

# Adherence treatment factors in hypertensive African American women

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**Background:** Hypertension among African American women is of epidemic proportions. Nonadherence to treatment contributes to uncontrolled blood pressure in this population. Factors associated with adherence to treatment in African American women are unknown. The purpose of this study was to identify factors associated with adherence to hypertension treatment in African American women.

**Methods:** Five audio-taped focus groups were conducted with hypertensive African American women, 35 years and older receiving treatment for hypertension from an inner-city free clinic. All transcripts from the tapes were analyzed for content describing adherence to treatment factors.

**Findings:** Factors associated with adherence to treatment in hypertensive African American women were in three main categories including: beliefs about hypertension, facilitators of adherence to treatment, and barriers to adherence to treatment.

**Implications:** The study supports the need for education on managing hypertension and medication side effects, early screening for depression in hypertensive African Americans, development of culturally sensitive hypertension educational material, and formation of support groups for promoting adherence to treatment among African American women with hypertension.

**Keywords:** adherence, African American, hypertension treatment factors

## Introduction

High blood pressure (HBP; hypertension), a leading cause of coronary heart disease (CHD) and stroke in African American (Black) women, is of epidemic proportions. Despite current advances in HBP management, African American women continue to suffer from higher incidence and prevalence of the disease compared with other groups (Denver et al 2003; AHA 2007). In 2004, 47% African American women versus 31% White women and 43% African American men (age 20 and above) had HBP (AHA 2007). High blood pressure is associated with 30% of all cardiovascular diseases and needs aggressive management (Strogartz and James 1986; Collins and Winkleby 2002; Jones et al 2002; Guo et al 2003). CHD, a complication of uncontrolled HBP, is more prevalent in African American women (7.8%) than in African American men (7.1%) (Levine et al 2003; AHA 2007). In general, African Americans have a higher prevalence, earlier onset, and more rapid progression of hypertensive end-organ disease as well as excessive hypertension-related mortality compared with other racial/ethnic groups (Flack and Sica, 2005; Hollar, Agatston and Hennekens 2004). Thus, HBP is a national priority and targeting African American women is a national health priority (US DHHS 2000).

Recent clinical trials indicate that blood pressure control can be achieved in most patients (NIH/NHLBI: JNC-7 2003). The Joint Commission on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7) blood pressure classifications include: normal (<120 systolic pressure or <80 diastolic), pre-hypertension

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(120–139 systolic pressure or 80–89 diastolic pressure), Stage I HBP (>140–159 systolic pressure or >90–99 diastolic pressure), and Stage II HBP (>160 systolic pressure or >100 diastolic pressure, and on antihypertensive medication). However, HBP control cannot be achieved without adherence to treatment regimens (Morisky et al 1986; Clarke 1991; Kim et al 2000; Levine et al 2003). Lloyd-Jones and colleagues (2005) called for urgent attention to increase awareness of the importance of treatment and control of HBP among middle-aged African American women. It is now recognized that effective interventions for urban hypertensive African American women must be culturally relevant with the participants involved in the development and evaluation of interventions (Levine et al 2003). The latter is not being done and barriers to effective management of HBP and specific strategies for African American women remain unclear. In addition, Krousel-Wood and colleagues (2005) wrote that patient adherence to therapeutic regimens or lack of adherence is not well understood. In general, adherence in the context of medical treatment refers to how well and consistently a patient follows the management plan developed with her or his health care provider and may include pharmacologic agents as well as changes in lifestyle (Chocklingam, et al 1998; Sabate 2003). Hypertensive African American women, health care providers, and the health care systems have specific roles to play for the women to achieve recommended levels of blood pressure control (Fongwa 2001). In light of the magnitude of HBP among African American women, studies that explore factors influencing adherence to treatment of the disease in this vulnerable population are urgently needed.

Urban African American women are particularly challenged by psychosocial and behavioral risk factors for HBP including obesity, physical inactivity, low socio-economic status associated with low education and unemployment, lack of access (insurance) to proper health care, and discrimination (Campbell 2003). Collins and Winkleby (2002) found that African American women at risk for uncontrolled blood pressure were likely to be those with low levels of education. In addition, the groups identified with the highest rate of HBP (>70% hypertensive) were likely to be middle-aged or older, less educated, obese (>80%), and physically inactive (50%). Using factors that influence adherence to HBP management to tailor culturally sensitive intervention strategies are likely to provide positive results. Damage due to HBP is cumulative, making intervention at a younger age a crucial strategy to prevent future problems such as congestive heart failure and stroke (PCRP-WG 2003). In order to

tailor treatment in hypertensive African American women in the West Los Angeles area, there is a need to identify the adherence-related factors in these women. Urban and underserved African American women (a population that suffers from uncontrolled HBP) are concentrated in the Crenshaw District in West Los Angeles. This study identified adherence to HBP treatment factors in hypertensive African American women 35 years and older.

## Methods

The paucity of information on factors that influence African American women's adherence to HBP treatment recommendations led us to conduct focus group interviews with hypertensive African American women who were receiving treatment for the disease from an ambulatory inner-city free clinic in West Los Angeles. Five focus group interviews were conducted with 20 hypertensive African American women, 35 years and older. Ten to 12 people were invited but attendance ranged from one to eight per group. The study was approved by the University of California, Los Angeles Institutional Review Board (# G05-06-114-01 on 9/20/05).

## Participant recruitment and screening

The study was advertised via a flyer posted in appropriate areas of the clinic and neighborhood. Participants were identified during routine clinic visits by two research assistants, clinic physicians, and nurse practitioners. The research assistants screened prospective participants for eligibility using the JNC-7 classifications for pre-hypertension, Stages I and II hypertension. Inclusion criteria were: 1) African American woman with hypertension, 2) receiving treatment for HBP, 3) at least 35 years old, 4) able to read 6th grade level English, 5) not obviously too ill to attend and participate in a focus group discussion, and 6) met the JNC-7 classifications for hypertension. We relied on each prospective participant's self selection as one who was able to read 6th grade level English. If an African American woman met the first five criteria, she was then asked to read and sign the consent form to be screened for the JNC-7 criteria for hypertension. Following the consent, the woman was invited to sit on a chair quietly for five minutes and systolic and diastolic blood pressure readings were measured in one arm. After ten minutes, the blood pressure was again measured in the opposite arm. To obtain blood pressure that was most accurate for each participant, we calculated the average systolic and diastolic readings from both arms. We appreciated the fact that being on HBP medications would influence the blood pressure readings we obtained. Therefore, we included everyone

who met the JNC-7 criteria for pre-hypertension and stages I and II hypertension. Participants' contact information was recorded in a secure recruitment log. The research assistant informed participants that they would receive an invitation to a one-time focus group in the near future.

After 10–12 participants had been recruited, a focus group invitation letter was sent out to each woman, stating the date, time, and room number at the clinic for the focus group session. Included in the package were two copies of the consent (to participate in focus group) and demographic forms for them to read and complete in the privacy of their homes. Participants were instructed to take the forms along with any questions to the group interview. Reminder phone calls were made to each prospective participant a day prior to the focus group date.

### Focus group interviews

All focus group interviews were conducted on a weekday at the clinic. Participants signed one copy of the consent form prior to taking part in the group discussion and retained one copy for their records. Focus group sessions lasted for 1½–2 hours. With their signed consent, all group sessions were audio-taped. To protect participants' privacy, they were asked to choose pseudo first names for themselves and to hold information disclosed in the focus groups in confidence. Focus group discussions were moderated by the Principal Investigator using a literature-generated interview guide (Appendix A) that asked questions on factors influencing adherence to HBP treatment recommendations including: 1) knowledge, attitudes and beliefs, 2) health care access and health care behaviors, and 3) social support (Hill et al 1999). Refreshments were served and each participant received \$20 as a token of appreciation for their participation.

### Data quality control, coding, analysis, and trustworthiness

All focus groups tapes were transcribed verbatim. Each transcript was coded before the next focus group session to identify salient issues to be addressed in the next group session. Coding entailed underlining keywords, phrases, or sentences related to adherence to HBP treatment. Data accuracy was ascertained by listening to each focus group tape and reading the corresponding transcript. All necessary corrections were made prior to coding and content analysis of each transcript for the factors associated with adherence to HBP treatment recommendations. One of the investigators (experienced in qualitative data analysis) performed content analysis of the data using constant comparative method. This

method involves line-by-line analysis of the transcribed interviews and coding data into relevant sentences and phrases. For each transcript, concurrent coding and analysis continued until unique categories were no longer identified. Emerging from this analysis was the identification of terms used to describe knowledge, attitudes and beliefs about HBP, access to care and health care behaviors, and social support. Coding and categories were independently reviewed by the other members of the investigation team and their comments were incorporated into the final categories.

Measures were taken to ensure the criteria for trustworthiness (Lincoln and Guba 1985; Peters et al 2006). Focus groups were conducted until saturation was reached to optimize credibility or having confidence in the truth of the findings as experienced by the women. Dependability was achieved by clearly stating the role of each research team member and using the same protocol for each of the focus group. Confirmability was established by a trail of raw data in audio tapes, written transcripts and details on coding, analysis and evolving categories of factors influencing adherence to HBP treatment in African American women. Transferability ensured that data were not bound; it was enhanced by collecting data over a range of adult hypertensive African American women 35 years and above. Also, two African American women not directly involved with the study verified that the identified categories reflected their own life experiences.

## Results

The final sample included 20 hypertensive African American women, ages 35 to 68, mostly high school educated and low income who presented with either JNC-7 Stage I or II HBP (see Table 1 for details). Ninety percent of the women used a free clinic (this study site) for their HBP care. The participants' discussions about HBP and adherence to treatment fell into three main categories including: beliefs about HBP, facilitators of adherence to recommended treatment regimens, and barriers to adherence with recommended treatment regimens.

### Beliefs/knowledge about HBP

The participants gave a variety of explanations that reflected their understanding of what "high blood pressure" means. Some described symptoms such as "head hurts, blurry vision, feel dizzy." One participant expressed not knowing what HBP was but knew that she had it when she said, "I don't know ... I want to know exactly ... (what HBP means) ... because it is hereditary in my family..." Some described what they believed to be the cause or the physiological dynamics that

**Table 1** Hypertensive African American women's demographics and blood pressure readings (n = 20)

Variable	Frequency (Percentage)	Mean (SD)
Age		52.20 (8.43)
<b>MARITAL STATUS</b>		
Single	6 (30%)	
Married	4 (20%)	
Divorced	8 (40%)	
Widowed	2 (10%)	
<b>EDUCATION</b>		
Less than high school	2 (10%)	
High school or GED	7 (35%)	
Business school	2 (10%)	
Some college	6 (30%)	
Associate degree	2 (10%)	
Bachelor's degree	1 (5%)	
<b>EMPLOYMENT STATUS</b>		
Employed full time	4 (20%)	
Employed part time	5 (25%)	
Unemployed	6 (30%)	
Disabled	4 (20%)	
Other	1 (5%)	
<b>YEARLY HOUSEHOLD INCOME</b>		
No income	5 (25%)	
Less than \$10,000	10 (50%)	
\$10,000 to 19,999	4 (20%)	
\$20,000 or more	1 (5%)	
<b>HEALTH INSURANCE STATUS</b>		
Yes	3 (15%)	
No	17 (85%)	
<b>WHERE YOU GET TREATMENT</b>		
Clinic (study site)	18 (90%)	
Other	2 (10%)	
<b>RATE YOUR HEALTH STATUS</b>		
Poor	1 (5%)	
Fair	8 (40%)	
Good	9 (45%)	
Very good	2 (10%)	
Excellent	0	
<b>COMPARE OWN HEALTH STATUS WITH AGE MATES</b>		
Poor	1 (5%)	
Fair	5 (25%)	
Good	9 (45%)	
Very good	5 (25%)	
Excellent	0	
Systolic blood pressure		151.80 (22.66)
Diastolic blood pressure		90.20 (20.57)
<b>JNC-7 blood pressure classification</b>		
Pre-hypertension	6 (30%)	
Stage I hypertension	7 (35%)	
Stage II hypertension	7 (35%)	

lead to an elevated HBP, "Your heart is pumping harder than it should ... works overtime and that damages the valves." Others said that an elevated blood pressure "is over 140/90" or that the measurement "is high." One participant explained that someone with an elevated blood pressure "...may not have signs but you can feel a difference in the body." Another participant captured the effect of dietary salt and fat consumption on the blood vessels by saying, "...something to do with blood and diet ... arteries get clogged by salt and fat deposits, cholesterol." Some participants referred to HBP medications as "addictive" and were therefore concerned with addiction as exemplified by this quote from one of the women: "...if I take every day, he said it would do something ... would get something mixed up ... I would be taking too much ... I may get dependent to the medication ... causes problems in the body..."

### Facilitators of adherence to HBP treatment recommendations

Facilitators of adherence to treatment included: reasons to follow provider' orders, positive/proactive changes, knowledge about HBP, adherence self-care, and social support. Some participants described reasons why they follow care providers' orders for their HBP. One participant expressed the need to achieve longevity by adhering to treatment when she said, "...I do want to see all my kids get to be 18 years old". Another followed with "...I don't wanna take a chance. That's death ... it's a silent killer so you never know when you are gonna snap ... heart attack..."

Other participants referred to positive/proactive changes they made in their lives in their efforts to follow treatment orders for HBP. For example, one participant described dietary changes she made in the following statement, "...change the butters and oils ... buy vegetables oils (canola oil), only eat fried foods occasionally, cook often..." A second participant added, "...restrict salt intake ... eat egg white and leave out the yolk..."

The participants felt knowledge about HBP and its management provides a basis for adhering to treatment orders. Here is how one participant put it, "...it's being grounded ... I know what I am supposed to do ... keeps you grounded..."

Adherence self-care (taking responsibility for or ownership of managing HBP) facilitates adhering to prescribed HBP treatment regimens. The latter involves assuming some responsibility in the management of HBP. Here is how a participant described being responsible for making sure she does not run out of prescribed medications.

“...I have to make sure I do it like two weeks in advance to make sure I get there ... I let the medication get to a certain number of pills and then I’ll call them ... get my medication and there won’t be a break in between me taking it.”

While discussing social support as an adherence factor, the women talked about 1) those with whom they live, 2) learning from one another through group interactions, and 3) communicating with a higher power (God). Some participants talked about the instrumental roles others play in helping them adhere to HBP treatment orders. One woman stated, “...haven’t been shopping for myself since I fell on the job. My daughter does all my grocery shopping ... she takes time and she knows I have high blood pressure and she buys what I need.”

The focus group interactions were often described as beneficial for the women’s self-care abilities as clearly expressed by one of the participants in the following excerpt:

“...and it is nice to come together like this. It’s just like an alcoholic anonymous group ... you learn from different people ... because here we didn’t know each other but we took some thing from each other ... we might not see each other in our walk but I do hope we decide to ... that’s good...”

Another participant added, “... allowing us to discuss this ... it’s for a great worthy cause ... it helps every one of us. Knowledge is power, we learned from each other ...”

Finally, the participants felt that prayers or communication with God is critical in the efforts to abide by care providers’ orders as captured by what this woman said:

“...always put God first in your life ... and say Lord help me to accept that I have a problem and that I need to deal with it and surrender to Him and once you do that, then you can go on to do what you have to do ... cause if you are fighting it, you’re going to find a reason not to take it...”

## Barriers to adherence to HBP treatment recommendations

Some of the women’s descriptors of adherence factors were categorized as barriers to following treatments regimens. Such factors include individual, provider, and environmental factors, and depression. Individual barriers to following dietary recommendations stemmed from disbelief that one has HBP, from financial problems or from medication side effects. One woman expressed her disbelief that she had HBP and her nonadherent behavior by saying, “...I am feeling well but I still didn’t used to taking my medication because I didn’t believe. I took home remedies ... boiled garlic, ginger

and lime...” A participant who could not afford quality foods described her situation this way:

“...you know you can’t eat proper foods so you end up getting the macaroni and cheese ... you have children to feed ... you can’t always get the fresh vegetables ... are high in the grocery store...” She believed her situation was not unique as she added “That is a big problem with black women. Black American women are going through that low income...”

Individual barriers to adherence also had to do with the side effects of medications. Medication side effects made some participants change the dosage of their medications and switch to previous prescriptions without consulting with their care providers. One woman said “... I didn’t take it yesterday. I took my old one ... I said I’m going to take like half...” Another participant said, “...I got sick because they gave me medicine that did not work with me.”

The study participants felt health care providers could do better listening to what patients say about side effects of prescribed antihypertensive medications as one put it: “...I am telling the doctor all the time this stuff is not working for me ... he said ... I hadn’t taken the medication for long ... and that I was going through menopause...” She added, “...I was not going through menopause ... I had never had something like that, not feeling myself. I feel like some times the doctors don’t listen to what you are saying ... a lack of knowledge or feelings...”

An example of an environmental factor that interferes with recommended management plan for HBP is the lack of a convenient place for physical activity. A participant put it this way, “...we don’t stay close to nothing really to walk around. Yeah, I don’t have nothing closer.” But the woman felt a sense of responsibility regarding her care when she said “...if I just push myself a little more ... I probably could find one ... I’m gonna find one...” Another focus group participant had this to say about her residential environment:

“...a different environment. Move out of South Central ... I used to live in Simi Valley and I was taking 25 mg and now I take 140 mg ... it is my environment ... I don’t drink, I don’t do drugs, I do smoke cigarette every now and then...”

The women also experienced stress from the social system. One participant described how the social service system contributes to her uncontrolled blood pressure:

“...every thing is steady going up ... your money is not going up, you can’t control yourself right and if you tell the truth about some thing, you never get nothing ... I am sorry to say it but in order for you to get something, you know

I have been here for 30 years ... you have to lie in order to get a lot of stuff. You can't be truthful about any thing. Some people are really sick. I mean I would like to go to work ... To get disability pay, you have to accept mental health (crazy) instead of a physical illness..."

The stressors in the women's lives were also family-related. A woman recounted the negative effect of family members' interactions on her blood pressure by saying, "...with my aunt and mother ... argued everyday ... I can feel my blood pressure going up. Get rid of stress ... yell at somebody or you take it in, which is worse." Another woman described what it is like to have a male partner who is not supportive:

"... he told me you are having the pressure, I'm not having any ... I found that women more than men because we carry all, we take care of them, the children, and every thing ... we the worries ... the house is burning down and he is snoring ... every thing is fine for them ... men period, not just African American men..."

Taking care of children and grandchildren was seen as a stressor that contributes to uncontrolled blood pressure among the women. A participant who assumed parental role for her grandchildren had this to say:

"If you are 60 years old and you end up with two little kids to take care of, nowhere else for them to go ... rather than letting them go through the system. I had to rewind and go back to my motherhood days. So that can be a lot of stress to get a routine..."

Some of the study participants felt controlling some of the stressors in their lives could help them manage their HBP. One participant put it this way,

"... don't wait for the last minute. I think we have a problem waiting for the last minute to do things ... and then we become stressed out. The system is not gonna change. We can't change anyone else, we can change ourselves..."

Based on how the participants described its effect on them, depression emerged as a barrier to adherence. Here is how one participant put it, "...you sit there and cry all the time and stuff, feel sorry for yourself. Just don't wanna be bothered with nobody ... You go off into yourself and your family and children notice you are not doing things any more..."

## Discussion

In this study, we identified factors associated with adherence to HBP treatment recommendations in African Americans women 35 year and older. Three main categories of adherence factors emerged from the data including: beliefs about HBP,

facilitators of adherence to treatment regimens and barriers to adherence to recommended treatment regimens. Although all the participants were on antihypertensive medications, most of them were classified as having JNC-7 Stages I and II hypertension. This is consistent with the evidence that blood pressure is poorly controlled in this population (Artinian et al 2001; Chobanian et al 2003). Although research indicates blood pressure can be controlled, only 50% of patients on anti-hypertensive medications have their blood pressures under control (Hill et al 1999; Samson 2004; Krousel-Wood et al 2005). In addition, only 25% of hypertensive African Americans have controlled blood pressure. With the national target to increase the percentage of African Americans with controlled blood pressure to 50% by 2010 (Paschal et al 2006), there is an urgent need for health care providers to provide different strategies to manage hypertension in African American women. Levine and colleagues (2003) recommended using culturally sensitive approaches with hypertensive African Americans. Participants in this study discussed some of the issues they face with the diagnosis and management of HBP that provide some insights into culturally relevant concerns they have about the barriers they face in adhering to prescribed treatment.

The women provided varied but vivid explanations reflecting their understanding about HBP including signs, symptoms and management with diet and medications. The women's understanding of the effect of salt, fat deposit and cholesterol in the vascular system could influence their dietary habits (such as cutting down on greasy and high cholesterol foods). However, some of the women's beliefs related to HBP may lead to nonadherent behaviors. For instance, patients who believe antihypertensive medications can be addictive, that there is no need to take medications in the absence of signs and symptoms, or that medications do not work (Ogedegbe et al 2003), will likely be nonadherent to treatment. Those who do not know what HBP is deserve to be informed so they can participate in their own care.

The women in this study described experiences in their lives that constitute strong reasons for adhering to HBP treatment such as living to see children grow up and not wanting to get complications like a heart attack or stroke. They also identified positive behavioral changes that need to be encouraged or supported. For example, some women reported having made significant changes in their daily habits including healthy ways to shop, cook, and eat food. Nutritious eating can alleviate the effect of co-morbidities associated with increased risk for poor health outcomes such as obesity and hypertension (Sacks et al 2001). Dietary approaches

to stop hypertension (DASH) diet can significantly reduce blood pressure (Sloane et al 2003; Lesley 2007). Positive reinforcement of desired behaviors is critical since it would give women a sense of control in the management of their hypertension. Reichgotts and Simons-Morton (1983) noted that positive reinforcement is particularly valuable for patients with inadequately controlled blood pressure who admit to nonadherence.

Hypertensive African American women concerned with addiction to antihypertensive medications are likely to skip doses or reduce the prescribed dose. The study participants were concerned about becoming addicted to antihypertensive medications and had varied ideas about handling side effects of medications. Medication side effects made some women change their medication and dosage without consulting their health care providers. There is a need for a common basic knowledge base on HBP and its management, especially on medication adherence and side effects among African American women. A common frame of reference would facilitate targeted educational approaches by health care providers and empower the women by grounding them in their personal responsibility to take care of themselves. Patients are often unaware of necessary steps needed to improve their health and prevent complications. Several studies have indicated that targeted patient education improves outcomes including increased adherence to treatment (Roter et al 1998; Morrison et al 2000; Krousel-Wood et al 2005; Safeer et al 2006). Targeted patient education for a hypertensive African American woman will provide the knowledge she needs. But the latter depends on adequate assessment of the patient. For instance, a woman who does not believe she has HBP or does not think she needs prescribed medications is in need of serious education on the disease and support in its management.

When considering facilitators of adherence to treatment for HBP, it is critical to examine the various roles patients, health care providers and the health care system play in the management of the disease. In the study to explore dimensions of quality of care among African Americans, Fongwa (2001) identified patient, provider, and health care system roles as critical for ensuring high quality patient care. The Advisory Committee on the Canadian Coalition for High Blood Pressure Prevention and Control incorporated the roles of the patient, provider, and environment in their practical recommendations (Chockalingram et al 1998). The participants in this study assumed some responsibility (adherence self-care) for behaviors that positively influence adherence. They talked about refilling antihypertensive medications

before they run out, calling for appointments, controlling their emotions and the stresses in their lives, and taking care of their bodies. The women felt the need to self-manage or control themselves in their efforts to adhere to their doctor's treatment plan. They recognized the importance of getting treatment for HBP even if they did not have health insurance. That means if a woman became uninsured due to loss of a job, it was imperative that she looked for a means to obtain treatment for HBP.

Whenever the women could not get any form of medicines for their hypertension (lack of access to needed care), some turned to home remedies including: boiled garlic (with rectal insertion of peeled garlic at times), lime, spicy foods, cinnamon, and oatmeal. These home remedies do not meet the recommended standard for medical managing hypertension. They often are ineffective in controlling blood pressure in hypertensive patients. Lack of access is the issue with the women in this study. However, quality care for HBP management should follow JNC-7 guidelines for pharmacologic treatment of essential hypertension which include using a variety of different classes of medications to initiate therapy including: diuretics, beta blockers, calcium channel blockers, angiotensin-converting enzyme (ACE) inhibitors, angiotensin-II receptor blockers (ARBs), and alpha-1-adrenergic blockers. JNC-7 guidelines recommends initiating therapy in uncomplicated hypertension with a thiazide diuretic and reserving the use of two drugs for patients whose blood pressure is greater than 20/10 mmHg above goal (Samson 2004; Rao et al 2007). It is imperative that hypertensive patients receive and take appropriate medications in order to achieve adequate control of their HBP.

An important factor in adherence for African American women to emerge from our results was the presence of others in the household. These people can either be instrumental in helping the woman adhere to treatment regimen or make things difficult for her to follow the treatment plan. For instance, one's blood pressure may stay elevated if she lives with someone who puts her down and fails to consider her needs when shopping for and preparing foods. This is very important if the person controls the household budget. African American women in this study clearly identified a need for a support group for those with HBP. They were quite pleased with sharing information and learning about HBP from the group interactions. In addition to learning from one another, interactions in a support group positively reinforced desired attitudes and behaviors. Webb and colleagues (2006) described women hearing how other women discuss stressors in their lives and how they handled them

as a source of stress reduction itself. Engaging patients in the selection of activities to improve adherence (such as identifying a need for support group) was recommended by Krousel-Wood and colleagues (2005). In addition, these authors thought support groups may have a significant effect on an individual's success in adhering to recommended regimens. African Americans believe in the power of prayers and that intervention from a divine power (God) will provide direction and guidance for maintaining health (Klonoff and Landrine 1996). Considering support groups, perhaps in the context for faith-based organizations may prove to be fruitful grounds for intervention development.

Several individual factors interfered with adherence to HBP treatment including disbelief about diagnosis, lack of finances, and side effects of medications. Providing consistent information and establishing a trusting relationship would be helpful for a patient who does not adhere to treatment because of her disbelief. Such a patient could also benefit from psychological counseling and a culturally relevant educational program. Available community resources would be helpful for those with financial difficulties. Information on how to handle side effects of prescribed medications should be verbally provided in addition to any written information that comes with medications. All information needs to be provided at an appropriate literacy level to be accessible. Health care providers are challenged to know or become knowledgeable about community resources that could benefit hypertensive African American women, especially those with no insurance and limited budget who run the risk of not getting needed treatment for their HBP. Examples of community resources are free or a sliding scale payment type medical clinics, free social service consultations, free or low-cost psychological consultations, and safe environments for physical activity for those in need of such places. Another individual reason for not adhering to their treatment plans could be as simple as forgetting to take medications. The use of reminders to take prescribed medications is one way some focus group participants said helps them overcome simply forgetting to take the medications. Jalpa and colleagues (2003) considered forgetting to take medications and careless about taking medications as common reasons for nonadherence.

Health care provider-related factors impacting blood pressure control in the women were also identified. They said to control their blood pressures, health care providers need to order the right tests, prescribe the right medications and dosages for their body types, and schedule follow-up appointments. They also said that when providers fail to listen to what they say, they prescribe medications that the

women know they will not take or would not work. Patients have ideas and action plans relating to the management of their disease. For instance, they may have specific concerns about side effects that providers need to hear (Theunissen et al 2003). Similarly, Ogedegbe and colleagues (2003) found medication side effects, inadequate knowledge of HBP, forgetfulness, and asymptomatic nature of HBP to be barriers to adherence to treatment among African American patients. Failing to check through medical records to get full and recent information about patients, especially when they are new to the providers, was a provider-related factor that influenced the women's adherence to HBP management.

According to the women in this study, environmental barriers to adherence to treatment and controlling blood pressure may come from stress. For instance, fighting the social service system for money when one cannot get a good paying job keeps blood pressure elevated—usually because of low level of education. Webb and colleagues (2006) wrote that African Americans are consistently exposed to stressors associated with living in the Western world including racism, poor housing, poor education, unemployment, low status occupations, high rates of poverty, and stressful residential environments. Living in a less stressful environment is financially expensive. Such a residential area is likely to be safe for physical activity like walking. One of the behavior modifications required in the management of HBP is to increase physical activity. A possible strategy for getting needed physical activity in a stressful environment would be for women to form walking groups in their neighborhoods. Based on what the women in this study said, the roots of some of the factors influencing adherence to treatment extend beyond the health care delivery system. A long term policy implication would be to ensure African American women attain adequate formal education that would enable them to get good paying jobs and be able to live in less stressful environments or give them power to influence positive environmental changes where ever they live. Indeed, Collins and Winkleby (2002) found that African Americans at risk for uncontrolled blood pressure were likely to be those with low levels of education. Women with difficult family situations may benefit from the intervention of a medical social worker.

The idea of a patient-centered approach that tailors interventions to overcome patient-specific barriers to adherence (Krousel-Wood et al 2005) is similar to providing culturally relevant health care (meets general and patient-specific health care needs). The latter requires adequate assessment of a hypertensive African American woman including physical and psycho-social/depression aspects and using the



information as basis for a culturally relevant plan of care. Although circumstances in the lives of a woman might be the underlying reasons for the elevated blood pressure and any observed depressive states, the women in this study described signs and symptoms that are typical in depressed patients. When they are depressed about what they cannot change, they do not follow health care providers' treatment plan for hypertension. DiMatteo and colleagues (2000) found a significant relationship between depression and nonadherence (odds ratio, 3.03, 95% CI, 1.96–4.89). Also, Siegel and colleagues (2007) found African American ethnicity and depression were associated with worse adherence.

### Limitation and strengths

The findings from this study may not be generalized beyond the studied sample. First, the findings are based on a small sample. Second, the study participants were low-income women who received treatment for hypertension from an inner-city free medical clinic and are not representative of African American women in general.

Despite these limitations, the findings contribute to efforts at closing the gap on the paucity of information on adherence to hypertension treatment factors among African American women. The findings provide a model for working with other low-income and minority ethnic groups and provide a foundation for developing culturally relevant interventions for low income, urban African American women with HBP. Replication with other populations and contexts is recommended.

### Implications

In addition to following the standards for managing HBP in hypertensive African American women, there is a need to 1) screen the women for depression, 2) provide individualized information each woman needs to adhere to prescribed treatment for HBP, 3) create and test the effectiveness of a local support group in promoting adherence and subsequent control of blood pressure among these women, and 4) create culturally sensitive health education material on HBP and its management. Health education material on hypertension and its management specifically relevant to the needs of African American women with HBP is needed and should be available free of charge. Sample content based on our results might include definition of HBP, common medications and side effects, how to handle medication side effects, dietary recommendations and foods to avoid, types of physical activity, and approaches to stress reduction. This material could provide a framework for management of other chronic conditions in this population and other ethnic minority groups.

### Disclosure

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## Appendix A

### Focus group interview guide for hypertensive African American women

#### Knowledge, attitudes, and beliefs

1. What is high blood pressure?
2. How do you know you have high blood pressure?
3. How important is it for you to stick to your doctor or nurse's treatment plan all the time?
4. How does what you know about high blood pressure affect how you take care of yourself with this disease?
5. As an African American woman with high blood pressure, what do you need to keep your blood pressure under control?
6. What makes you stick to your doctor or nurse's treatment plan for your high blood pressure?
7. What stops or prevents you from sticking to your doctor or nurses treatment plan for your high blood pressure?
8. What do you think needs to happen for you to take care of things that prevent you from sticking to your doctor or nurse's treatment plan for your high blood pressure?

#### Health care access and health care behaviors

1. How does the type of health insurance you have affect the care you receive for your high blood pressure?
2. What else do you need to get the treatment you need for your high blood pressure?
3. What prevents you from getting the needed care for your high blood pressure?
4. What about going to the emergency room because of your high blood pressure?

#### Social support

1. How does living with someone affect your following your doctor or nurse's treatment plan for high blood pressure?
2. How does having someone to talk with about personal matters affect your sticking to your doctor or nurse's treatment plan for your high blood pressure?