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The Impact of a Faith-based Education Network for Cardiovascular Disease Prevention

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Dedication

This project is dedicated to my loving family. To my grandmother, affectionally known as "Granny," I know that you desperately wanted to see me to the finish line, but God had a better plan for you. You have been there with me, supporting me all the way. I dedicate this cardiovascular disease prevention project, of which you succumbed, to you. To Breshauna, I know that, at times, you needed me, and I may not have been as attentive. Thank you for understanding. Last but not least, to my mom. You are always there for me to say an encouraging word and providing comfort when I needed it.

Acknowledgements

I would like to first thank God for giving me this vision to pursue my dream and passion. I would also like to thank Dr. Josie Doss for her constant guidance throughout the process. Your attention to detail and timely constructive criticisms helped to make my project a success. Words can not express how thankful I am for mentoring and your encouraging words that you uttered. They helped me when I was doubtful about seeing everything through. Dr. Handwerker, thank you for stepping in to provide feedback when needed. It was significant. Dr. Miller, I admire you for what you have accomplished. Thank you for being there for me. It was my pleasure to work with an extraordinary team.

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Abstract

Cardiovascular disease is a leading cause of mortality in the United States. Racial disparities related to cardiovascular disease also exist, especially in African Americans. It is imperative to explore solutions to close the gap amongst these individuals. This study measured the effectiveness of an educational intervention on cardiovascular disease prevention targeting African Americans in a faith-based community setting. This study aimed to target individuals in community and faith-based settings for health promotion and disease prevention through an education network, increase participant's awareness and knowledge about cardiovascular disease, determine the impact of a cardiovascular disease program on perceived cardiovascular disease risk, and improve modifiable behaviors such as decreased smoking, increased self-reported physical activity, and increased consumption of fruits and vegetables for cardiovascular disease risk reduction. There was a significant increase in knowledge from baseline ($M = 6.67$, $SD = 1.42$) to immediately post-intervention ($M = 7.53$, $SD = 0.629$; $MD = -0.867$; $p = 0.002$), and from baseline ($M = 6.67$, $SD = 1.42$) to 30 days post-intervention ($M = 7.47$, $SD = 0.629$; $MD = -0.800$; $p = 0.002$). Results of the study also showed an increase in modifiable behavior such as frequency of engaging in physical activity ($z = -3.61$, $p < .001$) and frequency of consuming fruits and vegetables ($z = -2.641$, $p = .008$). Community programs in alternative settings are beneficial in providing programs for health promotion in African American communities. This paper describes the foundations for implementing a translational project related to cardiovascular disease prevention for African American adults in a faith-based setting.

Keywords: faith-based, African-American, cardiovascular disease, awareness

The Impact of a Faith-based Education Network for Cardiovascular Disease Prevention

Chapter 1

Introduction

Cardiovascular disease (CVD) has been one of the most prevalent chronic diseases in America for decades, accounting for a high rate of morbidity and mortality (World Health Organization [WHO], 2018). African Americans are faced with a higher disparity of cardiovascular-related chronic diseases, including hypertension, high blood cholesterol, diabetes, and stroke compared to Caucasian Americans (Cunningham, Croft, Liu, Lu, Ike & Giles, 2017). Cardiovascular disease is also a more significant threat to premature mortality in African Americans over the age of 35 (543.2 per 100,000) than to Caucasian Americans (460.4 per 100,000) over the age of 35 in Georgia (Centers for Disease Control and Prevention [CDC], 2017). Since symptoms of CVD can be camouflaged or nonexistent, CVD may not be a significant concern for asymptomatic individuals. Also, people may not ask for medical attention when necessary or be aware of the consequences of inaction. Therefore, it is imperative to evaluate the knowledge of African Americans about CVDs, the perceived threat of the disease, and interventions to prevent or control the disease.

Background

Among all diseases, CVD is the most common cause of mortality in individuals globally (WHO, 2018). In the United States, it kills more than 600,000 individuals annually (Kochanek, Murphy, Xu, & Arias, 2014). In 2017, the CDC reported 87.9 age-adjusted CVD-related deaths and 52.7 age-adjusted stroke-related deaths per 100,000 African Americans in Georgia (CDC, 2017). This is compared to 83.4 age-adjusted CVD-related deaths and 40.2 age-adjusted stroke-related deaths per 100,000 Caucasian Americans in Georgia. Data from the CDC in 2017 also

states that there were 51.4 age-adjusted deaths from hypertension per 100,000 African Americans, compared to 22.7 per 100,000 Caucasian Americans in Georgia. This data indicates that a community focus on the prevention of CVD in the African American population is paramount.

One opportunity to capture the African American audience is through faith-based organizations. Faith-based organizations serve as a vehicle for networking, and socializing, and may serve as a platform for health promotion through education (Davis-Smith & Edwards, 2015). A needs assessment was performed to determine whether there is an opportunity to implement an evidence-based project focused on CVD prevention through education using a faith-based environment in Palmetto, GA, a city in South Fulton County.

Needs Assessment

According to the CDC (2017), the mortality rate for African Americans, older than 35 years of age, in Fulton County (559.7 per 100,000) was higher than State (467.3 per 100,000) and National (426.2 per 100,000) averages between 2014 and 2016. Obesity, smoking, drug use, diabetes, hypertension, high cholesterol, and a higher sedentary lifestyle are factors that contribute to the increased incidence of CVD in the Fulton County area (Citi-Data.com, n.d.). Ischemic heart disease, essential hypertension (HTN), HTN-related renal, heart disease, and cerebrovascular disease were the leading causes of age-related adjusted deaths in Fulton County from 2013-2017 (CDC, 2017). The data showed that the age-adjusted death rate for essential primary HTN and HTN-related renal and heart disease in African Americans in Fulton County was 68.2 per 100,000 compared to a rate of 51.5 per 100,000 for the State between 2014-2018 (Georgia Department of Public Health, n.d.).

Palmetto, Georgia, is a suburban and rural town located in Fulton County and Coweta County (Citi-Data.com, n.d.). The closest hospital is approximately 11 miles away (Citi-Data.com, n.d.), and there is one Health Resources and Services (HRSA) sponsored medical facility in the city (HRSA, 2017). According to the United States Census (2010), the city of Palmetto has a population of 4,488 of which, 57.4% are Black or African American. Palmetto, Georgia, was chosen because of the high rate of African Americans. The Faith-based organization was selected because it is a great way to meet the community's educational needs and because of the close ties to the population of interest.

Although data exists that describes the health state of Fulton County, due to the size and extreme demographics of the county, data specific to Palmetto Georgia was sought, and an assessment of the local Health Resources and Services Administration (HRSA) facility's data was explored. A HRSA-supported facility is a federally funded facility of the U.S. Department of Health and Human Services that aims to improve access to health care services for people who are uninsured, isolated or medically vulnerable (HRSA, 2019). The HRSA facility serves 12,974 individuals who have limited income and covered the geographical area of the proposed faith-based site (HRSA, 2017). Of the individuals treated, the percentage of individuals between the ages of 18 and 85 treated for hypertension was 28.42% in 2015, 31.05% in 2016, and 36.35% in 2017 (HRSA, 2017). The quality measures that the HRSA facility is attempting to meet that are related to CVD include controlling hypertensive patients' blood pressure at less than 140/90, screening and counseling individuals for tobacco use, and prescribing lipid-lowering therapy for individuals with coronary artery disease. These outcomes are ranked nationally with other health centers on a scale of one to four (one means the highest 25% and four is the lowest 25%). The

local HRSA facility received a three for blood pressure control, two for tobacco screening and counseling, and a four for lipid management (HRSA, 2017).

Gap Analysis

The organization selected for implementation of this project is a Baptist church that serves approximately 200 predominately African American members. Before implementing the community-based project, the researcher explored the interest and feasibility of the mission in the organization. Stakeholders, including members, ministers, and key leaders of the congregation, were assessed to determine a primary contact person. The pastor of the congregation was identified as the main point of contact. An in-person discussion took place with the pastor to inquire about the needs of the congregation, the organization's top priorities, and to determine the interest and willingness of the organization to participate in the establishment of a faith-based community education project. After initial approval, a discussion took place with congregants who were potential participants regarding needs, topics, and interventions. Areas of interest discussed included CVD and health promotion to improve diabetes.

Analysis of Strengths Weaknesses Opportunities Threats

Strategic planning is a method that is used by organizations to assist with planning for future goals and programming (Gurel & Tat, 2017). It is beneficial for evaluating the organization's resources to help guide the allocation of the resources to achieve goals (Gurel & Tat, 2017). Strategic planning involves conducting an external and internal evaluation of the organization's strengths, weaknesses, opportunities, and threats (SWOT) (Gurel & Tat, 2017).

A telephone interview with a church member was completed to obtain perspectives of the perceived congregation's strengths and weaknesses. The member recognized that strengths of the

community include being very welcoming, having a strong capacity to instill hope and faith, providing a secure social network, and helping the needy (members and non-members). These identified strengths will enhance the project because the congregants will likely be supportive of the program. Since the stakeholders identified that helping the needy who are members and non-members as well as their secure social network as a congregational strength, the site is ideal for networking with other congregations.

The organization's weaknesses include limited financial resources, a lack of audio/visual aid, a decline in membership, and a lack of structure. The researcher defrayed the financial costs of the initial project, including funding audio-visual aids, handouts, and flyers, to minimize potential failures related to finances and equipment. The SWAT analysis provided structure for the group to complete the project and provided the foundation for future events.

Identified opportunities include the potential to engage members of the congregation and the community, to improve knowledge by hosting health-related events, and to explore the possibility of a ministry of health. Based on discussions with the stakeholders, it was determined that a faith-based educational network would be feasible and would include topics based on the interest of the congregants.

After the exploration of topics with key members and the pastor, it was decided that the focus of the initial educational project would be CVD awareness and knowledge. This decision was based on the premise that some members suffer from CVD related illnesses, and that there are no programs currently in place in the organization to address health-related needs. More specifically, we will explore the use of a faith-based organization and ministry to promote CVD awareness and improve knowledge and perception of CVD risk using evidence-based information. The threats to the success of the project are the dedication and attrition rate of the

members, the members' prior commitment, potential lack of interest, and previous CVD knowledge.

Problem and Purpose

Among all diseases, cardiovascular disease (CVD) is the most frequent cause of mortality in individuals globally (World Health Organization, 2018). More specifically, African Americans in Georgia have a higher prevalence of CVD and stroke than Caucasian Americans (CDC, 2017). Thus, the phenomenon of interest for the first educational session was CVD in the African American population. More specifically, the project will focus on knowledge of CVD, perception CVD risk, and the effect on modifiable risk factors.

The purpose of the project was to test the impact of faith-based education on knowledge and awareness of health-related issues and the impact on modifiable behaviors. The faith-based organization is a great place to connect with this population. The faith-based organization selected for this project has approximately 200 congregants who are primarily African American. The current state of the organization is that its members are aging, and some members have CVD. Additionally, an exploration of continuous health-related educational programs and services to improve the health of the community is needed. This educational intervention will attempt to improve health in the community by promoting healthy behaviors.

Questions and Goal

The research question to be answered is, "What is the effect of a **(I)** cardiovascular disease (CVD) prevention program on **(O)** CVD knowledge, perceived CVD risk, smoking frequency, exercise frequency, and frequency of consuming fruits and vegetables **(P)** in African American adults over the age of 18 in a faith-based setting **(T)** at baseline, immediately after the intervention, and 30 days post-intervention?" The goals of the project were to increase

knowledge of CVD risk factors, perceived CVD risk, and assess changes in smoking frequency, exercise frequency, and frequency of consuming fruits and vegetables. The population explored included African American men and women over the age of 18 years who can read, write, and understand English. Outcome measures will be evaluated by comparing pre (Time 1), post (Time 2), and 30-day follow up (Time 3) survey results.

The project aims are to:

1. Establish a health ministry team in the faith-based community that focuses on health promotion and illness prevention.

2. Increase participant's awareness and knowledge about cardiovascular disease.

3. Determine the impact of a cardiovascular disease program on perceived cardiovascular disease risk.

4. Improve modifiable behaviors such as self-reported decreased smoking, increased physical activity, and consumption of fruits and vegetables, for cardiovascular disease risk reduction.

5. Determine the impact of the health ministry team on chronic disease management related to cardiovascular disease.

Chapter 2

Review of Literature

The purpose of this review was to explore and identify the best methods for raising awareness of CVD prevention and management in the African American community. Cardiovascular disease has been on the rise for many years and has increased African Americans' health spending, morbidity, and mortality compared with Caucasians (CDC, 2014). Various approaches have been adopted to help reduce the rate of cardiovascular morbidity and mortality (Arriola et al., 2017; Cooper, King, & Sarpong, 2015; Tettey, Duran, Andersen, & Boutin-Foster, 2016). Further research is required to determine the feasibility of alternative methods of delivery for CVD information and prevention in the African American community. A literature review was completed to explore the possibility of cardiovascular prevention programs for African Americans delivered in religious and community contexts.

Literature Search Strategy

The search strategy for the literature review was based on the PICOT question to examine whether there was evidence of increased knowledge of CVD in African Americans, or whether the perception of CVD risks changed after an education program. Literature was also evaluated to determine whether the use of faith-based settings was a viable way to promote health and prevent disease. The two databases used were CINAHL and MEDLINE. The search was limited to articles from 2014 to 2019 in which African Americans aged 18 and over were included. Geography was also used to target the focus group and was restricted to the United States.

Literature Synthesis

Faith-based settings to increase CVD knowledge and awareness. Cardiovascular disease (CVD) is one of the leading causes of death in the United States of America (Reeder,

Childs, Gibson, Williams, & Williams, 2017). Cooper et al. (2015) noted that heart disease, stroke, and diabetes were the leading causes of death among African Americans (AA) living in the USA. There are apparent racial and ethnic differences in CVD development. Therefore, it is important to focus on high-risk populations that share prevention and management skills (Ma & Ma, 2015; Rose, Farmer, Yano, & Washington, 2013). Many researchers choose to use the African American Church as an effective way of reaching families with culturally relevant CVD prevention information (Arriola et al., 2017; Cooper et al., 2015; Davis-Smith & Edwards, 2015; Harmon, Chock, Brantley, Wirth, & Hébert, 2016; Lancaster et al., 2014; Ma & Ma, 2015; Tettey et al., 2016).

The Transformation, Empowerment, and Affecting Congregation Health (TEACH) project (Cooper et al., 2015) is an example of the use of faith-based settings for CVD prevention. This faith-based health promotion reaches families by taking advantage of the positive relationship and trust that exists in churches. Cardiovascular education programs in religious organizations, such as the TEACH program, have led to positive changes in weight control and health promotion behaviors that may lead to an overall improvement in the health of CVDs (Boateng et al. 2017; Cooper et al., 2015; Smith & Edwards, 2015).

Health messaging in faith-based settings. Messaging can be used to promote healthy behavior (Arriola et al., 2017; Harmon et al., 2016). The use of churches is a crucial strategy to identify and target people who cannot be reached by other conventional means (Harmon et al., 2016). It is believed that people from religious backgrounds are generally healthier compared to others because of the implied lifestyle that rejects the use of alcohol, smoking, and stressful environments that cause chronic diseases (Holt, Clark & Roth, 2014). In addition, the belief that illnesses are a punishment for wrongdoing and can lead to healthier lifestyles and chronic disease

prevention (Holt et al., 2014; Lancaster et al., 2014). In the African American culture, church podiums are an essential learning environment in which people are attentive and ready to implement what they learn making this method of delivery effective (Arriola et al., 2017).

Knowledge and awareness in the community. Studies have shown that evidence-based programs are needed to address chronic disease disparities in African Americans, such as CVD (Holland, Carthron, Duren-Winfield, & Lawrence, 2014; Ma & Ma, 2015; Reeder et al., 2017; Tettey et al., 2016). Knowledge gaps in CVD and CVD risk factors in African Americans, as well as the perception of CVD risk and CVD symptoms such as heart attacks and strokes, are prevalent (Holland et al., 2014; Reeder et al., 2017; Villablanca, Slee, Lianov, & Trancredi, 2016). Education can influence CVD knowledge positively (Holland et al., 2014; Smith & Edwards, 2015; Tettey et al., 2016). Community-based settings are useful in providing evidence-based health promotion interventions and raising awareness of CVD, the risk of CVD, family risks, and risk control plans (Ma & Ma, 2015; Villablanca et al., 2016). Small group workshops are effective in raising awareness of CVD among African Americans (Holland et al., 2014; Reeder et al., 2017). Other studies show that community outreach aimed at hypertension and other CVDs have improved outcomes by influencing the identification of community challenges, thereby helping them to develop facilities essential to CVD prevention (Corbie-Smith et al., 2018; Ferdinand et al., 2012).

There is an educational opportunity to improve the understanding of cardiovascular risk in an environment that is familiar to the African American population. The community setting is ideal for identifying and eliminating barriers to CVD disease screening, knowledge, and lessening barriers to accessing healthcare (Khatib et al., 2014; Ma & Ma, 2015). Khatib et al. (2014), after a review of obstacles linked to CVDs, recommended the creation of interventions

tailored to individuals. The value of education and the provision of healthy living resources is a

feasible community strategy that can reduce the risk of CVD (Barnidge et al., 2015).

Limitations

Limitations in the literature review were that assessments were carried out by self-

reporting (Ma & Ma, 2015; Smith & Edwards, 2015) and the use of small sample sizes (Holland

et al., 2014; Smith & Edwards, 2015). Self-reporting can lead to errors of partiality, while small

sample sizes limit the ability to generalize the results. One study experienced issues with attrition

due to the program's time commitment (Corbie et al., 2018). Although high levels of attrition

limited the study results, the information may be useful for future studies to avoid high attrition

rates.

The research that has been conducted has been from inconsistent methods. For example,

some studies have been carried out with purposeful sampling, while others have been carried out

with random sampling. Therefore, the lack of consistency in the methods used to measure the

knowledge and perception of cardiovascular diseases is a significant limitation of this research.

Theoretical Framework

Rosenstock's Health Belief Model (HBM; 1974) was used as a theoretical framework to

develop the CVD prevention program and to assess its effect on participants' knowledge of CVD

risk factors, perception of individual CVD risk, and changes in modifiable behaviors related to

CVD risk (see Figure 1). In community health research, the HBM is used to understand barriers

to participation in programs and activities to promote health (Rosenstock, 1974). It also offers a

framework for the implementation of community programs and to understand the commonalities

that influence adherence to activities that promote health. The HBM is developed on the premise

that the health behavior of an individual is based on his or her beliefs or perceptions of disease.

The HBM's main themes are the perception of risk, behavior modification, and the likelihood of action (Rosenstock, 1974). The core assumptions of the HBM include that a change in the behavior occurs if the person, 1) believes that he or she is susceptible to the disease, 2) believes that the disease is severe if he or she develops the disease, 3) feels that the disease can be avoided, 4) believes that he or she can successfully perform the health behavior necessary to prevent disease, and 5) believes that the advantages of implementing the behavior exceed other barriers. The HBM lists six key elements that influence changes in health behaviors. The critical factors of influence are perceived susceptibility, perceived severity, perceived benefits of action, perceived barriers to action, cues to action, and self-efficacy (see Figure 1) (Rosenstock, Strecher, & Becker, 1988).

Within the HBM, the concepts of perceived susceptibility and perceived severity indicate that as the individual perception of risk and severity of disease increases, individuals will modify behavior (Becker, 1974; Champion & Skinner, 2008; Rosenstock, 1974). The project incorporated this aspect of the HBM using the following methods. First, blood pressure screenings, and body mass index screenings (BMI) were performed to identify risk status. Next, the participants were informed of risk factors related to CVD. The risk factors included age, gender, race, family history, comorbidities such as obesity and hypertension, as well as smoking and cholesterol (American Heart Association, 2017). And finally, statistics related to CVD in the local area and the state of Georgia were discussed. The strategies were intended to increase the participants' perceived susceptibility or perception of their chance of getting CVD.

The model further indicates that perceived severity is the view of how the disease will affect their life if it is left untreated (Rosenstock, 1974). The curriculum introduced how risk factors can affect their lifestyles and can lead to CVD and to allow participants who experienced

CVD to share their experiences. The intention was that the participants understood that if their behavior continues, there could be consequences that could lead to further health problems such as stroke which could potentially change their daily lifestyle.

Perceived benefits to change are an individual's beliefs that the proposed strategy will decrease the threat of the illness (Rosenstock, 1974). The curriculum plan included information regarding modifiable risk factors and how the changes in behaviors can be incorporated into daily routines as well as how behaviors impact CVD. Some topics on modifiable risk factors for CVD prevention included in the discussion were proper diet, exercise, managing cholesterol, and avoiding smoking so that participants could understand the benefits of accepting healthy behaviors. Benefits of modifying participant's behaviors such as gaining energy, weight loss, and the potential to live longer were also discussed.

Many barriers may exist that complicate the ability for individuals to make behavioral changes for CVD prevention (Cunningham, Croft, Liu, Eke, & Giles, 2017; Schwalm, McKee, Huffman & Yusuf, 2016). Those barriers include lack of health insurance, knowledge, financial constraints, and beliefs regarding alternative vs. traditional medicine (Schwalm, McKee, Huffman & Yusuf, 2016). Participants were allowed to explore barriers to adhering to a healthy lifestyle. Barriers such as access to walkable areas, gymnasiums, fresh fruits, and vegetables (food deserts), and access to healthcare were discussed. Participants were also provided the contact information for the local HRSA facility if they needed a provider.

Cues to action are the influences of a person's environment to make changes (Amason & Lee, 2016). Cues can be internal such as from life experience, or external such as cues from family members, media, or advice from health professionals (Amason & Lee, 2016). In this project, the cues to action were introduced by sending reminders using electronics such as weight

loss applications and follow up texting and phone calls to participants. The participants were also encouraged to use an accountability partner or buddy system for motivation. The ultimate goal for the participants is that they would be self-efficacious and to educate others to make health promotion part of their lifestyle. Participants were encouraged to use electronics as reminders to track progress. They also received a 30-day follow-up to discuss their progress, visits to a provider, knowledge about their previous blood pressure or cholesterol level, or any concerns or changes that were made since participating in the program.
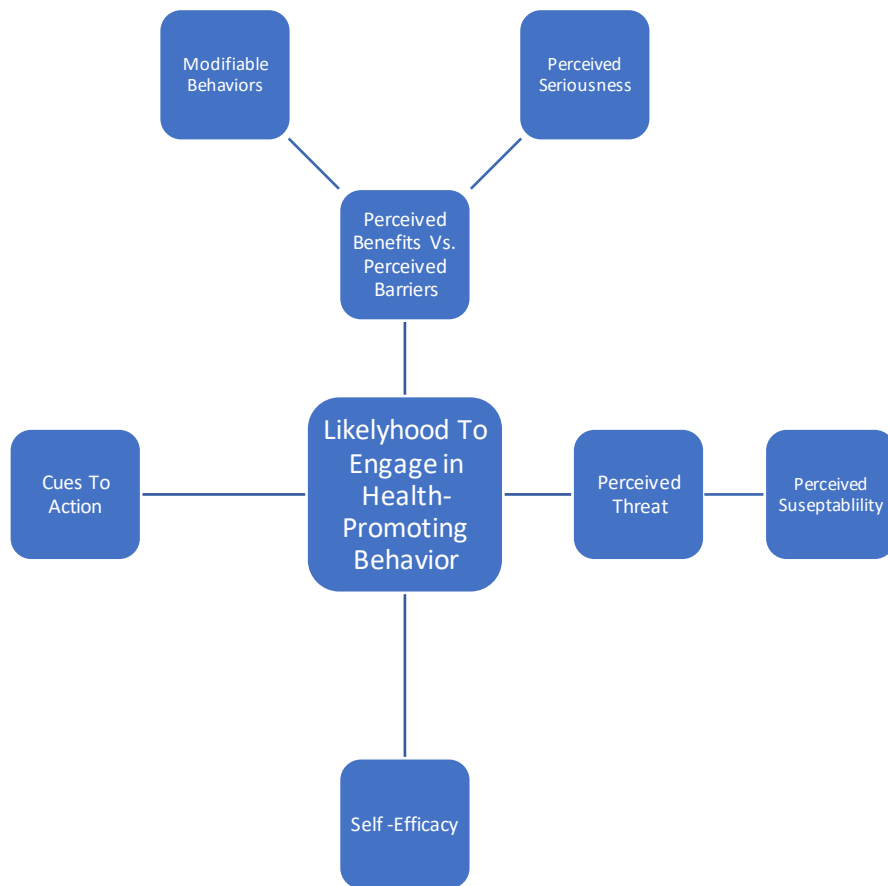
Figure 1. Belief Model Diagram.

Conceptual Framework

Healthy People 2020's Mobilize, Assess, Plan, Implement, Track (MAP-IT) (2019) process was used to implementing the project (see Figure 2). The framework assisted with mobilizing partners, assessing community needs, creating and implementing plans to reach the objectives of Healthy People 2020, and tracking the progress of the program. The first phase of the MAP-IT process was to mobilize the team of key individuals and organizations. The team consisted of the organization leaders to assist with organizing the health education ministry and to discuss the process for implementing the program. The needs assessment, which is the second step, was completed with key members of the congregation, and it was agreed that the initial program would focus on cardiovascular disease. The implementation plan was operationalized by taking action steps, assigning responsibility, collecting information, and creating a timeline. The implementation phase was completed as indicated in the methodology section of the paper.
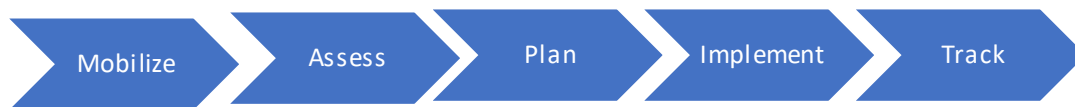
Figure 2. MAP-IT Diagram Implementation Process.

Chapter 3

Methodology

Project Design

A goal of Healthy People 2020 is to encourage collaboration to strengthen healthcare (Centers for Disease Control and Prevention [CDC], n.d.). Often, patients with financial burdens may not seek medical attention (United States Department of Health and Human Services [USDHHS], 2010). The faith-based-education network is a forum in which various health-related educational sessions can be delivered at the congregational or community level and has proven effective in reaching those individuals who may otherwise fall through the cracks (Davis-Smith & Edwards, 2015).

In this Education Intervention Pilot Project, the researcher explored the impact of a faith-based health ministry on health promotion and illness prevention as it relates to cardiovascular disease in a faith-based organization in a suburban city in the United States in South Fulton County, Georgia. The design consisted of a one-group pre-test (Time 1), post-test (Time 2) and 30-day follow up (Time 3), without randomization.

Setting

The setting for this project was in a local suburban church in Palmetto, Georgia, in the Southwestern metropolitan Atlanta area in the United States. The predominantly African American congregation has approximately 200 members, and the Denomination is Baptist. It was formed in 1975. The congregation has several ministries, including food, children's, women's, men's, Sunday school, outreach, music, dance, and others.

Sampling Plan

A convenience sample of adult African Americans over the age of 18 who could understand, speak, and read English was recruited from the faith-based community and the surrounding area. Recruitment was accomplished by using flyers (see Attachment A), word of mouth, and church bulletin announcements (see Attachment B). The announcement for the project was repeated verbally and written in the church bulletin for three consecutive Sundays before the program implementation. Members, non-members, and individuals with and without diagnosed cardiovascular disease were included. Individuals from other races were welcome to participate in the educational intervention. However, they were not included in the statistical analysis since the focus of this study was the African American population. Eligibility and screening of the participants took place during the registration/consenting period. Of the 200-member congregation, there were approximately 120 adults who met the eligibility criterion. A power analysis was performed to determine the sample size to prevent a type II error as per Polit and Beck (2008). The sample size needed for the study using a 95% confidence level, and a confidence interval of 15.5 was 30 participants. Because some tools used yes or no questions, 50% was chosen to find the confidence interval using a population of 120.

An incentive for participation in the project was the information the participant received to prevent cardiovascular disease. Participants received healthy snacks, a blood pressure screening, and an in-person or telephone follow up call to discuss any changes in modifiable behaviors and for questions.

Protection of Human Subjects

Before implementing the study, Institutional Review Board (IRB) approval was obtained from Georgia College & State University (GCSU), and a letter of intent was received from the

church pastor (see Appendix C). Before the collection of data, the consent form was reviewed, details of the project were discussed, and participants were allowed to ask questions. The consent form detailed the purpose of the project, risks, and benefits, that participation is voluntary, and that the participants may withdraw from the study at any time.

It was not anticipated that participants would experience any stress nor social, legal, or physical harm over and above that which would be encountered under normal daily functioning. No coercion nor deception took place during the study, and no harm was envisioned from completing the surveys of 15-20 minutes. There were concerns about what to do if a participant presented with dangerously high blood pressure. Thus, a protocol was developed to address those individuals with health assessment data that fall outside of the normal parameters (Appendix D). A list of local healthcare providers was available to those individuals who sought additional medical advice or who were in need of assessments outside of the normal parameters.

A benefit to the participant was improved awareness of cardiovascular disease prevention strategies and potential risks for cardiovascular disease such as high blood pressure. Knowledge of hypertension was also beneficial to individuals who were unaware of their status as individuals with hypertension often do not have symptoms.

After answering participant questions, informed consent was obtained from each subject by the principal investigator before data collection began (Appendix E). Two consent forms were given to the participant to sign. Following signature, one consent form was returned to the principal investigator, and one was retained by the participant.

Following consent, all participants were assigned a unique participant number that they were asked to use on each data collection instrument. The data collected from participants was limited to surveys designed to answer the research questions and physiologic data in the form of

height, weight, and blood pressure. The principal investigator maintained a master list of participant names and numbers to ensure the ability to compare pre (Time 1), post (Time 2), and follow-up-survey data (Time 3). The master list was stored separately from the actual survey forms to protect participant information. All forms were maintained in a locked boxed with the principal investigator. The principal investigator was the only one with access to the identifiable data and entered de-identified data into SPSS on her personal password-protected computer, locked in a secured area. The records will be saved for a minimum of three years and then be destroyed per policy of Georgia College & State University.

The CVD Awareness Program

The CVD awareness program was a one-hour intervention provided to the participants that covered evidence-based information on CVD, which aimed to address the PICO question. The PICO question to be answered was, what is the impact of a CVD prevention program on CVD knowledge, perceived CVD risk, smoking frequency, exercise frequency, and frequency of consuming fruits and vegetables in African American individuals in a suburban Georgia community? The goal of the project was to improve cardiovascular disease awareness in a faith-based community setting. This was accomplished by implementing a CVD awareness educational program.

Following informed consent, collection of baseline data, and verification of eligibility, interested participants were asked to attend a one-hour educational session. Topics included:

a. Risk factors for cardiovascular disease (American Heart Association, 2018; American Society of Cardiologists, 2018; CDC, 2014).

b. Modifiable behaviors for prevention of cardiovascular disease (American Heart Association, 2018; American Society of Cardiologists, 2018; CDC, 2014).

c. Adverse effects from cardiovascular disease, questions to ask a provider (American Heart

Association, 2018; American Society of Cardiologists, 2018; CDC, 2014).

d. Know your numbers: blood pressure values, cholesterol levels, and weight/BMI (American

Heart Association, 2018; American Society of Cardiologists, 2018; CDC, 2014).

Instruments

Based on the study purpose and research questions, three measurement tools were used to

evaluate participant demographics and the impact of the intervention. Instruments included a

principal investigator (PI)-developed screening and demographic form (Appendix F), the Health

Beliefs Related to Cardiovascular Disease (HBCVD) instrument by Tovar (2010), (Appendix G)

to measure HBM concepts, and the Attitudes and Beliefs about Cardiovascular Disease (ABCD)

Risk Questionnaire (Appendix H) to measure knowledge, and perception of CVD risk (Woringer

et al., 2017). In addition, the PI developed the classroom delivery survey (Appendix I) to

evaluate the effectiveness of the instruction as well as to determine the fidelity of the program,

and the follow-up survey (Appendix J) to evaluate changes in modifiable risk reduction

behaviors, as well as self-care behavors. The follow up survey (Appendix J) contained questions

to assess changes in modifiable risk reduction behaviors such as smoking, physical activity, and

nutrition. It also includes data regarding visits to healthcare providers, knowledge of last blood

pressure, as well as cholesterol levels. It is the self-efficacy component of the HBM.

The screening and demographic form included questions regarding insurance status,

CVD status, and questions related to smoking frequency, exercise, and fruit and vegetable

consumption. This instrument also prompted the collection of health information data related to

blood pressure and BMI. The demographics form was used to develop an understanding of

participants' backgrounds and to identify variables that may have an impact on study outcomes.

Health Measures. All health measures were taken by the PI and used to demonstrate the participants' risk of CVD. Blood pressures were obtained using a calibrated oscillometric blood pressure monitor by Paramed. The device is approved by the Federal Drug Agency (FDA) and was calibrated by the manufacturer's recommendation before the event. The Electronic Paramed blood pressure was placed 2-3 centimeters above the antecubital space. The edge of the cuff was placed over the artery inside the arm. The patient was positioned seated with legs uncrossed, feet flat on the floor, palm facing up, back and arm supported, with the middle of the cuff at the level of the right atrium of the heart. The patient was asked not to talk, and the reading was taken after a few minutes. The device yields a precision of ± three mmHg for pressure readings or ± 5% of pulse reading (Paramed, n.d.). A contingency plan was developed in the event that any participant demonstrated a dangerous blood pressure reading (see Appendix B).

The height was self-reported by the participant and weight was measure by the PI. The weight was measured at the site by the principal investigator using an electronic scale per the weighing procedure (Appendix K). Body mass index (BMI) was calculated using imperial values of height in inches and weight in pounds. The calculation for BMI was (weight in pounds X 703)/ height in inches^2.

Health Belief Model Concepts. The Health Beliefs Related to Cardiovascular Disease (HBCVD) psychometric instrument (Appendix G) was developed by Tovar, Rayens, Clark, & Nguyen (2010). The survey tests the primary components of the Health Belief Model. The tool consists of a 25-item Likert scale that used nominal data and is scored from strongly disagree (1) to strongly agree (4) and was developed by an expert panel. It is separated into sub-scales that test perceived susceptibility, perceived severity, perceived benefits, and perceived barriers

(Becker & Janz 1985). Questions 1-5 assessed the susceptibility of cardiovascular disease, questions 6-10 assessed the severity of cardiovascular disease, and questions 11-16 assessed benefits to change behaviors, and questions 17-25 assessed barriers to change modifiable behaviors. The HBCVD risk questionnaire is simple to use, takes approximately 10-15 minutes to complete, and was written on a six-grade reading level (Tovar et al., 2010). Forty-two participants completed an evaluation 2-3 weeks later to evaluate test-retest reliability. Cronbach's alpha for eight items with loadings above the threshold was 0.80. Test-retest: of the conceptual subscales were 0.432 for Susceptibility (five items) 0.286, Severity (five items) 0.396, Benefits (six items), 0.476 for Barriers (nine items), Internal Consistency for four-factor solution- Cronbach's alpha of 0.77 total.

The tool can easily be used in clinical or community settings (Abdela et al., 2019; Chiu, Yee-Cheng, & Arifin, 2015; Kamimura, Sin, Pye, & Meng, 2017; Tran D. T. et al., 2017; Woringer et al., 2017). The HBCVD can be personalized to assess the beliefs and perception of cardiovascular disease risk of a population, and with the results, training can be enhanced to provide education for the population. Permission to use the HBCVD tool was granted by, Dr. Tovar, the developer of the tool (see Appendix L).

Knowledge and Perception of Risk. The Attitudes and Beliefs about Cardiovascular Disease (ABCD) Risk Questionnaire (Appendix H) was developed to assess the effectiveness of the National Health Service Health Check Program of England (Woringer et al., 2017). Experts and focus groups developed the questionnaire to measure cardiovascular disease knowledge, the perception of cardiovascular disease risk, perceived severity and susceptibility of cardiovascular disease, and benefits and barriers to adopting healthy lifestyle (Woringer et al., 2017). The tool is a 26-item questionnaire using a Likert scale that assesses attitudes and beliefs of cardiovascular

disease on four subscales; CVD knowledge, perceived CVD risk, perceived benefits to change behaviors, and intention to change behaviors. Knowledge consists of eight true and false questions. The other three sub-scales use a Likert scale 1= strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0. Questions 1-8 assess knowledge; questions 9-16 assess perceived risks, questions 17-21 assess perceived benefits and intention to change exercise behavior, questions 22-26 assess perceived benefits and intention to change eating behaviors. The Cronbach's alpha is 0.85 for perceived risk, 0.82 for perceived benefits and intention to change behavior >0.70. Eating intentions received a Cronbach's alpha of 0.56. The questionnaire resulted in acceptable reliability and validity for the population studied (Woringer et al., 2017). The ABCD questionnaire will be used in this study to assess the knowledge of cardiovascular disease before and after the intervention, assess the perception of cardiovascular disease risk, and to assess the impact of the cardiovascular disease education program on cardiovascular disease awareness. Permission to use the tool was granted as per the Creative Commons Attribution (CC BY 4.0) license. The CC BY 4.0 license allows others to distribute, remix, adapt and build upon the work as long as it is properly cited (Creative Commons Global Network, n.d.; Woringer et al., 2017).

Classroom Deliverery and Program Fidelity. The Classroom Delivery Survey (Appendix I) is a brief questionnaire developed by the researcher to assess the educational session, requests for additional topics, and to evaluate the fidelity of the program. The questionnaire consists of three questions. The first question evaluated the educational session on a Likert scale from 1 (not helpful) to 4 (very helpful). A second yes or no question was used to determine if participants are interested in future educational events. A third question asked

participants about topics of interest for future sessions. Finally, the survey includes a section that allows the participant to include comments.

Follow-up Survey. A follow-up survey (Appendix J) was developed by the researcher to capture any changes in modifiable lifestyle behaviors such as smoking frequency, frequency of activity, and frequency of fruit and vegetable consumption. The first part of the questionnaire addressed changes in the participants' perceived risk of cardiovascular disease and contained four yes or no questions. Questions included (1) Have you seen a provider since completion of the program? (2) Was your visit related to cardiovascular disease (high blood pressure, heart attack or chest pain, stroke, atherosclerosis)? (3) If yes, did you ask questions related to your BP? (4) If yes, did you ask questions related to your cholesterol level? The survey was scored based on the frequency of yes (1) or no (2) answers and was used for information purposes.

The second part of the survey assessed the effectiveness of the educational program and whether modifiable behaviors improved after the educational offering. Questions included (1) What was your last BP? (2) What was your last cholesterol level? (3) Do you currently smoke? (4) If yes to the previous question, how often? (5) Did you participate in physical activity in the past month? (6) If yes to the previous question, how often? For last BP and cholesterol, the self-reported value was entered. Smoking history, activity history, and history of consuming fruits and vegetables were evaluated using yes or no answers whereby yes = 1 and no = 0. Smoking frequency was evaluated using a Likert scale on a scale of 0 (non-smoker) to 5 (smoked multiple packs per day). Frequency of activity was scored on a scale of 0 (did not exercise) to 4 (exercise more than three times a week for at least 30 minutes of moderate activity. Frequency of fruit and vegetable consumption was also scored using a Likert scale from 0 (less than 5 servings on any

day in the last week) to 5 (consumed at least five servings of fruits and vegetables on four days

in the past week).

Data Collection

Time 1 data (pretest): Following consent, time 1 data was obtained. Participants

completed the demographics survey, blood pressure was measured, weight was obtained, and

BMI was calculated (Appendix E). After the demographics form was completed and returned,

participants were administered the HBCVD (Appendix G) and the ABCD (Appendix H) surveys.

Time 1 pretest surveys took approximately 30 minutes to complete.

Time 2 data (post-test): The post-survey, instruments were administered immediately

after the educational session to determine changes in knowledge and perception of CVD risk.

Survey instruments included the HBCVD (Appendix G), the ABCD (Appendix H), and the

Classroom Delivery Survey (Appendix I). Time 2 posttest surveys took approximately 30

minutes to complete.

Time 3 data (follow up): Thirty days after the initial educational session, a follow-up

telephone interview was conducted to gather information related to the effect of the intervention

on sustained CVD knowledge, perceived CVD risk, and to assess changes in modifiable risk

factors. Questions 1-16 of the ABCD survey and the follow-up survey were included in time 3

data (Appendix H). Questions 1-16 of the ABCD survey were to evaluate sustained CVD

knowledge and perceived CVD risk. The follow-up survey, developed by the researcher,

contained questions to assess modifiable risk reduction behaviors (smoking, nutrition, and

physical activity). A transcript for this 10-minute telephone conversation, including questions,

can be found in Appendix J.

Summary

This intervention pretest/posttestproject explored the effects of a faith-based cardiovascular disease prevention program on CVD knowledge, perceived risk of CVD, and adherence to modifiable risk reduction behaviors, in a suburban Georgia community. The project is aligned with the Health People 2020's initiative to impact difficult-to-reach populations in a community setting. The initiative was implemented based on the MAP-IT process for project implementation and based on the Health Beliefs Model. These frameworks assisted the researcher in understanding participants' beliefs and susceptibility to cardiovascular disease, and to increase awareness risk for cardiovascular disease. The researcher impemented the pretest/posttest translational project to evaluate the participants' knowledge of CVD, perception CVD of risks, and modifiable behaviors for CVD prevention using validated instruments. Evaluation of the educational program was also completed to determine the effectiveness of the educational offering , and to determine program fidelity. A post-follow-up assessment was also performed to assess modifiable risk reduction behaviors as well as to determine wheather individuals visited healthcare providers, and wheather they could recall their blood pressure and cholesterol levels. The long-term goal is to establish a faith-based health network of churches and or communities for partners in preventing chronic diseases. Using a community-based implementation method, individuals who may otherwise fall through the cracks can be provided information and awareness of preventable illnesses. This intervention education project will prove to be an effective means of providing ongoing community-centered interventions.

Chapter 4

Results

The project intended to discover the effectiveness of the cardiovascular disease (CVD) prevention program among African American adults (18 years and above). A preintervention-postintervention study design was conducted using education, testing, and follow up interviews. Findings from this translational project include sample characteristics using descriptive statistics. The results described sought to detect changes in cardiovascular knowledge, perceived cardiovascular disease risk, and changes in smoking frequency, frequency of activity, and frequency in consuming fruits and vegetables in the specified population using parametric and non-parametric tests. Cardiovascular disease knowledge (clinical question one) and perceived cardiovascular risk (clinical question two) were measured at baseline, immediately post-intervention, and 30-days post-intervention using paired t-tests and one-way repeated measure analysis of variance (ANOVA). Changes in physical activity frequency (clinical question four) and the frequency of consumption of fruits and vegetables (clinical question five) was assessed at baseline and 30 days post-intervention using Wilcoxon signed-rank tests. Since there was only one participant who smoked, baseline data and post-intervention data will be presented descriptively in the narrative to answer question three.

The data was analyzed using IBM SPSS 25 and was initially cleansed and assessed for missing data and outliers. The data was then reviewed manually for missing rows of data, duplicate cases, invalid values, and data entry errors. One finding was an out-of-range value on the Health Beliefs Related to Cardiovascular Disease (HBCVD) survey, which was corrected using the original paper survey. Continuous variables on the Attitudes and Beliefs related to Cardiovascular Disease (ABCD) survey were evaluated for errors using descriptive statistics.

There are no invalid values, entry errors, nor were there variables outside of the range per the frequency and descriptive output. Total scores for both instruments were computed for all data collection periods. The data were assessed for all continuous level variables by analyzing frequencies, central tendency, dispersion, skewness, kurtosis, outliers, as well as normality. All continuous variables were near normally distributed.

Description of Instruments

The HBCVD psychometric instrument was used to measure the participants' beliefs related to cardiovascular disease risk. The tool consists of a 25-item Likert scale that used nominal data that scored from strongly disagree (1) to strongly agree (4) and was developed by an expert panel Tovar, Rayens, Clark, & Nguyen (2010). Cronbach's alpha was 0.80. Each question can be scored with a value of 1 to 4.

Participants' knowledge of CVD disease and perceived CVD risk were also assessed using the ABCD questionnaire. The tool is a 26-item questionnaire using a Likert scale that assesses four subscales (cardiovascular disease knowledge, the perception of cardiovascular disease risk, perceived severity and susceptibility of cardiovascular disease and benefits and barriers to adopting healthy behaviors) (Woringer et al., 2017). Knowledge consists of 8 "true" and "false" questions. Each correct answer regarding knowledge receives a score of "one." The other three subscales use a Likert scale 1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; and 0 = N/A. The Cronbach's alpha in previous studies was 0.85 for perceived risk, 0.82 for perceived benefits, and intention to change behavior >0.70 (Woringer et al., 2017). Higher scores for the HBCVD and the ABCD surveys indicate higher CVD knowledge and perceived CVD risk. Score ranges for the HBCVD and the ABCD questionnaires are outlined in Table 1.

Sample Description based on the Demographic Characteristics

This section presents the sample constituent based on the demographic characteristics related to age, gender, race, education level, insurance status, the participants' CVD history, and scores assessing CVD knowledge and perceived CVD risk using descriptive statistics. A total of 30 individuals participated in the study. Table 1 presents a summary of the sample composition based on age, gender, race, insurance status, education level, body composition, history of CVD, as well as scores from the ABCD and the HBCVD surveys.

Table 1

Summary of the Sample Characteristics (N = 30)

Characteristic	*M*	*(SD)*	*n*	(%)
Age Years	53.3	(16.17)		
18-30 Years			5	16.7
31-45 Years			1	3.3
46-60 Years			12	40.0
> 60 Years			12	40.0
Gender				
Male			3	10.0
Female			27	90.0
Race				
African American Non-Hispanic			30	100
Education Level				
High School or Less			16	53.3
2-Years College			7	23.3
4-Years College			4	13.3
Graduate Degree			3	10.0
Insurance Status				
Non-Insured			1	3.3
Insured			29	96.7

Body Mass Index (BMI)	*M*	*(SD)*		
	32.78 kg/m^2	8.176		

Body Composition Categories (BMI)			*n*	(%)
Underweight or Normal 17-25 kg/m^2			2	6.7
Overweight 26-30 kg/m^2			12	40
Obese >30 kg/m^2			16	53.3

CVD History			*n*	(%)
Yes			12	40.0
No			18	60.0

Blood Pressure Stages *a*			*n*	(%)
Normotensive			3	10
Prehypertensive			11	37
Hypertensive Stage 1			12	40
Hypertensive Stage 2			3	10
Hypertensive Stage 3			1	3

Knowledge ABCD Questions 1-8	*M*	*(SD)*	Possible Range	Actual Range
Baseline (*n*=30)	6.67	1.42	0-8	3-8
Immediately Post (*n*=30)	7.53	0.629	0-8	6-8
30 Days Post (*n*=30)	7.47	0.629	0-8	6-8

Perceived Risk HBCVD Questions 1-10	*M*	*(SD)*	Possible Range	Actual Range
Baseline (*n*=30)	21.80	3.61	10-40	10-30
Immediately Post (*n*=30)	21.73	4.80	10-40	10-31

Perceived Risk ABCD Questions 9-16	*M*	*(SD)*	Possible Range	Actual Range

Baseline (*n*=30)	15.57	5.46	0-32	6-25
Immediately Post (*n*=30)	16.97	6.45	0-32	0-29
30 Days Post (*n*=30)	17.10	5.09	0-32	8-25
Total Score ABCD				
Baseline (*n*=30)	53	10.83	0-80	23-67
Immediately Post (*n*=30)	57.33	7.33	0-80	39-71
Total Score HBCVD				
Baseline (*n*=30)	61.03	5.69	1-100	44-72
Immediately Post (*n*=30)	61.03	5.50	1-100	47-72

Note. *n* = Total participants in subpopulation, % = percentage, *M* = Mean, *SD* = Standard deviation. *a* = As per the American Heart Association's 2017 Guidelines

The sample composition illustrates that the majority of the participants were 46 years old and above (*M* = 53.3 years, *SD* = 16.17), and ranged in age from 24 to 75 years old. Specifically, 80% of the respondents are aged 46 years and above. The implication is that the outcome on the effect of the faith-based CVD prevention program is likely to bias towards older individuals as opposed to the young people.

The participants were primarily insured, female, African Americans who have a 'high school or less' level of education. The implication is that the insight based on the selected sample is likely to bias towards individuals with a low level of education. The participants were also described based on body composition. As illustrated in Table 1, most of the participants were overweight or obese (*M* = 32.78 kg/m², *SD* = 8.176). Most of the participants who were included in the sample have no history of cardiovascular diseases (*n* = 18, 60%). Blood pressures were also collected and categorized based on the American Heart Association's (AHA) 2017 Guidelines (American Heart Assiociation, 2017). The results are displayed in Table 1. Based on the AHA's 2017 guidelines, three participants (10%) were normotensive, 11 were prehypertensive (37%), 12 (40%) were in

hypertension stage 1, three (10%) were in hypertension stage 2, and one individual was in hypertensive stage 3. The participant who presented in hypertensive stage 3 received a repeat blood pressure, however, the blood pressure remained elevated. The participant was advised of the implication based on the protocol (see Appendix D). However, the participant decined further treatment and signed the critical blood pressure form (Appendix D).

Clinical Question 1-The Effect of a Faith-based Educational Prevention Program on CVD Knowledge

The first research question sought to assess whether exposure to the faith-based educational program on CVD disease prevention had a considerable positive influence in enhancing the CVD knowledge among the church congregants recruited in the survey. The expectation is that participation in the faith-based educational CVD prevention program is likely to have a significant impact in enhancing the cardiovascular knowledge among the program participants. A repeated ANOVA test analysis was performed to answer the research question mentioned above, and the results are presented in Table 2. The assumptions are based on the following:

Ho: There is no difference in the CVD knowledge at baseline, immediately post, and 30 days post-intervention as a result of participating in the faith-based CVD prevention program.

Ha: Participation in the faith-based CVD prevention program resulted in a higher level of CVD knowledge at 30 days and immediately post-intervention compared to the baseline.

Table 2

The Effect of a Faith-based Educational Prevention Program on CVD Knowledge

Source	F-value	p-value	Partial Eta Squared
Greenhouse-Geisser	12.898	.000	.308

Note. Repeated ANOVA test evaluated at $\alpha_{0.05}$ significance level.

A one-way repeated measures ANOVA was conducted to determine whether there was a statistically significant difference in CVD knowledge at timepoints stated in the research methods section. The data was near normally distributed as assessed by the Shapiro-Wilk test ($p > .05$). However, the Mauchly's sphericity test indicated that the assumption of sphericity had been violated, $\chi^2(2) = 14.03$, $p = .001$. Epsilon (ε) 0.717 was calculated according to Greenhouse and Geisser (1959) and was used to correct the one-way repeated measures ANOVA, $F(1.435, 41.606) = 12.898$, $p < .001$. The F-distribution for the CVD knowledge at baseline, immediately post and 30 days post-intervention is statistically significant ($F = 12.898$; $p < .001$, partial $\eta^2 = .31$). The implication is that the mean scores for CVD knowledge at baseline, immediately post, and 30 days post-intervention are significantly different. The pairwise comparison test for the repeated ANOVA is undertaken to assess the source of the mean difference.

Table 3 depicts the outcome of the pairwise comparison repeated ANOVA test to assess the significance of the difference between the CVD knowledge at baseline, immediately post, and 30 days post-intervention using the ABCD survey.

Table 3

Pairwise Comparison Test: CVD Knowledge

Time	Mean Difference	Std Error	p-value
Baseline-Immediately Post	-0.867	0.224	.002
Baseline-30 Days Post Intervention	-0.800	0.211	.002
Immediately Post-Baseline	0.867	0.224	.002
Immediately Post-30 Days Post Intervention	0.067	0.117	1.000
30 Days Post Intervention-Baseline	0.800	0.211	.002
30 Days Post Intervention-Immediately Post	-0.067	0.117	1.000

Note. Repeated ANOVA test evaluated at $\alpha_{0.05}$ significance level.

Participant means on the CVD knowledge scores from the ABCD survey increased from baseline ($M = 6.67$, $SD = 1.42$) to immediately post ($M = 7.53$, $SD = 0.629$), and from baseline to 30 days post-intervention ($M = 7.47$, $SD = 0.629$), in that order. The results of the pairwise comparison repeated ANOVA depict that there was a significant difference in the level of CVD knowledge at baseline and immediately post-intervention ($MD = -0.867$, $p = .002$, 95% CI [-1.44, -.30]). Additionally, there was also a significant variation in the level of CVD knowledge at baseline and 30 days post-intervention ($MD = -0.800$, $p = .002$, 95% CI [-1.34, -.26]). However, no significant difference was noted between the level of CVD knowledge at immediately post-intervention and 30 days post-intervention ($MD = 0.067$, $p > .05$, 95% CI [-.23, -.36]). The implication is that there was a substantial improvement in the participants' CVD knowledge immediately post and 30 days after exposure to the faith-based CVD prevention program compared to the CVD knowledge at the baseline period. The findings compare favorably to the outcome based on the study of Zhang et al. (2017), who noted that structured lifestyle interventions have a considerable positive impact in enhancing the individuals' awareness and knowledge on cardiovascular diseases in the immediate and long-term period after the intervention. Clinical question one was supported.

Clinical Question 2-The Effect of a Faith-based Prevention Program on the Perceived CVD Risk

The second research question sought to evaluate the effect of a faith-based cardiovascular disease prevention program on the participants' perceived CVD risk at the baseline, immediate post, and 30 days after exposure to the intervention. As a result of the program's educational efficacy, it is expected that exposure to the faith-based CVD prevention program would enhance the perceived risk of cardiovascular diseases among the congregants.

A paired samples *t*-test based on the HBCVD instrument was conducted and is presented in table 4 based on the following initial and alternative hypothesis formulation;

Ho: There is no difference in the perceived risk of CVD at baseline and immediately post-intervention after participating in the faith-based CVD prevention program.

Ha: Participation in the faith-based CVD prevention program resulted in a higher perceived risk of cardiovascular disease immediately post-intervention compared to the baseline.

Table 4

The Effect of a Faith-based Prevention Program on the Perceived CVD Risk HBCVD Instrument

Perceived CVD Risk	*MD* (Pretest-Posttest)	*t*-statistic	*p*-value
Perceived CVD Risk [Baseline] – Perceived CVD Risk [Immediate Post]	0.067	0.087	.931

Note. Paired samples *t*-test evaluated at $\alpha_{0.05}$ significance level.

The data was near normally distributed as evaluated by the Shapiro-Wilk test ($p >$ .05). The outcome of the paired samples *t*-test reveals that there was no significant variation in the perceived risk of cardiovascular diseases at baseline and immediately post-intervention. There was a decrease in the mean perceived CVD risk score on the HBCVD instrument from baseline to immediately post-intervention, as outlined in Table 1. The mean difference between the perceived CVD risk at baseline and immediately post-intervention ($MD = 0.067$; $t(29) = 0.087$; $p = 0.931$, 95% CI [-1.505, 1.639]) fails to meet the $\alpha0.05$ significance threshold level. The results mean that exposure to the faith-based educational CVD prevention program did not have a substantial impact on the individuals' perceived risks associated with the cardiovascular diseases immediately after the intervention compared to the baseline.

Tables 5 and 6 depict the results of the repeated ANOVA to ascertain whether there is any substantial difference between the perceived risks of CVD at baseline, immediately post-intervention, and 30 days after the intervention using the CVD risk perception subscale of the ABCD tool.

The data was near normally distributed as assessed by the Shapiro-Wilk test ($p > .05$). The Mauchly's test of sphericity indicated that the assumption of sphericity had not been violated, $\chi^2(2) = 0.473$, $p = .789$. The results of the repeated ANOVA test depict that there was no substantial variation in the perceived risk of cardiovascular diseases in the immediate post period and 30 days after the intervention compared to the baseline.

Table 5

Effect of a Faith-based Educational Prevention Program on Perceived CVD Risk ABCD Instrument

Source	*F*-value	*p*-value	Partial Eta Squared
Time-Sphericity Assumed	1.499	.232	.049

Note. Repeated ANOVA test evaluated at $\alpha_{0.05}$ significance level.

The means of the CVD risk perception subscale scores increased from baseline to immediately post to 30 days post-intervention, respectively, as outlined in Table 1. However, the *F*-value, $F(2, 27) = 1.499$; $p = .232$, 95% CI [-.929, 3.729], partial $\eta^2 = .049$, fails to meet the significance level. The implication is that the participants did not have a greater perceived CVD risk in the immediate post period, and the 30-day period after the intervention compared to the baseline period. Therefore, the outcome based on both the HBCVD tool and the ABCD instrument supports the initial hypothesis that there is no significant difference in the perceived risk of cardiovascular diseases at the baseline, immediate post, and 30 days after the faith-based intervention.

Table 6

Pairwise Comparison Test: Perceived CVD Risk ABCD Instrument

Time	Mean Difference	Std Error	*p*-value
Baseline-Immediately Post	-1.400	0.917	.413
Baseline-30 Days Post Intervention	-1.533	1.001	.409

Time	Mean Difference	Std Error	*p*-value
Immediately Post-Baseline	1.400	0.917	.413
Immediately Post-30 Days Post Intervention	-0.133	1.022	1.000
30 Days Post Intervention-Baseline	1.533	1.001	.409
30 Days Post Intervention-Immediately Post	0.133	1.022	1.000

Note. Repeated ANOVA test evaluated at $\alpha_{0.05}$ significance level.

Clinical Question 3-The Effect of a Faith-based Prevention Program on the Smoking Frequency

The primary aim of the third research question is to ascertain whether participation in the faith-based CVD prevention program influenced the association between the smoking frequency at the baseline level and the rate of smoking post-intervention. The results of the chi-square test are discussed and are guided by the following hypothesis:

Ho: The smoking frequency at baseline is independent of the smoking frequency after the intervention for individuals that participated in the faith-based CVD prevention program.

Ha: The smoking frequency at baseline is not independent of the rate of smoking after the intervention for individuals that participated in the faith-based CVD prevention program.

The researcher anticipated performing the chi-square test of independence. However, there was only one self-reported smoker in the sample and the cell frequency assumption could not be met. Therefore, descriptive statistics were used to describe changes in smoking frequency. The participant reported smoking one pack per week, 30

days post-intervention compared to smoking less than one pack per week at baseline, which was

an increase in smoking frequency post-intervention. This self-report indicates that the faith-based

CVD prevention program was not effective in decreasing the frequency of smoking in the

participants.

Clinical Question 4-The Effect of a Faith-based Prevention Program on Physical Exercise Frequency

The research study also sought to evaluate the impact of the faith-based CVD prevention

program on the extent of physical exercise frequency among the survey respondents in the pre-

intervention (baseline) and 30 days post-intervention. The expectation is that exposure to the

faith-based CVD prevention program would enhance the participants' awareness level on the

importance of physical exercise as a strategy for reducing the risk of cardiovascular diseases.

The data was not normally distributed as evaluated by the Shapiro-Wilk test ($p < .05$), so a

Wilcoxon signed-rank test was conducted to evaluate the CVD prevention program, and results

are presented in Table 7 and are guided by the following hypothesis:

Ho: There is no difference in the physical exercise frequency in the baseline period and after

exposure to the faith-based CVD prevention program.

Ha: The exposure to the faith-based CVD education program resulted in a considerable

difference in the frequency of physical exercise at baseline and post-intervention.

The different scores were approximately symmetrically distributed, as assessed by a

histogram with a superimposed normal curve. Of the 30 participants recruited to the study, the

CVD prevention program resulted in an increase in the median frequency of physical activity in

21 participants post-intervention. In contrast, four participants decreased their median frequency

in physical activity post-intervention. There was a statistically significant median increase in the

frequency of physical activity 30 days after the intervention ($Mdn = 3$ times per week for 30 minutes) compared to before the intervention ($Mdn = 1$ time per week for 30 minutes) $z = -3.61$, $p < .001$. The median difference before and after the intervention increased by one time of activity per week ($Mdn = 1$). The CVD prevention program resulted in no change in the median frequency of physical activity in five participants compared to baseline.

Table 7

The Effect of a Faith-based Prevention Program on Physical Exercise Frequency and Consumption of Fruits and Vegetables using Wilcoxon Signed-Ranks Tests

Wilcoxon Signed-Ranks					
Q4 What is the effect of the faith-based CVD prevention program on frequency of physical exercise frequency, and the frequency of consuming fruits and vegetables					
Variable		n	Mean Rank	z	*p
Quantity of Activity 1-month post-education	Negative Ranks	4[a]	8.00	-3.607	
Compared to Quantity of Activity pre-education	Positive Ranks	21[b]	13.95		<.001
	Ties	5[c]			
	Total	30			
Q5 What is the effect of the faith-based CVD prevention program on the frequency of consuming fruits and vegetables					
Variable		n	Mean Rank	z	*p
Number of Days of Fruits and Vegetables 1-month post-education	Negative Ranks	4[d]	10.25	-2.641	
	Positive Ranks	17[e]	11.18		.008
Compared to Number of Days of Fruits and Vegetables pre-education	Ties	9[f]			
	Total	30			

Notes. [a]Quantity of Activity 1-month post-education $<$ Quantity of Activity pre-education. [b]Quantity of Activity 1-month post-education $>$ Quantity of Activity pre-education. [c]Quantity of Activity 1-month post-education $=$ Quantity of Activity pre-education. [d]Number of Days of Fruits and Vegetables 1-month post education $<$ Number of Days of Fruits and Vegetables pre education. [e]Number of Days of Fruits and Vegetables 1-month post education $>$ Number of Days of Fruits and Vegetables pre education. [f]Number of Days of Fruits and Vegetables 1-month post education $=$ Number of Days of Fruits and Vegetables pre education. [*]Evaluated at $\alpha_{0.05}$ significance level.

Clinical Question 5-Effect of a Faith-based Prevention Program on the Frequency of Fruit and Vegetable Consumption

The researcher also sought to assess whether participation in the faith-based CVD prevention and lifestyle modification program increased the frequency of fruits and vegetable consumption in the post-intervention period when compared against the baseline specifically among the African American adults. As a result of insight that is derived from attending the faith-based education network, it is expected that the program participants would increase their consumption of fruits and vegetables, which are considered important in preventing cardiovascular diseases. The data was not normally distributed as evaluated by the Shapiro-Wilk test ($p < .05$). Therefore, Wilcoxon signed-rank test was used for analysis. The outcome of the Wilcoxon signed-rank test is highlighted in Table 7 based on the following initial and alternative hypotheses.

Ho: There is no variation in the frequency of fruits and vegetable consumption in the baseline period and after participating in the faith-based CVD prevention program.

Ha: Participation in the faith-based CVD prevention program contributed to a substantial difference in the frequency of fruits and vegetable consumption at baseline and post-intervention.

The difference scores were approximately symmetrically distributed, as assessed by a histogram with a superimposed normal curve. Of the 30 participants recruited to the study, the

CVD prevention program resulted in an increase in the median frequency of consuming fruits and vegetables in 17 participants post-intervention, whereas four participants decreased their median frequency in consumption of fruits and vegetables post-intervention. There was a statistically significant median increase in the frequency of fruit and vegetable consumption 30 days after the intervention ($Mdn = 3$ fruit and vegetable consumption per week) compared to before the intervention ($Mdn = 3$ fruit and vegetable consumption per week) $z = -2.641$, $p = .008$. The median difference in the frequency of consuming fruits and vegetables after compared to before the intervention increased ($Mdn = 1$).

The results depict that there is a substantial difference in the frequency of fruits and vegetable consumption immediately post-intervention compared to the baseline among the congregants who participated in the faith-based education network program ($z = -2.641$, $p = .008$). Therefore, based on the outcome of the results, the participants seem to have positively modified their eating habits after attending the faith-based CVD prevention program by consuming a higher proportion of fruits and vegetables.

Miscellaneous Findings Not Associated with Clinical Questions-Education Evaluation

Feedback on the educational session was collected from participants to determine whether the education was helpful, and if participants are willing to participate in future educational offerings. Participants rated the educational sessions as very helpful, helpful, and not helpful at all. Most participants indicated that the educational session was very helpful (83.3%). A majority of the participants (80%) expressed interest in participating in future health-related educational events. These findings suggest that educational

offerings can be supported in the faith-based community. The specific results of the evaluation of the sessions are displayed in Table 8.

The participants were also requested to indicate topics that would be of interest in attending if offered in the future. The top three topics of interest include heart disease ($n = 9$, 30%), diabetes ($n = 5$, 16.7%), and weight loss ($n = 5$, 16.7%). Topics that did not fit into the top topics are categorized as other ($n = 5$, 16.7) and include menopause, living will, vitamins, health fair, and men's health. Other topics of interest are outlined in Table 8.

Table 8

Evaluation of the Educational Session (N = 30)

Responses	*n*	(%)
The Educational Session Evaluation		
Very Helpful	25	83.3
Helpful	3	10.0
Not Helpful	1	3.3
Missing/No Answer	1	3.3
Desire to Participate in Future Educational Events	*n*	(%)
Yes	24	80
No	2	6.7
Did Not Answer	4	13.3
Future Educational Topics	*n*	(%)
Topic		
Heart Disease	9	30.0
Weight Loss	5	16.7
Diabetes	5	16.7
Mental Health	3	10.0
Other	5	16.7
No Answer	3	10.0

Note. n = Total participants in subpopulation, % = percentage.

The cardiovascular disease session included topics that will assist the participants in self-care. Self-care topics included the importance of visiting a healthcare provider, as well as knowing values related to CVD, such as blood pressure and cholesterol levels. At their 30-day follow-up, participants were asked questions regarding visits to their healthcare provider, whether the provider visit was related to CVD, and whether they asked they could recall their previous blood pressure or cholesterol levels. Of the 30 participants, forty percent visited a healthcare provider ($n = 12$). Of the individuals who visited a healthcare provider, 25% ($n = 3$) of the visits were cardiovascular disease-related visits. Participants were also asked if they were able to recall their last blood pressure and cholesterol level at the 30-day follow up. Of the 30 participants, most participants were able to recall their last blood pressure ($n = 18$, 60%), but only three individuals (10%) could recall their last cholesterol level.

Conclusions

The primary aim of the study was to evaluate whether participation in the faith-based CVD education program had a substantial impact on enhancing participants' CVD knowledge, perception of CVD risk, and in facilitating lifestyle modification concerning the frequency of smoking, physical exercise and the consumption of fruits and vegetables. The outcome based on the paired samples *t*-test and the Wilcoxon signed-ranks test depicts that the integration of the congregants to the CVD prevention program had a significant effect in improving CVD knowledge, frequency of participating in physical activity, frequency of fruit and vegetable consumption in the post-intervention period compared to the baseline. The desire for future topics rationalizes the practicality of programs that target the faith-based community population for health promotion. The

study explains the justification for the stated conclusion based on the attributes of the sample,

which consisted of mainly older African American females.

Chapter 5

Discussion

This project utilized a partnership approach involving collaboration with the community to meet healthcare needs, which align with Healthy People's 2020 goals. It also met the demands of the specified community. The uniqueness of this project was that it combined evidence-based interventions for CVD prevention with follow-up assessments to determine knowledge, perception of risk, and establishment of healthy behaviors that addressed modifiable risk factors. Faith-based settings provide excellent venues and opportunities to promote healthy behaviors (Ma & Ma, 2015; Reeder et al., 2017; Tettey et al., 2016). Results from this project demonstrated that faith-based settings are appropriate for health-related programs for the targeted group.

Due to the demographics of participants in the study (80% over the age of 46), the outcome on the effect of the faith-based CVD prevention program is likely to bias towards older individuals as opposed to young individuals. The sample constituent profile based on gender indicates that 90% of the participants that were integrated into the study were females, with only 10% of them being male respondents. The fact that most of the sample constituent is represented by females depicts that the results on the effect of the faith-based education network on the CVD knowledge, perceived risks, and change in modifiable behaviors are likely to bias towards the perception of females. The sample composition based on gender is likely to affect the validity of the results given that females have different smoking and eating habits compared to males (Zhang et al., 2017).

The sample characteristic based on the racial composition is consistent with the planned research methodology, which specifically sought to recruit adult participants of

African American descent. All 30 respondents (100%) who participated in the survey are non-Hispanics African American. The stated dominant sample composition based on race is deliberately proposed, given that the incidence of cardiovascular diseases is most common among the majority of the African Americans (CDC, 2017).

The sample descriptives, based on the education level, depicts that most of the individuals who participated in the survey have a 'high school or less' level of education. Specifically, 53.3% of the sampled respondents have a 'high school or less' education level, 13.3% have a '2-Years College', 13.3% have a '4-years College' degree while only 10% reported having a graduate degree. This shows that the knowledge gained from the sample is likely to bias towards individuals with a low level of education.

The sample composition with respect to the participants' insurance status reveals that the majority of the participants were medically insured. Specifically, 96.7% of the respondents reported having medical insurance, while only 3.3% of the participants reported having no medical insurance. The stated sample attribute based on insurance status is inconsistent with recent data insight that most of the African Americans are less insured compared to the whites because of economic disparity (CDC, 2018).

Knowledge

The implication based on the stated outcome is that the exposure to the faith-based educational CVD prevention program had a significant impact on enhancing the knowledge of cardiovascular disease among the participants. This occurred immediately after the intervention when assessed to the level of CVD knowledge. However, there is no considerable variation in cardiovascular disease knowledge and awareness 30 days after the intervention compared to the level of CVD knowledge in the immediate post-intervention period. The findings compare

favorably to the outcome based on the study of Zhang et al. (2017), who noted that structured lifestyle interventions have a considerable positive impact in enhancing the individuals' awareness and knowledge on cardiovascular diseases. The implication is that there was a substantial improvement in the participants' CVD knowledge 30 days after exposure to the faith-based CVD prevention program.

Perceived CVD Risk

The results mean that exposure to the faith-based educational CVD prevention program had no considerable impact on the individuals' perceived risks associated with cardiovascular diseases. However, the results are not supported by the findings of Boateng et al. (2017), who found that when individuals are integrated into any lifestyle behavioral change interventions, they are likely to have a greater perceived risk of cardiovascular diseases. According to the insight from the Health Belief Model (HBM), participation in the faith-based CVD prevention program is anticipated to have a positive effect in enhancing the perception and overall awareness of the risk of cardiovascular diseases (Zhang et al., 2017).

Modifiable Behaviors: Smoking

The insinuation based on the stated results is that exposure to the faith-based education network program did not result in any substantial variation of the smoking frequency among the participants that were incorporated in the survey. There are two main reasons that explain the stated findings. The first aspect relates to the sample characteristics, which showed that the majority of the participants (90%) were females who were not known to be ardent smokers. For instance, according to the CDC (2019), the proportion of female smokers in the U.S. was 12% compared to male smokers

(15.6%) during the year 2016. The other reason that explains the results of the Wilcoxon Signed

Rank test is based on the assumption that smoking is addictive and normally takes time to change

behaviors associated with smoking (Boateng et al., 2017).

Modifiable Behaviors: Physical Activity

The results on the effect of the faith-based CVD prevention program were consistent with

the findings of Zhang et al. (2017), who reveals that exposure to a structured lifestyle

intervention program has a substantial effect in promoting modifiable behavioral change with

respect to physical exercise. Although findings were significant pre-intervention vs. post-

intervention, some members who were over the age of 60 mentioned that they found it difficult

to find exercise routines to suit their abilities. The main aspect that explains the finding is likely

to be related to the biased sample composition, where the majority of the respondents were older

females who have a 'high school or less' level of education.

Modifiable Behaviors: Consumption of Fruits and Vegetables

There was a statistically significant median increase in the frequency of consuming fruits and

vegetables 30 days after the intervention ($Mdn = 3$ fruit and vegetable consumption per week)

compared to before the intervention ($Mdn = 3$ fruit and vegetable consumption per week) $z = -$

2.641, $p = .008$. The median difference in the frequency of consuming fruits and vegetables after

compared to before the intervention increased ($Mdn = 1$). The conclusion from the results is also

consistent and supported by the findings of Zhang et al. (2017), who noted that the structured

lifestyle intervention program had a considerable effect in enhancing the consumption of healthy

and highly nutritious meals such as fruits and vegetables.

Strengths

Strengths of this project include its pre and posttest design, the 30-day follow up, as well as its low attrition rate. Also, the targeted sample size was met. The pretest-posttest design allowed for evaluation of the effectiveness of the program since comparable data is present. The 30-day follow up provided additional evaluation that was not immediately post-intervention. It allowed participants to ask additional questions and provided an opportunity to assess discuss self-care habits post-intervention.

Limitations

The sample size met the targeted power analysis. However, the sample size was small (N =30). This study primarily consisted of middle-aged (M = 53.3, SD = 16.17), African American (100%), females (90%), and can only be appropriately applied to this population. Additionally, participants were recruited by convenience sampling, creating sampling bias.

Recommendations for Future Research

Although this research project focused on faith-based settings, this project would be appropriate for various settings. Recommendations for future research recommendations include expanding the educational program to other settings in the community such as community centers as well as other established community groups. A broader representative sample would be beneficial to expand empirical research. Also, there is an opportunity to partner with the local HRSA to assist in meeting their benchmarks. For example, the local HRSA metric for blood pressure control, smoking, and lipid management were three of four for blood pressure control and two four tobacco screening and counseling, and a four for lipid management whereas one means the highest 25% and four is the lowest 25% (HRSA, 2017). The faith-based ministry provides a great opportunity to assist in providing programs to assist in improving the metrics. Research involving the effectiveness of the partnership would justify the benefit of programs in faith-based and community settings.

Sustainability Plan

Using the MAP-IT process, and feedback from the initial educational session, constant evaluation and planning will occur with the organization and the health ministry. The feedback received from the survey, along with ongoing planning with different community health ministries, will ensure that the project is sustainable. Buy-in from the organization and members of both the congregations and the health ministry team will be an ongoing process. The educational plan will be modified based on the needs of the community will ensure that the project is sustainable. Educational needs will be assessed annually for program needs and development. As the health ministry evolves and resources are needed, the ministry can solicit additional members and funding, including fundraisers.

Implications to Practice

Cardiovascular disease is one of the leading causes of death in the African American community (CDC, 2017). Health disparities related to CVD also exist among African Americans (Cunningham, Croft, Liu, Eke, & Giles, 2017). Populations with higher economic burdens also have a higher prevalence of chronic diseases (Cunningham et al., 2017). As such, it is essential for health care providers to seek alternative methods to provide cost-effective interventions to meet the needs of vulnerable individuals. Faith-based settings offer the option of delivering health promotion and disease prevention programs. The opportunity exists to utilize faith-based organizations as an ongoing means to provide care to individuals in need. Future programs can include topics based on the needs of the community. Not only is this project suitable in the faith-based setting, but it can also be used in community settings for health promotion activities based on the needs of the population. Based on feedback from program participants, individuals in the community are interested in learning more about health. Healthcare workers can use faith-based

settings to collaborate with community members and offer services to individuals in select

communities that are facing disparities, such as access to care. As many of the participants are

obese (90%) and request for health-related topics (80%), there is room for further education and

support for health-related programs.

Conclusions

The prevalence of CVD is high among African Americans. Opportunities exist to

improve awareness and knowledge of cardiovascular disease by using evidence-based practice

measures. Faith-based settings are optimal venues to provide education and other community-

based programs to this population. As knowledge and perception of cardiovascular disease

increase, African Americans may change behaviors by implementing preventative measures

recommended through faith-based education.

This intervention pilot project intended to explore the effects of a faith-based

cardiovascular disease prevention program on knowledge, perception of cardiovascular disease

risks, and adherence to modifiable risk reduction behaviors in a suburban Georgia community.

The project was aligned with the Healthy People 2020's initiative to impact difficult-to-reach

populations in a community setting. The initiative was implemented based on the MAP-IT

process for project implementation and based on the Health Beliefs Model. These frameworks

assisted the researcher in understanding participants' beliefs and susceptibility to cardiovascular

disease, and to increase awareness risk for cardiovascular disease. The researcher delivered an

educational program that evaluated the participants' baseline CVD knowledge, perception of

CVD risks, and modifiable behaviors for CVD prevention. A post-follow-up assessment was also

performed. The program was evaluated using *paired sample t-tests, repeated ANOVA*, *Wilcoxon

Signed-Rank* tests, and descriptive statistics to evaluate demographics and the post-classroom

survey for program fidelity. The long-term goal was to establish a faith-based health network of churches and or communities for partners in preventing chronic diseases. Using a community-based implementation method, individuals who may otherwise fall through the cracks can be provided information and awareness of preventable illnesses. This intervention education project was proven to be sustainable and to be an effective means of providing ongoing community-centered interventions. This project had a significant effect only in promoting the CVD knowledge and enhancing the frequency of fruits and vegetable consumption in the post-intervention period compared to the baseline. The study explains the justification for the stated conclusion based on the attributes of the sample, which consisted of mainly older females of the African American racial orientation. Alternative settings, such as faith-based communities, are appropriate and convenient. Based on the feedback of this project, health ministries are desirable opportunities to improve the health of African Americans in faith-based communities.

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Appendix A

Flyer

Modifiable Behaviors for Cardiovascular Disease Prevention

Do you want to learn more about your cardiovascular disease risk and how you can prevent cardiovascular disease?

Are you interested in helping others assisting to understand barriers to adhering to modifiable risks?

The Georgia College and State University, Department of Health Sciences Division of Nursing seeks Women and Men, ages 18 and over to participate in a study and educational offering on cardiovascular disease prevention. The event will include blood pressure and weight screenings, surveys, and post follow-up interview.
Time Required: Approximately 2 hours plus a short follow-up survey
Date and Time: TBD
Location: Church Palmetto, Ga. 30268

Free BP screenings and Refreshments

For more information please contact:
- **Chandila Tutt, MSN, APRN, CCNS, NP-C, Principal Investigator**
- **████████████, or email Chandila.tutt@bobcats.gcsu.edu**
- **IRB # 11629**

Faculty Advisor **Dr. Josie Doss, PhD, MSN, RNC-OB**

Appendix B

Church Announcement

Chandila Tutt, student, of Georgia College & State University, Department of

Health Sciences Division of Nursing seeks adult African American Women and

Men, ages 18 and over who can understand, speak, and read English to participate

in a study and educational offering on cardiovascular disease prevention. The event

will include blood pressure and weight screenings, surveys, and post follow-up

interview.

Time Required: Approximately 2 hours plus a short follow-up telephone or in-

person survey of no more than 10 minutes

Date and Time: will be added after approval and arrangement

Location: ██

Free BP screenings and Refreshments

For more information please contact:

- o   Chandila Tutt, MSN, APRN, CCNS, NP-C, Principal Investigator
  - o   ███████████, or email Chandila.tutt@bobcats.gcsu.edu

Faculty Advisor **Dr. Josie Doss, PhD, MSN, RNC-OB; josie.doss@gcsu.edu**

Appendix C

Site Approval Letter

J S Hammond Missionary Baptist
Church
211 Beckman Street
Palmetto, Ga.30268

Reverend Willie R. Starks, Pastor
770-875-4132

April 28, 2019

Dear GC IRB,

Based on my review of the proposed research by Chandila Tutt, and Dr. Josie Doss, I give permission for her to conduct the study entitled The Impact of a Faith-based Education on Cardiovascular Disease Knowledge, Perception of Risk, and Lifestyle Behaviors within the Georgia College and State University School of Nursing in Milledgeville, Georgia. As part of this study, I authorize the researcher(s) to advertise and recruit, administer surveys, gather health data (blood pressures, height, and weight), and provide education as indicated at the JS Hammond Missionary Baptist Church. I also authorize the researcher(s) to disseminate de-identified results via seminars, presentations, and publications. Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include: the use of facilities and utilities, and assist with advertising. We reserve the right to withdraw from the study at any time if our circumstances change.

We understand that the research will include typical classroom instruction, blood pressure, height, and weight screenings, pre-tests, and post-tests.
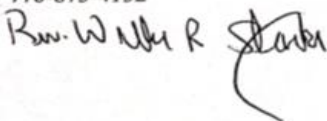
This authorization covers the time period of May 1, 2019 to May 31, 2020.

I confirm that I am authorized to approve research in this setting.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Georgia College IRB.

Sincerely,

Reverend Willie R. Starks
770-875-4132

Appendix D

Event Protocol

Actionable Abnormal Blood Pressure Procedure

ACTION ITEMS for Abnormal Blood Pressure:

o   If participants are adherent to their medications, they should be advised to consult their Primary Care Clinician (PCC). If no PCC is available, then they can wait until the first working day to go to urgent care.

o   For those with systolic > 180 mmHg and/or diastolic > 110 mmHg, they should be seated in a quiet area for 15-30 minutes and have BP repeated. If all their BP readings are persistently elevated (> 180/110), they should seek care immediately either by calling their primary care clinic OR by going to urgent care/ER that same day. Per American Heart Association Guidelines "blood pressures readings **180/120 or greater along with any other associated symptoms** of target organ damage such as chest pain, shortness of breath, back pain, numbness/weakness, change in vision, or difficulty speaking is considered a hypertensive emergency" (American Heart Association, 2017).

o   If they are on anti-hypertensives and have not been taking their medications or have just started medications again for the first time that morning, inform patients to be adherent and to have their BP checked within a week by their primary care clinic.

After BP measurement, provide patients with the Critical BP form which includes the BP results and the time of test. Have them sign the document certifying that they have been advised to seek urgent care.

Critical Blood Pressure Form

Patient Copy

Your blood pressure reading today was _____ / _____.
This reading is very high, and we encourage you to contact your
primary care clinician (PCC) or visit the emergency room as soon as possible.
***If you don't have a PCC, please sign up with the [Your Town Health Center 643 Main Street,
Palmetto, Ga. 30268 404-929-8824].***
By signing this form, I am indicating that I am aware of the risk of not seeing a physician given
my elevated blood pressure.

_____   _____   _____
Print Name of Subject   Signature of Subject   Date

_____   _____   _____
Print Name of Staff   Signature of Staff   Date

Critical Blood Pressure Form
Researcher's Copy

Your blood pressure reading today was_____ /_____.
This reading is very high, and we encourage you to go see your primary care clinician (PCC) or visit the emergency room as soon as possible.
If you don't have a PCC, please sign up with the [Your Town Health Center 643 Main Street, Palmetto, Ga. 30268 404-929-8824].
By signing this form, I am indicating that I am aware of the risk of not seeing a physician given my elevated blood pressure.

_____   _____   _____
Print Name of Subject   Signature of Subject   Date

_____   _____   _____
Print Name of Staff   Signature of Staff   Date

Appendix E

Informed Consent

I, _____, agree to participate in the

research The Impact of a Faith-based Education Network on Modifiable Behaviors for

Cardiovascular Disease, which is being conducted by Chandila Tutt, who can be reached at █████

██████, or Chandila.tutt@bobcats.gcsu.edu. I understand that my participation is voluntary; I

can withdraw my consent at any time. If I withdraw my consent, my data will not be used as part

of the study and will be destroyed.

The following points have been explained to me:

1. The purpose of this study is to determine the impact of a faith-based community

   education program on awareness of cardiovascular disease risk factors, perception

   of individual cardiovascular disease risk, increase awareness of cardiovascular disease

   risk factors, and improvement of modifiable lifestyle behaviors for cardiovascular

   disease.

2. The procedures are as follows: you will be asked to

   a. Complete an informed consent (5 minutes).

   b. Complete Time 1 data (pre-test) (30 minutes)

      1. Demographic form

      2. Health Beliefs Related to Cardiovascular Disease survey

      3. Attitudes and Beliefs about Cardiovascular Disease survey

   c. Obtain a measurement of your blood pressure, height, weight, and body mass index

      (BMI) (10 minutes)

    d. Attend an evidence-based presentation related to cardiovascular disease risk (1 hour)

    e. Complete time 2 data (30 minutes)

        1. Health Belief Related to Cardiovascular Disease

        2. Attitudes and Beliefs About Cardiovascular Disease

        3. Post-Educational Program Survey

    f. Participate in a post-session follow up in-person, via email, or by telephone approximately one-month after the presentation for a post-session survey

3. Your name will not be connected to your data. Therefore, the information gathered will be confidential.

4. You will be asked to sign two identical consent forms. You must return one form to the investigator before the study begins, and you may keep the other consent form for your records.

5. You may find that some questions are invasive or personal. If you become uncomfortable answering any questions, you may cease participation at that time.

6. This research project is being conducted because of its potential benefits, either to individuals or to humans in general. The expected benefits of this study include improved knowledge related to your risk for cardiovascular disease and the risks for cardiovascular disease that you can change. To gain a better understanding of perceptions of risk for cardiovascular disease and barriers to adhering to healthy lifestyles.

7. You are not likely to experience physical, psychological, social, or legal risks beyond those ordinarily encountered in daily life or during the performance of routine examinations or tests by participating in this study.

8. Your responses will be confidential and will not be released in any individually identifiable form without your prior consent unless required by law.

9. The investigator will answer any further questions about the research should you have them now or in the future (see above contact information).

10. In addition to the above, further information, including a full explanation of the purpose of this research, will be provided after the research project is completed upon request.

11. By signing and returning this form, you are acknowledging that you are 18 years of age or older.

_____

Signature of Investigator   Date

_____

Signature of Participant   Date

Research at Georgia College involving human participants is carried out under the oversight of the Institutional Review Board. Address questions or problems regarding these activities to the GC IRB Chair, email: irb@gcsu.edu.

Appendix F

Demographics and Questionnaire

Answers will Remain Confidential   Participant_____

Please Circle One

What is your Age today	18-30 years old 31-45 years old 46-60 years old older than 60 years
Race	Black Non-Hispanic Caucasian Non-Hispanic Hispanic Asian Multiracial Other
Gender at birth	Male Female
Education level	I have high school or less education I have 2-year college education I have 4-year college education I have graduate degree other
Do you have medical insurance?	Yes No
Do you have a history of CVD- such as high blood pressure, stroke, heart attack, or atherosclerosis	Yes No
Do you smoke currently	Yes No
If yes to previous question, how often	Less than one pack per week One pack a week Two packs a week Three packs per week Multiple packs per day
Did you participate in physical activity in the past month	Yes No
If yes to previous question, how often	Once a week for at least 30 minutes of moderate activity Twice a week for at least 30 minutes of moderate activity

	Three times a week for at least 30 minutes of moderate activity More than three times in a week for at least 30 minutes of moderate activity
In the past week, how many days did you have at least five servings of fruits and vegetables?	Zero days One days Two days Three days Four days Five or more days

To Be Completed by the Staff

BP _____/_____   Weight_____   Height_____

BMI_____

Appendix G

Health Beliefs related to Cardiovascular Disease Survey

1. It is likely that I will suffer from a heart attack or stroke in the future	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
2. My chances of suffering from a heart attack/stroke in the next few years are great	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
3. I feel I will have a heart attack or stroke sometime during my life	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
4. Having a heart attack or stroke is currently a possibility for me	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
5. I am concerned about the likelihood of having a heart attack/stroke in the near future	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
6. Having a heart attack or stroke is always fatal	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
7. Having a heart attack or stroke will threaten my relationship with my significant other	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
8. My whole life would change if I had a heart attack or stroke	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
9. Having a heart attack or stroke would have a very bad effect on my sex life	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
10. If I have a heart attack or stroke, I will die within 10 year	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree

11. Increasing my exercise will decrease my chances of having a heart attack or stroke	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
12. Eating a healthy diet will decrease my chance of having a heart attack or stroke	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
13. Eating a healthy diet and exercising for 30 minutes most days … to prevent a heart attack/stroke	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
14. When I exercise, I am doing something good for myself	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
15. When I eat healthy, I am doing something good for myself	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
16. Eating a healthy diet will decrease my chances of dying from cardiovascular disease	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
17. I don't know appropriate exercises to perform to reduce my risk of developing cardiovascular disease	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
18. It is painful for me to walk for more than 5 minutes	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
19. I have access to exercise facilities and/or equipment	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
20. I have someone who will exercise with me	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
21. I don't have time to exercise for 30 minutes a day on most days of the week	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
22. I don't know what is considered a healthy diet that would prevent me	1 = strongly disagree 2= disagree

from developing cardiovascular disease	3=agree 4 = strongly agree
23. I don't have time to cook meals for myself	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
24. I cannot afford to buy healthy foods	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree
25. I have other problems more important that worrying about diet and exercise	1 = strongly disagree 2= disagree 3=agree 4 = strongly agree

Permission to use the tool was granted by, Tovar, the developer of the tool. Tovar, E. G., Rayens, M. K., Clark, M., & Nguyen, H. (2010). Development and psychometric testing of the Health Beliefs Related to Cardiovascular Disease Scale: preliminary findings. *Journal of Advanced Nursing, 66*(12), 2772–2784

Appendix H

Participant_____

Attitudes and Beliefs Related to Cardiovascular Disease ABCD Risk Survey

	True	False
1. One of the main causes of heart attack and stroke is stress.	True	False
2. Walking and gardening are considered types of exercise that can lower the risk of having a heart attack or stroke.	True	False
3. Moderately intense activity of 2 ½ hours a week will reduce your chances of having a heart attack or stroke.	True	False
4. People who have diabetes are at higher risk of having a heart attack or stroke.	True	False
5. Managing your stress levels will help you to manage your blood pressure.	True	False
6. Drinking high levels of alcohol can increase your cholesterol and triglyceride levels.	True	False
7. HDL refers to 'good' cholesterol, and LDL refers to 'bad' cholesterol.	True	False
8. A family history of heart disease is not a risk factor for high blood pressure.	True	False

9. I feel I will suffer from a heart attack or stroke sometime during my life.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
10. It is likely that I will suffer from a heart attack or stroke in the future,	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
11. It is likely that I will have a heart attack or stroke some time during my life.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
12. There is a good chance I will experience a heart attack or stroke in the next 10 years.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
13. My chances of suffering from a heart attack or stroke in the next 10 years are great.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
14. It is likely I will have a heart attack or stroke because of my past and/or present behaviors.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
15. I am not worried that I might have a heart attack or stroke.	4=Strongly disagree; 3 = disagree; 2 = agree; 1 = strongly agree; N/A = 0
16. I am concerned about the likelihood of having a heart attack or stroke in the near future.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
17. I am thinking about exercising at least 2½ hours a week.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0

18. I intend or want to exercise at least 2½ hours a week.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
19. When I exercise for at least 2½ hours a week I am doing something good for the health of my heart.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
20. I am confident that I can maintain a healthy weight by exercising at least 2½ hours a week within the next two months.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
21. I am not thinking about exercising for 2 ½ hours a week.	4=Strongly disagree; 3 = disagree; 2 = agree; 1 = strongly agree; N/A = 0
22. When I eat at least five portions of fruit and vegetables a day I am doing something good for the health of my heart.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
23. Increasing my exercise to at least 2½ hours a week will decrease my chances of having a heart attack or stroke.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
24. I am confident that I can eat at least five portions of fruit and vegetables per day within the next two months.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0
25. I am thinking about eating at least five portions of fruit and vegetables a day.	1=Strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree; N/A = 0

26. I am not thinking about eating at least five portions of fruit and vegetables a day.	4=Strongly disagree; 3 = disagree; 2 = agree; 1 = strongly agree; N/A = 0

Permission to use the tool was granted as per the Creative Commons Attribution (CC BY 4.0) license. The CC BY 4.0 license allows others to distribute, remix, adapt and build upon the work as long as it is properly cited (Creative Commons Global Network, n.d.; Woringer, et al., 2017).

Appendix I

Classroom Delivery Survey

Participant _____

Please provide any feedback and comments you have about this education session. Also, please provide any other suggestions you may have for future sessions:

The education was

Very helpful

Helpful

Not helpful

Would you like to participate in other educational events in the future? Yes No

What topics you are interested in learning about in the future

_____

_____

_____

Please provide any feedback and comments you have about this education session. Also, please provide any other suggestions you may have for future sessions:

Appendix J

Follow-Up Survey

Participant _____

1. Have you seen a provider since you completed the educational session related to cardiovascular disease risk factors?	Yes No
2. Was your visit related to cardiovascular disease risk factors (high blood pressure, heart attack or chest pain, stroke, atherosclerosis)	Yes No
3. If yes, Did you ask questions related to your BP	Yes No
4. If yes, Did you ask questions related to your cholesterol level	Yes No
5. What was your last Last BP	
6. Last cholesterol level	
7. Do you smoke currently	Yes No
8. If yes to previous question, how often	Less than one pack per week One pack a week Two packs a week Three packs per week Multiple packs per day
9. Did you participate in physical activity in the past month	Yes No

10. If yes to previous question, how often	Once a week for at least 30 minutes of moderate activity Twice a week for at least 30 minutes of moderate activity Three times a week for at least 30 minutes of moderate activity More than three times in a week for at least 30 minutes of moderate activity
11. In the past week, how many days did you have at least five servings of fruits and vegetables?	Zero days One days Two days Three days Four days Five or more days

Appendix K

Height/Weight/Body Mass Index (BMI) Screening Protocol

Weight Procedure:

a. Place scale on solid level floor (hard surface, not carpeting).

b. Balance the scale per manufacture's guidelines.

c. Zero the scale before the client steps on the scale.

d. Have client remove shoes and bulky clothing (no jackets).

e. Have client empty out pockets of any objects (keys, change, wallet).

f. Have client stand with back facing the readout on the scale, both feet on the center of the platform, and not touch other objects or persons.

g. Record the weight to the nearest 0.5 lb.

h. At the end of measuring and recording the weight, return the scale to the "zero" position to ensure privacy for each client.

Appendix L

Email Approval from Dr. Tovar to use HBCVD Instrument

RE Health Beliefs of Cardiovascular Disease.msg