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A Phone Coaching Intervention to Improve Blood Pressure and Hypertension Self-management Practices in a Community-Based Setting: Pilot Study

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Background

Hypertension (HTN) is a lifelong chronic disease that requires self-management practices (diet, physical activity, and medication adherence). HTN is a common diagnosis for which many adults seek medical attention. HTN increases the risk of death due to coronary heart disease, stroke, end-stage renal disease, and heart failure (Cené et al., 2016). All cultures are affected by HTN; however, African Americans (AAs) are disproportionately affected in comparison to other cultures. Racial differences in HTN prevalence and blood pressure (BP) control are persistent, with AAs having the highest prevalence of HTN and the highest inadequate BP control rates (Cené et al., 2016). According to the Centers for Disease Control and Prevention (CDC), almost half of adults have hypertension (48.1%, 119.9 million). AA adults (56%) are more likely than their white (48%) counterparts to be diagnosed with HTN (Centers for Disease Control and Prevention [CDC], 2023). AA men are at a higher risk of experiencing a stroke and are more likely to die from heart disease due to poor hypertension self-management practices.

Individuals diagnosed with HTN must perform self-care practices to effectively manage their disease. Because HTN self-care management practices are performed by patients and families, there is an important need for adequate and consistent hypertension self-management practices knowledge. Phone Coaching (PC) has been supported in the literature as an effective intervention to improve hypertension self-management practices. The purpose of this quality improvement project was to examine the effects of PC on HTN self-management practices in a 12-week pilot project. The aim of the project was BP reduction and improved self-management practices among AA adults in a faith-based setting.

Treatment of HTN and HTN-related complications is costly. HTN continues to be a public health burden on the economy in the form of increased medical costs and indirect costs. Kirkland et al. (2018) noted that the cost of adults with HTN is estimated to be almost $2,000 more in annual healthcare costs compared to those without HTN. Nationally, annual healthcare costs for persons with HTN were estimated to be $131 billion higher than those without the disease (Kirkland et al., 2018).

Primary care clinics are where most patients are diagnosed and treated for HTN. Teaching HTN self-management practices and knowledge about the disease can be challenging in the primary care setting, especially when healthcare providers are limited in time spent with patients. Consequently, many patients diagnosed with HTN are not receiving HTN self-management practice education at a time when they are seeking information about the disease. Considering the number of AAs suffering from HTN, it is evident that traditional methods such as providing pamphlets on HTN have been unsuccessful when implemented as the only strategy. A PC intervention can be an effective means to improve BP reduction and HTN self-management practices. PC provides patients with educational information and skills needed to self-manage their chronic condition(s) and may prevent complications resulting from poorly managed chronic diseases (Huffman, 2007).

The following PICOT question was tested: In African American adults with hypertension: How does phone coaching impact blood pressure reduction and self-management practices over a 12-week period?

Methods

Design

A one-group pre-test post-test design was used in this 12-week pilot project. The project aimed to help AAs reduce BP levels and improve hypertension self-management practices (diet, physical activity, and medication adherence).

Goals

The goals of the project were that after receiving a 12-week community-based intervention, participants would show improvements from pre- to post-intervention in 1) BP levels and 2) HTN self-management practices (diet, exercise, medication).

Project Site and Population

The practice site was in participants' homes in a rural area of (W-S) NC. A convenience sample of AAs 18 years and older who met the criteria for inclusion were recruited into the project. The study sample included participants with a self-reported diagnosis of HTN made by a healthcare provider. Further inclusion criteria were the ability to speak and read English and the ability to complete surveys. Exclusion criteria included having participated in a HTN self-management program during the past year and pregnant women (because of the complexity of pregnancy). Eligible participants were recruited into the project with the assistance of a community pastor. Potential participants were identified through the following methods: informational presentations at a community church, posting of recruitment flyers distributed within the church and throughout the community, word of mouth, and pastor announcements through his weekly services. An Institutional Review Board (IRB) application was submitted and approved by the university. There was a total of 21 participants recruited into the project.

Outcome Measures

A HTN self-management participant questionnaire was used to collect demographic data and HTN-related inquiries. BP measurements were also obtained. The Hypertension Self-Care Activity Level Effects (H-SCALE) scale is a 31-item questionnaire used to collect HTN self-care activities. Regarding medication usage, low-salt diet, physical activity, and smoking, participants were asked, “How many of the past seven days did you …...?” and participants were given number scores for each component. The numerical scoring of items was based on the number of days of the week that the behavior was performed using a 7-point reply format. The total scores ranged from 0 to 133 points. Another domain included on the H-Scale was weight management, that used a 5-point reply format. The total scores ranged from 0 to 50. Higher scores indicated more days that participants performed self-care activities. All domain levels had adequate Cronbach Alpha Reliability coefficients: medication usage (.84), low salt diet (.74), physical activity (.95), and weight management (.87) (Warren-Findlow & Seymour, 2011).

The primary investigator (PI) created educational PC scripts that addressed each domain on the H-SCALE. Each participant received 6 PC sessions over 12 weeks that lasted for 20 minutes. Each PC session emphasized the importance of healthy eating, physical activity, and medication adherence as referenced in the resource manual: "High Blood Pressure in African Americans" published by the American Health Association, Inc. © Copyright 2020.

Analysis

Descriptive statistics, including frequency and percentage, mean (M), standard deviation (SD), and minimum and maximum, were used to describe the characteristics of the sample and pre-and post-test measures. The data were analyzed using the IBM *SPSS 27 version* (IBM SPSS, Chicago, IL). Descriptive statistics, including frequencies and percentages for nominal and ordinal level measurements, were used to quantify the demographic and the various subscales. The Wilcoxon Rank Sum test was used to determine the differences in the pre-and post-intervention rank scores of BP readings.

Results

A total of 21 participants completed the project, 14 (67%) females and 7 (33%) males. All the participants identified their ethnicity as AA. Participants in the sample ranged from 29 to 70 years, with a mean age ≥ 61 years old. The majority (86%) of the participants had completed high school or a higher level of education. The duration of HTN for the participants ranged from 2 to 20 years, with a mean duration of 10 years. The post-intervention results after 12 weeks of PC showed a significant reduction in diastolic BP values. There were statistically significant differences in the rank sum scores pre- and post-intervention for DBP ($z = 2.195$, $p = 0.0281$). See Table 1. There were no significant differences in the rank sum scores pre- and post-intervention for SBP ($z = 1.807$, $p = 0.0708$), but there were clinically significant differences with a 9.86 mm Hg reduction in systolic BP at the completion of the project. Participants showed improvements from pre- to post-intervention in the outcomes of the hypertension self-care activity (H-Scale) in this project. There were improvements in behaviors for medication use (pre mean 16.24, post mean 17.14), diet (pre mean 35.19, post mean, 38.48), and weight management (pre mean 38.1, post mean 36.33). See Table 2.

Discussion

Previous PC intervention studies have been conducted with participants who were experiencing HTN (Bosworth et al., 2009; Margolious et al., 2012; Bosworth et al., 2008; and Wu et al., 2018). Findings from this research indicated that participants in health coaching intervention studies that included a PC component had improved BP reduction and self-management practices compared to the control group.

The findings of this study indicated that participation in the PC HTN self-management project showed improvements across the HTN self-management components. BP reduction and HTN self-management practices (diet and medication adherence) showed improvements post-intervention. Designing and implementing culturally tailored HTN self-management programs with PC in community-based settings are practical and necessary to reduce the disparity in HTN for AAs.

Implication for Practice

Hypertension continues to be a public burden on the economy and a huge burden to individuals. Providing appropriate and effective HTN self-management education is essential in preventing and reducing HTN-related complications, thus leading to a healthier life for those affected by the disease and lower healthcare costs. Collaborating with faith-based institutions to develop and implement HTN self-management programs may reduce the unnecessary use of healthcare resources, reduce HTN disparities, and improve the quality of life for those living with this disease.

Conclusion

This short-duration intervention project showed improvements in HTN self-care practices and may be more practical in reaching this underserved population in the community. Findings indicated that interventions focused on BP reduction and HTN self-management practices can be implemented in the community and can lead to an improved quality of life.

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Table 1. The difference in Average Scores for SBP and DBP

	n	Average Scores	Rank Sum	Z-Score	*p*-value[§]
Systolic Blood Pressure					
Pre-intervention	21	143.24	523	1.807	0.0708
12 weeks post-intervention	21	133.38	380		
Diastolic Blood Pressure					
Pre-intervention	21	88.67	537.5	2.195	0.0281
12 weeks post-intervention	21	80	565.5		

Note. [§]$p < .05$

Table 2. Hypertension Self-Care Activity Level Effects (H-SCALE)

		Pre-Intervention				Post-Intervention			
	n	Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
Medication Usage	21	16.24	7.47	0	21	17.14	7.25	0	21
Diet	21	35.19	12.28	15	62	38.48	9.91	25	54
Physical Activity	21	7.33	3.48	1	14	6.71	4.01	0	13
Smoking	21	0.57	2.4	0	11	1.33	3.58	0	14
Weight Management	21	32.81	5.97	20	44	36.33	7.16	23	49
Alcohol Consumption	21	1.48	3.39	0	14	1.52	3.54	0	14