



Priority Hypertension Management Strategies for At-risk African Americans as Perceived by Medical Clinicians and Academic Scholars

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Abstract

African American adults, in the United States (US), bear the greatest burden of high blood pressure (HBP)—a primary risk factor for cardiovascular disease and premature death. Current research does not adequately inform the design of multi-level interventions that work to control HBP in this at-risk population. The purpose of this study was to uncover information about priority strategies recommended for HBP control in African American adults. Research questions are 1) what are factors that reduce or manage HBP in at-risk African Americans and 2) what factors are important to the design and implementation of successful HBP interventions in at-risk African Americans? A qualitative interpretive descriptive design and in-depth interview were used with a purposive sample ($n=10$) of doctorate-educated healthcare clinicians (i.e., physicians) and academicians (i.e., researchers) based on eligibility criteria: a) experience in treating or conducting research about HBP in African American adults, b) located within the Southern US, and c) consent to participate. Thematic analysis of audio-taped interview transcripts yielded a theoretical framework that consists of three multi-level elements believed to be critical components of interventions that can successfully manage HBP in at-risk African Americans: 1) social support, 2) lifestyle coaching, and 3) personalized medical management. Unique domains within the each element were revealed that ranged from stress management and holism to emotional resonant patient-caregiver partnership and experiential learning. Our findings were consistent with the social ecological model and have the potential to help address racial/ethnic-based health disparities through the design of patient-centered interventions. Findings will also be used to identify parameters available to simulation modelers in the design of models for optimal population level HBP control policy.

Keywords

Hypertension; Intervention; Theory; African American; Health Disparities

Cover Page Footnote

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ABSTRACT

African American adults, in the United States (US), bear the greatest burden of high blood pressure (HBP)--a primary risk factor for cardiovascular disease and premature death. Current research does not adequately inform the design of multi-level interventions that work to control HBP in this at-risk population. The purpose of this study was to uncover information about priority strategies recommended for HBP control in African American adults. Research questions are 1) what are factors that reduce or manage HBP in at-risk African Americans and 2) what factors are important to the design and implementation of successful HBP interventions in at-risk African Americans? A qualitative interpretive descriptive design and in-depth interview were used with a purposive sample ($n=10$) of doctorate-educated healthcare clinicians (i.e., physicians) and academicians (i.e., researchers) based on eligibility criteria: a) experience in treating or conducting research about HBP in African American adults, b) located within the Southern US, and c) consent to participate. Thematic analysis of audio-taped interview transcripts yielded a theoretical framework that consists of three multi-level elements believed to be critical components of interventions that can successfully manage HBP in at-risk African Americans: 1) social support, 2) lifestyle coaching, and 3) personalized medical management. Unique domains within the each element were revealed that ranged from stress management and holism to emotional resonant patient-caregiver partnership and experiential learning. Our findings were consistent with the social ecological model and have the potential to help address racial/ethnic-based health disparities through the design of patient-centered interventions. Findings will also be used to identify parameters available to simulation modelers in the design of models for optimal population level HBP control policy.

Keywords: hypertension, strategies, African American, perceptions

INTRODUCTION

African Americans have the greatest burden of hypertension in the United States (US) (Ford et al., 2014). There is a dire need to better understand and design multi-level interventions that can be implemented to successfully manage hypertension in this population since only 58% of clients who receive antihypertensive medication therapy achieve high blood pressure (HBP) control (Migneault et al., 2012; Nwankwo, Yoon, Burt, & Gu, 2013).

HBP is defined as a consistent systolic BP of 140 mm Hg or above and diastolic BP of 90 mm Hg or above (American Heart Association, 2015; Roger et al., 2012). The prevalence of HBP in African American, Caucasian, and Hispanic adults is 42.1%, 28%, and 26%, respectively and has not changed substantially since 2009 (Roger et al., 2012). BP control rates are lower for African Americans than for any other US racial/ethnic group (Dave et al., 2013; Nwankwo et al., 2013). Current overall hypertension control rates fall short of the Healthy People 2020 goal of 61.2% (US Department of Health and Human Services [DHHS], 2016). In addition, African Americans of low socioeconomic status and who reside in the Southeastern US are believed to fare worse with attaining recommended HBP control (Ogedegbe et al., 2014). These epidemiologic data signal a priority health concern--especially since HBP is a primary risk factor for cardiovascular disease (CVD) and premature death (James et al., 2014). Interventions that can best remedy the burden of HBP in African Americans are needed. Information that can inform the design of successful HBP management interventions and long-term population health planning tools is warranted.

Purpose

The purpose of this study is to uncover perceptions about successful HBP management strategies for low-income African Americans that can help inform population level interventions for comprehensive hypertension management. The long-term outcome of model development will result in the first decision making tool designed explicitly to prioritize interventions to help reduce racial disparities affecting African Americans. Research questions are 1) what factors reduce or manage HBP in at-risk African Americans and 2) what factors are important to the design and implementation of successful HBP interventions in at-risk African Americans?

Literature Review

Hypertension is a manageable condition caused by a variety of personal and environmental factors (Nwankwo et al., 2012). The challenge is to understand how to tailor interventions to better address multi-level influences significant to African American populations (Holt-Lunstad, Smith, & Layton, 2010; Ogedegbe et al., 2014). Ford et al. (2014) reported that behavioral and psychosocial factors are correlates of BP levels among African Americans. For example, an interacting, culturally sensitive storytelling intervention (delivered by interactive DVD) was found to produce significant improvements in BP for inner-city African American patients with uncontrolled hypertension at baseline (Houston et al., 2011). The researchers theorized that significance was due, in part, to patients' feelings that the media persona was actually communicating with them (parasocial interaction) while also engendering a sense of solidarity with and affection for them. This perception was believed to have made patients more susceptible to the HBP behavior-change message as well as more insightful about helpful ways of interacting with family and health care providers (Houston et al., 2011).

The influence of social interaction to BP outcomes in African Americans was also implicated in a study that reported significant findings generated by an 8-week mindfulness-based program (Palta et al., 2012). The researchers attributed the program's success to its

capacity to help participants better manage their mental and physical health through mindfulness, social, and emotional skills. All sessions were conducted in group settings designed to allow participants to learn and benefit from the experiences of others.

Significant findings were also produced in two interventions that featured nurse-managed group and individual lifestyle management sessions focused on helping African American patients manage their BP (Brennen & Williams, 2013; Pezzin et al., 2010). Brennen and Williams (2013) sought to help participants foster healing relationships that enable one to reflect on and discuss personal experiences and behavior through the use of healthful activities. Pezzin et al. (2010) implicated the design of an augmented intervention whereby visiting nurses were trained in hypertension support and used explicit self-management protocols.

Although research reveals some success in producing evidence-based knowledge to help inform successful HBP management interventions for at-risk African Americans (Brennen & Williams, 2013; Palta et al., 2012; Pezzin et al., 2010), more studies continue to generate insignificant study results. For example, the impact of telephone support (Migneault et al., 2012); physician communication skills training and patient coaching (Cooper et al., 2011); computerized patient education, behavioral lifestyle telephone/group counseling and automated home BP monitoring (Ogedegbe et al., 2014); and telephonic nurse disease management (education materials, lifestyle/diet counseling, home BP monitoring) (Brennan et al., 2010) on BP (systolic and diastolic) control revealed no significant results. In addition, no significant relationship was found between HBP control and in-home BP monitoring (Hebert et al., 2012), aerobic exercise (Fairheller et al., 2014), and hypertension education (Shaya et al., 2013).

We lack adequate HBP management interventions able to attain desired outcomes in African Americans. Research falls short in informing HBP control strategies that work best for this group. However, it is likely that experienced health care clinicians and scholars who have knowledge of HBP management in African Americans are able to uncover meaningful perspectives about attributes of programs that can help to best attain HBP control in vulnerable African American adults.

METHODS

Design

A qualitative interpretive descriptive design was deemed appropriate for this study that sought to uncover perceptions about the social process of HBP management (Creswell, 2014; Guba & Lincoln, 1998). This design allows for insights to be collected and meaning about a particular experience, situation, cultural element, or historical event to be discovered (Burns & Grove, 2011). The intent of the design is an in-depth understanding from a purposefully selected sample and not the generalization of findings, from a randomly selected sample, to a study population as in quantitative research (Creswell, 2014). The design allows for similarities, differences, patterns, and relationships among phenomena to be uncovered (Thorne, 2004). The approach also enables exploration of distinctive features about hypertension treatment that can aid understandings across participant types and inform practice implications.

Sample and Data Collection

A purposive sample ($n=10$) of earned doctorate degree educated healthcare clinicians (i.e., physicians) and academicians (i.e., researchers) was selected based on eligibility criteria: a) experience in treating or conducting research about HBP in African American adults, b) located within the Southern US, and c) consent to participate. The principal investigator (PI) recruited

participants using snowball sampling referrals and a National Institute of Health database (RePORTER) that identifies academic scholars with a record of funded research.

Potential participants were contacted via telephone and electronic mail, provided an informational letter about the study, and asked to confirm their agreement to participate by responding to the PI. The letter described a) study purpose, b) what was expected of respondents, c) eligibility criteria, d) identification of foreseeable risks and benefits to participation, e) extent to which confidentiality is maintained, f) statement of voluntary participation and freedom to withdraw from the study, and g) contact information for the PI. The PI assigned a unique identification number to each respondent and scheduled a convenient time for an individual, in-depth interview to be conducted either in person or by telephone.

An e-mail follow-up reminder of the scheduled time was provided to volunteers 2 days before the meeting that was conducted in a quiet setting conducive to a private conversation. The PI obtained informed consent at the beginning of each interview and each discussion was audiotaped. The research was approved by the Institutional Review Board at the PI's employing institution prior to data collection.

Data Collection

In-depth interviews were deemed the most appropriate data collection method due to the technical nature of the research questions (Guba & Lincoln, 1998). A semi-structured interview protocol of four open-ended questions about HBP management was used to focus data collection (see Table 1). Questions were designed to generate all possible perspectives by participants and were reviewed at the end of each interview (adherence check) to ensure that all had been addressed. All data were collected within a 6 month period.

Table 1. Interview Guide Questions

What comes to mind when you think of:
1. ...factors that reduce or manage HBP in low-income African American adults,
2. ...underutilized strategies that control or reduce HBP within at-risk African Americans,
3. ...how strategies differ between at-risk African Americans and other ethnic/racial populations in the US, and
4. What have we missed in our effort to uncover strategies that help to reduce disparities related to HBP management in at-risk African American populations?

A six item demographic survey was used to collect descriptive data about participants' age, gender, geographic location, and professional role. The survey has been successfully used, in prior studies, to characterize personal attributes of research respondents (Timmons, 2009). Each participant was thanked, at the end of each interview, and solicited to preview study findings for credibility prior to final analysis and dissemination.

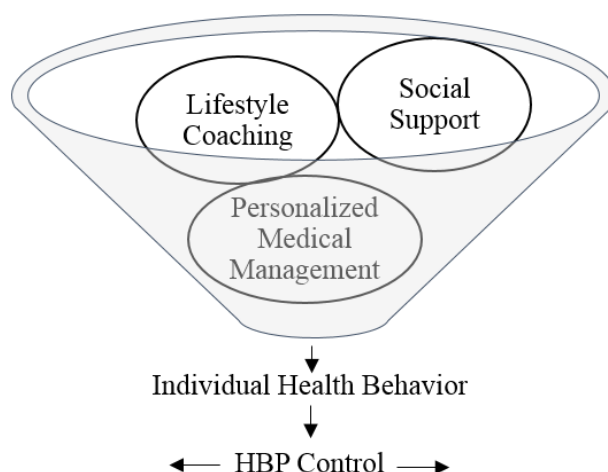
No names or personal identifiers were required on the demographic survey or audio-tape recordings. The confidential master list of participants' names and assigned identification number were kept in a locked file in the PI's office. After data collection, the audio-tapes, surveys, and consent forms were stored in an unmarked sealed envelope and filed where access was limited to the PI.

Data Analysis

A transcript of the audio-taped interviews consisted of over 70 pages of data. It constituted the basis for thematic analysis: data were reviewed for conceptual relationships and patterns about

recommended hypertension treatment strategies for vulnerable African American adults. Patterns were assigned representative codes and unique categories that were then used to develop primary themes and domains representing participants' views about HBP management. Coding was refined until it became apparent that all relevant concepts had been identified. All themes were inductively derived from the data. Narratives supporting each theme were illustrated using direct participant quotes. Analysis was revisited after the initial grouping of codes until it was clear that no new categories or themes were apparent. Thematic analysis resulted in a theoretical framework that presents relationships among key concepts uncovered about HBP control in at-risk African Americans: social support, lifestyle coaching, and personalized medical management (see Figure 1).

Figure 1. Theoretical concepts for HBP management interventions for African American adult populations



A qualitative data analysis software program (NVivo9) was used to help organize interview data and the Statistical Package for the Social Sciences (SPSS) 22 was used to analyze descriptive demographic survey measures. Along with adherence to the thematic analysis method, rigor of analysis was ensured based on attention to auditability, credibility, and fittingness of the data (LoBiondo-Wood & Haber, 2013). Auditability was addressed through detailed documentation of the coding method to preserve consistency through analysis. Credibility was demonstrated by making certain that a) ample time (approximately 1 hour) was spent with each respondent to allow for unencumbered data collection and b) polling at least 3 respondents about whether the final analysis accurately reflected their views. All codes and categories were consistently checked for adherence to the thematic analysis technique while attempting to capture participants' views (versus those of the PI interviewer). Fittingness or transferability of the data was addressed by selecting participants who varied in characteristics including discipline, length of employment, and gender and by soliciting discussion about their varied experiences with HBP management with African Americans.

RESULTS

Sample Characteristics

Participants ($n=10$) consisted of direct care providers (i.e., physicians) and higher education academicians (see Table 2). They were of African American (50%), Caucasian (30%), and

“other” (20%) ethnicity and included 4 females (40%) and 6 males (60%) with a mean age of 53.9 years (SD, 10.91). The mean number of years employed in their current position was 10.52 (SD, 8.26) and all respondents reported a history of addressing ethnic/racial related health disparities in hypertension outcomes over an average of 21.9 years (SD, 12.71). No participant indicated awareness of or incorporation of the community guide, an online evidence-based intervention resource, in their practice (Centers for Disease and Prevention [CDC], 2016a). The guide is a free resource created and maintained by the Community Preventive Services Task Force, an independent, nonfederal, volunteer body of public health and prevention experts.

Table 2. Participant ($n=10$) Attributes: Employment and Position

Category	Frequency
US State of Employment: Tennessee	1
North Carolina	2
Georgia	2
South Carolina	5
Position Title: Research Associate Professor	1
Assistant/Associate Professor	2
Physician Administrator (i.e., director/medical director)	3
Physician (i.e., internal medicine, family practice, emergency medicine)	4
Use of Community Guide: No	10

Themes and Domains

This study sought to uncover perceptions about critical and underutilized components of interventions believed to positively effect HBP control in African American populations. Findings are presented through 16 related domains within three primary themes: social support, lifestyle coaching, and personalized medical management (see Table 3).

Table 3. Factors Believed to Affect Optimal Management of HBP in African American Adults

Themes	Domains
I. Social Support	<ol style="list-style-type: none"> 1. Family 2. Community (e.g., health services organizations and human resources)
II. Lifestyle Coaching	<ol style="list-style-type: none"> 1. Stress management (e.g., financial status, ethnicity-based discrimination) 2. Culturally compatible recommended diet 3. Positive body weight self-image 4. Long-term physical activity 5. Future orientation 6. Holism (e.g., mind, body, and spirit harmony)
III. Personalized Medical Management	<ol style="list-style-type: none"> 1. Efficient medication therapy 2. Emotional resonant (compassionate) partnership 3. Adherence to evidence-based clinical guidelines 4. Multi-disciplined health professions workforce 5. Epigenetics-based therapy (i.e., how body responds to environment) 6. Prevention (e.g., primary, secondary) 7. Experiential (hands-on) learning

Social support

Family. Feelings of being cared for was revealed as beneficial in helping African American patients to sustain BPs within recommended levels. Respondents felt that compliance with HBP treatment regimens, in general, and medication adherence, in particular, were enhanced when persons had access to a supportive network of people who could be counted on for assistance in a time of need. One participant supported this view with emphasis on the relevance to males: “...you know, African American men, may take it one day and they’ll skip 3 or 5 days and when this happens, the wife or the daughter or whatever family that lives with them will let me know they haven’t been taking their medicine.” Another informant added: “...you might be blessed or fortunate enough to have a daughter or son that’s concerned about what’s going on with their parent or concerned what’s going on with their uncle or aunt and they’ll be very, very, helpful...then some people are sort of isolated.” Participants also highlighted the need for patients to be able to discern and engage in only positive support networks from within and without the immediate family unit as needed: “How can you structure some help for them if they don’t have any help from their family...how can you get that support with the social services that you have.”

Community. Helpful community supports were identified as churches, grocery stores, “fun” cooking classes, hair salons and barbers, and sorority and fraternal organizations: “...because sometimes it requires a village to take care of people in a home environment.” Other examples were defined as supports that consisted of outreach initiatives within patients’ own communities such as nurse home-visits. This sentiment was represented through the statement “You can reach the people if you go to the people...don’t expect them to come to you—to get what you have...go to them. They are so grateful when you come because

taking that step to come sends the message that you indeed care and they tell you that and they value what you give more because you are offering it because you care.”

Lifestyle coaching

Participants revealed that HBP could be best managed when African American clients were personally helped to engage in and sustain specific behaviors: 1) stress management, 2) a prescribed diet that closely resembles their cultural intake of highly flavored foods, 3) a positive image of body weight—even when it differs from cultural norms, 4) adherence to long-term physical activity recommendations, 5) an orientation to life where preparation for the future is prioritized, and 6) a belief in the importance of harmony among the mind, body, and spirit (holism). Therefore, interventions designed to address hypertension outcomes in this at-risk population should be designed accordingly.

Stress Management. Strategies that mediate stressors stemming from racism based on African American ethnic/racial group identification and compromised financial status were believed to negatively affect BP control outcomes. Participants indicated that although a stress-HBP link is well known, it is typically ignored within treatment regimens that primarily focus on pharmacologic therapy aimed at limiting target organ damage associated with hypertension versus the cause of the disease itself. Chronic and acute stress were offered as the primary reason why only about half of African Americans treated for HBP actually have controlled BPs. One participant reiterated this belief: “...every physician you ask if they think stress is important, the answer is always yes...but do they treat that? The answer is no.” Another echoed “...we’ve taken urine samples and BP in kids before they see the doctor, the doctor is a stressor, then we look at them afterward and can identify in those individuals based upon that change in the urine sample in whom a diuretic or angiotensin blocker is going to be effective.” Another informant stated a correlation between increased angiotensin (hormone that causes vasoconstriction and a subsequent increase in BP) and the experience of stress: “...if you measured levels of it, they are low and particularly in African Americans...but once you put people under pressure...they go up and they’re not low anymore but they’re up during the day when people walking around and fighting with people and having activities and all that kind of stuff...so they are driving the pressures during the day but you don’t see that because they’re so low when you’re just sitting in a chair.”

Meager financial resources and ethnicity/race based discrimination were viewed as significant stressors in African Americans that negatively influence BP levels: “If you have money you can decrease stress, you know...affluent African Americans are not the same as affluent Caucasians. There is always the ethnicity component.” Respondents emphasized a heightened negative impact on BP levels for low income African Americans: “It has to do with how much money they have, what type job they have, what stressors they’re having in their life...all of that has to be encompassed into how you going to manage them.”

Racism experienced by African American patients was implicated as a resounding element that should be addressed in efforts to improve hypertension outcomes. “We’ve shown in normal healthy and young African Americans that the experience of racism increases their resting BP; so part of their normal resting BP is the result of their life experience...state of anxiety at any moment will predict how your BP will respond to acute stressors such as a hassle...I guess it’s discrimination more than anything...you’re treated differently...you’re not treated fairly...that’s the bottom line. So, people aren’t whining and complaining and getting

angry because they didn't get what they wanted, they're upset because they didn't get it because of unfair and inequitable treatment."

Respondents recommended the use of a "life coach" model to assess, assist, and empower patients to mediate life's stressors. They offered that a life coach could help one to understand stressors, identify the core of anger and responses to it, recognize that each person is the creator of his/her own reality, and empower persons to move from a state of hopelessness to hopefulness. Use of a life coach to help hypertensive patients learn resilience was also recommended for alleviation of stress induced HBP.

Culturally Compatible Recommended Diet. The importance of a nutritious diet was revealed as a predictor of hypertension management outcomes in African American patients. Consumption of the DASH (dietary approaches to stop hypertension) diet was recommended due to its low salt and fat and high fiber and potassium content as well as that its results were evident within a relatively short period to time. DASH was deemed especially relevant for African Americans since many are believed to be salt-sensitive (versus salt-resistant) thereby, increasing the likelihood of HBP. Participants also expressed concern that patients' lacked awareness about the magnitude of "hidden" salt content in common foods: *"....the most important thing that we really need to think about is what are the foods that we're eating? What are the things that we're adding to our foods that really can affect our BP? Number one, high sodium: ok...diets that are cheap: and processed meat, not fresh...we use to eat from the earth, but now we get into a society that's really fast food, quick eating, consumptions of high fat, trans fat, all of that, and we tend to get more cardiovascular disease."*

Although a low sodium diet was advocated as a priority strategy in HBP control, informants also recognized the influence and significance of dietary cultural norms held by a significant number of African Americans: *"You have to also have a little bit of respect for cultural diversity...I grew up in the projects, so we didn't look at diet...I mean you ate whatever was put on your plate or whatever food...nobody analyzed it and say: is this going to be too much salt or fat or cholesterol...you just eat it. So I understand the population because I'm within the population, so it is not a surprise to me at all."* Adoption of healthy dietary behaviors was believed to be one component of a permanent lifestyle that when combined with physical activity could actually reverse structural damage caused by HBP: *"...and those might be better than medication in not only controlling the BP but also preventing the cardiovascular event."*

Positive Body Weight Self-image. Respondents believed that patients' (especially females) valuing of recommended body weights in light of (and instead of) a cultural preference for an alternative (greater) weight is warranted for HBP control. This notion was summarized in the statement *"Well, I think that there has to be a cultural metamorphosis concerning weight, for example, the overweight situation is considered the norm in so many cases and considered healthy and sexy and a sign of prosperity, still."* All participants identified sustained healthy weight maintenance as being crucial to HBP management: *"...and movement toward a goal weight...I don't like the four letter word diet really...it seems to have a temporary connotation or means something temporary."*

Long-term Physical Activity. Sustained and adequate physical activity was identified as a primary lifestyle strategy believed to foster HBP control: *"I think the biggest is always going to be exercise for those who are still able to...because exercise is controlling almost everything we've talked about."* Participants indicated that persons have become more sedentary as a social trend and that this tendency is compounded when they reside in low resource environments--

common to many African Americans. One informant noted: “...in most affluent neighborhoods, you have sidewalks or fields where people can go to bike, walk, and that type of thing...but for poor communities--those may not be available.” Participants emphasized the positive influence of physical activity on virtually “all” chronic diseases (e.g., obesity, diabetes, and depression) including hypertension.

future orientation. Participants believed that future oriented patients were more likely to experience superior HBP management outcomes compared to those who were more present oriented. Future orientation was expressed as planning for rather than discounting the future. Respondents thought that some patients minimized future rewards afforded by controlled BP levels (i.e., decreased risk of heart disease) in exchange for immediate gratification from lax dietary, physical activity, and medical regimen adherence regimens—even when they were aware of the potential for organ damage resulting from uncontrolled BP levels. One respondent offered the following example of a patient’s perception that warrants intervention: “*I’m just living for today, then future health is less important.*” This view was also thought to negate compliance with one’s health care regimen, overall: “*BP management is all about compliance...it’s all about people coming to the clinic and knowing that even though they don’t feel anything, they can have it and it can affect their life in the future.*”

Another respondent cautioned that some African American patients interpret a diagnosis of slight BP elevation as insignificant to long-term health outcomes when care providers respond by prescribing lifestyle change (versus medication) and will discount its severity. This sentiment was captured in the following statement: “...they just heard me say your BP is not very serious...I’ve learned over the years to be very, very, cautious in saying I think you could have used some exercise...Some of those people just don’t come back...I’ve had too many conclude well, if I didn’t need medication, it must not have been serious.”

Holism. Belief in harmony among mind, body, and spirit was thought to help African American patients realize that their life makes a difference and is worthy of health. Informants offered that this realization allowed patients to focus inward—compelling them toward optimal BP levels. On the contrary, feelings of hopelessness resulted in diminished desire to invest in a state of overall well-being. One informant conveyed “*Where there’s hope, there’s definitely a way to go up...you have to develop that hope...you have to feel that hope and you have to instill that hope and that desire...And that’s what I try to give when I have people who come in who are in despair...what we’ve done is we’ve focused people inward.*” This comment was offered in contrast to a tenet of western medicine that prioritizes attention to the state of the physical body with less attention afforded to its mind and spirit interrelationship.

Spirituality was believed to be especially important to African Americans who formally worship (i.e., attend church) at relatively greater rates than other ethnic groups. Spiritual connection was identified as a coping mechanism as demonstrated by the statement “*Well, spiritual connection really deals with how well you can cope with the stressors that you’re having in your life...how do you get your comeback...your source to be able to function on a daily basis...what’s important to you in your life?*” Strategies that incorporate holism was conveyed as particularly important to fostering HBP control in African American patients.

Personalized medical management

Seven domains, represented as personalized medical management, were deemed critical to the effective management of HBP in African American patients. Domains consisted of 1) efficient medication therapy, 2) emotional resonant (compassionate) partnership, 3) adherence to

evidence-based clinical guidelines, 4) multi-disciplined health professions workforce, 5) epigenetics-based therapy (i.e., how body responds to environment), 6) prevention (e.g., primary, secondary), and 7) experiential (hands-on) education.

Efficient Medication Therapy. Informants believed that patients benefitted most from efficient medication therapy: a) limited quantity of “pills,” b) affordable (“...if they can’t afford the medicine, how are they going to be able to get the treatment that they need”) and/or comprised of generic agents that patients believed to be just as effective as non-generic formulations, c) associated with negligible side effects, d) target BP fluctuations throughout the day (“...damage to the heart and kidneys and vasculature are caused by chronic increases in pressure”), and e) based on the patient’s genetic status of salt sensitive or resistant: *...if your hypertension is the result of salt sensitivity, then you do not want to use angiotensin receptive blockers: you lower the BP, but the injury increases with that...And, so what may be better to use if you’re salt-sensitive hypertensive to use agents that are going to increase nitric oxide bioavailability in combination with reducing dietary salt and in combination with reducing your stressful environment.*”

Respondents believed that interventions that resulted in patients’ ability to periodically monitor their BP to help them to identify elevations were warranted. They felt that healthcare providers yielded flexibility in the number of pills prescribed and that the lesser amount was associated with fewer complaints about undesirable side effects: *“Most of the time, I can treat hypertension with very good medication, no more than two pills...so decreasing the number of pills, you can make sure they’re well tolerated.”*

Emotional Resonance (Compassionate) Partnership. Caregivers who engaged in a compassionate relationship with patients were thought to facilitate hypertension management goals: *“Empathy is a crucial thing because you have to first of all understand what a person is going through in your alliance to better understand how you can help them...because it’s not all about giving pills, but it’s also about giving love...because some people are cookie cut straight to the point without giving any type of dialogue to have people (i.e., care providers) begin to be partners in their care.”* Respondents indicated that empathy is transcultural and an essential element of caring for patients. A close emotional tie was seen as a prerequisite to forming a caregiver-patient partnership wherein hypertension intervention outcomes could be maximized. This kind of alliance was thought to foster patients’ feelings of love, care, and respect that fostered caregivers’ ability to better understand their lived experience and therefore, how to optimally manage their care. *“You want to know the family as a whole to find out what the family dynamics are...you want to figure out what their beliefs are and what their diet is made of....and what their ancestral backgrounds were...try to get a feel for how best to treat.”* In this way, treatment is based on strategies that account for patients’ emotional strengths as well as weaknesses.

The emotional partnership was also believed to boost the design of culturally sensitive health services. On the other hand, absence of emotional resonance between patient-provider dyads were thought to minimize the meaningfulness of health care planning, implementation, and consequences. *“Sometimes it can be really tough because some people have a wall that is somewhat impenetrable until you find out the thing that you can connect with them on....Sometimes it takes that one or two visits to determine that.”*

adherence to evidence-based clinical guidelines. Adherence to evidence-based clinical guidelines was identified as another vital criterion of personalized medical management of

hypertension for at-risk African Americans. Some respondents recommended the use of the Eighth Joint National Committee Guidelines for Management of Hypertension in Adults (JNC8) that espouses a tiered flow-chart of recommended treatments based on the effectiveness of the preceding treatment (Able et al., 2015; James et al., 2014). *“JCN8 says, well, we’re going to treat...first, we’re going to use this treatment and second, we’re going to add this drug...then third, we’re going to use this.”* However, respondents believed that too many care providers were unaware of the guidelines and that those who were aware often erred in using them and tended to prescribe the same treatment for all patients regardless of the mechanism responsible for BP elevation. One participant offered: *“I don’t necessarily think they use them...anybody who’s a specialist in hypertension—they know what JNC8 is...If you’re going to an academic institution—I don’t know if the everyday practitioner knows although if they take CME (continuing medication education), they should know.”* Participants highlighted a drawback to using the JNC8: *“It’s OK if all African Americans using a beta blocker and a diuretic is going to work—50% of them, it doesn’t...and it’s not just what the diuretic is doing, it’s the homeostasis within the arteries...so, if that’s not working another thing—another system that’s driving it, and in many cases, we think it’s food, stressors driving it.”* Participants revealed that care providers tended to prescribe the least expensive medication regimen and this presented an added obstacle to reaching HBP management goals. Personalization of clinical guidelines as well as affordability of treatment was recommended elements of hypertension strategies targeting adult African Americans.

Multi-disciplined Health Professions Workforce. *“They do want there to be a partnership in their healthcare so they are looking for you, the health provider, to also ask the right question in addition to them asking the right question...to give them the best health coverage.”* Respondents offered the notion that hypertension management could be better addressed through partnerships among patients and a multidisciplinary healthcare provider workforce. One respondent affirmed *“But in terms of manpower, we could make much better use of nurse and physician and nurse practitioner positions, assistant trainees...other members of the team like physician assistants and so forth...we can make better use of the entire team...pharmacists too—disciplinary approach.”* A workforce team that consisted of licensed and unlicensed personnel was viewed as a vital resource with the potential to positively affect the judicious use of oftentimes limited financial resources. Unlike laypersons and other family or community supports, patients who actively engaged with a multidisciplinary workforce were believed to have a greater opportunity to develop rapport with those caregivers: a goal thought to foster intended health outcomes including BP control. *“They do need someone, preferably the nurses because I do feel they just tend to have a rapport with the nurses more so than with the doctors, take the time to talk to them...They do have questions but they often don’t want to ask them because they don’t feel safe to show their ignorance of what is going on.”*

Epigenetics-based Therapy. Respondents maintained that a genetic predisposition related to the physiologic function of the kidney contributed to the incidence of HBP in many African Americans. *“We have a population of West African people who live in the US...there is no survival advantage to carrying this allele.”* While a genetic variant was believed to have conferred a degree of resistance to malaria prior to the diaspora, it now increases the risk of chronic kidney and end-stage renal disease. African Americans in the US (as well as Hispanics and American Indians) are reported to carry similar genetic variances that affect BP levels at a higher rate than with Caucasians. Still, participants conveyed the need for caution when

predicting HBP outcomes based on genetics only. *"I don't like using genetics to scare people into doing the right thing because we know very little...I think it's going to be a lot of little things: diet, exercise, lack of exposure to environmental toxins, body mass index, social support, self-care."* Another echoed *"40% of people can have the gene (e.g., APO1) that predisposes them to high BP, but it's not the only factor...something else is going on...maybe they have protective lifestyle factors--the right diet, access to care, you know."*

While informants recognized the importance of epigenetics in addressing HBP in African Americans, they also reiterated that priority attention should be focused on strategies that address other individual, environmental, and social determinants.

Prevention. Participants indicated that primary and secondary prevention strategies should be incorporated within all interventions targeting hypertensive African Americans. They proclaimed that healthy lifestyle efforts are underutilized and that an increase in screening was warranted. They noted that too many persons are unaware of their hypertensive status (*"It's amazing to us how many people say 'oh, I didn't know it.'"*). This unawareness was particularly disconcerting to participants in light of their view that HBP is an underlying risk factor for a number of other prevalent disorders including kidney failure. The need for better screening was emphasized with reference to historical trends: *"It (incidence of hypertension) has not improved since 1988...now the uninsured had fewer healthcare visits, they were less aware of their hypertension, they were less likely to be treated. But even when treated were less likely to be controlled."* Another stated: *"We need to get them in and they need to screen appropriately...made aware and have appropriate follow-up. If we can do those simple things, a lot of good can come."*

Participants noted the cost effectiveness of BP screening for at-risk groups and prioritized access to opportunities at worksites. They believed that this setting helped to overcome the barrier to screening experienced by employees who are unable to take time away from work to engage in health promotional activities: *"It's less of an investment because I have to go out and then I have to go get prescriptions filled...all of that takes time."*

experiential (hands-on) education. Respondents indicated that patient knowledge (especially experiential) about individual health behavior, its influences, and association with HBP control was a needed component to any hypertension management intervention. However, they also noted that knowledge, alone, was insufficient to attain recommended BP levels: *"But I hear people say we've got to educate, we've got to educate. We do, but it's not that simple...."* Another pondered: *"How do we move from (patients) knowing the information to actually deciding to use the information."* Experiential education, where learners are engaged in experiences and reflection to increase their knowledge, as well as capacity to act was one strategy identified to help mediate other factors over which patients may have limited control (e.g., access to care, supportive network).

DISCUSSION

This descriptive qualitative study was conducted to uncover perceptions about intervention components that hold promise for hypertension management among at-risk African American adults. It revealed three primary themes (social support, lifestyle coaching, and personalized medical management) that highlight 16 unique domains. Each domain conveys the importance of patients' interactions with the social environment and the impact on health behavior: family and community (social support); stress, culturally compatible recommended

diet, body weight self-image, physical activity adherence, future orientation, holism (lifestyle coaching); and efficient medication therapy, patient-care provider partnership, clinical guidelines adherence, multi-disciplined health professions workforce, epigenetics, primary and secondary prevention, and experiential learning (personalized medical management) (see Table 3).

This study is the first to identify a common set of multi-level factors attributed to HBP control for at-risk African American adults. Only one related study (Flynn et al., 2013) was found that sought to elicit views of African American patients and their family members about factors influencing self-management of the patients' hypertension. The study's sample represented a different US geographic setting (urban, Northeastern) in comparison to our study and did not explore HBP control, *per se*. Yet, the Flynn et al. (2013) findings complement those of our study as they underscore the importance of diverse environmental and personal factors deemed critical for hypertension management interventions: 1) family members' support, 2) positive relationships with doctors, 3) non-competing health priorities, 4) adequate knowledge about hypertension, 5) access to community resources, 6) family members' participation in patients' doctors' visits and discussions outside of visits, 7) family members' health knowledge, and 8) patient motivation to sustain positive hypertension self-management behaviors. Findings of Flynn et al. (2013) and our study highlight the importance of the social environment to predicting BP outcomes as well as recognition that persons who experience illness must be supported within a context that exemplifies comprehensive, patient-centered, and compassionate care (Dahlgren & Whitehead, 1991; Linden, Butterworth, & Prochaska, 2010).

Our findings are also consistent with the social ecological model (SEM) that theorizes the interaction of three levels of modifiable influences (individual lifestyle factors; social and community networks; and socioeconomic, cultural, and environmental conditions) on disease (CDC, 2016b; Dahlgren & Whitehead, 1991; Hill, Weston, & Jackson, 2014). The first level represents personal behavior or ways of living that can either promote or compromise HBP outcomes (e.g., stress, diet, physical activity). The second level includes mutual support or non-support/assistance to at-risk (i.e., unfavorable conditions) individuals, and the third level denotes access/no access to essential services and facilities (e.g., housing, employment, health care, education) (Dahlgren & Whitehead, 1991).

Our findings reveal that HBP control evolves from behavior that is mediated by social support, lifestyle coaching, and personalized medical management. Factors identified, within these theoretical elements, found to affect BP outcomes among African American adults ranged from family and community support and stress management to primary and secondary prevention and experiential learning (see Table 3). It may be warranted that hypertension management interventions include strategies defined by each domain revealed in this study and supported by the SEM.

Our findings are relevant to practice, research, and education. The theoretical constructs (themes and domains) uncovered hold promise for categorizing and informing interventions to help address racial/ethnic health disparities related to cardiovascular disease. We plan to simulate these recommended interventions in a future microsimulation model to explore the optimal combination of these approaches. Microsimulation is a health planning endeavor that has been adopted by modelers of infectious diseases (Neilan, Schaefer, Gaff, Fister, & Lenhart, 2010). After refinement, the theoretical framework identified in this study can be tested for its potential to inform future clinical practice and research agendas.

Limitations

This study has a few limitations. First, interview questions may not have allowed exhaustive data collection about all multi-level strategies that affect HBP control or evoked all possible responses. Second, since respondents were all educated at the doctorate level, other hypertension management experts might have responded differently due to variations in their educational background and practice roles. Findings can only be generalized to the study sample due to the nonprobability purposive sample from which data were collected. Nonetheless, our findings contribute to identifying perceived hypertension management needs and recommended approaches important to at-risk African American adults—an important step for public health stakeholders to design and plan antihypertensive interventions among this ethnic minority group.

CONCLUSION

These findings have potential for increasing understanding of the relationships among the social environment, health behavior, and interventions that predict HBP control among at-risk African American populations. They also hold promise for helping to meet Healthy People 2020 objectives for increased quality of life and elimination of health disparities that affect too many US citizens (US DHHS, 2016). The study illuminated a number of social environmental level factors (social support, lifestyle coaching, personalized medical management) and specific domains that can be used to help craft evidence-based strategies to address the problem of hypertension among African Americans. In addition, simulation modelers can use parameters from the interventions uncovered here to design policy models for optimal population level HBP control.

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