Published in final edited form as:

Clin Nurse Spec. 2017 ; 31(6): 311–318. doi:10.1097/NUR.0000000000000331.

Opportunities for the Advanced Practice Nurse to Enhance Hypertension Knowledge and Self-Management among African American Women

Lenette M. Jones, PhD, RN, ACNS-BC [Assistant Professor],

Department of Health Behavior and Biological Sciences, University of Michigan School of Nursing, Room 2180, 400 N. Ingalls, Ann Arbor, MI 48109, phone: 734-763-1371

Marie-Anne S. Rosemberg, PhD, MN, RN [Assistant Professor], and

Department of Systems, Populations and Leadership, University of Michigan, School of Nursing

Kathy D. Wright, PhD, RN, GCNS-BC, PMHCNS-BC [Assistant Professor]

The Ohio State University College of Nursing, 1585 Neil Avenue, Columbus, Ohio 43210, phone: 614-292-0309

Abstract

Purpose—Despite increased awareness and the advent of methods to manage the disease, hypertension is poorly controlled among African American women. This study explored hypertension knowledge and blood pressure in a sample of African American women.

Design—A descriptive, cross-sectional design was used to collect survey data on hypertension knowledge.

Methods—African American women attending a church conference were invited to complete a questionnaire, which included the Check Your High Blood Pressure Prevention IQ survey, and had their blood pressures measured.

Results—Of the 151 women who participated, 62% were diagnosed with hypertension. Many of the women - even those not diagnosed with hypertension - had elevated blood pressures. Although the average scores showed that the women scored well on the survey, there were four items on the survey that a percentage the women had difficulty with - questions about (1) stress as a cause of hypertension, (2) symptoms associated with high blood pressure, (3) whether or not hypertension could be cured, and (4) the amount of exercise needed to help reduce blood pressure.

Conclusions—Despite efforts to increase awareness and control of hypertension, considerable misconceptions about the disease were found in this sample of African American women. To improve self-management of hypertension among this group, advanced practice nurses need to directly address these misconceptions.

Introduction

Hypertension, defined as having a systolic blood pressure reading of 140 mmHg or higher and a diastolic blood pressure reading of 90 mmHg or higher, affects over 75 million individuals in the United States.¹ Despite increased awareness of hypertension's etiology and efforts to mitigate the complications associated with this disease, hypertension remains a major public health concern, with less than half the affected population having the disease under control, and costing the nation over \$48.6 billion annually.¹⁻⁸ Lack of self-management of hypertension increases one's risks for developing heart disease and stroke.⁹⁻¹¹ Some women do perceive themselves as being at risk for developing hypertension, however women with hypertension have a higher risk of cardiovascular related death than men.¹² African American women have the highest risk, as they are disproportionately affected by hypertension and hypertension-related complications.^{9,13}

Among African American women diagnosed with hypertension, almost half have do not have their blood pressure under control (47.3%) compared with European American women (43.2%).¹⁴ In addition, African American women are more likely to be diagnosed with hypertension at a younger age, have higher blood pressure readings, and die earlier from complications related to hypertension, when compared to European American women.^{9,14} Because of such disparities, it is important to explore African American women's knowledge and their approach to hypertension self-management. Interventions are needed that address the cultural and gender needs specific to African American women. The first step in developing interventions that appropriately target this problem begins with understanding how African American women currently conceptualize hypertension and manage it.

Hypertension is a chronic disease that necessitates consistent behavior changes that are maintained over time.⁹ Self-management of hypertension requires a skill set that includes problem-solving, decision-making, finding and utilizing resources, and taking action to reduce and maintain blood pressure.¹⁵ Patients with hypertension need information about the condition and must have an accurate understanding to manage it successfully. Blood pressure self-management may include a change in dietary or exercise patterns, as well as medication adherence.⁹

The patient-provider relationship is an important factor in promoting self-management of hypertension.^{16,17} Becoming aware of patients' understanding of hypertension is essential to reduce knowledge deficits that could influence health outcomes. Nurses are well positioned to work to reduce the disparity in hypertension among African Americans because they are taught to monitor, treat, and educate patients; advanced practice nurses can also prescribe medications and develop individualized treatments plans.¹⁸⁻²¹ However, the majority of the responsibility then rests with the patients, as they are to apply the information and recommendations obtained from the advanced practice nurse to their daily life in order to self-manage at home.

There are several potential barriers to self-management of hypertension. First, some patients do not conceptualize the disease as chronic; they expect that hypertension can be cured and that medications are only required for symptoms.^{22,23} In addition, previous studies have

shown that participating overweight and obese African American women reported that they were not attempting to lose weight.²⁴⁻²⁶ Research has also demonstrated that lack of knowledge regarding hypertension and the necessary diet changes are a barrier to self-management of the condition for some African American women.²⁷ Other barriers to treatment may include patient-specific factors (beliefs, behavioral norms, health literacy) and the intricacies of the patient-provider relationship.^{16,28}

Cultural influences shape beliefs about hypertension and therefore impact self-management behaviors.²⁹ Little is known about how African American women's knowledge and beliefs about hypertension may affect their approach to self-management of blood pressure. Therefore, the purpose of this study was to examine hypertension knowledge and blood pressure levels in a sample of African American women.

Methods

The methods employed in this study have been described elsewhere.^{30,31} A brief description is provided here for clarity.

Design

We used a descriptive cross-sectional study design. In 2013, a convenience sample of women attending a Midwestern regional church conference were invited to participate in the study. The University of Michigan Institutional Review Board (IRB) granted the work IRB-exempt status. In addition, the conference administrators granted permission for the study to be conducted. In order to be eligible to participate in the study, the women were required (1) to self-identify as African American and (2) to be age 18 years or older. Individuals who were unable to provide spoken consent to participate were excluded from the study.

Data collection procedures

Once they expressed interest in participating in the study, individuals were directed to a quiet area in the conference center that was reserved for the study. Given the IRB exemption status, completion of the questionnaire signified consent to participate in the study. The first page of the questionnaire provided written information about the study. This information included an explanation that participation in the study was completely voluntary and that the participants could change their mind and decide not to participate in the study at any time. In addition, the principal investigator was available to answer questions related to the study. Each participant received a \$10 gift card for her participation.

Data sources

There were two types of data sources for this study: (1) an anonymous questionnaire booklet and (2) blood pressure measurement. The questionnaire took approximately 20 minutes to complete. The questionnaire included a demographic section (i.e., inquiring about age, education, income, and marital status). The questionnaire also included another section about hypertension knowledge. Participants' knowledge of hypertension was assessed with a 12-item survey developed by the National Heart, Lung, and Blood Institute – the *Check Your High Blood Pressure Prevention IQ* survey.³² This survey has been used in previous

studies with African American samples.³³ The Flesh-Kincaid reading level of this tool was 3.5. Topics included the cause and management of hypertension, as well as family history of hypertension. Participants could select either *true* (scored as a 1) or *false* (scored as a 0). An overall score was calculated by summing the responses. Possible scores ranged from 0 – 12, with higher scores indicating more accurate knowledge about hypertension.

Upon completion of the questionnaire, each participant's blood pressure was measured using a protocol developed from the *Seventh Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure* (JNC-7) guidelines.⁹ All blood pressure measurements were taken after the participant had been sitting for at least five minutes, in a chair with back support, with legs uncrossed. The Omron Elite 7300W Women's Advanced Blood Pressure Monitor was used to measure each participant's blood pressure.³⁴ This model had been validated in previous studies; the average error reported was 1.2 mmHg ($SD = 5.2$)/3.3 mmHg ($SD = 5.5$).³⁵ Each participant received her blood pressure measurement results. She was advised if her blood pressure was safe, was slightly elevated and requiring follow-up with a provider, or was dangerously elevated and required immediate follow-up with a provider. Women ($n = 40$) with blood pressure readings greater than 150/110 mmHg were advised to immediately seek care from the nearest emergency room.

Statistical analyses

Questionnaires that were not complete ($n = 5$) were excluded; there were a total of 151 complete questionnaires available for analysis. SPSS software (Version 24) was used to conduct the analyses. Descriptive statistics were used to summarize the data. Pearson product moment correlations were conducted to explore the relationship between systolic blood pressure scores and hypertension knowledge scores. Independent-samples t-tests were conducted to compare hypertension knowledge scores for women with controlled blood pressure and women with uncontrolled blood pressure. Linear regression was used to assess the effect of demographics (age, income, education, diagnosis of hypertension, employment status) on hypertension knowledge scores.

Results

Participants

A total of 151 individuals participated in the study. The majority of the participants had at least some college education (85.5%), were married or partnered (43.6%), and were working full-time (43.7%). The mean age of the sample was 55.2 ($SD = 13.3$), with ages ranging from 19 to 82 years. Sixty-two percent of the women stated that they had been clinically diagnosed with hypertension by a healthcare provider.

As shown in Table I, the women were further divided into groups to examine the differences between women who were normotensive and women with elevated blood pressures – 64% of the sample had systolic blood pressure less than 140 mmHg ($n = 96$) and 36% of the sample had systolic blood pressure greater or equal to 140 mmHg ($n = 55$). There were some differences between the groups. The women in the elevated blood pressure group were more

likely to be diagnosed with hypertension. In addition, the women with elevated blood pressures were older (59 years) than the women with controlled blood pressure (52 years), $t(135.17) = -3.60, p < .001$.

Blood pressure

The average blood pressure reading for the overall sample was 136/82 mmHg (which is elevated and categorized as prehypertension). The average blood pressure reading for women diagnosed with hypertension was 143/84 mmHg. Eighteen of the women (14%) had a systolic reading of greater than 160 mmHg. Sixteen of these women had been diagnosed with hypertension, while two had not been diagnosed. Most of the women (55%) had their blood pressure measured within the past two months.

Hypertension knowledge scores

The majority of the sample (97%) answered at least seven of the 12 questions correctly (Table II). The average score for hypertension knowledge was 8.76 (SD = 1.00), which was a score of 73%. The scores ranged from 6 to 11, or 50% to 92%. The effects of age, income, education, diagnosis of hypertension, and employment status on hypertension knowledge were examined. Each variable was entered into a separate regression analysis in order to determine its independent influence on hypertension knowledge scores. Each model was examined and none of the demographic characteristics had a statistically significant effect on hypertension knowledge scores.

Overall, there were eight statements to which the majority of the sample selected the correct response. As shown in Table II, there were three statements to which the majority of the participants responded incorrectly. In response to the first statement, "Stress causes high blood pressure," 89% of the participants incorrectly responded "true". In response to the next statement, "High blood pressure has no symptoms," 87% of the sample incorrectly responded "false". In response to the third statement, "High blood pressure has no cure," 72% of the participants responded incorrectly, "false". Also noteworthy, 54% of the sample incorrectly responded "true" to the statement, "You have to vigorously exercise every day to improve your blood pressure and health."

There was no association between systolic blood pressure and hypertension knowledge $r(-.05), p = .52$. In addition, there was no association between blood pressure control status and hypertension knowledge $r(-.06), p = .90$. As shown in Table III, women who were normotensive were compared to women with elevated blood pressures, to examine differences in each hypertension knowledge survey question. No statistical differences were identified between the groups, meaning that women with elevated blood pressures answered the questions in the same manner as the women who were normotensive.

Discussion

This study addresses the need for evidence related to hypertension knowledge specifically among at-risk women.¹² The overall average hypertension knowledge score in this sample was 73%, suggesting that, in general, this group of African American women were knowledgeable about the condition. This is comparable to reports that participants were

generally knowledgeable about hypertension in a sample of primarily European women diagnosed with hypertension.³⁶ Although their overall knowledge was above average, the women in this study could benefit from additional education on the cause, lack of symptoms, and options for the management of hypertension. In fact, when comparing women who were normotensive to women with elevated blood pressures, there were no differences in the way that they responded to the statements. Also, none of the demographics variables (age, income, education, diagnosis of hypertension, employment status) explained any of the variance in hypertension knowledge scores. This suggests that despite varying demographics and blood pressure status, the women in the sample had the same cultural misconceptions about specific characteristics of hypertension (cause, symptoms, and management).

There were three statements to which the majority of the participants responded incorrectly which may have been influenced by cultural misconceptions. The first statement concerned hypertension symptoms. Although studies have shown an association between hypertension and late-occurring symptoms, such as headache and nosebleeds, self-management of hypertension is not based on response to symptoms. It is based on daily eating and exercise patterns, and adherence to medications.⁹ Basing treatment on symptoms might lead to inconsistencies in a patients' regimen, such as not taking medications as directed or only reducing sodium in response to a headache.

The next statement that the women had difficulty answering was related to stress as a cause of high blood pressure. There are debates about the role of stress and poor health outcomes including elevated blood pressure. Chronic stressors relating to social constructs such as race, socioeconomic status, immigration status and experiences, stressful work environment, and history of trauma have been shown to have a direct correlation with high blood pressure.³⁷⁻⁴⁰ However, among this group of study participants, it was noted that their conceptualizing episodic stress as a cause lends to the belief that hypertension is not a chronic disease, supporting the notion that stress reduction would lead to remediation of hypertension. Previous studies have also reported on beliefs that hypertension is a result of stress and is a curable disease.⁴¹⁻⁴³ The fact that the women believed hypertension could be cured showed that they did not view hypertension as a chronic disease. This finding is disconcerting given that individuals must have accurate knowledge in understanding hypertension is manageable, not curable.⁹ Patients also must understand the purpose of following a regimen (dietary changes, exercise plans, and medication adherence) in order to effectively self-manage their blood pressure.^{9,16} It is within the advanced practice nurse's scope of practice to identify gaps in the patient's knowledge of hypertension and provide education that meets their needs.¹⁸ Understanding the basis for these misconceptions will help the advanced practice nurse tailor culturally competent health education messaging to African American women with hypertension.

Finally, 35% of the sample incorrectly answered the question regarding the use of vigorous exercise to lower blood pressure. This relates to previous studies that found overweight and obese African American women were not participating in weight loss efforts due concerns surrounding the misconceived intensity of exercise required to reduce weight.²⁴⁻²⁶ Perhaps the women felt if they were not able to exercise vigorously, their weight loss efforts would be in vain. Advance practice nurses play a role in delivering evidence-based education to

address this misconception by promoting the benefits of light and moderate exercise to reduce blood pressure.

Comprehensive interventions (that also account for stressors such as race, and socioeconomic status) that address such cultural misconceptions will improve self-management routines, helping ensure that they are successful and consistent across the lifetime. Nurse administered interventions have been successful in assisting patients to self-manage their blood pressure through making these lifestyle changes.^{21,44,45} Advanced practice nurses can help to mitigate these problems in two ways. First, they must remain current in evidence-based practice and cognizant of differences among groups, especially nurses who are prescribing anti-hypertensive medications.²⁰ In addition, frequent patient-nurse interactions can lead to increased medication adherence among hypertensive patients.^{21,44,46,47} While interacting with patients, nurses can assess patients for side effects and suggest modifications to their treatment plan.²⁰ Advanced practice nurses can also help patients to self-manage side effects while adhering to their current treatment plan.^{44,48}

As expected, there was no correlation between hypertension knowledge and systolic blood pressure. Studies continue to show that knowledge does not necessarily translate to changes in behavior.^{9,41,49,50} This finding is consistent with other studies, as fewer than half of the women with hypertension who were on medication had their blood pressure under control.^{3,51} The mean systolic blood pressure of women diagnosed with hypertension was greater than 140 mmHg. Therefore, there are opportunities to improve knowledge of hypertension and promote self-management strategies to improve blood pressure control, particularly among the women in the sample who had been diagnosed with hypertension and were already receiving treatment.

There are health disparities among those with hypertension and nursing has been challenged to find methods to reduce those differences.^{9,52,53} The advance practice nurse has highly developed skills that can make significant contributions towards helping patients to successfully self-manage their blood pressure. Through implementing evidence-based practices, nurse-directed care will continue to decrease morbidity and mortality related to hypertension.^{19,20,54} However, to further enhance care provided by the advance practice nurse, we must develop and test new intervention methods, especially those that can be tailored to meet the needs of vulnerable populations in order to continue to reduce the health disparity gap.

Limitations

These findings should be interpreted within the limitations of the study. One limitation is that data collection took place at a regional church conference, where the women were culturally similar and it is probable they had shared belief systems. Also, the sample obtained was a convenience sample, which limits the generalizability of these findings. Additional studies are needed to examine hypertension knowledge and blood pressure status among women in other church settings, outside of the church setting and among women from other regions of the United States, to determine if they have the same misconceptions about hypertension self-management. The study participants were highly educated women, as over 85% of the sample had attended college. Studies are needed among women with

fewer years of education to determine if their perceptions and knowledge differ. Another limitation is that this was a cross-sectional study and blood pressure was measured at one time point. There are multiple factors that could have affected the women's blood pressure readings – normal blood pressure variation, as well as physical (arterial stiffness), emotional (anxiety), and behavioral (sleep) influences.⁵⁵ Finally, there was limited information on the validity and reliability of the hypertension knowledge survey, although this survey has been used in similar samples.³³ Despite these limitations, this study provided an opportunity to capture specific views of women within a community and highlights knowledge deficits that must be addressed in order to improve self-management and blood pressure control.

Conclusion

This study examined hypertension knowledge and blood pressure in a sample of African American women. The findings of this study show that there are opportunities for the advanced practice nurse to improve knowledge among the women in this sample, particularly among women diagnosed with hypertension. Despite the high prevalence of hypertension in the sample, the women had a moderate level of knowledge of the condition. The knowledge deficits identified could affect blood pressure self-management. Women in this study could benefit from additional education on the cause, lack of symptoms, curability, and options for management of hypertension. The lack of an association between one's blood pressure and one's hypertension knowledge suggests that women may require additional support to translate hypertension knowledge into self-management behaviors. Additional studies are needed to better understand the role and influence of the advanced practice nurse in translating hypertension education into health information, diet, exercise, and medication adherence behaviors among African American women improve their blood pressure control.

Acknowledgments

Research reported in this publication was supported by the National Institute of Nursing Research of the National Institutes of Health under Award Numbers T32-NR-007073 and P30NR015326-02S1. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

References

1. Centers for Disease Control and Prevention. 2016. http://www.cdc.gov/dhdsr/data_statistics/fact_sheets/docs/fs_bloodpressurepdf
2. Valderrama AL, Gillespie C, King SC, George MG, Hong Y, Gregg E. Vital Signs: Awareness and Treatment of Uncontrolled Hypertension Among Adults- United States, 2003-2010. Morbidity and Mortality Weekly Report. 2012; 61(35)
3. Egan BM, Zhao Y, Axon RN. US trends in prevalence, awareness, treatment, and control of hypertension, 1988-2008. JAMA : the journal of the American Medical Association. 2010; 303(20): 2043–2050. [PubMed: 20501926]
4. Cushman WC, Whelton PK, Fine LJ, et al. SPRINT Trial Results Latest News in Hypertension Management. Hypertension. 2016; 67(2):263–265. [PubMed: 26553234]
5. Appel LJ, Champagne CM, Harsha DW, et al. Effects of comprehensive lifestyle modification on blood pressure control: main results of the PREMIER clinical trial. JAMA : the journal of the American Medical Association. 2003; 289(16):2083–2093. [PubMed: 12709466]

6. Artinian NT, Flack JM, Nordstrom CK, et al. Effects of nurse-managed telemonitoring on blood pressure at 12-month follow-up among urban African Americans. *Nursing research*. 2007; 56(5): 312–322. [PubMed: 17846552]
7. Flack JM, Sica DA, Bakris G, et al. Management of high blood pressure in blacks an update of the international society on hypertension in blacks consensus statement. *Hypertension*. 2010; 56(5): 780–800. [PubMed: 20921433]
8. Schneider RH, Alexander CN, Staggers F, et al. A randomized controlled trial of stress reduction in African Americans treated for hypertension for over one year. *American journal of hypertension*. 2005; 18(1):88–98. [PubMed: 15691622]
9. Chobanian AV, Bakris GL, Black HR, et al. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *JAMA : the journal of the American Medical Association*. 2003; 289(19):2560–2572. [PubMed: 12748199]
10. Mozaffarian D, Benjamin EJ, Go AS, et al. Executive Summary: Heart Disease and Stroke Statistics—2015 Update: A Report From the American Heart Association. *Circulation*. 2015; 131(4):434–441.
11. Roger VL, Go AS, Lloyd-Jones DM, et al. Heart disease and stroke statistics--2012 update: a report from the American Heart Association. *Circulation*. 2012; 125(1):e2–e220. [PubMed: 22179539]
12. Gudmundsdottir H, Høieggen A, Stenehjem A, Waldum B, Os I. Hypertension in women: latest findings and clinical implications. *Therapeutic advances in chronic disease*. 2012; 3(3):137–146. [PubMed: 23251774]
13. Jamerson KA. The disproportionate impact of hypertensive cardiovascular disease in African Americans: getting to the heart of the issue. *The Journal of Clinical Hypertension*. 2004; 6(s4):4–10.
14. Roger VL, Go AS, Lloyd-Jones DM, et al. Heart disease and stroke statistics--2011 update: a report from the American Heart Association. *Circulation*. 2011; 123(4):e18–e209. [PubMed: 21160056]
15. Lorig KR, Holman HR. Self-management education: History, definition, outcomes, and mechanisms. *Annals of Behavioral Medicine*. 2003; 26(1):1–7. [PubMed: 12867348]
16. Martin LR, Williams SL, Haskard KB, DiMatteo MR. The challenge of patient adherence. *Ther Clin Risk Manag*. 2005; 1(3):189–199. [PubMed: 18360559]
17. Go AS, Bauman MA, King SMC, et al. An effective approach to high blood pressure control: a science advisory from the American Heart Association, the American College of Cardiology, and the Centers for Disease Control and Prevention. *Journal of the American College of Cardiology*. 2014; 63(12):1230–1238. [PubMed: 24246165]
18. McLean D, Kingsbury K, Costello J, Cloutier L, Matheson S. 2007 Hypertension Education Program (CHEP) recommendations: management of hypertension by nurses. *Canadian Journal of Cardiovascular Nursing*. 2007; 17(2):10–16. [PubMed: 17583316]
19. Chummun H. Hypertension -- a contemporary approach to nursing care. *British Journal of Nursing*. 2009; 18(13):784–789. [PubMed: 19593308]
20. Breen J. An introduction to causes, detection and management of hypertension. *Nursing Standard*. 2008; 23(14):42–46.
21. Bengtson A, Drevenhorn E. The nurse's role and skills in hypertension care: a review. *Clinical Nurse Specialist: The Journal for Advanced Nursing Practice*. 2003; 17(5):260–268.
22. Odedosu T, Schoenthaler A, Vieira DL, Agyemang C, Ogedegbe G. Overcoming barriers to hypertension control in African Americans. *Cleveland Clinic Journal of Medicine*. 2012; 79(1):46–56. [PubMed: 22219234]
23. Ogedegbe G, Mancuso CA, Allegrante JP. Expectations of blood pressure management in hypertensive African-American patients: a qualitative study. *Journal of the National Medical Association*. 2004; 96(4):442. [PubMed: 15101664]
24. Warren-Findlow J, Seymour RB, Brunner Huber LR. The Association Between Self-Efficacy and Hypertension Self-Care Activities Among African American Adults. *Journal of Community Health*. 2012; 37(1):15–24. [PubMed: 21547409]

25. Kumanyika S, Wilson JF, Guilford-Davenport M. Weight-related attitudes and behaviors of black women. *Journal of the American Dietetic Association*. 1993; 93(4):416–422. [PubMed: 8454809]
26. West DS, Prewitt TE, Bursac Z, Felix HC. Weight loss of black, white, and Hispanic men and women in the Diabetes Prevention Program. *Obesity*. 2008; 16(6):1413–1420. [PubMed: 18421273]
27. Spencer A, Jablonski R, Loeb SJ. Hypertensive African American women and the DASH diet. *The Nurse Practitioner*. 2012; 37(2):41–46.
28. Scisney-Matlock M. Strategies for Implementing and Sustaining Therapeutic Lifestyle Changes as Part of Hypertension Management in African Americans. *Postgraduate medicine*. 2009; 121(3): 147–159. [PubMed: 19491553]
29. Heurtin-Roberts S, Reisin E. The Relation of Culturally Influenced Lay Models of Hypertension to Compliance With Treatment. *American journal of hypertension*. 1992; 5(11):787–792. [PubMed: 1457078]
30. Jones LM, Veinot T, Pressler SJ, Coleman-Burns P, McCall A. Exploring Predictors of Information Use to Self-Manage Blood Pressure in Midwestern African American Women with Hypertension. *Journal of Immigrant and Minority Health*. 2017:1–8. [PubMed: 26880029]
31. Jones LM, Veinot TC, Pressler SJ. Cell Phone Information Seeking Explains Blood Pressure in African American Women. *Western journal of nursing research*. 2017 0193945916689069.
32. National Institutes of Health National Heart L, Blood Institute. Check your high blood pressure IQ. Bethesda, MD: US Government Printing Office; 1994.
33. Scisney-Matlock M, Makos G, Saunders T, Jackson F, Steigerwalt S. Comparison of Quality-of-Hypertension-Care Indicators for Groups Treated by Physician Versus Groups Treated by Physician-Nurse Team. *Journal of the American Academy of Nurse Practitioners*. 2004; 16(1):18–23.
34. Omron Healthcare. Bannockburn, IL 60015.
35. Grim CE, Grim CM. The Omron Elite 7300W home blood pressure monitor passes the European Society of Hypertension International Validation Protocol for women and men. *Blood pressure monitoring*. 2009; 14(2):87–90. [PubMed: 19305188]
36. Oliveria SA, Chen RS, McCarthy BD, Davis CC, Hill MN. Hypertension knowledge, awareness, and attitudes in a hypertensive population. *Journal of general internal medicine*. 2005; 20(3):219–225. [PubMed: 15836524]
37. Grotto I, Huerta M, Sharabi Y. Hypertension and socioeconomic status. *Current opinion in cardiology*. 2008; 23(4):335–339. [PubMed: 18520717]
38. Moran A, Roux AVD, Jackson SA, et al. Acculturation is associated with hypertension in a multiethnic sample. *American journal of hypertension*. 2007; 20(4):354–363. [PubMed: 17386340]
39. Kulkarni S, O'Farrell I, Erasi M, Kochar M. Stress and hypertension. *WMJ: official publication of the State Medical Society of Wisconsin*. 1998; 97(11):34–38.
40. Rosenthal T, Alter A. Occupational stress and hypertension. *Journal of the American Society of Hypertension*. 2012; 6(1):2–22. [PubMed: 22024667]
41. Lukoschek P. African Americans' beliefs and attitudes regarding hypertension and its treatment: a qualitative study. *Journal of Health Care for the Poor and Underserved*. 2003; 14(4):566–587. [PubMed: 14619556]
42. Wilson RP, Freeman A, Kazda MJ, et al. Lay beliefs about high blood pressure in a low-to middle-income urban African-American community: an opportunity for improving hypertension control. *The American journal of medicine*. 2002; 112(1):26–30. [PubMed: 11812403]
43. Sanon MA, Mohammed SA, McCullagh MC. Definition and management of hypertension among Haitian immigrants: a qualitative study. *Journal of health care for the poor and underserved*. 2014; 25(3):1067. [PubMed: 25130225]
44. Bosworth HB, Olsen MK, Gentry P, et al. Nurse administered telephone intervention for blood pressure control: a patient-tailored multifactorial intervention. *Patient Educ Couns*. 2005; 57(1):5–14. [PubMed: 15797147]
45. Aminoff UB, Kjellgren KI. The nurse--a resource in hypertension care. *J Adv Nurs*. 2001; 35(4): 582–589. [PubMed: 11529958]

46. Clark MJ, Curran C, Noji A. The effects of community health nurse monitoring on hypertension identification and control. *Public Health Nurs.* 2000; 17(6):452–459. [PubMed: 11115143]
47. Chummun H. The management of hypertension: the impact of nurse-led clinics. *Nurse Prescribing.* 2011; 9(2):68–74.
48. Bosworth HB, Powers BJ, Oddone EZ. Patient self-management support: novel strategies in hypertension and heart disease. *Cardiology clinics.* 2010; 28(4):655–663. [PubMed: 20937448]
49. Homko CJ, Santamore WP, Zamora L, et al. Cardiovascular Disease Knowledge and Risk Perception Among Underserved Individuals at Increased Risk of Cardiovascular Disease. *Journal of Cardiovascular Nursing.* 2008; 23(4):332–337. [PubMed: 18596496]
50. Konicki AJ. Knowledge of cardiovascular risk factors, self-nurturance, and heart-healthy behaviors in women. *Journal of Cardiovascular Nursing.* 2012; 27(1):51–60. [PubMed: 21372730]
51. Go A, Mozaffarian D, Roger V, et al. On behalf of the American Heart Association statistics committee and stroke statistics subcommittee. Heart disease and stroke statistics—2013 update: a report from the American Heart Association *Circulation.* 2013; 127(1):e1–e240.
52. Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing at IoM. *The Future of Nursing: Leading Change, Advancing Health.* The National Academies Press; 2011.
53. Heidenreich PA, Trogdon JG, Khavjou OA, et al. Forecasting the future of cardiovascular disease in the United States: a policy statement from the American Heart Association. *Circulation.* 2011; 123(8):933–944. [PubMed: 21262990]
54. Peters RM, Flack JM. Salt sensitivity and hypertension in African Americans: implications for cardiovascular nurses. *Progress in cardiovascular nursing.* 2000; 15(4):138–144. [PubMed: 11098526]
55. Parati G, Ochoa JE, Lombardi C, Bilo G. Assessment and management of blood-pressure variability. *Nature Reviews Cardiology.* 2013; 10(3):143–155. [PubMed: 23399972]

Table I
Sample Characteristics (N = 151)

	SBP<140 (<i>n</i> = 96)	SBP 140+ (<i>n</i> = 55)		
	% (n)	% (n)	χ^2 (df) value	p value
Income			χ^2 (10) = 10.64	.39
30,000 – 59,999	29.2% (28)	36.4% (20)		
Greater than 60,000	37.5% (36)	29.6% (11)		
Relationship status			χ^2 (6) = 6.54	.37
Married or partner	44.8% (43)	41.8% (23)		
Education			χ^2 (7) = 9.29	.23
College graduate	32.2% (31)	27.3% (15)		
Advanced Degree	30.3% (29)	32.7% (18)		
Occupational Status			χ^2 (1) = .26	.61
Full-time	45.8% (44)	40.0% (22)		
Diagnosis of hypertension			χ^2 (1) = 10.44	.001
Yes	52.1% (50)	80.0% (44)		
No	47.9% (46)	20.0% (11)		

Note: SBP – systolic blood pressure

Table II
Hypertension Knowledge Characteristics

		Correct Answer	Overall sample (N = 151)	
			Incorrect % (n)	Correct % (n)
1.	There is nothing you can do to prevent HBP.	False	3.9% (6)	96.0% (145)
2.	If your mother or father has HBP, you'll get it.	False	3.5% (26)	96.5% (124)
3.	Young adults don't get HBP.	False	1.8% (2)	98.2% (148)
4.	HBP has no symptoms.	True	86.8% (131)	12.6% (19)
5.	Stress causes HBP.	False	88.7% (134)	10.6% (16)
6.	HBP is not life threatening.	False	2.6% (4)	96.6% (146)
7.	BP is high when it is over 140/90 mmHg.	True	9.9% (15)	89.4% (135)
8.	If you are overweight, you are 2 to 6 times more likely to develop HBP.	True	4.6% (7)	95.3% (144)
9.	You have to vigorously exercise every day to improve your BP and health.	False	53.6% (81)	46.4% (70)
10.	Americans eat 2 to 3 times more salt and sodium than they need.	True	n/a	100% (151)
11.	Drinking alcohol lowers BP.	False	1.3% (2)	98.6% (149)
12.	HBP has no cure.	True	72.1% (109)	27.8% (42)

Note: BP – blood pressure, HBP – high blood pressure, HTN – hypertension, n/a – not applicable

Table III

Hypertension Knowledge by Group

	SBP<140 (<i>n</i> = 96)		SBP 140+ (<i>n</i> = 55)		χ^2 (df) value	<i>p</i> value
	Incorrect	Correct	Incorrect	Correct		
	% (n)	% (n)	% (n)	% (n)		
There is nothing you can do to prevent HBP.	4.2% (4)	95.8% (92)	1.8% (1)	96.4% (53)	χ^2 (1) = 10.64	.78
If your mother or father has HBP, you'll get it.	16.7% (16)	83.3% (80)	14.5% (8)	80% (44)	χ^2 (1) = .00	1
Young adults don't get HBP.	1.0% (1)	99.0% (95)	1.8% (1)	96.4% (53)	χ^2 (1) = .00	1
HBP has no symptoms.	90.6% (87)	9.4% (9)	80.0% (44)	18.2% (10)	χ^2 (1) = 1.85	.17
Stress causes HBP.	89.6% (86)	10.4% (10)	87.3% (48)	9.1% (5)	χ^2 (1) = .00	1
HBP is not life threatening.	2.1% (2)	97.9% (94)	3.6% (2)	92.7% (51)	χ^2 (1) = .01	.94
BP is high when it is at or over 140/90 mmHg.	9.4% (9)	87.5% (84)	10.9% (6)	87.3% (48)	χ^2 (1) = .00	1
If you are overweight, you are 2 to 6 times more likely to develop HBP.	3.1% (3)	96.9% (93)	7.3% (4)	92.7% (51)	χ^2 (1) = .58	.45
You have to vigorously exercise every day to improve your BP and health.	33.3% (32)	66.7% (64)	36.4% (20)	61.8% (34)	χ^2 (1) = .08	.78
Americans eat 2 to 3 times more salt and sodium than they need.		100% (96)		100% (55)		n/a
Drinking alcohol lowers BP.		99% (95)		98.2% (54)		n/a
HBP has no cure.	76.0% (73)	24.0% (23)	65.5% (36)	34.5% (19)	χ^2 (1) = 1.46	.23

Note: BP – blood pressure, HBP – high blood pressure, SBP – systolic blood pressure, n/a – not applicable