

Winter 12-14-2013

Efficacy of Motivational Interviewing and Centering to Increase Physical Activity and Dietary Adherence in African Americans with Pre-hypertension and Hypertension

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Dedication

This capstone project is dedicated to my family, husband Victor Okereke and my children, Tina, Victoria and Victor I Okereke. They were my biggest cheerleaders, without their love and support this would have been difficult to achieve. Thank you for being there every step of the way.

Acknowledgement

Firstly, I would like to thank my chair Dr. Deborah MacMillian for her enormous help, support and guidance that was instrumental in getting this project completed.

Secondly, thanks to my committee members Dr. Genie Dorman and Mrs. Jeanne Sewell for their support and help. Finally, I will like to thank the many churches that allowed me to recruit participants from their congregations..

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Abstract Title: Efficacy of Motivational Interviewing and Centering to Increase Physical Activity and Dietary Adherence in African Americans with Pre-hypertension and Hypertension.

Objectives: The purpose of this study was to evaluate the motivation, subjective norms, perceived control and barriers associated with self-care behaviors of African Americans necessary to prevent the development of hypertension or to improve the control of all ready existing hypertension. Motivational interviewing was used to identify and address barriers to lifestyle modifications. The feasibility of using a Centering Care Model to deliver interactive educational sessions to empower individuals to take an active role in their health care was evaluated.

Specific Aim I: To assess the impact of motivational interviewing (MI) on the participants willingness to engage in physical activity and adherence to DASH (specify what DASH stands for) diet for blood pressure control.

Clinical Question 1. Will motivational interviewing (MI) have an impact in the participant's willingness to engage in increase physical activity and adherence to dash diet for blood pressure control?

Clinical Question 2. Will increasing physical activity and adherence to DASH diet be associated with a decrease in BMI and both systolic and diastolic blood pressure?

Specific Aim II: To assess the feasibility of using a Centering Care Model (CCM) to deliver interactive educational sessions to empower the participants to take an active role in their health care.

Assumptions:

The followings are the assumptions that were associated with this study:

1. The adoption of lifestyle modifications including increased physical activity and adherence to the Dietary Approaches to Stop Hypertension (DASH) diet would result in improved blood pressure control.
2. Both physical activity and dietary changes compliance would result in weight reduction.
3. The Centering Care Model would be an effective and efficient way to provide education to participants in a primary care setting.

Significance of the Problem: African Americans have a higher prevalence and severity of hypertension than any other racial group in the United States. The prevalence rate of hypertension in African American males is 43.0% and 45.7% in females compared to 33.9% in Caucasians males and 31.3% in Caucasian females.

Design: Quasi-experimental study

Setting: A primary care setting in the Southeastern United States

Participants: Twenty-nine (n = 29) African American individuals with the diagnosis of pre-hypertension or hypertension.

Methodology: This study compared self-reported motivation, subjective norms, perceived control and barriers associated with self-care behaviors associated with hypertension before and after a 4-week Centering Care Educational intervention. The Theory of Planned Behavior was used to guide this study.

Result: Participants reported a statistically significant increase in how often they exercised prior to (M = 3.48, SD = 1.50) and after completing the educational sessions (M = 4.59, SD 1.26), $t(28) = 4.70, p \leq 0.00$. Additionally, participants reported a significant increase in the length of time they exercise from baseline (M = 2.55, SD 1.40) and the final measure (M = 3.17, SD = 0.84), $t(28) = 3.18, p \leq .03$. Participants reported a statistically significant decrease in the difficulty they perceived regarding regular exercise before (M 3.76, SD 1.24) and after the sessions (M 4.17, SD 1.33), $t(28) = 2.85, p = 0.008$.

Additionally, the participants reported eating fast food significantly less often from baseline (M = 3.07, SD = 1.73) to the final measure (M = 2.62, SD = 1.32), $t(28) = 2.28, p \leq 0.03$. Motivation to exercise and make dietary changes showed significant improvement following the educational sessions. The participants reported statistical significant scores for motivation to exercise at initial time measure (M = 3.07, SD = 2.21) and at final measure (M = 2.10, SD 1.92, $t(28) = 3.29, p \leq 0.003$ and motivation to make dietary changes at initial time measure (M = 2.93, SD = 2.11) and at final measure (M = 2.06, SD 1.87, $t(28) = 3.09, p \leq 0.004$).

Furthermore, result showed statistical significant decrease in body mass index (BMI) from initial time measure (M = 29.60, SD = 4.62) to final measure after the 4-week educational sessions (M = 29.0, SD = 4.39, $t(28) = 6.13, p \leq 0.00$. In addition, baseline blood pressure measurement of systolic (M = 128, SD = 6.36) and diastolic (M 84, SD = 4.03 compared to final measure of systolic (M = 123, SD = 7.40) and diastolic (M = 80, SD = 5.13), $t(28) = 5.67, p \leq 0.00$ showed a significant decrease.

Limitations of the Study:

Several limitations are apparent in this study. The participants represented a convenience sample and were not randomly assigned. Recruitment was through black churches, flyers and word of mouth. The sample does not represent the totality of African Americans. Furthermore, the instrument for this study is new and has not been used in this population. In addition, the results are based on self-report by the participants, which may not reflect the magnitude of their participation. Another limitation for this study is the small sample size (n=29).

Conclusion: Results from the pilot study indicated that motivational interviewing and Centering Care educational sessions are effective in helping African Americans with pre-hypertension and hypertension make effective lifestyle changes that improved their blood pressure.

Chapter I

Background

Pre-hypertension poses a significant health risk globally and nationally in adults. Pre-hypertension is defined as systolic blood pressure (SBP) between 120 and 139mm Hg and a diastolic blood pressure (DPB) between 80 and 89mm Hg and has been shown in research to be a precursor to hypertension. Almost 30% of the adults in the United States are reported to have pre-hypertension (Centers for Disease Control and Prevention 2012). The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC 7, 2003) identified risk factors for a pre-hypertensive state to include physical inactivity, body mass index (BMI) greater than 30, excessive alcohol intake, excessive dietary sodium and an inadequate consumption of fruits and vegetables.

Non-pharmacological therapies recommended to treat pre-hypertension include: increased physical activity, consumption of fruits and vegetables; decreased dietary salt and reduction in excess weight. The JNC 7 report advises that uncontrolled pre-hypertension can progress to hypertension in a relatively short period of time.

Significance of the Problem

Hypertension is a major health problem worldwide. It significantly increases the risk for heart disease, kidneys disease and stroke (Scott, Spees, Taylor, & Wexler, 2010; Simon, H., 2012). The prevalence of hypertension is increasing at an alarming rate. Globally there are approximately one billion people affected with hypertension and an estimated increase to 1.56 billion adults by 2025 (World Heart Federation, 2012). It is estimated that 76.4 million adults in the United States have hypertension (American Heart Association, 2012).

In 2011 Georgia's prevalence rate of hypertension was 32.3% (Trust for Health American, 2013) The Centers for Disease Control and Prevention (CDC) estimated that hypertension lead to almost \$131 billion annually in health care cost, medications, and another \$25 billion in workplace absenteeism (CDC, 2012). The financial burden attributed to hypertension in the United States is staggering.

African Americans have a higher prevalence and severity of hypertension than any other racial group in the United States (JNC 7, 2003). The prevalence rate of hypertension in African American males is 43.0% and 45.7% in African American females as compared to 33.9 % in Caucasian males and 31.3% in Caucasian females (American Heart Association, 2012). Studies suggest racial/ethnic and/or socioeconomic disparities are contributors to the prevalence of hypertension and related health complications such as heart disease, stroke, chronic and end stage kidney disease seen in African Americans (Morenoff et al., 2007; Keenan & Rosendorf, 2011).

An increase in weight with a BMI of greater than 30kg/m² has been established as an independent risk factor for hypertension (JNC 7, 2003). Being overweight or obese is more prevalent in African Americans as compared to Caucasians. African American men and women are less likely to be physically active than Caucasian men and women (Kruger, Ham, & Kohl, 2005; Peterson, 2011; Scott, et al., 2010). Being overweight or obese and physically inactive are important risk factors that can contribute to the prevalence of morbidity and mortality from hypertension in African Americans. Although hypertension is disproportionately high in African Americans, information is limited regarding their knowledge of self-care behaviors necessary to control blood pressure (Peters, & Templin, 2008). The development of interventions specific to the African Americans is imperative to

eliminate the morbidity and mortality associated with uncontrolled blood pressure among this population.

Purpose of the study

The purpose of this study was to evaluate the motivation, subjective norms, perceived control and barriers associated with self-care behaviors of African Americans necessary to prevent the development of hypertension or to improve the control of existing hypertension. Motivational interviewing was used to identify and address barriers to lifestyle modifications. The feasibility of using a Centering Care Model to deliver interactive educational sessions to empower individuals to take an active role in their health care was evaluated.

Specific Aim I

To assess the impact of motivational interviewing (MI) on the participants willingness to engage in physical activity and adherence to DASH diet for blood pressure control.

Specific Aim II:

To assess the feasibility of using a Centering Care Model (CCM) to deliver interactive educational sessions to empower the participants to take an active role in their health care.

Assumptions:

The following are the assumptions that were associated with this study:

1. The adoption of lifestyle modifications including increased physical activity and adherence to the Dietary Approaches to Stop Hypertension (DASH) diet would result in improved blood pressure control.

2. Both physical activity and dietary changes compliance would result in weight reduction.
3. The Centering Care Model would be an effective and efficient way to provide education to participants in a primary care setting.

Clinical Question 1.

Will motivational interviewing (MI) have an impact in the participant's willingness to engage in increased physical activity and adherence to dash diet for blood pressure control?

Clinical Question 2.

Will increasing physical activity and adherence to DASH diet be associated with a decrease in BMI and both systolic and diastolic blood pressure?

This quasi-experimental study was conducted in a primary care setting comparing self-reported motivation, subjective norms, perceived control and barriers associated with self-care behaviors of African Americans (AA) associated with hypertension before and after a 4- week Centering Care Educational intervention. The Theory of Planned Behavior was used to guide this study.

Theoretical Framework

The Theory of Planned Behavior (TPB) conceptual framework guided this study. It was used to gain understanding of factors influencing individuals' intent or lack of intent to engage in behaviors that can promote health including an increase in physical activity and dietary changes. In 1991, Icek Ajzen, a psychologist developed the theory for the purpose of exploring the predictive nature of human behavior.

The Theory of Planned Behavior has a basic assumption that an individual's intention towards a behavior is influenced by their attitude towards performing that

behavior, subjective norms and perceived behavioral control (Ajezi, 1991). Subjective norms in this study focus on how favorable or unfavorable the people that the participants care about view the start of physical activity and dietary adherence. Their view could determine the participant's intention in performing the activities. In addition, the ease or difficulty in which the participant perceived performing these activities determines its performance. Figure of the TPB is located in Appendix I

Research suggests that the majority of African Americans do not believe that lack of exercise and obesity were causes of high blood pressure (Scott, et al., 2010). Therefore, there is a disconnect in the importance of performing these self-care practices necessary for the control of blood pressure. In addition, 79% of African Americans surveyed perceived an increase in physical activity and weight loss as the most difficult lifestyle modifications to adopt in order to reduce high blood pressure (Scott, et al., 2010) Motivational Interviewing was used to assess the willingness of the participate to engage in increased physical activity and to make dietary changes.

Centering Care Model (CCM)

The Centering Care Model was used in this study to guide the delivery and implementation of the intervention. Centering health care has been shown to be an effective model of care delivery for antepartum care, well childcare and for certain chronic diseases such as diabetes mellitus (Walker & Worrell, 2008). It is an innovative program in which the participants meet together in a group setting to learn with each other and from one another regarding self-care skills and personal goal setting. The participants a facilitated discussion and the formation of a support network results, in the achievement of goals that would be otherwise unattainable by the individual alone (Schindler Rising, S. 1998).

Research suggests that the Centering Care Model is more effective in promoting a positive outcome when compared with traditional care (Walker, & Worrell, 2008; VNA Health Care, 2011).

Components of the Centering Care Model that differ from traditional care are as follows: patient-centered healthcare visits between 90 to 120 minutes are allocated for interactive educational sessions, participants are empowered to take an active role in their health care by monitoring their own blood pressure and weight prior the start of each visit as well as being responsible for recording this information on their chart. Each participant also has individual time with the healthcare provider to address private concerns and questions before the beginning of the group visit. An example of the Centering Care Model can be found in appendix II

Conclusion

The prevalence of hypertension is increasing at an alarming rate worldwide. African Americans are disproportionately affected at a greater rate than any other racial group. There are several modifiable risk factors that predispose individuals to hypertension including obesity, sedentary lifestyle, excessive alcohol intake, excessive sodium intake and an inadequate consumption of fruits and vegetables. The reversible of these factors can mitigate their effects, thereby decreasing or eliminating the morbidity and mortality associated with hypertension.

Chapter II

Literature Review

This chapter will provide a review of the literature on prevalence, awareness and non-pharmacological treatment of pre-hypertension. It discusses the efficacy of non-pharmacological therapies as the cornerstone for treating pre-hypertension. In addition, risk factors associated with the development of pre-hypertension will be discussed. Lastly, this review discusses the prevalence of hypertension in African Americans (AAs) and the perceived barriers that results in lack of blood pressure control.

Lifestyle Modifications and Pre-hypertension

The prevalence, awareness and management of pre-hypertension and hypertension have been well documented. The JNC 7 report identified modifiable risk factors that are shown to contribute to hypertension including: excessive body weight, increased sodium intake, physical inactivity, excessive intake of alcohol and inadequate consumption of fruits and vegetables. Moreover, this seminal report issued a recommendation that lifestyle modifications be adopted to mitigate these risk factors and their contribution to the development of hypertension. The important lifestyle modifications that are specifically recommended are: weight reduction (maintain body mass index range of 18.5 to 24.9Kg/m²), the adoption of the DASH eating plan including the consumption of diet rich in fruits and vegetables, low fat dairy products and a reduction in saturated and total fat, limited sodium intake to not more than 2.4 g per day, the engagement in at least 30 minutes of aerobic physical activity per day, and the limiting of alcohol consumption to no more than two drinks per day for men and one drink per day for women and light weight individuals (Chobanian et al. 2003).

Excess Body Weight

Maintaining a body mass index (BMI) of less than 25kg/m² is shown to help control blood pressure (JNC 7, 2003). African Americans have a higher rate of being overweight or obese than any other race in the United States, which increases their risk for the development of chronic diseases, including hypertension (Cowart, Biro, Wasserman, Stein, Reider, & Brown, 2010; JNC 7, 2003). The high rate of being overweight or obese in this population is attributed to traditionally poor dietary habits including consumption of more meat, high fat, high salt, high caloric foods and poor intake of fruits and vegetables (Cowart et al. 2010; Peters & Templin, 2008; Wexler, et al., 2009). African Americans are accustomed to the cultural and ethnic food choices that consist mainly of breaded fried meat, muffins, cornbread and starchy vegetables. Research suggests that these customary food choices lack adequate representation in the DASH diet guidelines (Spencer, et al., 2012). The traditional diet of AA's does not possess the nutritional requirements necessary to promote health and reduce blood pressure, and it may also increase the risk of obesity and hypertension among this group (Spencer, Jablonski, & Loeb, 2012; Wexler, et al., 2009).

There is a general assumption that cost of DASH diet creates a barrier to AA's adherence to the diet (Spencer, et al., 2012). Research indicates that while food items comprising the DASH diet costs only \$30.73 in low socioeconomic communities and \$40.20 in high socioeconomic communities, this food cost may still constitute an expense that the majority of AAs cannot afford (Young, Batch, & Svetkey, 2008). Commodity Food Assistance Programs implemented by the federal government renders help by supplementing the diet of low-income individuals and reduces the cost of eating by providing foods items including milk, canned vegetables, cereal, pasta, canned fruit, juices,

peanut butter, beans and cheese (Georgia Department of Human Services 2011). However, this nutritional assistance may actually contribute to the problem because canned vegetables and cheese have been shown to contain high sodium and canned fruits and juices are high in sugar (University of California San Francisco Guidelines for Low Sodium 2013).

Physical Inactivity

It is postulated that physical inactivity is noted more frequently in African Americans (Coulon et al., Kruger, Ham, & Kohl, 2005; Scott, et al., 2010). Lack of physical activity is an important contributor of the higher incidence and increased prevalence of obesity, hypertension and cardiovascular diseases in this population (Dubbart et al., 2010; Wilbur et al., 2008; Peterson, 2011). Studies suggest that various barriers including unsafe neighborhoods to be active, lack of community involvement, economic limitation, lack of motivation to exercise and busy daily lives are contributing factors to the physical inactivity seen in African Americans (Anthony-Peterson, 2011; Coulon et al., 2012). Sedentary lifestyle fosters weight increase and obesity. These are modifiable risk factors that occur in the African American population leading to persistent health disparities in cardiovascular disease and hypertension (Dubbart et al., 2010).

Lifestyle Modifications

Experts agree that lifestyle modifications including weight reduction, physical activity, reduction in dietary sodium, moderate alcohol intake, and adequate intake of fruits and vegetables are effective in blood pressure control. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC 7, 2003) suggests that engaging in physical activity such as brisk walking for at least thirty minutes per day most days of the week has been shown to lower systolic blood

pressure by an average of 4 to 9 mmHg. In addition, the report pointed out those individuals with weight reductions resulting in normal body weight with a body mass index (BMI) less than 25 kg/m² benefitted by lowering their systolic blood pressure by an average of 5 to 20 mmHg/10. Several studies emphasize the Dietary Approaches to Stop Hypertension (DASH) diet, which encompasses adequate intake of fruits and vegetable, low-fat dairy products and a reduction in total fat intake. The DASH diet was shown to be instrumental in controlling blood pressure with an average systolic blood pressure reduction of 8 to 14 mmHg (Appel et al., 2003; Sacks et al., 2001; Scott, et al., 2010; Bavikati et al., 2008 & JNC7, 2003).

Reduction in dietary sodium of not more than 2,400 mg per day is recommended to manage pre-hypertension and hypertension (JNC 7, 2003). Dietary sodium reduction produced an average systolic blood pressure reduction of 2 to 8 mmHg. In study by Sacks et al., (2001), effective reduction in sodium intake from high to intermediate level reduced the systolic blood pressure (SBP) by 2.1mm Hg in the control group and 1.3mm Hg in the DASH diet group. Further reduction of sodium from intermediate to low level demonstrated greatest control amongst the participants. Furthermore, research suggests moderate alcohol consumption resulted in an average decrease in systolic blood pressure of 2 to 4 mm Hg (JNC 7, 2003). Lifestyle modifications are efficacious in blood pressure control. Research indicates that its utilization can prevent pre-hypertension from progression to hypertension eliminating the morbidity and mortality associated with hypertension (JNC, 2003).

Although there is sufficient evidence to support the efficacy of lifestyle modifications in controlling blood pressure, the majority of individuals with pre-hypertension are not engaging in behaviors necessary to prevent progression to

hypertension. What is still to be determined is if this is due to lack of motivation, perceived barriers, or attitudes. Research suggests African Americans perceptions about self-care practices for blood pressure control and their lack of knowledge about the disease process has been shown to create barriers in providing effective care (Scott, et al., 2010). In addition, they are less likely to believe that physical inactivity and a BMI greater than 25 kg/m² are risk factors that can contribute to hypertension (Peters & Templin, 2008; Scott, et al., 2010). However, there is limited research, which identifies knowledge, attitudes, and self-care behaviors of African Americans necessary for blood pressure (Peters & Templin, 2008).

Motivational Interviewing as a Tool for Lifestyle Modifications

Motivation can play a role in an individual's ability to continue engaging in health promoting activity or any action. Motivational interviewing is person-centered and elicited talk that encourages the participants to move toward a positive behavior change. It is not confrontational or authoritative, rather it gives the individual the autonomy to see the importance of change and move beyond ambivalence towards a positive change (Miller & Rollnick, 2002).

Motivational Interviewing has four key principles that guide its utilization as a counseling technique that include the following: expressed empathy, development of discrepancy, rolling with resistance, and supporting self-efficacy (Miller, & Rollnick, 2002). Empathic communication is devoid of criticizing, blaming and judging while it fosters acceptance that encourages change. Developing discrepancy gives the individual an opportunity to present argument for change and allows the participants to see that the

present situation may not fit the value and what they would want their future to be. (Miller, & Rollnick, 2002).

The third principle of MI, rolling with resistance discourages confrontation and argument for change while it empowers the individual to take active role in their care and be the primary source in finding answers and solutions (Miller, & Rollnick, 2002). Lastly, supporting self-efficacy is a crucial component of facilitating change. The individual's belief that it is possible to change is an important motivator and a reasonably predictor of treatment outcome (Miller, & Rollnick, 2002).

Similarly, TPB postulates that the degree of perceived behavioral control, the ease or difficulty with which the behavior can be performed by an individual determines the intention. The stronger the intention the likelihood that a change will occur is greatly enhanced (Ajzen, 1991).

Research supports the efficacy of MI as a counseling technique that has significant effects in improving behaviors that promote health and well being (Van Keulen et al., 2011; Patrick & Williams, 2012). Motivational Interviewing can be incorporated into primary care practice and practitioners such as advance practice nurses, who are well-educated and skilled communicators in caring for patients, can integrate MI into their practice (Van Nes, & Sawtzsky, 2010). Several encounters with a patient can establish trust and serve as a strong foundation in which MI can be incorporated into the practice for an evidence-based outcome (Bishop & Jackson, 2013).

Motivational Interviewing has been used increasingly in many health related problems, including mental health disorders such as anxiety, eating disorders, and depression (Westra, Aviram, & Doell, 2011). It has shown promise in producing intrinsic

motivation that fosters the ability for an individual to resolve ambivalence and make a change. Participants in one study using adaptive motivational interviewing group had a greater increase in self-esteem and confidence in the ability to abstain from binge eating (27.8% compared with the control group 11.1%) (Cassin, Von Ranson, Heng, Brar, & Wojtowicz, 2008).

In addition, Carles et al., (2007) noted that MI contributed in motivating participants to make a positive change to exercise. Research also notes that the participants in behavioral weight loss program with an addition of MI sessions lost more weight and engaged more often in planned physical activity (Carles et al., 2007). This study utilized MI, and it was instrumental in motivating the participants to adopt healthy lifestyle changes geared towards controlling their blood pressure and managing their weight.

Theoretical Framework

The theoretical framework used for this study is the Theory of Planned Behavior (TPB)(Ajzen, 1991) to guide the understanding of factors that might influence individuals' intent or lack of intent to engage in behaviors that can promote health. The Theory of Planned Behavior has robust empirical evidence supporting its effectiveness in predicting behavior change. It postulates that individual's attitudes, subjective norms and perceived behavioral control are the key factors that determine if intentions to change a behavior combined with motivational factors can predict actual behavior.

Attitudes - Motivation

This is the degree in which an individual decides to change or not change the behavior in question (Ajzen, 1991). Attitudes towards a specific behavior can determine intention to change that behavior and attitude can predict behavior (Ajzen, 1991). Therefore,

a favorable attitude towards the behavior such as starting physical activity increases the intention and motivation that could result in the likelihood of its performance (Ajzen, 1991).

Subjective Norm

Individuals' belief about how others that they care about feel about the behavior determines the intention to change or not change the behavior in question. If social pressures favor performing the behavior, there is increased chance that the individual will engage in the behavior (Ajzen, 1991).

Perceived Behavioral Control

The difficulty or ease with which an individual believes a given behavior can be performed determines its performance. For example, the greater the perceived ease in which a participant believes starting physical activity would be, the more likely the intention will be to engage in the activity.

The Theory of Planned Behavior has been used extensively in health behavior related studies involving the blood pressure control (Peters, & Templin, 2010; Scott, et al., 2010; Carter- Parker, et al., 2012; Spink, et al., 2012). Research suggests that the most statistically and clinically significant predictor for engaging in moderate physical activity was the participant's attitude towards physical activity ($p < .001$), and the perceived behavior control for physical activity ($p < .001$) (Carter- Parker et al., 2012). Similarly, TPB was applied to a research study using two-exercise settings (structured or unstructured) to determine if perceived behavioral control is a predictor of intention to exercise (Spink, et al., 2012).

The results indicated that perceived behavioral control was significant in predicting intention to exercise in an unstructured setting (coefficient =0.28, SE=0.08, P =. 0001).

However, perceived behavioral control failed to predict intention in a structured setting. In addition, the participant's attitude and subjective norms was positively related to intention to exercise (Spink et al., 2012). The TBP constructs of intention, subjective norm and perceived behavioral control were utilized in the study to explore behavioral intentions of the participants to engage in physical activity and dietary adherence to promote health and prevent progression to hypertension.

Perceived Barriers

African Americans are disproportionately affected with a greater incidence of chronic diseases such as hypertension, cardiovascular disease and stroke than any other population (Butler-Ajibade, Booth, & Burwell, 2012). Several barriers including, low socioeconomic status, cultural food patterns, may limit the AA population from engaging in healthy self-care behaviors necessary for disease prevention and management (Musa, et al., 2009; Spencer, et al., 2012).

Centering Care Model

The Centering Care Model is an innovative care delivery that pioneered centering pregnancy as a unique and effective health care program. It utilizes three major components: assessment, education and support to implement evidence based health care delivery in a group setting (Centering Healthcare Institute, 2011). The study utilized the Centering Care Model, where the participants gathered weekly in a group using facilitated discussion to empower each other to take active role in their health. It is a patient centered, culturally appropriate program that delivers safe, efficient and effective care (Centering Healthcare Institute, 2011). Research suggests that women in centering pregnancy group had an improved outcome compared to traditional care (Ickovics, et al. 2003; Rising, 1998). There are several essential elements that

define the Centering Care Model including the participant's involvement in self-care activities, group conduction in a circle with a facilitative leadership style, the participant's empowerment to get involve in their own health care and a plan of care to promote positive outcome for each session (Centering Healthcare Institute, 2011).

This group care model not only focused on pregnancy, but also it has also been used in the care of chronic illness such as diabetes mellitus. As there is no existing literature on the use of the Centering Care Model for the management of hypertension, this study adapted the centering diabetes care model for implementation. In this fast paced health care delivery system, it is often difficult to provide efficient and comprehensive care to patients due to time constraints. Therefore, group health care delivery addressing the same health issue provides the opportunity for multiple patients to be seen at the same time while freeing time for others. This format also allows patients to interact with other patients, which is likely to prompt changes and encourage active involvement in their health care through peer influence and experience (Vachon et al., 2007).

The group care model has been shown to foster connectedness between patients, thus creating roles models among them. This serves as a motivating factor for individuals to control their disease and promote health (Vachon et al., 2007). Research suggests that patients who took the initiative for improving their health and attended sessions of group care had clinically relevant reduction in blood pressure, glycosylated hemoglobin and cholesterol (Vachon et al., 2007). This study used the Centering Care Model in implementing the intervention. Being in a group created connectedness and a sense of belonging amongst the participants. They were able to interact with one another, share their thoughts and give support to each other. Many served as role models for other participants enhancing their motivation for adherence to DASH diet and physical activity.

The group model of care might be particularly important to African Americans because studies suggest this population has significant lack of trust in health care providers and the health care system in general. This likely contributes to health disparities by causing the underutilization of health care services including chronic disease management and preventive services (Musa, Schulz, Harris, Silverman & Thomas, 2009; Butler-Ajibade, Booth, Burwell, 2012).

Healthcare providers can be pressured to see many patients daily resulting in shorter patient appointment times often coupled with a long wait time. This can lead to frustration and dissatisfaction with the amount of time spent in providing and giving care. Therefore, a group visit allows providers to maximize productivity while increasing the number of patients seen (Vachon et al.; 2007).

Instruments

This section discusses the instrument used in this study.

The Centering-Healthcare Survey is researcher developed. The scale was developed using the concepts of the Theory of Planned Behavior (TPB). The scale was designed to measure the past behavior, motivation (willingness to exercise and make dietary changes), subjective norms, perceived behavior control and perceived barriers of the participants. The instrument has a total of 17-items to measure the concepts from the Theory of Planned Behavior (TPB). Past behavior: Self report has a 7-item questionnaire that asks the participants to rate the degree in which they smoked, used alcohol, ate fast foods and exercised. Subjective norms were measured by 3 items that asked the respondents to determine how much they care what their health care provider and their family think about diet and exercise using the anchors “not at all” and “very much” and what they perceived that people who were important to them thought about the benefits of exercise. Perceived

behavior control was measured with 6-items that ask the participants to rate the degree to which they thought themselves able to control factors regarding diet and exercise using the anchors “very much” and “not often”. Barriers were measured with 4-item questions that ask the respondents to rate how strongly they agree or disagree that unexpected events would make it more difficult to exercise or to eat low fat or low salt diet.

Readiness to participate in exercise or make dietary changes was measured with a visual analog scale which asked participants to mark an X on the scale at the point that best matched how they felt about exercising or making dietary changes. The anchors were from “willing” to “not willing”. The participants “X” was measured with a ruler indicating centimeters. Higher scores indicated unwillingness to adopt these lifestyle changes.

Conclusion

Despite the fact that there is strong evidence supporting the efficacy of non-pharmacological therapies including increased physical activity, weight reduction, consumption of fruits and vegetables, moderate alcohol intake and reduction of dietary sodium to control blood pressure, the majority of AAs find it difficult to engage in these activities that promote health and control blood pressure. The literature supports utilization of Theory of Planned behavior as being appropriate framework for studying behavior change. However, there is limited research regarding African Americans, which identifies motivation, subjective norms, perceived behavioral control and barriers as significant factors for blood pressure control.

While the Centering Care Model has not been used for the management of hypertension, there is strong evidence that it is effective for the management of another chronic disease, diabetes mellitus. The group model of care would be particularly important

to African Americans because studies suggest this population has significant lack of trust in health care providers and health care system in general. Affirmation by their peers in the form of discussion and empowerment will address some of these concerns. Research also supports that group care can allow the healthcare providers to spend more time on education than when care is provided to individual patients.

Motivational-interviewing style of communication elicits behavior change and addresses ambivalence to change. The centering model plan of care was utilized for empowerment and for getting participants to assume an active role in their health care. No specific literature was found that addresses the use of MI in the AA population.

Chapter III

Methodology

This chapter discusses the methodology in this quasi-experimental study aimed at evaluating the motivation, subjective norms, perceived control and barriers associated with self-care behaviors of African Americans necessary to prevent the development of hypertension or to improve the control of already existing hypertension. This study evaluated the use of Motivation Interviewing to strengthen the participants' motivation to adopt lifestyle changes necessary for blood pressure control. Additionally, this study evaluated the use of the Centering Care Model to provide education to participants in a primary care setting.

The specific aims for this study were as follows:

Specific Aim I: To assess the impact of motivational interviewing (MI) on the participants willingness to engage in physical activity and adhere to the DASH diet for blood pressure control.

Specific Aim II: To assess the feasibility of using a Centering Care Model (CCM) to deliver interactive educational sessions to empower the participants to take an active role in their health care.

The followings are the assumptions that were associated with this study:

1. The adoption of lifestyle modifications including increased physical activity and adherence to the Dietary Approaches to Stop Hypertension (DASH) diet would result in improved blood pressure control.
2. Both physical activity and dietary changes compliance would result in weight reduction.

3. The Centering Care Model would be an effective and efficient way to provide education to participants in a primary care setting.

The research questions for this study are:

Clinical Question 1

Will motivational interviewing (MI) have an impact in the participant's willingness to engage in increase physical activity and adherence to dash diet for blood pressure control?

Clinical Question 2

Will increasing physical activity and adherence to DASH diet be associated with a decrease in BMI and both systolic and diastolic blood pressure?

Setting and Sample

The settings of the study included a primary care office, a day care center and a church. A sample of forty-five participants was screened, and twenty-nine participated in the study. Sixteen participants chose not to participate in the educational sessions.

Power Analysis

Thirty participants were determined through power analysis to detect a moderate effect with a 95 % degree of confidence in this study.

Inclusion Criteria

Criteria for inclusion in the study included being African American, between 21 and 65 years of age and able to speak and understand English. The participants were determined through blood pressure screening to have pre-hypertension or hypertension as defined by the JNC 7 guidelines. Pre-hypertension is defined as having a systolic blood pressure between 120 to 139mm Hg and diastolic blood pressure between 80 to 89mm Hg. Hypertension is classified in stages. Stage 1 is defined as having a systolic blood pressure 140 -159mm Hg

and diastolic blood pressure between 90 - 99mm Hg. Stage 2 is defined as having systolic blood pressure greater than or equal than 160mm Hg and diastolic greater than or equal than 100mm Hg

Exclusion Criteria

Criteria for exclusion from the study included being unable to speak or understand English and being unable or unwilling to participant in the educational sessions.

Recruitment

Aggressive recruitment using flyers and word of mouth in the primary care office, the local area African American churches, day care centers and barbershops was conducted. The study's recruitment target was African Americans between 21 and 65 years of age who meet the JNC 7 guidelines of having pre-hypertension and those with hypertension with or without medication.

Data Collection Procedures

Before beginning recruitment of participants for this study consent from the Georgia College and State University Institutional Review Board (IRB) was obtained. Informed consent was obtained from each participant who wanted to take part in this study. The participants were informed of the study protocol and guidelines and given assurance that all data collected, their responses and participation throughout the study would be kept confidential. Participants were informed that although they signed a consent form to participate in this study, they had the right to withdraw at anytime without fear of any repercussions.

To maintain strict confidentiality during data collection, each participant was assigned a unique identification number, and all forms used in this study were marked with

this unique identification number that could be accessed only by the researcher. All information related to this study was kept in a locked file cabinet in the researcher's office.

Baseline data was collected for the following variables: participant demographics, blood pressure, weight, height, activity level and dietary recall. Participants were asked to rate their baseline motivation level for making behavioral lifestyle changes using the visual analogue scale. Participants' motivation, subjective norms, perceived behavioral control, and barriers to self-care behaviors were assessed utilizing the Centering Healthcare Survey. Blood pressure, weight, height, activity level and dietary recall were assessed at each educational session. A total of four group sessions were held throughout the duration of this study.

During the first session the participant's height in inches, baseline body weight in pounds and body mass index were obtained with a Health O Meter Beam Scale and recorded. Blood pressure was assessed in a sitting position with an Advantage Ultra 6023 Sphygmomanometer using JNC 7 guidelines on blood pressure measurement. An appropriate-size blood pressure cuff was used to ensure accurate blood pressure reading. Participants were given Self-Assessment Sheet (SAS)/ logs to self-report blood pressure, A pedometer was provided to each participant as a motivator to implement daily walks as a form of exercise and to record the number of steps walked or minutes walked on the SAS. Also, participants kept a record of dietary consumption on a daily basis. They were encouraged to maintain these records for the purpose of data gathering. Healthy snacks and water were offered at each session.

Data collection continued in session two, one week following session one. Blood pressure was assessed again using the same methodology as session one. Participant

weights were also measured and recorded. Session three data collection followed the identical methodology used in sessions one and two. The participant's blood pressure and weight were obtained and recorded in SAS/logs. In the final session, the blood pressure and weight were again assessed utilizing the identical techniques as in the preceding sessions. All SAS/ logs were obtained from the participants for collection of data. In addition, each participant completed the Centering-Healthcare post assessment survey and a satisfaction survey.

Quality Control

Prior to initiating the data collection, all forms and procedures were evaluated, and specific protocol manuals were established. Recruitment procedures, informed consent procedures, and administration of questionnaires were detailed in the manual. A panel of experts (one family nurse practitioner, one nutritionist, and one motivational interviewing expert), and five African Americans with pre-hypertension were asked to evaluate the Participants Manual and instruments for ease of use, appropriateness of information, and readability. Modifications were made following their evaluations before the deployment of the study.

Forms were adapted to prompt participants to complete all the items and an option was given to indicate that a question was intentionally being left blank. A sample of how to complete the questionnaire was also provided to each participant prior to the completion of the questionnaire.

Reliability

To increase the reliability of the measurement of blood pressure, the Advantage Ultra 6023 Sphygmomanometer automatic device was calibrated, and the device was set for

triple measurement prior to the beginning of the study. Three measurements were automatically taken in succession, the results analyzed and displayed automatically. Blood pressure was assessed in a sitting position with Advantage Ultra 6023 Sphygmomanometer using JNC 7 guidelines for measuring blood pressure. The cuff is pre-formed for easier use, and it is adjustable to appropriately fit the arm based on the size to ensure accurate data. The same researcher obtained all measurements at each visit. The cuff size that was used for the patient at the first visit was recorded and then used for each additional visit.

Prior to the study the Health O Meter Beam Scale was calibrated and confirmed to be set at 0.0. Several patients' weights were obtained to confirm that the scale was accurate and reliable. The participant's height in inches, baseline body weight in pounds and body mass index were obtained with Health O Meter Beam Scale and recorded.

Interrater reliability was assessed for the measurement of the visual analog scales by having a second researcher confirm the measurements of the first researcher for the willingness to exercise and willingness to make dietary changes data.

Analyses were completed to show the strength of the correlation between the dependent variable (BP) and the independent variables (exercise) to avoid causal relationships.

Validity

Content validity for the educational sessions was assessed in two separate ways. The objectives for the educational sessions were planned using the recommendations from the JNC 7. A nurse practitioner and a nutritionist using the JNC 7 guidelines as the criterion reviewed the materials for all educational sessions. Construct validity for the educational sessions was addressed by using the Theory of Planned Behaviors constructs of

motivation, subjective norms, perceived behavioral control, and barriers as guidelines for the discussions of the participants. Research has supported these factors as predicting behavior change in individuals. The Centering Healthcare Model was used to provide the assessment and educational sessions of the intervention. An expert in Centering reviewed and evaluated the plans for the sessions and provided feedback to the researcher. The Centering Model was adhered to on each session. The goals and objectives for the educational sessions were clearly defined and operationalized in a procedure manual.

Validity of the Centering Healthcare Survey was assessed in the following ways: face validity and construct validity were assessed by the panel of experts (one family nurse practitioner, one nutritionist, and one motivational interviewing expert and an experienced researcher), and five African Americans with pre-hypertension. Since the researcher constructed this questionnaire, the panels of experts were provided with a copy of constructing a Theory of Planned Behavior Questionnaire by Icek Ajzen (1991) to use as a guide in evaluating the questionnaire. This guide was used by the researcher to develop the pilot questionnaire and used the constructs of attitude/motivation, subjective norms, perceived behavioral control, and barriers as the direct measures for this study.

The study determined whether the predictor variables, motivation, subjective norm, perceived behavioral controls and barriers to self-care behaviors, predicts willingness to engage in physical activity and dietary changes that would result in lowering of blood pressure. In addition, the study inferred or observed if there was a cause and effect relationship between predictor variables and the outcome variables. The presence of internal validity in a study increased the reliability and validity of the study findings. This quasi-experimental study attempted to minimize the threats to internal validity as much as

possible, such as instrumentation by using the same methodology for measurement throughout the sessions. Maturation was controlled with the questionnaire taking 10 – 12 minutes to complete, and the study was limited to four group sessions. In addition, statistical regression, history and attrition are threats to internal validity that were attempted to be minimize in this study. Nevertheless, there could be an internal validity threat due to non-randomization of the participants and a testing effect as a result of repeated measuring with pre- and post-assessment questionnaire (Internal Validity, 2010).

Education Intervention

Education interventions were conducted in the first three sessions of this study, beginning with the first educational session focusing on hypertension, its related risks and consequences. A handout discussing pre-hypertension and hypertension was given to the participants. To make the session interactive a total of fifteen questions were formulated from the handout including the following: 1) How would I know if I have high blood pressure? 2) What is the normal blood pressure? 3) What are some blood pressure- friendly tips? 4) What can I do to control my blood pressure? These questions were then cut out, folded and put in a basket. The participants took turns reaching in the basket and blindly taking a question to answer. They consulted with the group members to help them answer their respective questions. It made the session fun, informative and interactive.

In session two, the benefits of making lifestyle changes such as adopting Dietary Approaches to Stop Hypertension (DASH) diet, recommended by the JNC 7 as the first line treatment for pre-hypertension and a crucial component in the treatment of hypertension with or without medication was discussed. A DASH diet information handout was given to the participants as a guide to healthy eating. An interactive session with giant word puzzle

board consisting of DASH and non-DASH foods was used, and each participant took a turn circling on the board what foods they thought was a DASH diet food. They elicited help from the group members when needed. Any participant that circled a non-DASH diet food received a strike. This also made the session very interactive and educational.

Finally, the benefits of increased physical activity as an important component that can decrease the risk of obesity, can combat health problems and can prevent pre-hypertension from progressing to hypertension as well as being beneficial to hypertensive patients was discussed. A handout with 7 benefits of regular physical activity was given to the participants. According to the participants the sessions were very informative and helped them learn new materials.

Data Analysis

Pre-analysis that consisted of checking for missing values, errors in data entry or outliers was performed. There were no missing values or outliers, and there was normality of the values. An analysis consisting of descriptive and T- test statistics was conducted.

Summary

This chapter described the methodology used to conduct the research study. The following sections were delineated: study design, sample, setting, methods, methods used to protect human subjects, instruments used to measure the study variables, data collection procedures, and data analysis plan. Power analysis considerations were also discussed

CHAPTER IV

Results

The results of this quasi-experimental study entitled the Efficacy of Motivational Interviewing to Increase Physical Activity and Dietary Adherence in African Americans with Pre-hypertension are discussed in this chapter.

Pre-Analysis Screening

Pre-analysis screening was performed prior to statistical analysis including screening for errors of data entry, undefined missing values, unintended samplers and outliers. Normality was assessed for all interval and ratio level variables. There were no missing values and all data were evenly distributed.

Sampling

The study utilized a non-random, convenience sample recruited from a primary care office, African American churches, barbershops and a day care center. The study screened a total of forty-five eligible applicants. However, sixteen of those screened were not willing to participate in the educational session. The reason reported for not participating in the educational sessions was a lack of time.

Characteristics of the Participants

A total number of participants (n = 29) were enrolled in the study. The majority of the participants enrolled 72.4% (n=21) were identified to have pre-hypertension and 27.6% (n=8) were identified as having hypertension. Only 24.1% (n=7) of the participants identified as having hypertension reported taking medication for this chronic condition. All of the participants in the study self-identified as being Black or African American race. The majority of the participants 75.9 % 9 (n=22) was female. The youngest participant was 22

years of age and the oldest was 63 years of age. The mean age for the participants was 42.2 years ($SD = 10.77$). Greater than half of the participants (55.2%, $n=16$) reported that they were married or living with a significant other. Majority of the participants (69%, $n=20$) reported some type of college education.

Participants were asked if their parents or siblings have a history of hypertension. Seventy-nine percent ($n=20$) reported parental hypertension while 44.8% ($n=13$) reported that their siblings also have a history of hypertension. Participants were asked if their parents or siblings have a history of heart disease. Only 10.3% ($n=3$) reported that their parent has a history of heart disease and only about 6.9% ($n=2$) reported a sibling having heart disease. When participants were asked if they had ever been told in the past that they had high blood pressure, 37.9% ($n=11$) reported that they had been told that they had high blood pressure.

Past Behavior

Participants were asked to share information about their lifestyle related to consumption of fast foods, consumption of alcohol and abuse of nicotine. Seventy-five percent ($n=22$) of participants reported that the most important reason for choosing fast food was the convenience, 20.7% ($n=6$) liked the taste, and 3.4% ($n=1$) chose fast food because of the cost. The baseline reports of participant's dietary consumption of fast food was ($M = 3.07$, $SD = 1.73$) Alcohol and nicotine using were additional lifestyle habits related to hypertension control that were explored in this study. The overwhelming majority of participants 96.6% ($n=28$) reported that they had never smoked. A large percentage of participants 44.8% ($n=13$) reported never using alcohol, while another 44.8% ($n=13$)

reported sometimes drinking alcohol. A smaller percentage of participants, 10.3% (n=3), reported alcohol consumption as occurring often or very often.

Participants reported at baseline that they were participating in some type of exercise each week. Majority reported walking as the most common type of exercise performed. The baseline measure of how often the participants exercised were (M = 3.48, and the length of time they exercised were (M =2.55, SD=1.40).

Barriers

When the participants were asked specifically how the cost of food affects the purchase of food items, 31% (n=9) reported that often or very often cost was a factor. Forty-four percent (n=13) of the participants reported that sometimes cost of food does impact what they purchase, while 24.1% (n=7) reported that cost of food does not play a role in the food they purchased. When participants were asked about how difficult it was for them to exercise, they reported baseline difficulty to exercise (M =3.76, SD= 1.24).

Subjective Norms

Factors related to participants perception of subjective norms were explored with participants reporting the level at which they cared about what family, friends and their healthcare provider thought about their diet and exercise on a scale of 1 to 7 with 1 being not at all and 7 being very much. All the participants reported caring to some degree about what their healthcare provider thought they should do about diet and exercise. The majority of the participants 58.6% (n=17) reported that they cared very much about what their health care provider thinks they should do about diet and exercise. The other participants, 37.9% (n=11), reported that they cared about the healthcare providers opinion of their diet and exercise.

The opinions of family and friends regarding the participant's diet and exercise were reported as being less important than that of the healthcare provider's, with only 24.1% (n=7) reporting that they cared very much or 20.7% (n=6) reported they cared about their opinions. Furthermore, 17.2% (n=5) of the participants reported not caring much or 6.9% (n=2) reported not caring at all what family and friends think.

Motivation

Participants were asked how willing they were to participate in exercise and dietary changes at baseline. The participants reported the motivation to exercise at baseline (M= 3.07, SD= 2.21) and their readiness to make dietary changes at baseline was reported (M= 2.93, SD= 2.11)

Specific Aim I: To assess the impact of motivational interviewing (MI) on the participants willingness to engage in physical activity and adherence to DASH diet for blood pressure control.

Clinical Question 1. Will motivational interviewing (MI) have an impact in the participant's willingness to engage in increase physical activity and adherence to dash diet for blood pressure control?

To answer this question a paired T test was conducted to examine the willingness or motivation to exercise and to make dietary changes at the initial session and again after the four-week educational session. The participants reported a statistical significant difference in scores for motivation to exercise at initial time measure (M = 3.07, SD = 2.21) and at final measure (M = 2.10, SD 1.92, $t(28) = 3.29, p < 0.003$ and motivation to make dietary changes at initial time measure (M = 2.93, SD = 2.11) and at final measure (M = 2.06, SD

1.87, $t(28) = 3.09$, $p \leq 0.004$. Motivation to exercise and make dietary changes was significantly higher after the educational intervention.

Clinical Question 2. Will increasing physical activity and adherence to DASH diet be associated with a decrease in BMI and both systolic and diastolic blood pressure?

To answer this research question a paired T test was conducted to analyze the pre- and post- past behavior report. Participants were asked how often and how long they exercised at the initial visit and then again at the end of the four-week educational sessions. In addition, they were asked how often they ate fast foods at these same time intervals. Participants reported a statistically significant increase in how often they exercised from the initial measure ($M = 3.48$, $SD = 1.50$) and the final measure ($M = 4.59$, $SD = 1.26$), $t(28) = 4.70$, $p \leq 0.00$. Additionally, participants reported a significant increase in the length of time they exercise from baseline ($M = 2.55$, $SD = 1.40$) and the final measure ($M = 3.17$, $SD = 0.84$), $t(28) = 3.18$, $p \leq .03$. The participants reported eating fast food significantly less often from baseline ($M = 3.07$, $SD = 1.73$) to the final measure ($M = 2.62$, $SD = 1.32$), $t(28) = 2.28$, $p \leq 0.03$ food.

Participants reported no significant difference in the use of alcohol or in the rates of smoking between the initial visit and at the end of the four-week educational sessions. Initially, 44.8% of participants reported that sometimes the cost of food played a role in the foods that they purchased. The majority of the participants (51.7%) continued to report that the cost of food played a role in the foods that they purchased after the four-week educational sessions.

Participants height, weight and body mass index (BMI) was measured at the initial session, and there was a significant decrease in (BMI) from baseline ($M = 29.60$, $SD = 4.62$)

to final measure ($M = 29.0$, $SD = 4.39$, $t(28) = 6.13$, $p < 0.00$). Additionally, systolic blood pressure (SBP) at the initial time measure ($M = 128$, $SD = 6.36$) and diastolic blood (DBP) pressure at initial measure ($M = 84$, $SD = 4.03$) compared to final measure SBP ($M = 123$, $SD = 7.40$) and DBP ($M = 80$, $SD = 5.13$), $t(28) = 5.67$, $p < 0.00$ showed a significant decrease.

Specific Aim II: To assess the feasibility of using a Centering Care Model (CCM) to deliver interactive educational sessions to empower the participants to take an active role in their health care.

The feasibility of using a Centering Care Model was assessed in a number of ways. At the final educational session participants were asked to rate how satisfied they were with this type of centering group health care delivery. The majority of the participants 69% ($n = 20$) reported that they were satisfied with this type of group care delivery. When asked how likely they are to attend or recommend this type of group care to a family member, 62.1% ($n=18$) of the participants reported that they would attend or recommend this type of group care to their family and friends. Participants were asked if they believed the number of educational sessions offered was appropriate. The majority of the participants 65.5% ($n=19$) reported that the number of sessions offered were adequate. However, 34.5% ($n=10$) reported there were too many sessions offered.

Additionally, participants were asked if they believed the amount of time spent in educational sessions was appropriate. The majority of the participants 75.9% ($n=22$) reported that the amount of time spent in the sessions were adequate while 24.1% ($n=7$) reported that it was too long. Participants were asked for specific suggestions on how to improve attendance to this type of centering group care sessions. Two participants specifically commented that the sessions could be offered in 30-45 minutes instead of 90-

120 minutes. One participant thought the program was good because it allowed them to make their own food choices and not have to stick to a set menu.

The goal of Centering Care was to have the group work to find ways to decrease barriers to exercise and dietary changes; comparing the baseline of the participant's subjective norms and barriers assessed this. Participants were asked how difficult or easy it was for them to exercise on a regular basis at the initial visit and again after the four-week educational sessions. Participants reported a statistically significant decrease in the difficulty they perceived regarding regular exercise. At the initial visit participants reported that exercising regularly was difficult ($M= 3.76$, $SD= 1.24$), and at the final visit participants reported that exercising regularly was not as difficult ($M=4.17$, $SD= 1.33$), $t(28) 2.85$, $p < .008$. Additionally, participants were asked what the people who were important to them thought about regular exercise. The majority 34.5% ($n=10$) reported that important people in their lives think it is very good to exercise on a regular basis. Twenty-seven point six percent ($n=8$) think it is somewhat good while 10.3% ($n=3$) think it is good for them to exercise on a regular basis. On the other hand, 13.8% ($n=4$) participants reported that people who are important to them think it is bad to exercise on a regular basis.

Participants were asked how often unexpected things stop them from exercising at the initial time measure ($M =3.93$, $SD = 1.53$) and at the final measure ($M = 3.83$, $SD = 1.44$). The participants were also asked how often unexpected things stop them from eating a low fat diet at the initial measure ($M= 4.17$, $SD= 1.81$) and at the final measure ($M= 4.48$, $SD = 1.55$) and from eating a low salt diet at the initial measure ($M= 4.55$, $SD= 1.92$) and final measure ($M= 4.52$, $SD= 1.84$). In addition, the participants were asked at the initial session and again at the final session how often does lack of money prevent them from

eating a low fat diet regularly at the initial measure (M= 4.52, SD= 1.76) and at the final time measure (M=4.93, SD= 1.60) and from eating a low salt diet regularly at the initial measure (M= 4.62, SD= 1.93) and at the final measure (M= 4.93, SD= 1.64).

Furthermore, participants were asked at the initial session and again at the final session that if unexpected things happen would it make be more difficult for them to exercise. The result at the initial time measure was (M= 3.34, SD= 1.79) and at the final measure (M= 4.00, SD= 1.64) and eat a low salt diet at the initial time measure (M= 4.79, SD= 1.80) and at the final measure (M= 5.03, SD= 1.70) Also, would unexpected things make it more difficult for them to eat low fat diet with the result at the initial time measure being (M= 4.69, SD, 1.83) and at the final measure (4.97, SD= 1.76).

Summary

Motivational interviewing was shown to significantly increase participants' willingness to engage in physical exercise and in making dietary changes related to the DASH diet. The increase in frequency and length of exercise resulted in a significant decrease in systolic and diastolic BP as well as a significant decrease in BMI. The majority of the study participants reported satisfaction with Centering Health group care.

Chapter V

Discussion

The overall aim of this study was to evaluate the motivation, subjective norms, perceived behavioral control and barriers associated with self-care behaviors of African Americans (AA) necessary to prevent the development of hypertension or to improve the control of already existing hypertension. Motivational interviewing (MI) was used to identify and address barriers to lifestyle modifications. The feasibility of using a Centering Care Model to deliver interactive educational sessions to empower individuals to take an active role in their health care was evaluated. This pilot study combined the Centering Care Model with MI to address the physical activity and dietary habits of African Americans' with pre-hypertension and hypertension. The participants may not fully represent the African American population. The study is unique in its methodology because it combined MI and CCM to implement the educational intervention.

A Profile of Participants in this Study

This study found that the participants willing to enroll and participate in Centering Healthcare were educated, motivated to learn and engage in exercise and already exercising. It is undetermined if the participants of this study deferred from those who were recruited but declined to enroll. Previous studies suggest that AA have low levels of physical activity, which contributes to overweight or obesity raising the risk of chronic disease such as hypertension (Cowart, et. al., 2010 & Dubbert, et. al., 2010).

Feasibility of Centering Healthcare in Primary Care

This pilot study showed that these self-selected AAs were accepting and appreciative of the opportunity to be part of the educational sessions. They indicated that the educational

sessions not only provided interactions with others, but that they also fostered a sense of connectedness. Throughout the study the participants met together in a group setting, learned from one another and served as motivators for each other. The group oftentimes devised suggestions and ideas to help one another with ways to improve adherence to Dash diet and to stay focused on their respective exercise regimens. The majority of the participants noted that they were satisfied with this type of health care delivery, and that they would recommend it to their family and friends. Nonetheless, some also stated that the amount of time spent in each session was too long and that the number of sessions offered were too many. These comments are informative and will guide the implementation of future study. The sessions were offered during the summer and over a shorter period of time that would ordinarily occur because of the time limitations of the study, it is possible that offering during a different time of year and with more time between educational sessions would positively affect the study results.

In these sessions, participants were empowered to take an active role in their health care. They monitored their blood pressure and weight before the start of each session. This was shown to empower the participants because they were enthusiastic to find out how much weight, if any, that they lost, and if there were changes in their blood pressure readings.

Attitude and intentions of participants to engage in self-care behaviors necessary for blood pressure control resulted in significant decrease in their blood pressure and weight. Additionally, the utilization of CCM in implementing the intervention was instrumental in empowering the participants to take active role in their health for positive outcome. This

finding is similar to previous studies that utilized the group care (Walker, & Worrell, 2008; VNA Health Care, 2011; Vachon et al., 2007)

Secondly, 69% of the participants' parents and 44.8% of their siblings had high blood pressure. Having a first hand knowledge of the prevalence of this condition in their own families may have contributed to the participants' perception of increased risk for themselves. This perception of increased personal risk may have increased participant's motivation and willingness to participate in the educational interventions. In addition, more than half of the participants reported some type of college degree and this may have increased their understanding of high blood pressure, its risks and complications. However, some of the participants admitted that knowing about the complications and risks did not result in regular exercise and other lifestyle modifications necessary for blood pressure control. This finding seems to agree with a previous research study that suggested African Americans perceive increased physical activity and weight reduction as the hardest modifications to adopt in an effort to control blood pressure (Scott, et al., 2010).

The fact that the mean age of the participants in this study was 42, may also have contributed to their willingness to participant in the study and embrace lifestyle changes. Erikson defines this age from 35 to 55 as Middle Adulthood (Sokol, 2009). Erikson observed that this stage of development is a time that adults expect to be in charge and to transmit their values of the culture to children and family. Individual's goals often change during this stage as they face major life changes, such as illness of parents and children leaving home. The realization of ones own mortality and death are often acknowledged during this phase. Perception that they are in charge may have encourage them to seek the

benefits of the educational interventions regarding high blood pressure, its complications and ways to prevent or control the condition at this stage in their life.

The Centering-Healthcare Survey was developed for this study using the theoretical base of the Theory of Planned behavior (TPB). The reliability and validity of the scale has not been established. It is the first utilization of the survey in this population. The survey explored the tenets of TPB, it measures attitude and beliefs regarding physical activity and dietary habits using past behavior self-report. It will be important to conduct additional research on this instrument to determine reliability and validity. It would also be important to determine if this instrument was appropriate for different populations.

Motivation can be the biggest factor in adopting lifestyle modification such as increasing physical activity, dietary adherence and continuing with the activities for long-term blood pressure control. Participants' readiness to engage in lifestyle modifications was significant in this study. This result could be attributed to group sessions where empathic communication and reflective listening were used. Empathic communication was important during the study as the participants were in different stages of change. It allowed for non-judgment when a participant was not ready to fully engage in physical activity for blood pressure control or had indulged in a hamburger and fries instead of eating the DASH diet. Reflective listening allowed each participant to feel that they are being listened to and that what they had to say was important for the group. In addition, affirming and summarizing the discussions in order to make sure that every participant is on the same page was instrumental in empowering and motivating them.

The beliefs that people have can oftentimes guide their decisions regarding exercise and dietary changes. The majority of participants believed that sometimes when unexpected

things happened in their lives it could prevent them from exercising and eating a low fat and low salt diet regularly. In addition, finances is a factor in the affordability of healthy food because majority of the participants cited lack of money as the reason that sometimes prevented them from eating a low fat and low salt diet regularly. Furthermore, almost half of the participants stated that cost of food played a role in the food they purchased. Therefore, health care providers must acknowledge that adherence to a low fat, low salt or DASH diet could place financial burden on some of these patients.

Additionally, recognizing that DASH diet may not fit into the ethnic food choices of African Americans diet should be helpful in nutritional counseling for blood pressure control in this population. Studies suggest that African American cultural beliefs and dietary choices may create barriers that can interfere with adopting dietary changes necessary for blood pressure control (Spencer, Jablonski, & Loeb, 2012; Scott, et al., 2010; Wexler, et al., 2009).

The research questions for this study are:

Clinical Question 1

Will motivational interviewing (MI) have an impact in the participant's willingness to engage in increase physical activity and adherence to dash diet for blood pressure control?

Motivational Interviewing was instrumental in the participants' willingness to engage in increased physical activity and dietary adherence that resulted in the lowering of their blood pressure. Consequently, the assumptions that adoption of lifestyle modifications including increased physical activity and adherence to the Dietary Approaches to Stop Hypertension (DASH) diet would result in improved blood pressure control was supported.

Clinical Question 2

Will increasing physical activity and adherence to DASH diet be associated with a decrease in BMI and both systolic and diastolic blood pressure?

This study showed that the participant's BMI, and both systolic and diastolic blood pressure were significantly lowered due to engaging in physical activity and dietary adherence. As a result, the second assumption that both physical activity and dietary changes compliance would result in weight reduction was also supported.

The participants were receptive of the centering health group care because it fostered interaction with each other that served as a motivator. The majority attributed their ability to continue the exercise and dietary changes to the motivation and empowerment from other members of the group. Thus, the final assumption that the Centering Care Model would be an effective and efficient way to provide education to participants in a primary care setting was supported in this pilot study.

Limitation of the Study

Several limitations are apparent in this study. The participants represented a convenience sample and were not randomly assigned. Recruitment was through black churches, flyers and word of mouth. The sample does not represent the totality of African Americans. Furthermore, the instrument for this study is new and has not been used in this population. In addition, the results are based on self-report by the participants, which may not reflect the magnitude of their participation. Another limitation for this study is the small sample size (n=29).

Implications for Healthcare

In the United States, the financial burden attributed to hypertension management is alarming. It is estimated that yearly health care cost and medication for managing

hypertension is almost \$131 billion. In addition, loss of productivity in the workplace due to absenteeism is another \$25 billion (CDC, 2012). As the prevalence and incidence of hypertension continues to rise, likewise the cost to care for the condition would also continue to increase. Therefore, preventing pre-hypertension from progression to hypertension using non-pharmacological therapies recommended by the JNC 7 is vital. Furthermore, proper management of hypertensive to decrease the complications of hypertension such as stroke and heart disease is essential.

Implications for Further Research

This is the first study that combined the Centering Care Model and Motivational Interviewing to encourage AA with pre-hypertension and hypertension to engage in increased physical activity and dietary changes for blood pressure control utilizing the instrument measuring the constructs of TPB. Further studies are warranted in order to determine the generalization of the study findings.

Summary

African Americans have a known greater risk for developing high blood pressure than any other population. The management of high blood pressure includes adopting self-care behaviors such as an increase in physical activity and dietary changes. Oftentimes, a lack of motivation, perceived behavioral control and barriers can hinder progress of blood pressure management. The CCM and MI have shown promise in this study to be effective in engaging AAs to increase physical activity and dietary adherence yielding measurable positive outcomes.

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Appendix A. Institutional Review Board (IRB) Document

Appendix A. 1 IRB Approval

douglas.keith@gcsu.edu< douglas.keith@gcsu.edu>

Mon, Jun 10, 2013 at 11:43
AM

To: chioma.okereke@bobcats.gcsu.edu

Cc: mazhar.malik@gcsu.edu

Dear Chioma Okereke:

The IRB has reviewed the proposal you submitted. "Efficacy of Motivational Interviewing to Increase Physical Activity and Dietary Adherence in African Americans with pre-hypertension." has been granted approval by the Georgia College & State University Institutional Review Board. You may proceed but are responsible for complying with all stipulations described under the Code of Federal Regulations 45 CFR 46 (Protection of Human Subjects). This document can be obtained from the following web address.

<http://ohsr.od.nih.gov/guidelines/45cfr46.html>

The approval period is for one year. After that time, an extension may be requested. It is your responsibility to notify this committee of any changes to the study or any problems that occur. You are to provide the committee with a summary statement. Please use the enclosed statement to request an extension, for reporting changes, or reporting the completion of your study.

http://web.gcsu.edu/4dcgi/app/irb/status_report.html?str_protocol_id=1691&unique_id=Wec24Uaxp4cea1h86p

Yours sincerely,

Douglas Keith, PhD
Chair, IRB

Appendix B. Study Instruments

Appendix B. Study Instrument

Centering-Healthcare Survey

Date: _____

Your name: _____

This survey is part of a study that tries to discover some reasons why people change or don't change their diet or exercise habits if they have been diagnosed with prehypertension. Specifically, we are interested in your personal opinions regarding diet or exercise. Please read the questions carefully and answer it to the best of your ability. There are no right or wrong answers; we are very interested in your point of view.

Thank you for your participation in this study.

General Information About You

1. What is your gender? Please circle one.
Female
Male
2. What is your ethnicity? _____
3. What is your age in years? _____
4. What is your martial status? Please circle one.
Married
Divorced
Single
Widowed
Living with a significant other
5. What is the highest level of education you have completed? Please circle one.
GED graduate
High school graduate
Technical school graduate
Associate degree
Bachelor's degree

Master's degree
Doctoral degree

6. Does your mom or dad have hypertension?
Yes
No

7. Does your brother or sister has hypertension?
Yes
No

8. Does your mom and dad have heart disease?
Yes
No

9. Does your brother or sister have heart disease?
Yes
No

10. Have you ever been told that you have high blood pressure?
Yes
No

11. Are you currently taking any medication to treat your high blood pressure?
Yes
No

12. If you eat fast foods please indicate your reason.
___ Convenient ___ cheap ___ like the taste

13. How often does cost of foods play a role in the foods you purchase?
___ Never ___ sometimes ___ often ___ very often

14. How often have you had alcohol in the last 2 months?
___ Never ___ sometimes ___ often ___ very often

15. How much do you smoke every day?
___ Never ___ less than 1/2 a pack ___ 1/2 pack to 1 pack ___ more than 1 pack

Instructions for remainder of the Survey

Many questions in this survey make use of rating scales with 7 places; you are to circle the number that best describes your opinion. For example, if you were asked to rate “The Weather in Atlanta” on such a scale, the 7 places should be interpreted as follows:

The Weather in Atlanta is:
good: 1 : 2 : 3 : 4 : 5 : 6 : 7 :bad

If you think the weather in Atlanta is extremely good, then you would circle the *number 1*, as follows:

The Weather in Atlanta is:
good: 1 : 2 : 3 : 4 : 5 : 6 : 7 :bad

If you think the weather in Atlanta is quite bad, then you would circle the *number 6*, as follows:

The Weather in Atlanta is:
good: 1 : 2 : 3 : 4 : 5 : 6 : 7 :bad

If you think the weather in Atlanta is slightly good, then you would circle the *number 3*.

The Weather in Atlanta is:
good: 1 : 2 : 3 : 4 : 5 : 6 : 7 :bad

If you think the weather in Atlanta is neither good nor bad, then you would circle the *number 4*.

The Weather in Atlanta is:
good: 1 : 2 : 3 : 4 : 5 : 6 : 7 :bad

In completing the survey, please remember the following points:

Be sure to answer all items – do not omit any.

Never circle more than one number of a single question.

Please answer each of the following questions by circling the number that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each question carefully.

(Past Behavior: Self-Report)

1. During the past 4 weeks, how often have you exercised?

not at all: 1 : 2 : 3 : 4 : 5 : 6 : 7 :very much

2. During the past 4 weeks, how often have you eaten fast food?

not at all: 1 : 2 : 3 : 4 : 5 : 6 : 7 :very much

3. During the past 4 weeks I have done the following type of exercise:

4. If you exercise: how long do you exercise each time?

0 minutes: 10 : 20 : 30 : 45 : 60 : 75 : minutes

5. For me to exercise on a regular basis is

very difficult: 1 : 2 : 3 : 4 : 5 : 6 : 7 :very easy

6. Most people who are important to me think that for me to exercise on a regular basis is

very good: 1 : 2 : 3 : 4 : 5 : 6 : 7 :very bad

(Motivation to Comply)

7. Generally speaking, how much do you care what the your family and friends think you should do about diet and exercise?

not at all: 1 : 2 : 3 : 4 : 5 : 6 : 7 :very much

8. Generally speaking, how much do you care what the your healthcare provider think you should do about diet and exercise?

not at all: 1 : 2 : 3 : 4 : 5 : 6 : 7 :very much

Please place an “X” on the line to indicate the point that best matches how you feel about exercising.

Willing to exercise **Not willing**

Please place an “X” on the line to indicate the point that best matches how you feel about dietary changes.

Willing to make dietary changes **Not willing**

(Control Beliefs)

9. How often do you have unexpected things take place that prevent you from exercising regularly?

very often: 1 : 2 : 3 : 4 : 5 : 6 : 7 :not often

10. How often do you have unexpected things take place that prevent you from eating a low fat diet regularly?

very often: 1 : 2 : 3 : 4 : 5 : 6 : 7 :not often

11. How often do you have unexpected things take place that prevent you from eating a low salt diet regularly?

very often: 1 : 2 : 3 : 4 : 5 : 6 : 7 :not often

12. How often does lack of money prevent you from eating a low fat diet regularly?

very often: 1 : 2 : 3 : 4 : 5 : 6 : 7 :not often

13. How often does lack of money prevent you from eating a low salt diet regularly?

very often: 1 : 2 : 3 : 4 : 5 : 6 : 7 :not often

14. How often does lack of a safe place to exercise prevent you from exercising regularly?

very often: 1 : 2 : 3 : 4 : 5 : 6 : 7 :not often

(Power of Control Factors)

15. If I have unexpected things take place, it would make it more difficult for me to exercise.

strongly agree: 1 : 2 : 3 : 4 : 5 : 6 : 7 :strongly disagree

16. If I have unexpected things take place, it would make it more difficult for me to eat a low salt diet.

strongly agree: 1 : 2 : 3 : 4 : 5 : 6 : 7 :strongly disagree

17. If I have unexpected things take place, it would make it more difficult for me to eat a low fat diet.

strongly agree: 1 : 2 : 3 : 4 : 5 : 6 : 7 :strongly disagree

Figure A. Theory of Planned Behavior (TPB) (Ajzen 1991)

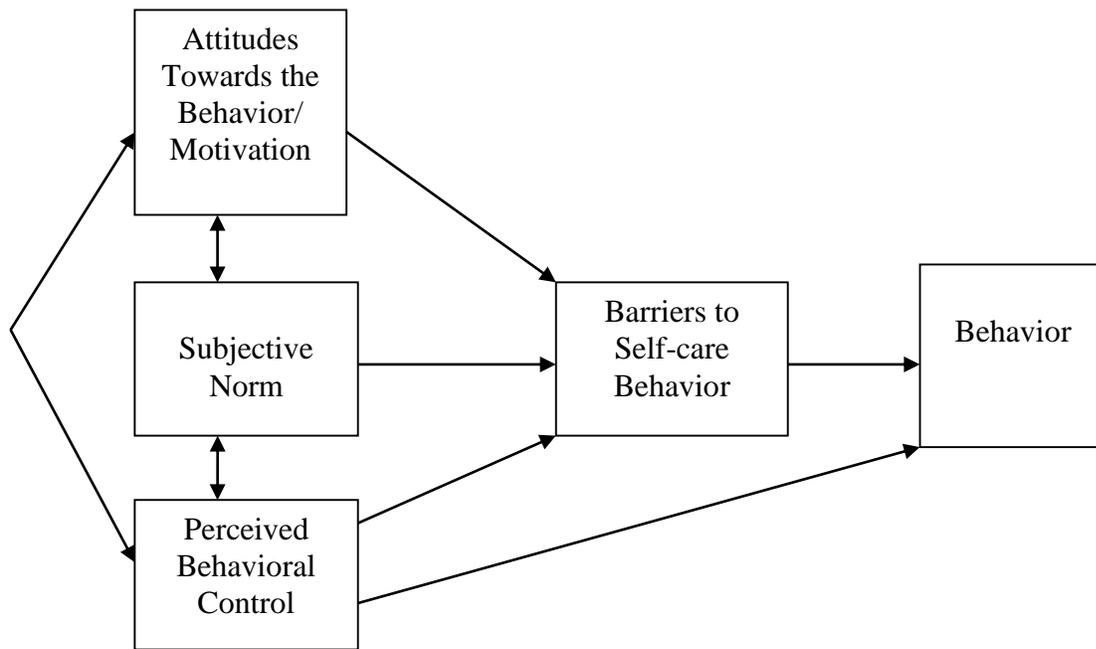


Figure B. Centering Care Model (CCM)

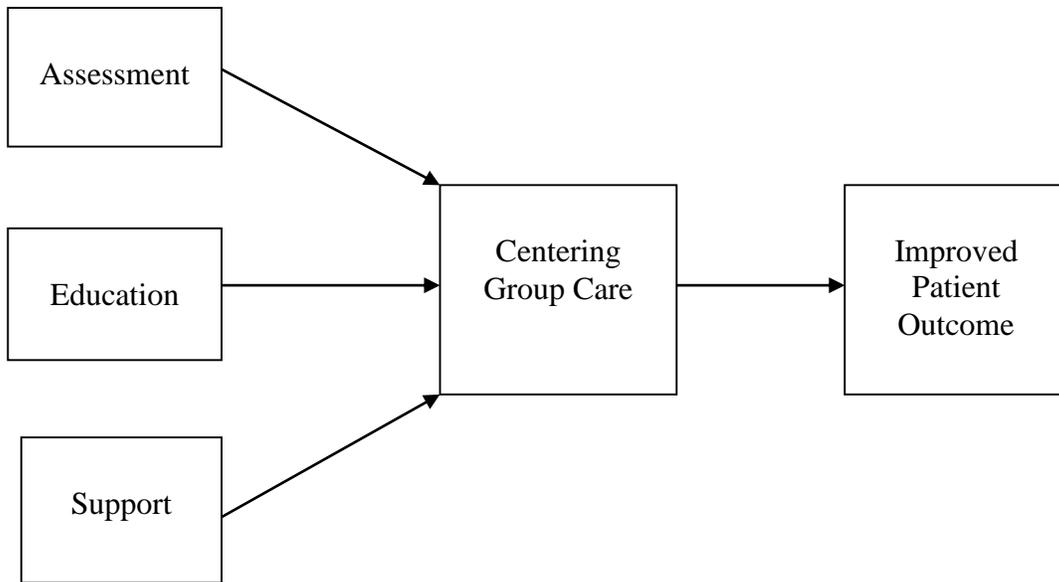


Table 1.

Changes in blood pressure classification and management based on JNC 7 guidelines

Blood pressure reading (SBP mm Hg/DBP mm Hg)	Blood pressure Classification	Treatment
< 120/80	Normal	Non-pharmacological therapies
120-139/80-89	Pre-hypertension	Non-pharmacological therapies
140- 159/90-99	Stage 1	Non- pharmacological therapies and medications
$\geq 160 / \geq 100$	Stage 2	Non- pharmacological therapies and medications

Key: SBP = Systolic blood pressure DBP = Diastolic blood pressure

Note. Adapted from “The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure,” by Chobanian et al. 2003.

Table 2.

Instruments

Table 2.

Dependent Variables/Outcome Variables	Instrument	Time	
BP	Advantage Ultra 6023 Sphygmomanometer using JNC 7 guidelines on blood pressure measurement. Self-Assessment Sheet (SAS)	Baseline and at each educational session	
Activity Level	Pedometer Self-Assessment Sheet (SAS)	Baseline and at each educational session	
Dietary Habits	Self-Assessment Sheet (SAS)	Baseline and at each educational session	
BMI	Health O Meter Beam scale	Baseline and at each educational session	
Independent Variables/predictor variables	Instrument	Time	
Participant Characteristics/Demographics	Demographics Survey -	Baseline	
Motivation	Visual Analogue Scale	Baseline	Final session
Subjective norm, perceived behavioral control	Centering-Healthcare Survey	Baseline	Final session
Barriers to self-care behavior	Centering-Healthcare Survey	Baseline	Final session

