsored heart health educational session.
b). Alternate data collection tool: A Demographic Form will be used to obtain demographic characteristics (age, gender, marital status, education, income, employment status, and income) to examine the relationship between demographic characteristics and knowledge scores. Names will not be supplied on this form.
c). Alternate data collection tool: The Heart Disease Facts Questionnaire (HDFQ),-a 25-item questionnaire will assess knowledge of heart disease risk and related risk factors.

The Walden University Institutional Review Board (IRB) will be responsible for ensuring that the student's published study meets the university's ethical standards regarding confidentiality (outlined below). All other aspects of the implementation and evaluation of the initiative are the responsibility of the student, within her role as volunteer nurse consultant.

The doctoral student will be given access to a Limited Data Set ("LDS") for use in the doctoral project according via the ethical standards outlined below.

This Data Use Agreement ("Agreement"), effective as of *Month/date/year* ("Effective Date"), is entered into by and between Linda Smith ("Data Recipient") and *Site Name* ("Data Provider"). The purpose of this Agreement is to provide Data Recipient

with access to a Limited Data Set ("LDS") for use in research in accord with laws and regulations of the governing bodies associated with the Data Provider, Data Recipient, and Data Recipient's educational program. In the case of a discrepancy among laws, the agreement shall follow whichever law is more strict.

1. Definitions. Unless otherwise specified in this Agreement, all capitalized terms used in this Agreement not otherwise defined have the meaning established for purposes of the "HIPAA Regulations" codified at Title 45 parts 160 through 164 of the United States Code of Federal Regulations, as amended from time to time.

2. Preparation of the LDS. Data Provider shall prepare and furnish to Data Recipient a LDS in accord with any applicable HIPAA or FERPA Regulations

3. Data Fields in the LDS. No direct identifiers such as names may be included in the Limited Data Set (LDS). In preparing the LDS, Data Provider or shall include the data fields specified as follows, which are the minimum necessary to accomplish the research: Demographic Form characteristics (age, gender, marital status, employment, and income). Heart Disease Facts Questionnaire (HDFQ) scores, for every participant in the Heart Health program (intervention).

4. Responsibilities of Data Recipient. Data Recipient agrees to:

    a. Use or disclose the LDS only as permitted by this Agreement or as required by law;

    b. Use appropriate safeguards to prevent use or disclosure of the LDS other than as permitted by this Agreement or required by law;

    c. Report to Data Provider any use or disclosure of the LDS of which it becomes aware that is not permitted by this Agreement or required by law;

    d. Require any of its subcontractors or agents that receive or have access to the LDS to agree to the same restrictions and conditions on the use and/or disclosure of the LDS that apply to Data Recipient under this Agreement; and

    e. Not use the information in the LDS to identify or contact the individuals who are data subjects.

5. Permitted Uses and Disclosures of the LDS. Data Recipient may use and/or disclose the LDS for its research activities only.

6. Term and Termination.

   a. Term. The term of this Agreement shall commence as of the Effective Date and shall continue for so long as Data Recipient retains the LDS, unless sooner terminated as set forth in this Agreement.

   b. Termination by Data Recipient. Data Recipient may terminate this agreement at any time by notifying the Data Provider and returning or destroying the LDS.

   c. Termination by Data Provider. Data Provider may terminate this agreement at any time by providing thirty (30) days prior written notice to Data Recipient.

   d. For Breach. Data Provider shall provide written notice to Data Recipient within ten (10) days of any determination that Data Recipient has breached a material term of this Agreement. Data Provider shall afford Data Recipient an opportunity to cure said alleged material breach upon mutually agreeable terms. Failure to agree on mutually agreeable terms for cure within thirty (30) days shall be grounds for the immediate termination of this Agreement by Data Provider.

   e. Effect of Termination. Sections 1, 4, 5, 6(e) and 7 of this Agreement shall survive any termination of this Agreement under subsections c or d.

7. Miscellaneous.

   a. Change in Law. The parties agree to negotiate in good faith to amend this Agreement to comport with changes in federal law that materially alter either or both parties' obligations under this Agreement. Provided however, that if the parties are unable to agree to mutually acceptable amendment(s) by the compliance date of the change in applicable law or regulations, either Party may terminate this Agreement as provided in section 6.

   b. Construction of Terms. The terms of this Agreement shall be construed to give effect to applicable federal interpretative guidance regarding the HIPAA Regulations.

   c. No Third Party Beneficiaries. Nothing in this Agreement shall confer upon any person other than the parties and their respective successors or assigns, any rights, remedies, obligations, or liabilities whatsoever.

d. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

e. Headings. The headings and other captions in this Agreement are for convenience and reference only and shall not be used in interpreting, construing or enforcing any of the provisions of this Agreement.

IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

Partner Site (Serves as a Volunteer Nurse Consultant)	Doctoral Student
Signed: _____	Signed: _____
Print Name: _____	Print Name: _____
Print Title: _____	Print Title: _____

Appendix B: Heart Disease Facts Questionnaire (HDFQ)

From Wagner, Lacey, Chyun, & Abbott, 2005.

Note: This was a secondary analysis study of data obtained from internal sources (clinic and faith-based organizations). Permission for use of the HDFQ in any presentation and publication was granted to the intervention collaborator.

These next questions ask about heart disease. Please circle true or false; if you are unsure about the correct answer, you may circle "I don't know".

1. A person always knows when they have heart disease:
a. True b. False c. I don't know

2. If you have a family history of heart disease you are at risk for developing heart disease:
a. True b. False c. I don't know

3. The older a person is, the greater their risk of having heart disease:
a. True b. False c. I don't know

4. Smoking is a risk factor for heart disease:
a. True b. False c. I don't know

5. A person who stops smoking will lower their risk of developing heart disease:
a. True b. False c. I don't know

6. High blood pressure is a risk factor for heart disease:
a. True b. False c. I don't know

7. Keeping blood pressure under control will reduce a person's risk for developing heart disease:
a. True b. False c. I don't know

8. High cholesterol is a risk factor for developing heart disease:
a. True b. False c. I don't know

9. Eating fatty foods does not affect blood cholesterol levels:
a. True b. False c. I don't know

10. If your "good" cholesterol (HDL) is high you are at risk for heart disease:
a. True b. False c. I don't know

11. If your "bad" cholesterol (LDL) is high you are at risk factor for heart disease:
a. True b. False c. I don't know

12. Being overweight increases a person's risk for heart disease:
a. True b. False c. I don't know
13. Regular physical activity will lower a person's chance of getting heart disease:
a. True b. False c. I don't know

14. Only exercising at a gym or in an exercise class will help lower a person's chance of developing heart disease:
a. True b. False c. I don't know

15. Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease:
a. True b. False c. I don't know

16. Diabetes is a risk factor for developing heart disease:
a. True b. False c. I don't know

17. High blood sugar puts a strain on the heart:
a. True b. False c. I don't know

18. If your blood sugar is high over several months it can cause your cholesterol level to go up and increase your risk of heart disease:
a. True b. False c. I don't know

19. A person who has diabetes can reduce their risk of developing heart disease if they keep their blood sugar levels under control:
a. True b. False c. I don't know

20. People with diabetes rarely have high cholesterol:
a. True b. False c. I don't know

21. If a person has diabetes, keeping their cholesterol under control will help to lower their chance of developing heart disease:
a. True b. False c. I don't know

22. People with diabetes tend to have low HDL (good) cholesterol:
a. True b. False c. I don't know

23. A person who has diabetes can reduce their risk of developing heart disease if they keep their blood pressure under control:
a. True b. False c. I don't know

24. A person who has diabetes can reduce their risk of developing heart disease if they keep their weight under control:
a. True b. False c. I don't know
25. Men with diabetes have a higher risk of heart disease than women with diabetes: a. True b. False c. I don't know