Self-Reported Cardiovascular Disease Risk Factors and Associated Hopelessness in African American Participants of a Church-Placed Health Screening Program

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Objective: This study evaluates patient inertia (PtInert) factors including hopelessness in African Americans participating in church cardiovascular screening programs in low income areas in Forsyth County, North Carolina. Patient inertia is defined as an inability to assume adequate hypertension self-management behaviors, leading to poorly controlled hypertension. Previous findings revealed hopelessness related to blood pressure (BP) control as a key PtInert factor in acute medical environment participants.

Design: Questionnaires were administered by facilitated interview. Clinical components of the cardiometabolic syndrome were obtained.

Setting: The study was conducted within six Forsyth County churches that were participating in cardiovascular screening programs sponsored by the Consortium for Southeastern Hypertension Control.

Participants: 67 African Americans (72% female; 49% personal history of hypertension) with an average age of 55 years served as study participants.

Results: Participants without a history of hypertension were overweight, pre-hypertensive, and normocholesterolemic while those with a history of high BP receiving antihypertensive treatment were normocholesterolemic, obese, and on average had a BP of 143/75 mm Hg. Hopelessness related to BP control was found in 18% of those with a personal history of high BP. A significant relationship was found between hopelessness and family history of high BP, perceived ability to control high BP, and frustration with BP treatment.

Conclusions: Our findings suggest that hopelessness, while exhibited less often in church participants as compared to previous findings in the acute medical environment, is associated with participant thoughts, feelings, and histories but is not associated with clinical components of the metabolic syndrome. (*Ethn Dis.* 2014;24[1]:60–66)

Key Words: Hypertension, Inertia, Hopelessness, Behavior, Church

Introduction

Within the Black church setting, hypertension prevention and control are viewed as major barriers to sustainable congregational health and community participation.[1] This problem cannot be overstated as hypertension is a major risk factor for cardiovascular disease morbidity and mortality, affecting ≥65 million American adults.[2] Faith placed initiatives have shown promise for promoting health behaviors and reducing hypertension and diabetes risk in African American communities.[3] For example, a National Institutes of Health (NIH) supported initiative designed to reduce diabetes rates through targeting weight loss and lifestyle modification in a Georgia Baptist church showed a ≥5% weight reduction in 48% of participants after church and individual level interventions by church health advisors.[4]

As factors influencing African American lay person perspectives regarding their hypertension health quality of life have not been well elucidated,[5] psychosocial stress such as hopelessness would be anticipated to have an untoward effect on patient's hypertension self-care behavior, including lifestyle practices.[6] Previous research has recognized the validity and reliability of assessing maladaptive function of hopelessness and adaptive function of acceptance in achieving long-term physical and psychological benefits for chronic disease patients,[7,8] Related research suggested that there was a significant correlation between high levels of hopelessness towards hypertension and worse patient BP control.[9,10] Positive attitudes toward the benefits of a treatment are increased as hopelessness is decreased and psychological wellbeing is improved.[11] If identified, feelings of hopelessness can be modified by decision making support, energy management, sleep enhancement, spiritual growth facilitation, support groups, and biochemical alterations including the hypothalamic-pituitary-adrenal (HPA) axis function.[12,13] In our previous publication, we found self-reported hopelessness related to BP control as a key patient inertia (PtInert) factor in 61% of a Forsyth County, North Carolina emergency department patient sample.[14] PtInert is defined as the inability to assume adequate hypertension self-management behaviors, leading to poorly controlled hypertension.

The health belief model (HBM) conceptual framework postulates that health seeking behavior is influenced by a person's perception of a threat and that changing risk perception attitudes and behaviors in patients who are at risk with chronic disease requires individual awareness, perception, and knowledge. As informed via the HBM, for our study, we characterize three key PtInert factors thought to influence beliefs about action-taking: BP control practices, lifestyle, and hypertension-associated hopelessness in African Americans participating

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in existing community-wide cardiovascular screening programs in churches located in low income communities within Winston Salem (Forsyth County), North Carolina. In 2007, Forsyth County, North Carolina had the highest age-adjusted mortality rates for diabetes and cerebrovascular disease and the second highest age-adjusted mortality rates of cardiovascular/heart disease among the five largest North Carolina counties (Durham, Forsyth, Guilford, Mecklenburg, and Wake) (See: www.wonder.cdc.gov).

Nested within our overarching conceptual framework and as a natural expansion to our prior study, we sought to determine the association of hopelessness with clinical components of the cardiometabolic syndrome and health behaviors. Based on our prior findings,[12] our study hypothesized that unhealthy PtInert factors will be present in the sampled population and that hopelessness, one key PtInert factor, will be associated with various other PtInert factors.

METHODS

Our study utilized a convenience sample of African Americans participating in church cardiovascular screening programs held in six Winston Salem (Forsyth County) North Carolina churches between the months of August 2008 and December 2009. These community screenings were sponsored by the Consortium for Southeastern Hypertension Control (COSEHC™, www.cosehc.org), a non-profit health organization with a mission of eradicating vascular disease in all people This study was reviewed and approved by the Institutional Review Board at Wake Forest University Baptist Health. All participants signed consent forms.

Facilitated Questionnaire

Patients were administered a revised PtInert questionnaire (PtInert-36) by facilitated interview. The PtInert-36 was adapted from our previously published PtInert questionnaire.[14] All PtInert-36 questions used in this study resulted from team consensus. The team consisted of a hypertension specialist (CF), a hypertension research fellow (JJ), an emergency medicine physician (DC) who specializes in cardiovascular disease management, and a health psychologist (DM). The items used in the questionnaire were developed and based upon core and collective knowledge of the communities targeted for this research.

The PtInert-36 comprised two sections. The first section (17 questions) was taken by all individuals (n=67) with and without a self-reported personal history of hypertension, and evaluated overall community response to lifestyle, health literacy, insurance, support systems, and family history questions. The second section (21 questions) was completed only by 49% of the participants who had, in section one, self-reported a personal history of hypertension, including hypertensive medication use. The second section of the PtInert-36 was designed to evaluate barriers to health care, emotions, and feelings toward these barriers and toward blood pressure control. Questions included such topics as medication adherence, medication side effects, and social stress. For example, to assess nonadherence to therapeutic medication as a component of PtInert, a slightly modified four item Morisky scale for medication adherence was incorporated within the second section of the PtInert-36.[15]

Hopelessness related to BP control was assessed on an agree-disagree scale (strongly agree, somewhat agree, neutral, somewhat disagree, strongly disagree) in the second section of the questionnaire and therefore was completed only by participants with a history of hypertension. Due to our previous findings,[14] hopelessness was a PtInert factor of particular interest. As such, hypertension associated clinical variables were compared between those agreeing or disagreeing with the PtInert-36 hopelessness question. Having the two sections of the questionnaire provided an opportunity for all individuals regardless of their hypertension history status to participate in the questionnaire.

Most questions, regardless of section, in the PtInert-36 questionnaire were multiple choice closed ended questions that used a 3 point (1=agree, 2=neutral, 3=disagree) or 5 point Likert scale (1=strongly agree, 2=somewhat agree, 3=neutral, 4=somewhat disagree, 5=strongly disagree). Other questions were either yes/no/sometimes, scaled or fill in the blank type questions. No study participants declined participation in the questionnaire, however, due to time constraints, not all participants completed the entire questionnaire.

Clinical Assessment

Seated systolic and diastolic blood pressures were obtained in resting participants using a DinaMap 1846 SX (Critikon, Tampa, FL) automated machine. A lipid panel including total and HDL cholesterol was measured using the Cholestech LDX machine (Hayward, California). Weight in pounds was measured using a digital weight scale while height was self-reported by the individual and body mass index was calculated.

Participant Sample Size

Hopelessness in hypertensive patients was our primary outcome variable for this study. Using data from our prior work,[14,16] we saw hopelessness associated

with BP control in 24% of 40 hypertensive patients out of 104 community participants, and 39% of 45 hypertensive patients out of 110 emergency department patients. For the primary outcome, a sample size of 33 hypertensive patients out of 67 total patients yielded 90% power to detect a significant number of patients with hopelessness regarding blood pressure control, at the alpha level of .05.

Participant Characteristics

This faith-placed study included 67 participants (72% female) who possessed both completed clinical factors and questionnaire results. The average participant age was 55 ± 15 years. The majority of participants had insurance (84%).

Data Analysis

Clinical and questionnaire data were entered into the SAS Statistical Program (SAS Institute, Cary, NC). Descriptive statistics, including frequencies, percentages, means, and standard deviations were calculated for variables. All data are reported as mean ± standard deviation (SD). The % of each response for each of the variables was calculated. *T*-tests were used to evaluate differences among clinical variables in individuals agreeing and disagreeing with personal hopelessness related to BP control. Nonparametric testing using Kruskal-Wallis was used to evaluate the significance between the hopelessness statement, ''I will have complications from high blood pressure no matter my actions,'' and other PtInert questionnaire parameters. Significance was reported if $P \leq .05$.

RESULTS

Clinical Characterization

Over half (54%, 36 of 67) surveyed participants had a self-reported personal history of high BP with many (77%) also declaring a family history of hypertension. However, only 49% of participants completed the second section of the PtInert-36 due to time constraints. Surveyed participants without a self-reported previous history of hypertension ($n=31$; 68% female) were clinically overweight, showed systolic and diastolic BP readings that were less than the Joint National Committee (JNC7) guideline goal of < 140/90 mm Hg, and had total and HDL cholesterol values that fell within normal range according to Adult Treatment Panel (ATP III) guidelines (Table 1). Participants with a personal history of hypertension ($n=36$; 75% female) were obese, showed systolic BP readings that were above the JNC7 goal of 140 mm Hg, and possessed normal diastolic BP and lipid (HDL and total cholesterol) values (Table 1). Table 2 compares the cardiovascular clinical variables among only those participants self-reporting a personal history of hypertension including antihypertensive medication use who agreed or disagreed with the PtInert-36 question used to evaluate hopelessness related to BP control ($n=33$). There was no significant difference in mean values of each of the clinical cardiovascular disease variables and hopelessness responses.

Table 1. Clinical cardiovascular disease risk variables among patients with a self-reported personal history of hypertension

	Personal History of Hypertension	No Personal History of Hypertension
Systolic BP, mm Hg	143 ± 27	131 ± 25
Diastolic BP, mm Hg	75 ± 10	71 ± 11
Total cholesterol, mg/dL	179 ± 46	181 ± 40
HDL cholesterol, mg/dL	52 ± 17	50 ± 20
Weight, lbs	189 ± 70	175 ± 32
BMI, kg/m^2	33 ± 8	29 ± 6[a]

[a] $P<.05$ (personal history vs no personal history).
Data are mean ± SD.
BP, blood pressure; BMI, body mass index.

Lifestyle Practices

Many church participants reported lifestyle behaviors that included: eating fast food ≤two days/week (87%); eating at home ≥4 days/week (71%); being physically active ≥2 times/week (78%); and eating vegetables (79%) or fruits (78%) at least sometimes (Figure 1). The meat choice selected by participants most often was chicken (56%) followed by ground meat (14%). More church participants reported baking (42%)

Table 2. Cardiovascular disease risk clinical parameters among participants who have a history of hypertension, by hopelessness[ab] divided by those who agree and disagree with the blood pressure hopelessness question

	Hopelessness (Agree)	Hopelessness (Disagree)
Systolic BP, mm Hg	145 ± 32	143 ± 29
Diastolic BP, mm Hg	73 ± 14	75 ± 10
Total cholesterol, mg/dL	189 ± 47	181 ± 44
HDL cholesterol, mg/dL	49 ± 15	53 ± 17
Weight, lbs	175 ± 26	209 ± 48
BMI, kg/m^2	29 ± 4	34 ± 8

[a] Hopelessness based on response to question, ''I will have complications from high blood pressure no matter my actions.''
[b] No differences between groups were significant.
Data are expressed as mean ± SD.
BP, blood pressure; BMI, body mass index.

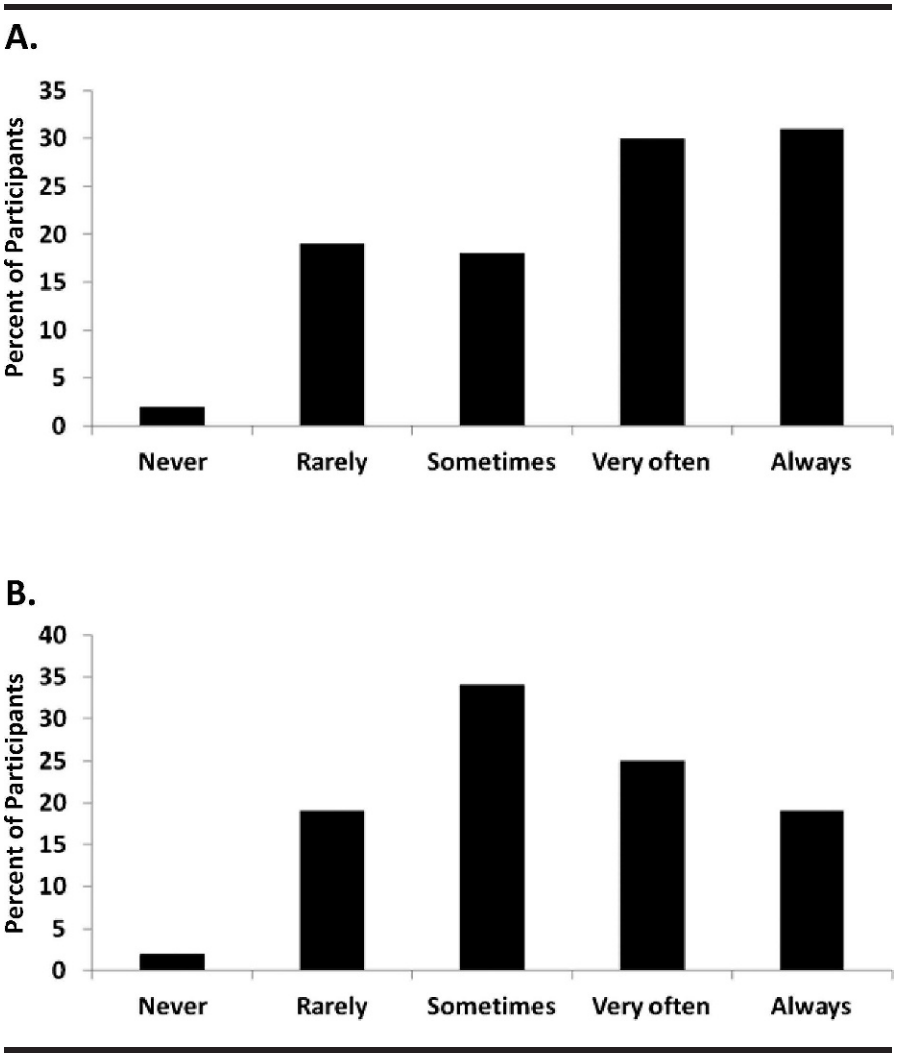

Fig 1. Church participants self-reported healthy lifestyle behaviors with the majority reporting consumption of vegetables (A) and fruit (B) at least sometimes. The highest percentage reported eating vegetables always and fruits sometimes suggesting that Forsyth County church participants prefer vegetables to fruit when making healthier lifestyle choices

their food as opposed to frying (21%). Forty-three percent of participants reported never adding salt to their food at the table while participants provided mixed reports regarding addition of salt during food preparation (24% never, 42% rarely/sometimes, 34% often/always). Eighty-five percent of participants agreed with the idea that high BP is caused or influenced by foods one eats and 91% agreed that consuming less salt can help control BP.

Blood Pressure Control Practices

The second section of the questionnaire asked participants, who reported a personal history of high BP, about their perceived BP control practices including their thoughts (eg, hopelessness) about their disease and medication habits. Only a small number of participants with a self-reported history of high BP agreed (strongly agree 9%, somewhat agree 9%) with the BP hopelessness assessment question ''I will have complications from high BP no matter my actions.'' Almost all participants (87%) disagreed with the statement ''I will have high blood BP because it is just my fate.'' Sixty-five percent of participants disagreed that they will have high BP because it is genetic and cannot be changed by their actions. Eighty-eight percent of participants agreed that they can control their high BP. Sixty-four percent of participants with a history of hypertension had systolic BP readings $<$ 140 mm Hg and 93% had diastolic BP readings $<$ 90 mm Hg. Over half (57%) of participants have spent time within the last month thinking about better BP control. More than half of participants (58%) agreed that they receive the emotional support they need from family and friends to help control their BP. Just over half (56%) of hypertensive participants felt stress due to their blood pressure.

Despite more than half (53%) of participants self-reporting that they had forgotten to take their BP medication at least one time in the last 12 months, 75% self-reported no difficulty in actually remembering their BP medication. Almost all (94%) participants stated that they do not stop taking their BP medication if they feel worse while the majority of participants (88%) also do not stop taking their BP medication when they feel better. More participants (46%) attributed not taking their BP medications to forgetfulness than to any other factor including being busy (23%) and fatigue from work (7%). Ninety-seven percent of participants indicated they were taking at least one BP medication. Finances kept 19% of participants from purchasing recommended BP medications. Only 19% of hypertensive participants agreed to frustration with their current BP treatment which included their medication regimen.

The Relationship between BP Control Hopelessness and Other Lifestyle Factors

There was a significant relationship between hopelessness and family history of high BP, perceived ability to control high BP, and frustration with BP treatment (Table 3). There was also a tendency toward a relationship (P=.06) among hopelessness and stress related to

Table 3. Relationships between BP control hopelessness and lifestyle factors among African Americans with a history of hypertension [a]

Variable of interest	Chi Square	*P*
Family history of high BP	10.7583	.01[b]
Thought: I can control my high BP	7.4746	.02[b]
Frustration with BP treatment	7.2218	.03[b]
Exercise habits	.0063	.99
Fast food consumption	.6164	.73
Number of people in personal support system	3.0358	.22
Forget BP medications	1.5625	.46
Difficulty remembering BP medications	.3128	.86
Stress related to high BP	5.5865	.06
I have spent time thinking about better BP control	.2715	.87
Past experiences of family with high BP	1.3549	.51

[a] Participants with a family history of hypertension, participants who think they can control their blood pressure, and participants reporting no frustration with BP treatment disagreed to having feelings of hopelessness related to BP control.

[b] $P \leq .05$.

BP, blood pressure.

BP control (Table 3). Seventy-one percent of participants with a family history of high BP disagreed to having feelings of hopelessness. Fifty-eight percent of those participants who agreed that they can control their high BP disagreed to having feelings of hopelessness. Fifty-nine percent of those participants who reported no frustration with their BP treatment also disagreed to having feelings of hopelessness related to BP control.

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DISCUSSION

In summary, only 18% of individuals with a previous history of hypertension who were attending cardiovascular screenings within low income Forsyth County, North Carolina church environments possessed hopelessness related to their individual hypertension management. There was no association between hopelessness and clinical components of the cardiometabolic syndrome. However, there was an association between the absence of self-reported hopelessness and a positive family history of high BP, thinking that one could control his/her BP, and not being frustrated with BP treatments. These findings are in direct contrast with our previous PtInert publication [14] where 61% of participants living in similar geographical locations but being surveyed in the emergency department (ED) demonstrated hypertension-associated hopelessness. Differences in questionnaire responses between church and ED environments are not necessarily unexpected due to heightened stress often seen during ED visits and previous reports that highlight positive influences of religious involvement on dimensions of well-being including life satisfaction, coping, happiness, and psychological distress.[17]

There are several factors that may potentially explain the differences observed in this study as compared to our prior research study. Our current study did not specifically address religiosity or require that participants of the cardiovascular screening programs be members or regular attendees of services within the church where the screening was held. However, based upon the way the program was advertised and comments made to data collectors during screenings, it is hypothesized that at least 90% of participants surveyed had regular religious involvement in the church where the screening was held. Religious involvement is thought to protect both mental and physical health through a variety of mechanisms.[18] Higher levels of religious involvement are associated with positive medical and psychiatric outcomes including self-ratings of health, functional disability, survival rates, hypertension and cancer prevalence, health behaviors, and well-being.[19]

Additionally, the tendency to endorse fewer concerns with hopelessness reported by Forsyth County church participants as compared to findings in our previous publication[14] within the acute medical environment of the Wake Forest Baptist Health ED could result from the religious participation experience. Psychosocial stress such as hopelessness may be reduced in people with a religious connection due to the social integration and support within the worship environment or from private participation/reflection.[6] Lower hopelessness and depression severity scores have been associated with prayer.[20] Additionally, among African American women, there was a positive correlation of social support within church environments with specific health indicators.[21]

In addition to contributions of hypertension associated hopelessness, our study examined clinical cardiovascular values and PtInert associated

lifestyle risk factors that could contribute to cardiovascular disease risk and mortality among church participants. While individual clinical values varied, averaged BP readings in participants who took hypertensive medications were in the stage I hypertension range. Most participants with a history of hypertension thought they could control their high BP; indeed 64% of participants were found to have SBP <140 mm Hg. These results indicated that the church population was doing better than a national standards study (NHANES) where 50.1% of participants reached control levels (<140 mm Hg non-diabetic, <130 mm Hg diabetic) in 2007–2008.[22] A previous study[23] demonstrated that poor medication compliance can affect 50% of hypertensive patients in a community setting with forgetfulness being the most important factor for BP medication non-compliance.[24] Surveyed church participants did not change their BP medication adherence with varying health status, and were generally satisfied with their BP treatment regimens. Despite sufficient BP control and self-reports of lifestyles that are fairly healthy, church participants with a history of hypertension had an average BMI that placed them in the obese category. This suggests that altering the PtInert-36 questionnaire to capture more specific questions about dietary intake, exercise, and medication compliance is warranted so that these areas can be more specifically targeted in future community and church health programming. The use of food frequency questionnaires (FFQ) in both blood pressure and cardiovascular research has been reported.[25] However, there can be significant participant burden associated with the FFQ due to the depth, breadth, and length of this tool. Streamlining the FFQ to specific questions that make sense with the PtInert paradigm may make incorporation of this tool a future possibility. Due to the association between hypertension and diabetes, it may be warranted to add the physical activity scale from the diabetes self-management questionnaire.[26]

Study limitations should be considered when interpreting these findings. First, due to the study design and altered format of PtInert-36, direct comparisons cannot be made between PtInert concepts in the previous study[14] conducted in the acute medical environment unless both the question and responses were the same as was seen with the hopelessness question. The original PtInert questionnaire tool was directed at only participants with a history of hypertension and used different assessment questions. Secondly, the sample size was limited especially in those with a history of hypertension. Thirdly, due to the specialized sample population, results may not be generalized to other populations. Fourthly, the use of facilitated self-report may have skewed participant response causing participants to answer in a manner that would be viewed positively by study staff. While the study participants self-reported questionnaire responses in confidential spaces within the church environment, being within the health screening setting within their church surrounded by friends and fellow church members may have influenced self-reporting of lifestyle and other PtInert factors.

In summary, our study indicates that African Americans participating in church sponsored screening programs in low income communities in Forsyth County, North Carolina exhibit self-reported healthy lifestyle behaviors, varied BP medication adherence as a result of forgetfulness, high hypertension health literacy, and low PtInert. African American church participants do not express as high of level of hypertension associated hopelessness as do participants living in the same geographical area surveyed in an acute medical environment. This study suggests that hypertension educational materials including health care communication may need to be tailored depending upon the environment in which the participant is encountered and should be considered in health interventions.

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