Fall 12-2-2019

Using Lifestyle Educational Intervention to Decrease Blood Pressure Reading Amongst African American Adults

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A Clinical Scholarly Project by

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Irvine, California

Submitted in partial fulfillment of the requirements for the degree of

Doctor of Nursing Practice

December 2019

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November 2019

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by Catherine A. Madu

ACKNOWLEDGEMENTS

I would begin by acknowledging and praising God Almighty for seeing me through the DNP journey. I appreciate my husband of almost 25 years for his immense support. He was there for me whenever I needed someone to complain to about all the stress that I was going through. He always had many kind and inspirational words that helped to propel me through this journey. Next, I would like to thank our three sons who were constantly encouraging me and telling me that I was near the finish line even when I was only half way through the program. My parents also played a huge role in my success story as they often stopped by and helped to prepare dinner that would last for several days and weeks. They may never understand how much that meant to me. Finally, I thank my chair, Dr. Hafford for her hard work, patience and contribution to my success.

ABSTRACT

Using Lifestyle Educational Intervention to Decrease Blood Pressure Reading Amongst African American Adults

by Catherine A. Madu

Hypertension or high blood pressure is a global epidemic and a major public health challenge in the United States. Hypertension increases the risk for cardiovascular disease, stroke and renal failure. The disease disproportionately affects African Americans (AAs) and is a leading cause of morbidity and mortality in this ethnic group. Effective management of hypertension decreases complications from the disease. The purpose of the clinical scholarly project (CSP) was to decrease blood pressure readings amongst AA adults, ages 18 to 65 years old using educational intervention on lifestyle modifications. A convenience sampling of 20 AA (n = 20) adult participants were drawn from the African Catholic Ministry (ACM) which is a subgroup within the Catholic Charismatic Center (CCC). The principal investigator (PI) used a patient educational brochure to teach participants about modifiable risk factors and healthy lifestyle behaviors aimed at decreasing blood participants' blood pressure readings within a 4-week period. Participants received a pre-intervention and post-intervention blood pressure checks. The findings of the project indicate that patient educational intervention on lifestyle was effective in significantly decreasing blood pressure readings among AAs with hypertension ($p < .05$). The limitations of the study include that participants were recruited through a convenience sampling and there was no random assignment in the project.

Keywords: Hypertension, patient educational intervention, lifestyle and African American

Chapter 1
Chapter 1: Background and Significance

Overview of Hypertension Problem

Background and Significance

Hypertension is the most commonly treated chronic disease affecting individuals seen in primary care settings. In the US alone, out of the 75 million people with hypertension, about 46% of them do not have their high BP under control (Centers for Disease Control and Prevention [CDC], 2017). Although hypertension is a global epidemic, the disease is more widespread among people of African ancestry in comparison with those of European descent (Fox et al, 2011). It disproportionately affects AAs when compared to other ethnic groups and is a major risk factor in the development of cardiovascular and renal diseases (Rigsby, 2011). In the United States alone, hypertension is the leading cause of coronary artery disease and stroke and AAs are more likely to experience increased mortality rates compared to other ethnic groups due to the rapid progression of cardiovascular disease, end-stage organ failure and stroke in this ethnic group (Gross et al., 2013).

According to Wang et al (2013), as many as 27 million people could have hypertension by 2030, if no further steps are taken to curb the disease, with incidence rates up nearly 10% since 2010. Hypertension is a silent killer which means that the disease does not give any warning signs and symptoms while increasing blood pressure may be damaging major organs in the body. AAs are more likely to develop blood pressure–related kidney failure, and are twice as likely to develop diabetes-related kidney failure than diabetics of other racial and ethnic groups (Gourdine, 2011). Young African Americans between the ages of thirty-five to fifty-four

years old have more incidence of heart attack than their Caucasian counterparts (Gourdine, 2011) It becomes vital to identify the environmental or modifiable risk factors that predispose the black community to high blood pressure to help to manage the disease.

African Americans who are less educated and live in medically underserved communities are particularly at risk for complications of the disease due to knowledge deficit, lack of medical insurance and financial difficulties. The risk associated with not following healthy lifestyle behaviors often contribute to the burden of the disease. Community awareness on the adoption of lifestyle choices that help to control the disease is absolutely very important. Through enhanced education, patients who have high blood pressure will understand the need to comply with their treatment regimen by taking their prescribed medications and engaging in recommended lifestyle modifications aimed at improving their blood pressure readings.

Assessment of the Phenomena (Problem Statement)

Hypertension is a chronic disease in which blood pressure is elevated. It is classified as either essential (primary) or secondary hypertension which results from an underlying problem such as kidney or cardiac disease. Majority of hypertension cases seen in primary care are essential with some genetic origin or because of unhealthy lifestyle choices. Garfinkle (2017) defines essential hypertension as an elevated blood pressure where "secondary" causes of the disease, such as Cushing's disease or renovascular problems have been ruled out. Uncontrolled blood pressure can cause impaired arterial elasticity, coronary artery disease, cardiomyopathy, heart failure, stroke, renal failure, and even death. Hypertension and diabetes mellitus (DM) commonly coexist, which further increases the risk of developing vascular complications (Sessoms et al., 2015).

Development of hypertension is dependent on either modifiable or non-modifiable risk factors. Modifiable risk factors include overweight and obesity, physical inactivity, tobacco use, sodium intake and excessive alcohol consumption while non-modifiable risk factors are increasing age, ethnicity such as being black and having a family history of hypertension (CDC, 2017). Although hypertension is a global problem, studies have shown that being from African descent is a risk factor in the development of the disease. A study by Cooper et al. (2013) revealed that approximately 2000 people die from cardiovascular disease in Baltimore each year and these deaths disproportionately affect African Americans. The study further indicates that the 20-year disparity in life expectancy between those who rich neighborhoods (83 years) and those who reside in poorer communities (63 years) of Baltimore was because of increased rates of cardiovascular disease amongst AAs (Cooper et al., 2013).

The eighth Joint National Committee (JNC 8) guideline as cited by Krader (2014) indicates that pharmacologic intervention should be initiated in younger persons less than 60 years old or in any adults with diabetes or chronic kidney disease (CKD) for systolic blood pressure (SBP) equal or greater than 140mmHg and diastolic blood pressure (DBP) equal or greater than 90. Also, in the general population 60 years and older, pharmacologic intervention should be started for SBP equal or greater than 150mmHg or DBP 90mmHg or greater (Krader, 2014). Prevalent comorbidities such as diabetes, hyperlipidemia or obesity in the presence of high blood pressure increase the burden of hypertension thereby predisposing patients to metabolic syndrome.

In addition to medication regimen, culturally sensitive patient education on lifestyle modifications equips patients with adequate knowledge needed in making lifestyle modifications to assume self-responsibility in the management of their high blood pressure. Such interventions

include consuming low salt, low fat, heart healthy diet rich in fruits and vegetables and engaging in increased moderate to vigorous physical activities for at least thirty minutes per day, five days a week for a total of 150 minutes per week. Other interventions include quitting smoking, and decreasing alcohol intake to no more than 2 drinks a week for men and 1 drink for women.

Historical and Societal Perspective

Gourdine, (2011) explains that during the early years in America, African American families were ineligible to participate in the mainstream health care system and had to rely on traditional healers, community organizations, and lay health workers with all kinds of home remedies and health beliefs and some of those health practices have persisted to this day. Back in ancient Africa, before the era of western medicine, people blamed their illnesses or diseases on other people such as family members and friends. Patients visited traditional healers who would further complicate their problems by pointing fingers at the patient's relatives or friends and accusing them of invoking evil spirits on their sick family members. The traditional healer would then ask the patient to stay away from the enemy and to make certain sacrifices to the gods of the land to be cured of the illness or disease. To this day, some people from African decent still hold such fetish beliefs and misconceptions about their chronic health problems including hypertension.

Long et al. (2017) argues that racial disparities in hypertension control are affected greatly by patients' attitudes and beliefs about health, which affects their health behaviors Additionally, African Americans' attitudes concerning health and illness have been influenced by their culture which are often extended to the future generations (Gross et al., 2013). The problem is further compounded by the misconception that hypertension is an episodic condition rather than a chronic disease which prompts patients to seek medical care only when they experience

symptoms (Gross et al., 2013). This practice is generally observed in the community clinics where patients are often non-compliant with treatment, but seek medical care only when they have symptoms such as headaches, dizziness or chest pain. On the contrary, the patient's high blood pressure may be detected incidentally during an encounter for other episodic illnesses.

Pettey et al. (2016) believe that cultural practices tend to influence peoples' health perceptions and adherence to dietary recommendations due to ethnic preferences for certain foods including salt, fat, and pork. African Americans have a habit of eating traditional soul foods packed with unhealthy calories that may worsen certain chronic diseases such as hypertension, obesity, heart disease, diabetes, hyperlipidemia. The art of preparing big soul meals has been described by Gourdine (2011) as an expression of love in the African American community.

Incidence and Prevalence

Almost one-third of the US population has hypertension with elevated blood pressure readings greater or equal to 140/90 (Lackland, 2014). The disease has a prevalence rate of 29.2% among males and 24.8% among females (Kang & Park, 2016). AAs in the USA have the highest incidence of hypertension in the world (Hall et al., 2012). A 2015 to 2016 survey done by the National Health and Nutrition Examination Survey (NHANES) indicates that the prevalence of hypertension was higher among non-Hispanic black (40.3%) than non-Hispanic white (27.8%), non-Hispanic Asian (25.0%), or Hispanic (27.8%) adults (CDC, 2017). Also, the incidence of hypertension control in adults with hypertension was higher among Caucasians (50.8%) adults than among AAs (44.6%) (CDC, 2017). People of African descent have a higher incidence of hypertension and hypertension-related cardiovascular disease and mortality than Americans of

European descent (Beune et al., 2014). Studies indicate that the disproportionate number of patients with poorly controlled blood pressure are minorities, mostly African-Americans (Bokhour et al., 2016). However, Ogedegbe et al (2014) believes poor hypertension- related outcomes amongst AAs explain the huge gap in mortality rates between this ethnic group and their Caucasian counterparts).

Review of Health Care Cost of Hypertension

Uncontrolled high blood pressure has direct correlation to cardiovascular and renal disease, therefore to determine the cost and burden of hypertension, it becomes relevant to assess the economic impact of managing cardiovascular disease (CVD). The difficulty of combating the problem is made worse by the increasing number of Americans with obesity, hypertension and type 2 diabetes, all of which are precursors to CVD. Data from the United States. Hartley & Hypertension is the most expensive cardiovascular disease with an estimated direct annual cost of $200.3 billion by 2030, reflecting a $130.4 billion increase from 2010 (Moughrabi, 2017).

A recent study by the American Heart Association, projects that by 2035, CVD will be the costliest and deadliest disease in the US, with a price tag of $555 billion in 2016 and if the trend continues, will place a crushing economic and health burden on the nation's economic and health care systems (American Heart Association, 2017). The study further states that in the next two decades, up to 131.2 million Americans, about 45 percent of the total U.S. population will develop CVD with costs expected to reach $1.1 trillion dollars (AHA, 2017). According to the same source, CVD risk will rise to 50 percent by age 45 and 80 percent at 65 respectively, with AAs having the highest rates of CVD followed by Hispanics (AHA, 2017).

Uncontrolled high blood pressure may lead to major cardiovascular and renal complications and even death. Disability or death from complications of the disease may further

create a financial burden on the surviving family members, who otherwise may have to depend on government assistance or resources for survival. Although one-half of the patients with hypertension are on medication, only a third of them have their blood pressure under control and the lack of adequate blood pressure control in treated patients is due to nonadherence or inadequate treatment plan, since greater compliance to hypertension management has been linked to decreased hospitalization and reduced medical costs (Repede, 2011).

Chapter 2: Literature Review and Theoretical Framework

PICOT Question

Although hypertension is a global epidemic, the impact of the disease is quite high in the African American community compared to other races with adolescents and younger African Americans developing the disease early in life as seen in primary care settings. The PICOT question helps to identify both the problem and search for evidence needed to solve the problem. Knowledge deficit of lifestyle interventions or non-compliance with treatment plan contributes to the burden of hypertension. That is where the PICOT question becomes necessary. "Among African American adult patients aged 18 to 65 years old with hypertension (P), does quality patient education on lifestyle management (I) compared to those who do not receive quality patient education (C), see an improvement in the blood pressure readings (O) over a four-week period (T)?

Daniels (2016) believes that aggressive management of hypertension through lifestyle and pharmacological interventions would be effective in lowering blood pressure and reducing the incidence of myocardial infarction, heart failure, cerebrovascular and renal disease in the African American community. The health and economic burden of cardiovascular disease is substantial with an estimated 2.2 million hospitalizations and 415, 480 deaths in 2016 (CDC,

2018). Evidence-based patient education creates an awareness of the disease process, major complications associated with it and necessary lifestyle modifications that empower individuals to assume self- responsibility in the management of their chronic disease condition.

Synthesis of Evidence

Reliable databases such as ProQuest, PubMed and CINAHL were searched for peer reviewed journals. This ensured a systematic gathering of evidence from previous articles and reviews to answer the PICOT question. Advanced search was done using key words such as *hypertension, educational intervention, lifestyle and African American.* Previous research studies have shown that educational intervention on lifestyle modifications was effective in decreasing blood pressure readings among patients diagnosed with hypertension. Even a moderate reduction in systolic blood pressure (SBP) of 10 mm Hg or diastolic blood pressure (DBP) of 5 mm Hg has been found to decrease the average risk of mortality from coronary heart disease and stroke by 22% and 41%, respectively (Himmelfarb et al., 2016).

A community-based participatory program that educated participants on lifestyle modifications was effective in decreasing blood pressure readings among AA patients within a six-month period (Zoellner et al., 2014). The study sample included 269 participants of which 94% of them were AAs. A lifestyle educational intervention sessions that emphasized diet and exercise decreased participants' BP significantly ($P < 0.0002$). Their mean SBP decreased from 126.0 ($SD = 19.1$) pre-intervention to a mean SBP of 119.6 ($SD = 15.8$) post-intervention while the mean DBP decreased from 83.2mmHg ($SD = 12.3$) to 78.6 ($SD = 11.1$) (Zoellner et al, 2014).

Another study by Brennen & Williams (2013) indicates that nutritional education and exercise counseling provided to AA women caused significant improvement in their blood pressure readings, confidence to exercise, knowledge about hypertension disease process and life

style modifications. In a one group, quasi-experimental design 16 participants from southeast Florida participated in the lifestyle educational intervention, but only 11 of them returned for their post-intervention evaluation. The average age of the participants was (M = 51). Pre-and post-intervention analysis was done using a paired sample t test. Their mean SBP decreased from 151mmHg to 131mmHg while their DBP decreased from 90mmHg to 76mmHg (Brennen & Williams, 2013).

A cluster, randomized trial by Beune et al. (2014) evaluated the effectiveness of using culturally appropriate patient educational intervention in lowering blood pressure in patients of African origin. A sample of 139 patients from four Dutch primary care centers were organized into an intervention and a control group (intervention n = 71, control n = 68). At the end of six months, the average SBP and DBP of participants dropped by 10mmHg and 5.7 mmHg in the intervention group and by 6.3mmHg and 1.7mmHg in the control group respectively (Beune et al., 2014). The result was obtained after controlling for age, sex, hypertension duration, education, baseline measurement and clustering effect (Beune et al., 2014).

In a quasi-experimental study with 40 hypertensive patients, 21 intervention, 19 control group, the interventional group received education on lifestyle interventions including diet and exercise. At the end of the six-month period, the intervention group had an average SBP reduction of 10.8mmHg, but there was no significant improvement in the diastolic blood pressure reading of participants (LauziÃ¨re et al., 2013). Anoher study by Baker et al (2016) shows that an adoption of the DASH diet was effective in decreasing participants SBP by an average of 5.5 mmHg and DBP by 3.0 mmHg.

Rigsby (2011) investigated the effect of lifestyle education in patients with hypertension. The results revealed that out of the 24 participants that submitted their daily blood pressure logs,

96% (n=23) of them had improved blood pressure readings. The sample consisted of 16 African American women between the ages of 25 and 65 years from southeast Florida. Also, Schoenthaler et al (2011) showed an improved lifestyle behaviors such as increased physical activity, and increased intake of fruits and vegetables among participants within a 6 month of group-based counseling and motivational interviewing.

Theoretical Framework

Nola Pender's Health Promotional Model which was established in the 1982 is a middle range theory that provides a foundation for nursing practice. The theory focuses on individual characteristics and experiences including behavior-specific cognitions, affect, behavioral outcomes and prior behaviors and personal factors (Pender et al., 2011). Other areas of emphasis include behavior-specific cognitions and affect such as perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity-related affect, interpersonal influences such as social support, and situational influences (Pender et al., 2011). HPM emphasizes positive behaviors by building upon previous accomplishments and failures. It promotes social empowerment through evidence-based patient education that promote healthy choices by individuals and communities (Miller, 2013).

Five key concepts in the HPM include the person, environment, nursing, health and illness. Nursing is the facilitator that helps to promote a positive goal directed health behavior in a person or patient with an illness or chronic health condition such as hypertension. APRNs and other health care professionals are in a unique position to promote health in the vulnerable populations by using the Health promotional models which includes identifying barriers, empowering individuals through knowledge, as well as encouraging and educating positive health behaviors (Thalacker, 2011). Since hypertension can be prevented or controlled with

healthy lifestyle modifications, the HPM is used to motivate patients to attain their optimal personal health (Marshall et al., 2012).

Communication between clinicians and their patients influences variables such as patient understanding, clinician–patient agreement on treatment and adherence to treatment which will directly impact patient outcomes (Street, 2013). HPM is used to reinforce positive healthy behaviors in participants by providing them with educational brochure on healthy lifestyle behaviors counseling them on low salt, low fat, heart healthy diet, increased physical activity, medication adherence, smoking cessation and moderate alcohol consumption.

HPM is used to promote healthy behaviors that will impact blood pressure readings in the vulnerable population. The model empowers patients to learn new healthy behaviors which enables them to assume self-responsibility in the management of their high blood pressure. Such practice helps to prevent or decrease complications arising from uncontrolled high blood pressure including cardiovascular disease, stroke and renal failure. Hence, HPM promotes responsible decision-making regarding healthy lifestyle choices in participants' daily lives (Miller, 2013).

Chapter III: Methodology

Overview

The purpose of the CSP is to evaluate the effectiveness of an educational intervention in lowering blood pressure (BP) readings among African American (AA) adults from the African American Ministry which is a subgroup within the CCC. Twenty AAs participated in the study. Blood pressure readings were taken pre-and post-intervention to determine if the educational intervention had any positive impact on participants' blood pressure readings. Statistical analysis was done at the end of the study period using baseline pre-intervention and post intervention data

taken at the end of four weeks. The findings of the study implied that evidence based patient education was effective in lowering blood pressure readings among AA adults. Participants had a significant improvement in their blood pressure readings with an average of 6.20mmHg decrease in SBP ($P < 0.05$) and an average of 6.55mmHg decrease in DBP (($P < 0.05$).

Purpose Statement

The purpose of this project is to use patient educational intervention on lifestyle modifications such as diet and exercise to decrease blood pressure readings among hypertensive AA adult patients aged 18-65 years old. The empirical research question is, does evidence based patient education on lifestyle modifications decrease blood pressure readings among African American adult patients within a four-week period?

Study Design

The purpose of the project was to evaluate the effect of a new teaching on AA participants with hypertension and determine how such educational intervention impacts participants' blood pressure readings. The CSP adopted a one group quasi-experimental design with pretest posttest measurements of participants' blood pressure readings. The one-group pretest–posttest is the most dominated design used in the study of nursing education interventions (Spurlock, 2018). The design (Y_1 X Y_2) tests the effect of an independent variable X on a dependent variable Y that is measured at Time 1 and Time 2 (Knapp, 2016). Hence, the measurement of the pre-and post-blood pressure readings allowed the PI to calculate a paired sample t-test which helped to evaluate the effectiveness of an educational intervention in improving participants' blood pressure readings. Unlike the one experimental, one control design, participants are not randomly assigned, with each group pretested and posttested (Knapp, 2016).

Population and Sample

The population for the study are AA parishioners from the CCC in Houston, Texas who have a history of hypertension and are currently taking antihypertensive medications. Parishioners are defined as registered members of the church who regularly attend church at the CCC and have hypertension. A convenience sampling of 20 AA (n = 20) adult parishioners were drawn from the ACM which is a subgroup within the CCC. The inclusion criteria were being AA adult, between the ages of 18 and 65 years old with a history of hypertension and currently taking one or more antihypertensive medications. Exclusion criteria were being younger than 18 or older than 65 years old. Every participant that met the criteria was provided with the standard Brandman Bill of Rights and an informed consent.

Data Collection

The Brandman University BUIRB approved all project procedures. An announcement was made at the end of each church service asking ACM parishioners who were interested in participating in the project to write down their contact information on the sign-up sheet at the door. A total of 31 parishioners listed their names and contact phone numbers on the sign-up sheet. The potential subjects were contacted by the PI either in person or by phone to explain the details of the study and ask them to participate if they meet the inclusion criteria. Participants were given full details of the study including the purpose of the study which is using educational intervention on lifestyle modifications to lower blood pressure readings.

A total of 20 individuals who met the inclusion criteria agreed to participate in the project. They were provided with the standard Brandman Bill of Rights and informed consent with a detailed explanation of participant's rights, risks involved and the purpose of the project. They were informed that participation in the project was voluntary and that participants were free

to opt out at any time. They were also informed that participant's confidentiality will be maintained throughout the study. Participants received a pre-intervention blood pressure checks which were recorded on a worksheet.

The PI ensured that participants were comfortable during the entire period. Participants were given an opportunity to relax for about five minutes prior to each blood pressure check. A fellow member of the Catholic charismatic ministry who is also a family nurse practitioner assisted the PI with the blood pressure checks. Participants received hypertension educational brochure, face to face education on hypertension disease process and major complications associated with uncontrolled blood pressure such as stroke, cardiovascular disease and renal failure.

The PI used patient educational brochure to educate participants on modifiable risk factors and healthy lifestyle behaviors aimed at decreasing blood pressure readings. Information was given on low salt heart healthy diet, exercise, smoking cessation, medication adherence, and reducing alcohol consumption. Patients were counseled to engage in moderate to vigorous physical activities for at least 30 minutes per day, five days a week for a total of 150 minutes a week. At the end of the educational session, questions were entertained from participants to ensure understanding of contents provided to them. Participants were given the PI's phone number and they were encouraged to contact the PI for any further questions that they may have during the project period. PI also followed up with a weekly phone call to each participant to encourage compliance in the adoption of healthy lifestyle choices. Participants returned at the end of 4 weeks for their posttest blood pressure checks. Each blood pressure check was again done with a dinamap blood pressure machine and an appropriate sized cuff after the participant rested quietly for about 5 minutes.

Data Analysis

Data analysis of the study was done with the use of Statistical Package for Social Sciences (SPSS), version 25.0 and descriptive statistics. Data from pre-and post-intervention BP readings were analyzed in the paired sample t-test to evaluate for a significant reduction in participants' blood pressure readings following the administration of a healthy lifestyle educational intervention. Descriptive statistics was used to describe variables such as participants' age, gender, marital status, employment status and educational level. Age was measured as a scale variable while education was measured as an ordinal variable representing participants' level of educational attainment. Married is a nominal variable used to represent participants' marital status such as being married or single. Finally, employment which is also a nominal variable was used to represent participants' employment status.

Summary

A one group pretest-posttest design was used to evaluate the effectiveness of lifestyle educational program in decreasing blood pressure readings among AA adult parishioners from the CCC. A convenience sampling of 20 participants was recruited for the project. A pre-and post-intervention blood pressure measurement was done. Data analysis was done using the SPSS version 25 to calculate a paired sample t test which was used to evaluate the effect of the treatment on the participants.

Chapter IV: Results

Data analysis was done using the SPSS (version 25). As shown in table 1, all the participants in the project were AAs (100%). One half of them were males (50%). The average age of participants was 41.1(*SD* = 11.1). One half of them were married (50%). More than half of the participants had high school diploma (55.0%) and majority of the them were employed

(70.0%). All 20 participants received one lifestyle educational counseling session. Participants' blood pressure was checked at baseline pre-intervention and after four weeks' post-intervention. All 20 participants returned at the end of the four weeks for their post-intervention blood pressure checks and there were no drop-outs.

The pre-intervention and post-intervention blood pressure readings were used for analysis. Participants' mean systolic blood pressure (SBP) decreased from 140.3 mmHg (*SD* =7.2) pre-intervention to 134.1mmHg (*SD* = 5.9) post-intervention (table 2). Their mean diastolic blood pressure (DBP) decreased from 82mmHg (*SD* = 6.1) pre-intervention to 75.5mmHg (*SD* = 5.1) post-intervention (table 2).

M systolic BP before = 140.3 (SD= 7.2) and M systolic BP after = 134.1 (SD = 5.9) (*t(19)* = 4.80, $p < .05$, 95% CI [3.49, 8.91].

M diastolic BP before = 82.0 (SD = 6.1) and M diastolic BP after = 75.5 (SD= 5.1), (*t(19)* = 5.19, $p < .05$, 95% CI [3.91, 9.19].

14 participants reported engaging in moderate to vigorous physical activities for at least 30 minutes every day and five days a week. Three participants stated that they exercised for 30 minutes three days a week while the remaining 3 participants exercised for less than three times a week and gave lack of time as a reason for not exercising much. However, all twenty participants reported healthy eating by cutting down on salt, carbohydrate, and fatty food intake, and eating lots of fruits and vegetables. Generally, they all reported personal satisfaction with the educational materials provided to them. More than half of the participants verbalized increased awareness of self-care responsibility in the management of their high blood pressure.

Conclusion

- The 'null hypothesis' might be: H0: There is no difference in mean pre- and post-intervention blood pressure readings.
- The 'alternative hypothesis' might be: H1: There is a difference in mean pre- and post-intervention blood pressure readings.

From the paired t-test, t = 4.80, and $p = 0.000$ in Pre-SBP to Post-SBP; t = 5.19, and $p = 0.000$ in Pre-DBP to Post-DBP; which means that there is a very small probability of the null hypothesis of no difference in mean pre-and post-intervention BP readings occurring. The null hypothesis is therefore rejected, since $p < 0.05$ ($p = 0.000$). Based on the t and p values, there is a convincing evidence that educational interventional program was successful in decreasing participants blood pressure readings.

Table 1

Descriptive Statistics of Variables of Interest

Variables of Interest	Frequency (%)	Mean (*SD)*
Age		41.1 (11.1)
Pre-intervention SBP		140.3(7.2)
Post-intervention SBP		134.1(5.9)
Pre-intervention DBP		82.0(6.1)
Post-intervention DBP		75.5(5.1)
Gender		
Male	10(50.0)	
Female	10(50.0)	
Marital status		
Single	10(50.0)	
Married	10(50.0)	
Educational Level		
High school diploma	11(55.0)	
Some college	6(30)	
Undergraduate/Graduate	3(15.0)	
Employment status		
Employed	14(70.0)	
Unemployed	6(30)	

Table 2
Paired Samples T-test

	Mean	Std. Deviation	Std Error Mean	95% Confidence of the difference Lower Upper	t	df	Sig (2 tailed)
Pre_SBP - Post_SBP	6.20	5.78	1.29	3.49 8.91	4.80	19	.000
Pre_DBP – Post_DBP	6.55	5.64	1.26	3.91 9.19	5.19	19	.000

* $p < .05$.

Chapter V: Discussion

Implications

The results of the project provide an evidence that patient education on healthy lifestyle behaviors significantly decreases blood pressure readings. It was observed that participants had a significant improvement in their blood pressure readings with an average of 6.20mmHg decrease in their SBP ($P < 0.05$) and an average of 6.55mmHg decrease in DBP (($P < 0.05$). Evidence based patient education on lifestyle choices such as diet, exercise, smoking cessation, and decreasing alcohol consumption was effective in decreasing blood pressure readings amongst AA adults. Improvement in BP readings will decrease complications and healthcare burden associated with uncontrolled high blood pressure. The results of the CSP are consistent with the findings from previous authors (Zoellner et al., 2014; Brennen & Williams, 2013; Beune et al., 2014) who found out that educational program on lifestyle intervention was effective in decreasing blood pressure readings in participants.

The results of the CSP is also clinically significant in preventing complications of hypertension in AAs. Daniels (2016) believes that an early intervention aimed at educating a

population at risk would most likely prevent complications, improve outcomes and quality of life. The findings of the project explain the importance of patient education in hypertension management. It implies that providers need to continually reinforce patient teaching on lifestyle education during each follow up visit or encounter. Clinicians need to help patients understand the relationship between healthy lifestyle choices and managing their hypertension.

Community awareness on disease process, lifestyle modifications and complications of the disease if left untreated is absolutely very important. Participants who assume self-responsibility in the management of their chronic diseases are likely to have a decreased rate of complications from the disease. They are more likely to teach their family and friends such healthy lifestyle behaviors which will benefit the society in general due to overall reduced healthcare costs. The project will likely add to the existing body of knowledge by educating participants and others about the benefits of making healthy lifestyle choices as a key to improving blood pressure readings and overall quality of life in patients suffering from hypertension and other chronic diseases.

Supporting Evidence for Advanced Practice Registered Nursing

The advanced practice registered nurse practitioner (APRN) program was developed by Loretta Ford and Henry Silverman back in 1967 with the goal of increasing patient's access to bridge healthcare disparity (Kippenbrock, 2017). APRNs work in different settings including primary care and rural underserved communities where they help in the prevention and management of chronic disease conditions. They play a major role in patient counseling on life style interventions and self-care responsibilities to prevent complications from chronic diseases such as hypertension, diabetes, hyperlipidemia and other chronic disease conditions.

According to Himmelfarb et al. (2016) the role of nurse practitioners in hypertension management involves all aspects of care, including detection, diagnostics medication management; patient education, counseling, referral, follow up and coordination of care. APRNs champion evidence based practice in the prevention and management of high blood pressure. They translate external evidence or knowledge from research into evidence-based practice. APRNs engage clinician expertise and patient preferences in the promotion of high quality patient care ensuring patient and family satisfaction. Kippenbrock (2017) argues that APRNs have similar outcomes as medical doctors in the management of chronic disease conditions such as hypertension, diabetes and elevated lipids, through pharmacologic and nonpharmacological interventions including lifestyle patient education. Such contribution by APRNs helps to decrease complications from hypertension in the communities.

Limitations

Participants were recruited through a convenience sampling and there was no random assignment. Results received from participants on adherence to lifestyle behaviors were self-reported which may not be reliable or valid. The study data was limited to an ethnic minority which may have reduced the generalizability of the findings compared to other ethnic groups. Another limitation to this CSP is that some of the patients who were probably non-compliant with their antihypertensive medication regimen may have suddenly resumed taking their medications which could account for the significant improvement in their blood pressure readings. Warren-Findlow (2012) explains that African Americans are generally less adherent to their antihypertensive medications than their Caucasian counterparts. Future studies may consider the use of technology such as text messaging system to send weekly educational

information to patients in addition to the face to face counseling and printed materials given to them.

Sustainability

Translating research evidence into clinical practice is fundamental to a safe, transparent, effective and an efficient healthcare provision which helps to meet the expectations of patients, families and the society (Curtis et al., 2018). Doctor of nursing scholars are champions in evidence-based practice and they play a major role in the prevention and management of chronic diseases. Hartley & Repede (2011) argue that even though half of the patients with hypertension are on medication, only a third have their blood pressure under control. They further state that lifestyle modifications are associated with decreased hospitalization and medical costs from treating hypertension and complications of the disease. Hence, there is continued need to stress on improving lifestyle behaviors in this ethnic group.

The results of the CSP indicate that healthy lifestyle interventions improve blood pressure readings. Consequently, there is need to emphasize on sustainable change by making the brochure available to others who need it. This positive change could be replicated within the entire church and community at large. The spiritual director of the CCC has requested for more hypertension educational brochures to be printed and distributed to other parishioners who may be interested in learning healthy lifestyle choices. The patient educational brochure could also be distributed to different churches and gatherings even among other ethnic groups to help promote positive healthy behaviors and outcomes within the community, especially due to the cost effectiveness of the project. It could also be distributed to patients within the primary care settings. Such outreach program helps to promote a healthy community which will decrease the

overall cost of treating complications of uncontrolled hypertension including cardiovascular disease, stroke and renal failure

Dissemination

Dissemination relates to the method of sharing research findings with stakeholders or individuals with similar needs. It requires excellent communication skills. The PI will use the educational intervention as a pilot program in other churches within the community. The hypertension brochures will be distributed to local churches and other African American organizations within the community. Lifestyle patient education delivered in association with the church have been shown to promote behavioral changes in the African American population (Gross et al., 2013). The brochures can be disseminated through clinical or primary care settings. Excellent dissemination skills increase the sustainability of the project.

Conclusions

In this study, the PI evaluated the effect of evidence based patient educational intervention on decreasing blood pressure readings among 20 African American adults from the ACM of the CCC. It was observed that participants had a significant improvement in their blood pressure readings with an average decrease of 6.20mmHg in their SBP ($P < 0.05$). and an average decrease of 6.55mmHg in DBP ($P < 0.05$) Educational intervention on lifestyle choices including diet, exercise, smoking cessation, decreasing alcohol consumption was effective in decreasing blood pressure readings in AA participants.

Improved BP readings will decrease the economic burden of hypertension which is the most expensive cardiovascular disease, (Moughrabi, 2017). Evidence based patient education

creates awareness of the disease process and major complications associated with it while at the same time empowering individuals to take full self- responsibility in the management of their high blood pressure and other chronic diseases. Therefore, early intervention aimed at educating the population at risk age is of extreme importance to prevent complications arising from the disease to improve outcomes and quality of life (Daniels, 2016).

Incorporating DNP Essentials

DNP Essential 1: Scientific Underpinnings for Practice

DNP essential I reflects the use of knowledge from ethics, the biophysical, psychosocial, analytical, and organizational sciences as a foundation for nursing science and the use of nursing theories to develop new practice approaches in patient care delivery (AACN, 2006). Nursing theorists such as Nightingale, Henderson, Hall, Orem, Johnson, Peplau, Roy, Levine, Rogers, Newman, Parse, Leininger, Nola Pender have established a foundation for nursing practice (Zaccagnini & Waud White, 2011). Nola Pender's health promotional model (HPM) employs three main concepts used in promoting healthy behaviors in clients or participants which includes individual characteristics and experiences, behavior-specific cognitions and affect and behavioral outcomes (Padden et al., 2013).

The PI implemented an educational intervention based on Nola Pender's HPM on healthy lifestyle behaviors used to effect positive changes on blood pressure readings among African American adults. Such education helps to equip participants with the basic knowledge needed to assume self-responsibility in the management of their high blood pressure. This includes eating low-salt, low-fat diet heart healthy diet rich in fruits and vegetables and engaging in increased moderate to vigorous physical activity Other interventions include smoking cessation, moderate alcohol consumption and adherence to BP medication regimen.

DNP Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking

DNP essential II prepares clinicians for organizational and systems leadership including quality improvement and systems thinking (AACN, 2006). The PI assumed a leadership position and organized meetings with the priest and other leaders of the CCC to discuss details of the project prior to gaining a site approval. The PI also organized the volunteers and parishioners that participated in the project. An outstanding leadership role was exhibited throughout the planning and implementation phase of the project. DNP essentials 2 seeks to assess care delivery methods that meet present and future needs of patient populations based on scientific findings while ensuring quality health care and patient safety (AACN, 2006).

In the African American community, hypertension is a common chronic condition where patients are often non-compliant with treatment. Beune et al (2014) believes that poor adherence to prescribed medications and lifestyle recommendations is the most significant modifiable cause for inequalities in blood pressure control and the complications associated with the disease in AAs. The PI evaluated the effect of incorporating a diet and exercise program on participants' blood pressure readings by measuring and analyzing pre-and post-intervention readings.

DNP Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

DNP essential III relates to the translation of research in practice, the evaluation of practice, improvement of the reliability of health care practice and outcomes (AACN, 2006). The PI conducted a literature search on previous studies showing that evidence-based patient education was effective in decreasing blood pressure readings among AA patients diagnosed with hypertension. Such statistical evidence encouraged the PI to use a similar approach in

educating AA participants in the CSP. Also, a study conducted by Zoellner et al (2014) showed that a community-based participatory research (CBPR) efforts that educated participants on lifestyle modifications was effective in significantly improving blood pressure readings among AA patients within a six-month period. Curtis et al (2018) believe that such knowledge and evidence from strong scholarly methods drive clinical practice and decisions, that help to improve healthcare delivery and patient outcomes.

DNP Essential 1V: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care

The recent use of electronic medical record (EMR) and clinical decision support systems (CDSS) in disease management have become a common practice among APRNs and other clinicians. The use of technology enabled the PI to conduct a literature search and obtain information that aided in carrying out the CSP. The SPSS used for data analysis is another form of information technology that was used to organize the CSP data and perform both descriptive statistics and paired sample t-test. Such analysis helped to evaluate the effect of lifestyle education on participants' BP readings.

Essential V: Health Care Policy for Advocacy in Health Care

DNP essentials stress on competencies essential for improving and sustaining clinical care and health outcomes, eliminating health disparities, and promoting patient safety and excellence in care (AACN, 2006). Health policy impacts care delivery issues such as health disparities, cultural sensitivity, ethics, access to care and teaches lifestyle modifications which attempts to bridge healthcare disparity in the AA ethnic minority group.

The PI acts as an advocate in addressing the needs of the AA community by engaging participants in an evidence based teaching about hypertension disease process, and management,

that enables them to assume self-responsibility in the management of their chronic disease condition. Research studies show that such behavioral and lifestyle modifications have been effective at reducing adverse cardiovascular disease (CVD) outcomes among minorities with hypertension (Long et al., 2014). Participants in the project were encouraged to follow up routinely with their primary care providers while others who did not have a regular provider or medical insurance were given available community resources to aid them in obtaining care for their disease management.

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