



# HHS Public Access

Author manuscript

*Patient Educ Couns.* Author manuscript; available in PMC 2018 May 01.

Published in final edited form as:

*Patient Educ Couns.* 2017 May ; 100(5): 1000–1006. doi:10.1016/j.pec.2016.12.011.

## Knowledge, attitudes, and beliefs related to hypertension and hyperlipidemia self-management among African-American men living in the Southeastern United States

Everett Long<sup>a</sup>, Monica Ponder<sup>b</sup>, and Stephanie Bernard<sup>c</sup>

<sup>a</sup>CDC Foundation, Atlanta, GA, USA

<sup>b</sup>National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, GA, USA

<sup>c</sup>National Center for Chronic Disease and Health Promotion, Centers for Disease Control and Prevention, Division for Heart Disease and Stroke Prevention, Atlanta, GA, USA

### Abstract

**Objective**—Perceptions of illness affect cardiovascular disease (CVD) self-management. This study explores knowledge, attitudes, and beliefs regarding hypertension and hyperlipidemia management among 34 African-American men with hypertension and/or hyperlipidemia, age 40–65, living in the Southeastern United States.

**Methods**—In-person focus groups were conducted using semi-structured interview questions informed by the Health Belief Model (HBM).

**Results**—Participants had a high level of knowledge about hypertension self-management, but less about cholesterol self-management. Perceived severity of both conditions was acknowledged, though participants perceived hypertension as more severe. Barriers to self-management included medication side effects and unhealthy dietary patterns. Facilitators included social support, positive healthcare experiences, and the value placed on family. Cultural implications highlighted the importance of food in daily life and social settings. Participants expressed how notions of masculinity affected self-management—noting the impact of feelings of vulnerability and perceived lack of control stemming from diagnosis and treatment expectations.

**Conclusions**—The findings highlight gaps in knowledge of hyperlipidemia versus hypertension, and the impact of cultural context and perceptions on engagement in self-management behaviors.

**Practice implications**—Public health practitioners and healthcare providers serving African-American men should address cultural factors and notions of masculinity which can hinder effective disease management among this population.

### Keywords

African-American; Men; High blood pressure; High cholesterol; Knowledge; Attitudes; Southern United States

## 1. Introduction

African-Americans bear a disproportionate burden of heart disease, leading to worse health outcomes, including higher mortality. Non-Hispanic blacks have the highest age-adjusted death rates from heart disease—210.4 per 100,000 persons [1]. African-Americans have a higher prevalence of hypertension than other race/ethnicities, and among those with hypertension, are less likely to have their hypertension controlled [2–4]. African-Americans have a higher prevalence of hyperlipidemia compared to White Americans [4,5]. Such disparities translate into increased mortality rates for African-American men—they are almost twice as likely to have a stroke, and more likely to die from heart disease than Whites [4,6].

Regional disparities in heart disease outcomes are also evident, particularly in the Southeastern United States—or the “Stroke Belt.” States like Georgia and South Carolina rank among the highest in disease rates and deaths from stroke and heart attack [7]. These states are among the six states where African-Americans comprise at least 25 percent of the population [8]. Studies show that factors associated with racial and regional heart disease disparities include low socioeconomic status and education, high smoking rates, lower physical activity and obesity, and lack of access to care [9–11]. Such factors play a role in the way African-American men in the Southeast, with hypertension and/or hyperlipidemia, perceive their condition(s), and must be taken into account when exploring their engagement in disease management behaviors.

Self-management behaviors such as eating a heart-healthy diet, taking medications as prescribed, smoking cessation, and engaging in physical activity are crucial for those with hypertension and hyperlipidemia. Such behavioral and lifestyle changes have proven effective at reducing adverse cardiovascular disease (CVD) outcomes among minorities [12–14]. Smoking cessation counseling from a clinician, along with pharmaceutical treatment has proven effective at improving quit rates among African-Americans [15]. Individualized behavioral programs have successfully increased physical activity among African-Americans [16], and research suggests that group physical activity interventions may be more effective for underserved racial/ethnic minority populations [17]. Programs such as *Dietary Approaches to Stop Hypertension (DASH)*, which involve a diet high in fruits and vegetables, and low in saturated fats and sodium, have improved hypertension outcomes in African-Americans [18,19].

Racial disparities in hypertension control are impacted greatly by patients’ attitudes and beliefs about health, consequently, affecting engagement in health behaviors [20]. Qualitative studies provide insight into the manner in which African-Americans’ beliefs and attitudes shape health behaviors, and inform the efforts of health professionals working to improve CVD outcomes among this group [21–27].

Specifically, qualitative data reveals similarities and differences in sub-populations of African-Americans. Research consistently identifies social support as a facilitator of self-management behaviors among urban and rural African-Americans [28,29,24,30]. Other studies show that African-American women with hypertension or hyperlipidemia identify

unique barriers to self-management, such as difficulty maintaining healthy diets due to family expectations about food preparation practices [29]. For older African-Americans, research shows that the desire to spend time with grandchildren serves as a cue-to-action for increasing engagement in physical activity and better nutrition [31]. Such findings help inform the development of interventions aimed at improving disease self-management behaviors among African-Americans.

Few qualitative studies have focused exclusively on African-American men in the Southeast with hypertension and/or hyperlipidemia. Such gaps are problematic given the unique challenges African-American males face which impact health outcomes—daily racial stress, historical mistrust of the healthcare system, perceptions that masculinity conflicts with seeking medical help, and the pressures of embracing the traditional household provider role [20,32–34]. Targeted studies are needed to examine self-management behaviors and barriers among African-American men.

This study uses the Health Belief Model (HBM) to assess the knowledge, attitudes, and beliefs regarding self-management of hypertension and hyperlipidemia among a sample of African-American men, ages 40–65, living in the Southeastern United States. Examining how the constructs of the HBM—perceived susceptibility, perceived severity, perceived barriers, perceived benefits, and cues-to-action—manifest among these men, can further inform the development of interventions that increase engagement in behaviors that improve heart health [35].

## 2. Methods

### 2.1. Research design

Qualitative methods were employed to describe the knowledge, attitudes, and beliefs of African-American men, aged 40–65, regarding hypertension and hyperlipidemia. Four in-person focus groups were conducted using a semi-structured interview guide with questions informed by the HBM. Female participants were excluded from these focus groups to engender an environment of open communication among men, and to capture important interactions between participants through a shared “male” culture. Groups were led by an African-American male moderator to further encourage candid discussion.

The interview guide included open-ended questions accompanied by follow-up probes (See Table 1). All focus group sessions were videotaped, recorded, and transcribed. Each focus group lasted approximately two hours.

### 2.2. Participants

Thirty-four men participated in focus groups from two counties in the southeastern U.S.—Clayton County, Georgia and Richland County, South Carolina. Inclusion criteria were African-American males, 40–65 years old, who self-reported as having hypertension, hyperlipidemia, or both conditions. The majority of participants had been diagnosed with hypertension, was 40–54 years old, employed, earned 0–\$34,000 per year, and had health insurance (See Table 2).

Recruitment and sampling was done through an online panel system based on a representative random sample of the U.S. population. Then, purposive case sampling, coupled with snowball sampling was used to recruit participants. Initially, eligible participants in the target counties were recruited through an existing proprietary database and notified by phone or e-mail with the study description. To access additional participants, the target respondents were asked for referrals that may be appropriate for the study. If a referral was given, an email was sent as an introduction, followed by a phone call to engage the potential participant. This sampling framework provided representation from the desired target demographic. Participants provided verbal consent by phone or written consent via e-mail or in-person.

### 2.3. Analysis

A codebook was developed, informed by constructs of the HBM. A deductive thematic analysis guided the grouping of themes into domains under the model constructs (i.e., knowledge of hypertension risk). Each domain was segmented into related subcategories (i.e. risk of death, denial of the condition).

Two coders conducted content analysis using NVIVO software version 10, using a combination of inductive and deductive approaches to identify and categorize focus group data by domain and subcategory. Multiple trainings were held to ensure accuracy and consistency in the coding process. Tests for inter-coder reliability were conducted and maintained at a 0.85 Kappa coefficient.

## 3. Results

Themes related to the HBM constructs are described briefly below with illustrative quotes in Table 3. For additional examples of quotes highlighting the HBM constructs, see Appendix A.

### 3.1. Perceived severity

Participants appropriately perceived the severity of hypertension, with the majority having knowledge of the consequences of the condition, including, risk of stroke, heart attack, and death. However, many participants perceived hypertension as more serious than hyperlipidemia or lacked knowledge of the consequences of hyperlipidemia.

### 3.2. Perceived susceptibility

Participants generally believed that African-Americans were highly susceptible to hypertension and hyperlipidemia. However, when assessing personal risk, participants conveyed low perceived susceptibility prior to diagnosis with these conditions. Most men indicated that prior to a health event (e.g. dizziness, stroke) they felt healthy and were not concerned about developing hypertension or hyperlipidemia. Health events were oftentimes the factors alerting men to their condition. Participants also attributed factors such as heredity, cultural, and dietary influences to African-Americans' greater susceptibility to hypertension or hyperlipidemia.

### 3.3. Perceived benefits

Participants were acutely aware of and discussed the benefits of engaging in self-management behaviors; specifically, exercise, dietary changes, medication adherence, and smoking cessation. Participants openly discussed personal gains resulting from engagement in such behaviors, including “being around for their family.”

### 3.4. Perceived barriers

Participants discussed challenges in taking their medications properly due to perceived or actual side effects induced by the medications. Participants expressed distrust in the medications and pharmaceutical companies in general. This mistrust manifested as an additional barrier in which participants perceived medication use as temporary. This was evident in participants’ expressed desire or expectation that they would stop taking medications and control their condition through lifestyle changes, including increased exercise and healthier diets.

Beliefs about food were perceived barriers. Many participants valued “eating what they wanted,” and saw it as a way of “treating” themselves. Oftentimes this meant continuing to eat unhealthy foods despite acknowledging their harm. Participants also discussed psychological barriers, specifically, the belief that having a chronic disease makes one vulnerable or weak.

### 3.5. Cues-to-Action

Participants expressed how cues-to-action were evidenced through their social supports’ personal regimens. Participants emphasized the role of spouses or significant others in preparing healthy meals, accompanying him on doctor’s visits, and providing reminders about medication use. Participants also noted personal cues-to-action used to enhance engagement in self-management behaviors, including employing strategies to remember to take medications and utilizing available clinical supports. Participants expressed the need for greater support and more discussion of health issues among African-American male peers to further encourage engagement in self-management behaviors.

### 3.6. Regional effects, culture, masculinity, and perceptions of control

Participants discussed ways Southern culture, particularly food traditions, contributed to challenges in maintaining dietary recommendations (See Table 4 and Appendix B). This was evidenced by participants’ remarks about unhealthy food choices. Participants noted that the influence of African-American culture on health involved not only passing down genes; but also habits, feelings about illness, and food traditions that must be addressed in order to reverse the effects of heredity on CVD outcomes.

Perceptions of masculinity and control were also tied to diagnosis of hypertension and hyperlipidemia, particularly, medication use for these conditions. Participants noted changes in perceptions, such as feeling less athletic and less in control of their bodies because of their diagnosis. Participants also described how medication use affected their sexual functioning, resulting in subsequent challenges to their personal relationships and views on masculinity.

## 4. Discussion and conclusions

### 4.1. Discussion

Findings highlight participants' knowledge, beliefs, and attitudes regarding self-management of hypertension and hyperlipidemia. The findings related to perceived severity—specifically, those showcasing knowledge of symptoms and consequences of hypertension, support existing research displaying high knowledge of hypertension among African-Americans, largely due to higher prevalence of the condition and efforts to increase awareness among this group [36,37]. The group's concerns about medication use may also heighten their perception of severity, as research shows that Whites with high blood pressure are more likely to report their blood pressure as less serious, given appropriate medication use [38].

While participants were highly knowledgeable about hypertension, regardless of their diagnosis; those not diagnosed with hyperlipidemia expressed less knowledge of the consequences of the condition. Participants perceived hyperlipidemia as more difficult to understand due to few recognizable symptoms. This gap in knowledge about hyperlipidemia versus hypertension [39], suggests a need for greater focus on educating African-Americans about managing hyperlipidemia.

Participants noted that African-Americans were highly susceptible to hypertension and hyperlipidemia. However, this notion failed to translate into self-perceptions of risk among participants, particularly during young adulthood. Susceptibility was often low until triggered by an adverse health event later in life. Consequently, participants expressed the need for CVD prevention efforts targeting younger African-American men to prevent the onset of hypertension and hyperlipidemia, and the occurrence of adverse health events. The perception of low susceptibility in young age aligns with research on younger Black men with CVD, ages 18–49, showing that over half of participants equated good health with the absence of symptoms [40].

Participants consistently noted the importance of heredity in susceptibility to both conditions. Participants made the connection between susceptibility and biological heredity, but also articulated the impact of inherited behaviors, such as dietary practices and attitudes passed down through generations of Black families. This was particularly evident in participant responses regarding nutrition practices in families, which were often contrary to recommended regimens. These findings align with research showing African-Americans as more likely than Whites to agree that heredity and diet were causal factors affecting their cardiovascular disease [37].

Responses also revealed that participants felt their food choices were influenced by Southern culture. Regional nutrition patterns and unhealthy food traditions served as barriers to participants attempting to maintain healthy diets. Participants also discussed how social environments such as family reunions, holiday gatherings, church events, and engagement with friends negatively affected their eating habits. Participants' discussion of the importance of cultural traditions, peers, and significant others on their engagement in self-management behaviors, highlights the need for interventions that draw on social ecological models that incorporate the interplay of social, environmental, and individual level factors in

engagement in healthy behaviors [41,42]. The findings also highlight the collectivistic view of health and illness often held by African-American men, which distinguishes them from White males who often hold a more individualistic view of health, prevention, and treatment [43]. Recognizing that group-oriented approaches to health and illness may resonate with African-American men, could be a valuable perspective for providers faced with addressing CVD management among this population.

Lack of perceived control was also a major theme among participants. The meaning participants attributed to diagnosis of hypertension or hyperlipidemia, and the feelings resulting from the diagnosis, reflected the belief that participants had less control over their bodies. The use of words like “weak” and “elderly” and phrases like, “[the disease] has control,” conveyed that participants’ perceptions of themselves changed following diagnosis. Being forced to eat healthier foods due to CVD was perceived as the condition taking control—for example, one participant revealed that he only agreed to take medications so that he could maintain an unhealthy diet. Participants viewed their ability to make dietary decisions as a means of exercising control over their lives and maintaining a sense of identity. Subsequently, controlling their food choices was deemed highly valuable, often resulting in continued consumption of unhealthy foods despite awareness of their potential harm.

Perceived lack of control was also expressed through negative connotations attributed to medication use. Statements such as “[the medication] dictates what you do” showed that participants felt debilitated by their condition and its treatment, and challenged notions of themselves as whole or complete. Participant’s discussions of medication use as temporary exemplified their struggle to regain control of their bodies and their health. Some participants stopped taking their medications, attempting to address the conditions on their own through exercise and dietary modifications. Others temporarily discontinued use of medications upon feeling better. A few participants reported negative consequences (i.e. getting sicker) when they discontinued use, later making the decision to return to the medications. Reactions to these failed attempts at regaining control may reinforce the belief that hypertension and hyperlipidemia are associated with weakness, further impacting engagement in unhealthy behaviors.

Perceptions regarding control also challenged participants’ views about masculinity. Participants discussed the effects medications had on their sexual functioning and its contribution to strained intimate relationships. Such perceived affronts to participants’ masculinity became another domain in which they perceived a loss of control, which was exemplified by one participant who asked his doctor to explain to his wife the potential sexual side effects of hypertension and related treatment protocols.

African-American men’s perceptions of health and illness, particularly the influence of control, are impacted by numerous historical and sociopolitical factors that continue to affect many facets of their lives, including disease self-management. Research regarding men’s beliefs about health and illness show that White men often express feelings of increased control over health risks, feel less stigmatized, and have greater trust in technology, compared to Black men [43]. Such empowering paradigms may translate into increased self-

efficacy surrounding CVD self-management, higher trust in physicians, and increased medication adherence, which can drive improved CVD health outcomes. In contrast, this study asserts an opposing viewpoint which may exist among Black men with CVD—one in which health and illness is driven, in part, by forces outside of one's control. Issues surrounding masculinity, cultural influences, and distrust of the health care community, may contribute to lower adherence to CVD treatment regimens and engagement in self-management behaviors. Such paradigms regarding control may decrease a sense of self-efficacy around healthy eating (particularly in social situations), negatively affect relationships with primary care providers, and frame medication use as an obstacle instead of an enabler of health.

Although numerous challenges exist, participants expressed how barriers were often mitigated by social support mechanisms. The influence of social support served as an effective cue-to-action for men having difficulty maintaining prevention and treatment regimens. Participants discussed spouses or significant others taking them to clinician visits, reminding them to take their medications, and encouraging them to eat properly and exercise. This aligns with research showing that social support from a live-in significant other can serve as a protective factor in increased medication adherence for African-American men [44].

Participants further discussed the need for more social support and open dialogue surrounding CVD with other African-American men. Participants articulated that discussions regarding health failed to occur as much among male friends as with their female significant others. This may be an untapped resource for promoting self-management behaviors among African-American men.

## 4.2. Conclusions

The findings convey gaps in knowledge of hyperlipidemia compared to hypertension, and low perceived susceptibility prior to adverse health events; showcasing the need for greater focus on cholesterol and better targeting of younger African-American men in prevention efforts. Findings also articulate the meanings participants associate with hypertension or hyperlipidemia diagnosis, and assert the importance of practitioner awareness regarding these cultural perceptions, discussing perceptions with African-American male patients, and considering them when making prevention and treatment recommendations.

African-American men with hyperlipidemia or hypertension living in the Southeastern United States face unique challenges regarding engagement in CVD self-management behaviors. Knowledge gaps surrounding hyperlipidemia; low perceived susceptibility to disease, regional and cultural influences on dietary behaviors and health beliefs; and distrust of the health care system and treatment regimens; all play a significant role in CVD management. Such factors in conjunction with perceptions of weakness, loss of control, and reduced masculinity could further hinder adherence and prove detrimental to prevention and treatment regimens. Addressing these challenges collectively can prove beneficial in enhancing African-American men's engagement in self-management behaviors and improving CVD outcomes among this population.



### 4.3. Practice implications

Because participants perceived susceptibility to hypertension and hyperlipidemia as low until an adverse health event, efforts targeting younger African-American men are essential to addressing risk factors early. Opportunities for early intervention include identifying peer-to-peer information sharing models for African-American men, and recruiting social support to share health messages and promote self-management behaviors.

Practitioners should also help align patient and provider expectations, identify culturally-appropriate education materials that encourage African-American men to engage with their healthcare team, and acknowledge the cultural and geographical norms that influence diet and lifestyle choices. Patient and provider communication should also clarify the role and importance of medication adherence to optimal health outcomes. When helping men recognize the benefits of medication adherence, providers should openly discuss the discomforts of potential side effects. Such transparency may assist in mitigating issues of distrust. Providers should ultimately engage in communication that considers African-American men's perceptions of illness, particularly those impacting feelings of loss of control. These findings highlight the array of challenges African-American men in the Southeast face when negotiating engagement in CVD self-management behaviors, and convey the importance of practitioner guidance around incorporating appropriate treatment and prevention strategies within their cultural context.

### 4.4. Disclaimer

The findings and conclusions in this report are those of the authors and do not represent the views of the Centers for Disease Control and Prevention (CDC). CDC Foundation served as the coordinating entity for this project. Financial support was provided to the CDC Foundation by Pfizer, and CDC provided in-kind staff and technical expertise in the planning and implementation of the project.

## Acknowledgments

Derrick Gervin, Ph.D., Centers for Disease Control and Prevention, Atlanta, GA; Rashon Lane, M.A., Centers for Disease Control and Prevention, Atlanta, GA; Letitia Pressley-Cantrell, Ph.D., Centers for Disease Control and Prevention, Atlanta, GA; Michael Sells, M.S., CHES, Centers for Disease Control and Prevention, Atlanta, GA.

## References

1. Centers for Disease Control and Prevention. Deaths: Final data for 2013: National Vital Statistics Report. [Internet]. Atlanta: Centers for Disease Control and Prevention; 2014. [cited 7 May 2015]. Available from: [http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64\\_02.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_02.pdf)
2. Agency for Healthcare Research and Quality. National Healthcare Disparities Report; Table. Rockville: Agency for Healthcare Research and Quality; 2012. T2\_2\_1\_2-1 [Internet][cited 7 May 2015]. Available from <http://www.ahrq.gov/research/findings/nhqrdr/nhqrdr12/index.html>
3. Centers for Disease Control and Prevention. High Blood Pressure Facts [Internet]. Atlanta: Centers for Disease Control and Prevention; 2015. [updated 2015 February 19, cited 7 May 2015]. Available from: <http://www.cdc.gov/bloodpressure/facts.htm>
4. Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, et al. Heart disease and stroke statistics-2015 update: a report from the American Heart Association. *Circulation*. 2015; 131(4):e29–322. [PubMed: 25520374]

5. Centers for Disease Control and Prevention. High Cholesterol Facts. Atlanta: Centers for Disease Control and Prevention; 2015. [Internet][updated 2015 March 22, cited 7 May 2015]. Available from: <http://www.cdc.gov/cholesterol/facts.htm>
6. Centers for Disease Control and Prevention. Stroke Facts [Internet]. Atlanta: Centers for Disease Control and Prevention; 2015. [updated 2015 March 24, cited 7 May 2015]. <http://www.cdc.gov/stroke/facts.htm>
7. Centers for Disease Control and Prevention. Interactive Atlas of Heart disease and Stroke 2008–2010. Atlanta: Centers for Disease Control and Prevention; [Internet][cited 7 May 2015]. <http://nccd.cdc.gov/dhdspatlas/reports.aspx>
8. U.S. Census Bureau. The Black Population 2010, 2010 Census Brief. 2011. <https://www.census.gov/prod/cen2010/briefs/c2010br-06.pdf>
9. Mensah GA, Mokdad AH, Ford ES, Greenlund KJ, Croft JB. State of disparities in cardiovascular health in the United States. *Circulation*. 2005; 111:1233–1241. [PubMed: 15769763]
10. Rothenberg BM, Pearson T, Zwanziger J, Mukamel D. Explaining disparities in access to high-quality cardiac surgeons. *Ann Thorac Surg*. 2004; 78:18–24. [PubMed: 15223394]
11. Litaker D, Koroukian SM. Racial differences in lipid-lowering agent use in medicaid patients with cardiovascular disease. *Med Care*. 2004; 42:1009–1018. [PubMed: 15377934]
12. Lloyd-Jones D, Adams RJ, Brown TM, Carnethon M, Dai S, De Simone G, et al. Heart disease and stroke statistics—2010 update. A report from the American Heart Association. *Circulation*. 2010; 121:e46–e215. [PubMed: 20019324]
13. Pearson TA, Blair SN, Daniels SR, Eckel RH, Fair JM, Fortmann SP, et al. AHA guidelines for primary prevention of cardiovascular disease and stroke: 2002 update consensus panel guide to comprehensive risk reduction for adult patients without coronary or other atherosclerotic vascular diseases. *Circulation*. 2002; 106:388–391. [PubMed: 12119259]
14. Stuart-Shor EM, Berra KA, Kamau MW, Kumanyik SK. Behavioral strategies for cardiovascular risk reduction in diverse and underserved racial/ethnic groups. *Circulation*. 2012; 125:171–184. [PubMed: 22215892]
15. Covey LS, Botello-Harbaum M, Glassman AH, Masmela J, LoDuca C, Salzman V, et al. Smokers' response to combination bupropion, nicotine patch, and counseling treatment by race/ethnicity. *Ethn Dis*. 2007; 18:59–64.
16. Artinian NT, Fletcher GF, Mozaffarian D, Kris-Etherton P, Van Horn L, Lichtenstein AH, et al. Interventions to promote physical activity and dietary lifestyle changes for cardiovascular risk factor reduction in adults a scientific statement from the American Heart Association. *Circulation*. 2010; 122:406–441. [PubMed: 20625115]
17. Racette SB, Weiss EP, Obert KA, Kohrt WM, Holloszy JO. Modest lifestyle intervention and glucose tolerance in obese African Americans. *Obes Res*. 2001; 9:348–355. [PubMed: 11399781]
18. Scisney-Matlock M, Bosworth HB, Giger JN, Strickland OL, Van Harrison R, Coverson D, et al. Strategies for implementing and sustaining therapeutic lifestyle changes as part of hypertension management in African Americans. *Postgrad Med*. 2009; 121:147–159. [PubMed: 19491553]
19. Svetkey LP, Simons-Morton D, Vollmer WM, Appel LJ, Conlin PR, Ryan DH, et al. Effects of dietary patterns on blood pressure: subgroup analysis of the Dietary Approaches to Stop Hypertension (DASH) randomized clinical trial. *Arch Intern Med*. 1999; 159:285–293. [PubMed: 9989541]
20. Centers for Disease Control and Prevention. A Closer Look at African American Men and High Blood Pressure Control: A Review of Psychosocial Factors and Systems-Level Interventions. Atlanta: U.S. Department of Health and Human Services; 2010.
21. Arslanian-Engoren C. Black, Hispanic, and white women's perception of heart disease. *Prog Cardiovasc Nurs*. 2007; 22:3–9.
22. Bopp M, Lattimore D, Wilcox S, Laken M, McClorin LR, Swinton R, et al. Understanding physical activity participation in members of an African American church: a qualitative study. *Health Educ Res*. 2007; 22:815–826. [PubMed: 17138614]
23. Dickson VV, McCarthy MM, Howe A, Schipper J, Katz SM. Sociocultural influences on heart failure self-care among an ethnic minority black population. *J Cardiovasc Nurs*. 2013; 28:111–118. [PubMed: 22343210]

24. Horowitz CR, Tuzzio L, Rojas M, Monteith SA, Sisk JE. How do urban African Americans and Latinos view the influence of diet on hypertension? *J Health Care Poor Underserved*. 2004; 15:631–644. [PubMed: 15531820]
25. Schoenberg NE. A convergence of health beliefs: an ethnography of adherence of African-American rural elders with hypertension. *Hum Organiz*. 1997; 56:174–181.
26. Schoenberg NE, Drew EM. Articulating silences: experiential and biomedical constructions of hypertension symptomatology. *Med Anthropol Q*. 2002; 16:58–75.
27. Wilson RP, Freeman A, Kazda MJ, Andrews TC, Berry L, Vaeth PA, et al. Lay beliefs about high blood pressure in a low-to middle-income urban African-American community: an opportunity for improving hypertension control. *Am J Med*. 2002; 11:26–30.
28. Flynn SJ, Ameling JM, Hill-Briggs F, Wolff JL, Bone LR, Levine DM, et al. Facilitators and barriers to hypertension self-management in urban African Americans: perspectives of patients and family members. *Patient Preference and Adherence*. 2013; 7:741. [PubMed: 23966772]
29. Ford CD, Kim MJ, Dancy BL. Perceptions of hypertension and contributing personal and environmental factors among rural Southern African American women. *Ethn Dis*. 2009; 19
30. Ogedegbe G, Harrison M, Robbins L, Mancuso C, Allegrante J. Barriers and facilitators of medication adherence in hypertensive African Americans: a qualitative study. *Ethn Dis*. 2003; 12:3–12.
31. Rimando M. Perceived barriers to and facilitators of hypertension management among underserved african american older adults. *Ethn Dis*. 2015; 25:329–336. [PubMed: 26675535]
32. Griffith DM, Gunter K, Allen JO. Male gender role strain as a barrier to African American men's physical activity. *Health Educ Behav*. 2011; 38:482–491. [PubMed: 21632436]
33. Hammond WP, Matthews D, Mohottige D, Agyemang A, Corbie-Smith G. Masculinity, medical mistrust, and preventive health services delays among community-dwelling African-American men. *J Gen Inter Med*. 2010; 25:1300–1308.
34. Thompson VLS, Talley M, Caito N, Kreuter M. African American men's perceptions of factors influencing health-information seeking. *Am J Men's Health*. 2009; 3:6–15. [PubMed: 19477716]
35. Glanz, K., Rimer, BK. *Theory at a Glance: A Guide for Health Promotion Practice* (No. 97). US Dept. of Health and Human Services, Public Health Service, National Institutes of Health, National Cancer Institute; 1997.
36. Martins D, Gor D, Teklehaimanot S, Norris K. High blood pressure knowledge in an urban African American Community. *Ethn Dis*. 2001; 11:90–96. [PubMed: 11289257]
37. Ayotte BJ, Trivedi R, Bosworth HB. Racial differences in hypertension knowledge: effects of differential item functioning. *Ethn Dis*. 2009; 19
38. Kressin NR, Orner MB, Manze M, Glickman ME, Berlowitz D. Understanding contributors to racial disparities in blood pressure control. *Circ Cardiovasc Qual Outcomes*. 2010; 3:173–180. [PubMed: 20233981]
39. Marmot MG. Improvement of social environment to improve health. *Lancet*. 1998; 351:57–60. [PubMed: 9433438]
40. Rose LE, Kim MT, Dennison CR, Hill MN. The contexts of adherence for African Americans with high blood pressure. *J Adv Nurs*. 2000; 32:587–594. [PubMed: 11012800]
41. Glanz K, Lankenau B, Foerster S, Temple S, Mullis R, Schmid T. Environmental and policy approaches to cardiovascular disease prevention through nutrition: opportunities for state and local action. *Health Educ Q*. 1995; 22:512–527. [PubMed: 8550374]
42. Cohen DA, Scribner RA, Farley TA. Structural model of health behavior: a pragmatic approach to explain and influence health behaviors at the population level. *Prev Med*. 2016; 30(200):146–154.
43. Finucane ML, Slovic P, Mertz CK. Gender, race, and perceived risk: the 'white male' effect. *Health Risk Soc*. 2000:159–172.
44. Braverman J, Dedier J. Predictors of medication adherence for African American patients diagnosed with hypertension. *Ethn Dis*. 2009; 19

## Appendix A. Additional Examples of Participant Quotes Highlighting Health Belief Model Constructs

Health Belief Model construct	Examples of participant statements
Perceived Severity	<ul style="list-style-type: none"> <li>When asked which do you think is more serious-high blood pressure or high cholesterol, the response was: "High blood pressure."</li> <li>"...I found I had cholesterol when one morning, I was getting out of the shower, I had this pressure in my chest. And I thought it was gas...I had [an] acute heart attack... But that's how I found out. Then, later on, they said . . . you have to get your weight down 'cause your blood pressure begin to go up. That's how I found out [about the] high blood pressure. But...I'm managing all that – blood pressure and cholesterol . . ."</li> </ul>
Perceived Susceptibility	<ul style="list-style-type: none"> <li>"All we ever hear is it's hereditary in your family. No, it's not hereditary in my family. Don't say that. It may have been some of the things that I done. It may be some of the things that I'm not doing."</li> <li>"We sort of accept that . . . all black folk, people have high blood pressure. They tell us we're going to have high blood pressure."</li> <li>"I mean you know, for black people that's the number one killer".</li> <li>"It's hereditary in my family, for the most part. All the men on my mother's side of the family, as well as my father's side of the family, were all dead by the time they were my age through either heart disease or high blood pressure or strokes–whatever the case."</li> </ul>
Perceived Benefits	<ul style="list-style-type: none"> <li>"And you get more conscious. Especially, like I said, everybody got small, got kids. So, my oldest is 18, but I've got to be there for–seven or six. I've got to be there for my youngest. I want to see her graduate 10 years from now. So, you get more conscious. Like I said, I cut back on cigarettes and try to, with my diet and everything."</li> </ul>
Perceived Barriers	<ul style="list-style-type: none"> <li>"Sometimes I had – I stopped taking the medicine, 'cause actually, the effects of the medicine was worse."</li> <li>"And everybody that get[s] on medication should have the same thing I did – all of us in here came up with . . . we take medication to get off of it. We don't wanna stay on that. We gonna get off of it. You take it only as needed and when you don't need it, you go on. Try to glean yourself off of it because medication is not the best thing for you. Even though it does you good at the time, that's a foreign substance in your body."</li> <li>"I still like my fried foods. I still like – because I barbecue – and I like to eat ribs every now and then."</li> </ul>
Cues-to-Action	<ul style="list-style-type: none"> <li>"She [participant's wife] wants to know everything the doctor tells me. Why she will go further than the doctor want me to go. She's a health nut. I exercise five days a week. She probably exercise six days – seven days a week. She – when I wasn't exercising, she would always say come, go with me; come, go with me. And I started. But she's into it all the way. Cooks healthy, and always have been. And when I start having problems, she really gets into it now."</li> </ul>

## Appendix B. Additional Examples of Quotes Discussing Regional and Cultural Perceptions, Perceptions of Control, and Masculinity

Domain	Example
Regional Effects	<ul style="list-style-type: none"> <li>"I'm from Louisiana. So everything's well-seasoned. So I had to just cut back on seasoning. And I've never been a terrible eater."</li> </ul>

Domain	Example
Cultural	<ul style="list-style-type: none"> <li>“ . . . we don’t take things serious and again, then something happens to cause us to really take a hard look – a stroke or something you know. Then we can share but when we young, sometimes they get by us. You know – don’t think about the potentials that can happen to you as far as your blood pressure, cholesterol and all that. But I think if you going to educate people especially young black men, we need to grab them at a very young age.”</li> </ul>
Masculinity	<ul style="list-style-type: none"> <li>“ . . . maybe every guy in here. But I guess particular him, because he was an – and still is – an athlete. He’s just an old, mature athlete. But as an athlete, you feel in control. Just like your body is your – I mean it’s everything. And then all of a sudden, something has taken control of you.”</li> <li>“If you can’t satisfy her at all, then she’s going to take up with your best friend, somebody that you know, then when you find out about it and you have a stroke, then it all ties in. It stresses her, yeah, but she’s going to stress you.”</li> </ul>
Perceptions of Control	<ul style="list-style-type: none"> <li>“It makes you feel vulnerable. Make[s] you feel somewhat weak or broken. And also . . . it’s disbelief because you associate this disease with someone that’s maybe elderly or obese or both. And then you’re just like, ‘No, that can’t be me’. And you look in the mirror like, ‘No’. But at the same time, [it is] you – it can happen to anybody.”</li> </ul>

**Table 1**

Example Focus Group Questions and Corresponding Health Belief Model Construct.

<b>Example Questions</b>	<b>Health Belief Construct</b>
What's a major consequence of high blood pressure?	Perceived Severity
What are some reasons you might not take your prescribed medication?	Perceived Barriers
How does the medication help you?	Perceived Benefits
How do you remember to take your medication?	Cues-to-action

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

**Table 2**

## Characteristics of Focus Group Participants.

Age	N (N = 34)	Percent
40–54	20	58.8
55–65	14	41.1
65+	1	0.03
Employment status		
Full-time	19	55.9
Part-time	1	0.03
Retired	11	32.3
Unemployed	3	0.09
Income Range		
0–\$34,000	12	35.3
\$35,000–\$49,999	9	26.4
\$50,000–\$74,999	11	32.3
\$75,000+	2	0.06
Health Insurance		
Yes	28	82.3
No	6	17.6
Diagnosis		
High Blood Pressure	14	41.2
High Cholesterol	8	23.5
Both	12	35.3

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

**Table 3**

Examples of Quotes from Participants, by Health Belief Model Construct.

<b>Health Belief Model construct</b>	<b>Example</b>
Perceived Severity	<i>“Oh, I don’t know anything about the impact of high cholesterol.”</i>
Perceived Susceptibility	<i>“It’s a major killer of African Americans”.</i>
Perceived Benefits	<i>“If you just change what you eat, that’s how it makes you feel better.”</i>
Perceived Barriers	<i>“I don’t wanna take a medication that’s gonna make me die too.”</i>
Cues-to-Action	<i>“Sit on that dresser. As I get up out of that bed to go to the bathroom, I got to walk right past it [his medication] . . . And that’s how I remember mine.”</i>

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript



**Table 4**

Examples of Quotes Discussing Regional and Cultural Perceptions, Perceptions of Control, and Masculinity.

<b>Domain</b>	<b>Example</b>
Regional Effects	<i>“So, I’m from New York City, and when I moved to South Carolina I started seeing a lot of different foods that were interesting to me, because everybody said, ‘Oh, chitlins. What’s that?’ I was like, ‘Well, let me taste that.’ Everybody was ranting and I don’t even know what it is. So, I found myself that those foods were cheaper to purchase and to cook.”</i>
Cultural Masculinity	<i>“I think what happens is, I think our habits are hereditary. What we eat is hereditary” “Sex life...I can tell you when it first happened to me I had no idea... And I went to [my doctor] one day and I said, Dr. Gigi look, something ain’t working. I don’t want to tell a lady that, you know. She said you know, that’s normal. She said the blood pressure restricts the flow of blood which of course – I said could you please tell my wife that?”</i>
Perceptions of Control	<i>“It dictates what you do. It dictates how you eat. It dictates whether you exercise or not. Everything – it makes you change everything about you. Even things you – you may even develop and like some of the things you have to change. But it force you to do it. You didn’t do it on your own; it force you to do it, if you want to be happy.”</i>

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript