

# Hypertension Knowledge among Adult African-Americans in the Cape Fear Region of North Carolina

Maxwell Twum-Asante \*

Department of Psychology, Fayetteville State University, Fayetteville, NC; USA

\*Corresponding author: [mtwum@uncfsu.edu](mailto:mtwum@uncfsu.edu)

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**Abstract** *Background:* The control of hypertension requires awareness, and monitoring of the disease through screening. *Aim:* The present study was undertaken to explore the knowledge of middle-aged and older African-Americans about hypertension, and to understand steps they are taking to prevent hypertension and its related consequences. *Method:* A qualitative research strategy with five focus groups of ten adults 55-83 years old each recruited through purposive sampling procedures participated in this study. *Results:* Seventy six percent of participants were not adequately informed about the nature of hypertension and stroke, although all participants were aware of risks for the disease posed by factors including the consumption of foods high in saturated fat, and lack of exercise. *Conclusion:* Lack of adequate knowledge about hypertension, related diseases, and perceived barriers to screening may hinder adequate control of the disease among this group.

**Keywords:** *hypertension, awareness, stroke, knowledge, screening, African-Americans*

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## 1. Introduction

Hypertension which is defined as an average systolic blood pressure of  $\geq 140$  mmHg, and an average diastolic blood pressure of  $\geq 90$  mmHg [1,2] is estimated to affect about 68 million Americans [3], and is a major reason for visits to doctors [4]. That hypertension is a major risk factor for cardiovascular diseases is a finding that has been very well established in the literature [1]. According to a recent finding released in the Centers for Disease Control's Morbidity and Mortality Weekly Report [5], one in three adults in the US is affected by hypertension. The statistics are even more dire when one considers that one in every seven deaths in the US, and nearly half of all deaths related to cardiovascular diseases, including stroke, are attributable to hypertension [1]. A recent analysis of data from the National Health and Nutrition Examination Survey (NHANES) from 2005-2008 that was compared to similar data from 1999-2002 showed that overall, the prevalence of hypertension among adults in the US aged 18 years and older in the 2005-2008 data was 30.9%; the prevalence was higher among people who were older than 65 years. The prevalence for this group of adults was 69.7%; it was 38.6% among non-Hispanic blacks. The report concluded that overall, prevalence of hypertension among US adults in the 2005-2008 NHANES data was approximately 31%.

Yoon, Ostchega, and Louis [6] have reported that this statistic has remained quite stable over the past 10 years. Although there had been improvements in the use of

medication for the control of hypertension among patients, there were still about 30% of patients who were not being treated, with only 46% having their condition under control. This inadequate control of the disease has been attributed to a number of variables including the lack of usual source of medical care, and the lack of health insurance [7,8].

According to a report by the American Heart Association (AHA), even modest blood pressure elevations are associated with increased morbidity and mortality from diseases including coronary heart disease, cerebrovascular disease, congestive heart failure, and renal disease [9]. Data from NHANES 1988-1991, Phase I showed an increase in hypertension prevalence with advancing age such that over half of people between the ages of 60 and 69 years, and nearly three-fourth of those 70 years and older were affected [10]. The debilitating effects of hypertension on those affected suggest the importance of preventive efforts.

According to the Seventh Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure [1], much of the hypertension, cardiovascular, renal diseases, and stroke might be prevented if the rise in blood pressure with age could be prevented or reduced. Indeed, a recent predictive model has shown that every 10% increase in hypertension treatment could prevent 14,000 deaths in adults aged 25-79 [11].

Between 1976 and 1980, 50% of adults with hypertension in the US were not aware of the disease; 70% were not being treated, and only 10% had their blood pressure under control [12]. The initiation of programs to

address this lack of knowledge has led to increased knowledge, treatment and control of hypertension in the US such that in 2003 and 2004, nearly 75% of adults with hypertension were aware of the disease; 65% were being treated, with 37% having their blood pressure under control [13]. Despite these advancements in the awareness and treatment of hypertension, however, the disease remains a critical public health problem that affects over 65 million Americans [13,14]. More than 16 million adult Americans were unaware that they suffered from hypertension, with about 41 million not having their blood pressure under control [13,14].

Several factors account for the lack of knowledge about hypertension in the US population. Among these is the ongoing lack of knowledge about various aspects of high blood pressure [15], including the lack of knowledge about the appropriate blood pressure target [16]. A study of the predictors of intentional and unintentional non-adherence to antihypertensive medication regimens and their relationship to blood pressure outcomes for middle aged Korean Americans who have significantly higher prevalence of hypertension and poorer control of the disease as compared to other ethnic groups [17,18] found that intentional non-adherence to antihypertensive medication was attributable to incomplete knowledge of hypertension treatment [19]. The findings of this study were consistent with earlier reports about significant differences in knowledge about hypertension between those who adhered to treatment and those who did not [20]. In other words, knowledge about hypertension and its treatment in this group was dependent on their knowledge about the disease. Similar findings have been reported in Nigeria [21] where inadequate knowledge of hypertension was reported by hypertensive patients. Only one in ten of patients in this study were aware that hypertension was asymptomatic, with symptoms being a reflection of target organ damage.

Poor knowledge of hypertension and its relationship to poor control of the disease is also supported by research in Karachi, Pakistan [22] where patients with uncontrolled hypertension were significantly low in their knowledge of the disease. Formal education was not related to the knowledge of patients about hypertension. Indeed, higher education has been reported as being associated with increased risk of untreated hypertension in Scotland [23], Geneva [24], and the UAE [25]. Moderate to poor knowledge and gaps in knowledge about hypertension and its relationship to stroke have also been reported in India [26] and Nepal [27]. Some patients [28] are knowledgeable about hypertension in general, but less knowledgeable about specific factors related to their condition. They lack knowledge about their own blood pressure levels, and the classification of their own level either as normal or elevated. A lack of knowledge about systolic blood pressure level has been found to be a significant predictor of poor blood pressure control [16]. Overall, these findings show that an increase in blood pressure awareness is related to the increased use of medication and compliance with treatment recommendations of doctors to control the disease [28].

African Americans are disproportionately affected by hypertension [29] and for that reason, it is important to know the awareness of this population about the disease, especially for middle aged and older adults as they tend to

be the population most vulnerable to high blood pressure. Advanced age has been cited as the most important correlate of uncontrolled hypertension accounting for an estimated 32% of those aware of the disease in NHANES III [15]. Age is strongly related to systolic blood pressure [30], with isolated systolic blood pressure accounting for the majority of cases of uncontrolled hypertension in individuals who are older than 60 years [31]. Understanding the knowledge African Americans have about hypertension can help with the crafting of effective policies and messages to address the problem in this group.

Despite a previous report that found no differences in knowledge about hypertension among whites, Hispanics, and African Americans [32,33], other researchers [34] have reported information to the contrary in primary care patients in a family network in North Carolina. The researchers explored regional variations in the knowledge of hypertension in the "Stroke Belt" which could be different from knowledge among patients in other parts of the country. Despite general improvements in hypertension awareness, a substantial number of participants expressed the erroneous idea that people will be able to "feel" it if their blood pressure was high. This lack of knowledge about hypertension in undiagnosed patients may prevent them from getting screened for the disease to be diagnosed [34]. The finding emphasizes the need for regular screening of individuals for the disease [35]. Other erroneous ideas expressed by 1 out of 5 hypertensive patients was that there was nothing one could do to prevent hypertension, or they were unsure about prevention. Being African American, having less than high school education, and a history of stroke or mini stroke were generally associated with lower hypertension knowledge. This finding is concerning given the earlier onset of hypertension among this group, and the difficulty in controlling the disease for African Americans [36]. Because of the conflicting findings, it was deemed worthwhile to further explore the knowledge of hypertension among groups of adult African Americans in the Cape Fear region of North Carolina with a qualitative research strategy.

## 2. Method

### 2.1. Design

A qualitative research strategy was used for collecting data between February 2014 and May, 2015. Purposive sampling procedures were used to recruit participants.

### 2.2. Participants

Fifty adult African-Americans aged at least 55 years participated in this study. The starting age was deemed necessary to ensure the inclusion of middle-aged adults for whom hypertension and related diseases tend to be higher as compared to younger adults. It is also the age between which and 64 years Blacks in the US experience one and a half to two times the rate of hypertension as whites [37]. The participants were recruited primarily from churches whose members are predominantly African American. Other participants were recruited from the communities through newspaper and radio advertisements. Participants were recruited in Fayetteville, Cumberland county, and

surrounding towns in Harnett and Hoke; two adjacent counties all in the Cape Fear region of North Carolina.

Five focus groups composed of ten adults each were formed for this study. Three groups were composed of active community-dwelling older adults, one group composed of active adult relatives of stroke survivors, with the last group composed of stroke survivors with minimal speech impairment. The sample size of 10 persons per group was deemed adequate and necessary to enable an in-depth exploration of the research question. Furthermore, the construction of the five groups yielding a total of 50 participants was designed to enable us capture the different facets and views about hypertension and stroke from healthy adults, and those who have been directly or indirectly affected by the disease. An one-way analysis of variance comparing ages across the groups did not show any significant differences.

### 2.3. Procedures

Fliers describing the project, and sign-up sheets were posted on bulletin boards in all African-American churches in the Fayetteville metropolitan area, and towns in Hoke, and Harnett counties. There were also radio and newspaper solicitations for volunteers. We asked interested individuals to submit their names and phone numbers to enable research assistants contact them and arrange an initial meeting.

At these meetings, we presented potential participants with an overview of the project. The researchers discussed all aspects of the informed consent form and answered questions. After participants had signed up for the project, we formed the groups and began the discussion sessions. We held discussion sessions in church seminar rooms with one held at a senior citizens center. The author led all sessions, and was assisted by several graduate research assistants with experience in the conduct and analysis of qualitative research data who kept field notes on the sessions. We taped all discussion sessions and hired a professional transcriber to transcribe verbatim all recordings.

### 2.4. Theme Generation and Data Analysis

Three of the assistants with the most experience worked with the author over several weeks to process and analyze the data. Each researcher first read the narratives of participants from all sessions with the goal of acquiring a feeling for the ideas expressed, and to fully understand them. Following this initial step, each researcher proceeded to extract significant statements and identify key words and sentences related to the research topic. We then each attempted to formulate meanings for each of the significant statements identified. This process was repeated across the narratives of participants leading to the identification of recurrent meaningful themes that could be clustered. The field notes provided additional context that helped to clarify statements identified. Each researcher then integrated the resulting themes into a description of the knowledge and experience of the participants about the phenomenon under study.

Following the individual analysis of the data, we held several discussion sessions in which we discussed how specific themes had been generated by each researcher. The researchers agreed on the overwhelming majority of

the themes generated. In the few areas of disagreement, the group discussed these until a consensus was reached. We then coded a master copy of the consensus themes and entered the information into Ethnograph 5.06, a flexible qualitative analysis software package that allows the user to search the codebook and display a number of aspects of the transcribed data including a summary output that lists the line number coordinates of segments [38,39,40,41]. It also allows the user to obtain an output of segment counts, a display of the size of segments, and a cumulative count of segment size. Code word searches can be performed both within and across data files.

For the data obtained, we attached code words to specific segments of the themes, with subsequent explanation of the code words. Data analysis focused on identifying code words related to themes identified in the different groups on the issues explored. We performed searches for these words in the codebook. Based on these searches, we sorted the comments into content areas.

## 3. Results

A summary of the demographic information on participants is in Table 1.

**Table 1. Baseline characteristics of study participants in different focus groups**

Group	Mean Age	Range	Male (n)	Female (n)
Active Community Adults (1)	65.10	55-80	3	7
		(9.20)		
Active Community Adults (2)	69.80	59-78	5	5
		(6.96)		
Active Community Adults (3)	68.10	57-83	4	6
		(8.78)		
Relatives of Stroke Survivors	73.00	65-82	3	7
		(8.57)		
Stroke Survivors	67.10	58-80	6	4
		(6.60)		

### 3.1. Knowledge about Hypertension and Related Diseases

The participants were, generally, not well informed about the nature of hypertension, and the specific symptoms that characterize a stroke. For example, when asked to state what "hypertension" meant, the majority of participants (76%) in all groups explained the term with references to "when you are under high stress and there is pressure in your blood" or "blood thickness," "narrowing of blood vessels due to fat consumption," and "inability of the heart to pump blood." No individual in any group could state blood pressure readings that characterize the three stages of hypertension. The majority (84%) of all participants admitted that they did not clearly understand the nature of hypertension and believed that many older adult African-Americans are not well informed about hypertension either. The belief that hypertension was triggered by excessive nervousness, tension, or stress in

the body was quite prevalent in many comments. To over three quarters of participants in all groups, hypertension was related to the daily hassles an individual could be experiencing at any particular time. They also believed that after a particular episode or event that induces hypertension has passed or is resolved, one would be free of the tension or stress responsible for the hypertension. The comment of one 64 year-old woman is illustrative of this belief:

"I was under a lot of stress so I went to the doctor and he said I had high blood pressure and he gave me some medicine. I did not feel any symptoms so when I used up the medicine I stayed off for about one year until I got a problem."

Although all participants were well informed about blood pressure monitoring procedures, there was little knowledge of specific readings and what they meant. When asked to define what specific measurements would indicate hypertension, only a couple of participants with previous nursing background in two of the groups knew about stage 1 hypertension. The majority of participants acknowledged their limited understanding of hypertension. One woman's comment summed up the general lack of knowledge about hypertension as follows:

"I believe that there are many people who have high blood pressure problems and do not know it. If we had more information about high blood pressure, such people would then be more educated about the problem."

This lack of understanding of the nature of hypertension was also related to the incidence of stroke. During discussions with stroke survivors, six out of 10 participants expressed frustration with their inability to identify what had occurred at the time they suffered the stroke. A 67 year old male stroke survivor commented on the issue thus:

"I was at the VA hospital the day I had my stroke. But I didn't know I had suffered a stroke, I went to work and came back the next day, and went back to the VA hospital, and then all the symptoms that I was supposed to be aware of that I had a stroke were there, because my eyes were running water, I couldn't read my post assignments at work but I had no idea I had suffered a stroke. Then I went back and found out that I had a stroke and stayed in the hospital 42 days."

Stroke survivors and other participants believed that the lack of proper information on hypertension and other related conditions required intensive education efforts of the kind we were engaging in to help bring attention and awareness to the problem. When asked whether they thought others would participate in educational sessions on hypertension, there was consensus in all groups that many would participate in these discussions. The main idea suggested was that church members who work in the health care profession could be useful partners for educating older adult African-Americans in particular about hypertension and its consequences.

### **3.2. Risk Factors for Hypertension and Related Diseases**

When asked "what do you think is the reason for hypertension" all participants readily offered their hypotheses about risk factors and causes of high blood pressure, stroke, and other diseases among older African-

Americans. There was unanimous agreement by participants in all groups that "Black folk diet" was a primary risk factor for hypertension and stroke. Black folk diet was defined by participants as comprising sausage, bacon, fat back, ham hocks, chitterlings, pig feet, pig tail, and hog knuckles. The comment by one woman summed up the views expressed by the participants on diet as follows: "It's like, most Blacks don't want chicken unless it is fried, you know. Fixing that soul food the way we do...that cornbread has oil in it, butter too, and all that kinda stuff, that stuff that's good to us but not good for us. And I think that has a lot to do with it, to cause high blood pressure. They say you can eat pork, but the majority won't cook the pork. Pork chops. What do we do with pork chops? We fry it. You can fix pork chops other ways besides frying. Take something they say is already bad for you and add to it, frying...So we have to think about these things. But that's the way we cook. We need to get away from that." Although all participants expressed awareness that saturated fat in their diet is a risk factor for hypertension and stroke, three participants in two community-dwelling groups spoke about family members and acquaintances who were reluctant to change from diets high in fat to healthier diets that emphasize less cooking with fat, and the consumption of more fruits and vegetables. According to two participants in one group, older adults who were skeptical about dietary changes often argued that they would die anyway so they must be allowed to eat what they wanted.

Four participants (13%) from the three community-dwelling groups, and one stroke survivor expressed understanding of the resistance by some older African-Americans to dietary changes from food high in saturated fat to more vegetable and fruit-based diets. To these participants, African-Americans who are in their eighties may not gain any significant longevity advantage by changing their diets. Thus, there is no point for these individuals to deny themselves the food they enjoy. The following comment by a 56 year old participant best captures the argument made in defense of this point:

"There is always going to be those who say I have lived 'x' amount of years, and I'm satisfied that I've lived this long, and I'm not going to inconvenience or make myself uncomfortable doing some things that probably won't make a big difference anyway, or won't add very many years to my life. And there's some validity in that."

Such comments highlighted the need to create awareness about quality of life issues for older African-Americans.

Despite the implications of excessive salt consumption for hypertension among African-Americans, not many participants mentioned this risk factor. There were also very few comments about the need for reductions in body weight among older African-Americans. The few who mentioned excessive salt consumption as a risk factor lamented the difficulty of getting canned foods that were sodium free. As one man commented:

"When I go shopping, I try to find stuff without salt, but it is hard to do so. A product label may say low sodium, but you will discover that it contains over 60 percent sodium. And it is very hard to find truly salt free foods, and that does not help my pressure to remain low. Every time I go to the doctor he says your blood pressure is up

and I'll say, well, you are probably right. It is just hard to find food without sodium in it."

A woman in another group commented on her unique attempt to reduce the intake of salt. She explained that her dietician had suggested the washing of canned foods with water to reduce their salt content. To her, this process was a reasonable way by which many African-Americans could control their intake of sodium.

Another risk factor frequently mentioned in discussions by the majority of participants in all groups was the lack of desire by older African-Americans to exercise. The following segment of discussion illustrates the perception of two men – one 70 years old, and the other a 75 year old – on the issue of exercise by older African-Americans.

M(70): Yeah, I was gonna say that as far as we Black elderly are concerned, we cut back on our exercise. We don't exercise and that's no help. Just eating and sitting down. Not burning anything.

Author: So you have a combination of things here: The food, combined with the lack of exercise.

M(75): You know nowadays we don't walk anywhere. If I have to go across the street I jump in the car and ride over there. Long time ago we didn't have a car so we had to walk. At least I would burn a couple of calories and get a little exercise but now we don't get anything.

Follow up questions about whether the lack of exercise is peculiar to older African-Americans led to comments that general improvements in living standards have made life easier for many African-Americans. Some claimed that most African-Americans employ others to do physical activities they used to do by themselves. Others commented that the lack of exercise by older African-Americans was attributable to unsafe neighborhoods. One man made the following remarks:

"Years ago we could get out, walk around this street and did not have to worry about a soul bothering them. You had better not sit on your steps nowadays. And you cannot just sit in your house all the time and do aerobics. It is not safe. Years ago, you could walk to the nearest store or walk down to visit the neighbors. This activity provided a lot of exercise. But today you go walking out your door, you better be looking left and right."

There was agreement by participants in all groups about the need for community leaders to provide safe and secure environments that would encourage older African-Americans to exercise.

Job stress was another factor identified by three women (30%) in the community-dwelling groups as a risk factor for hypertension. Although many of the participants were now retirees, there were some who were actively employed doing various jobs. These individuals believed that the nature of their jobs, and the stressful situations experienced on the jobs contributed to the incidence of hypertension for many African Americans. The following segment was recorded during one session. The respondent was a 55 year old woman.

W: You know I think that part of my problem is that I'm 55 and working. And I told my doctor last week when I'm unemployed and retired I won't have any stress or the hypertension that I have to deal with. Because I think that my employment has a lot to do with elevation of my pressure.

Author: So the job environment contributes to the problem.

W(55): Yes, dealing with computers, dealing with customers causes a lot of stress. But there's nothing you can do about it until you retire or quit your job.

One woman also remarked that: "I think a lot of hypertension is worry. We are stressed out due to a lot of things. You know, some people become stressed out when they cannot pay their bills, or when they cannot maintain their regular lifestyle. They get very stressed out." A second woman continued the comments thus: "You've got a child in college and you do not know how you're going to pay that bill. Not only are those children stressed but those parents are stressed too, even more."

### 3.3. Benefits of Screening, and Barriers to Participation in Hypertension Screening Programs

There was consensus in all the groups that screening is beneficial for the health of African-Americans. Likewise, there was awareness of the consequences of failure to screen for hypertension. Indeed, participants in all groups commented that it was useful to get screened for hypertension. Several factors, however, mediated the relationships between the perceived benefits and participation in screening programs. The most important barrier to screening for hypertension in all discussion groups was financial difficulties.

Large sections of transcribed segments from the various groups were coded as financial barriers. Themes about finances were related to other issues like insurance, Medicare, and Medicaid. Comments by participants in one group were usually stated in similar fashion by those in other groups. The following segment is representative.

M(67): I'd say the majority of them don't go for checkups. Number one, it's not because they don't want to. A lot of them don't have the funds to get there. A lot of times some of the clinics will charge. So, basically if you've got health concerns and you don't have money, you cannot get into these health care places as easily as you would want to.

M(71): Mostly folks lack insurance or money.

W(63): I agree, mostly insurance. It's the lack of insurance and because of that a lot don't even bother to get checked. Not that we don't want to get checked, 'cause I'm a victim of stroke. No Medicaid. As Medicaid is concerned, you know how that runs, you have to be half dead to get Medicaid, you know how the situation is. But that's basically the problem why we don't want to go to the doctors.

M(71): No money.

W(73): No money. No insurance is basically a big problem among Black people. I agree with that 100 percent.

Active, community-dwelling participants repeated the comments expressed by stroke survivors. Several segments of transcripts from the other groups were coded as expressions of difficulties with the payment of bills for medical services offered by doctors.

A second theme also coded for segments in the transcripts dealt with the fear of possible screening outcomes for many middle-aged and older African-Americans. One male participant's remarks illustrated this fear:



“In general, I think our biggest problem is we’re scared what we gonna hear, what the doctor gonna tell us. As far as going down, getting checked, prevention, things of that nature, sometimes we wait until we can’t take the pain and then it’s too late. But, in general, I think prevention, us going down periodically and being checked out is good. Just a few days ago, fella was telling me that he was going to the doctor just to be checked. He thought he was in the very best of health and after going in, he came out being attached to the doctor and hospital for the rest of his life. You never know, there is no warning. You get no warning with blood pressure, you walk around with blood pressure and every now and then you get woozy. But you say, well, I held my head down, sometimes justification other than facing the fact that there’s a possibility that it’s high blood pressure. We diagnose ourselves a lot, and we tell ourselves what we want to hear.”

There was consensus in all groups that for some older African-Americans, there is a sense of foreboding about visiting the doctor’s office. Participants expressed the thought that a simple visit to the doctor could somehow turn disastrous if routine examination uncovers problems not known to the individual concerned. For some people, therefore, the fear of unknown aspects of their health appears to be a barrier to screening for hypertension.

Further discussions of perceived barriers to hypertension screening suggested that for middle-aged and older African-Americans, there is a close relationship between financial difficulties and fear of what screening would discover. For these individuals, the fear of screening is related to the financial burden that may befall the family should greater health problems emerge from a simple screening process. Further probing of the issue of financial barriers in all groups usually revealed information about community-based resources that could benefit middle-aged and older African-Americans. In many instances, participants became aware for the first time that local fire service stations offered free blood pressure screening for residents. There was also the sharing of information about periodic screening programs offered by area health care facilities for free. There was, however, the general perception among stroke survivors that there were no free resources in the community for hypertension screening, or to help rehabilitate stroke victims. This perception was related to their perceived lack of support by the health care system and the community at large.

Stroke survivors generally expressed the opinion that they had received little help from the health services community after their illness. One man lamented that an 87-year-old acquaintance of his had paid \$167 for ten pills without obtaining any support for her drug bills. Stroke victims, generally expressed strong suspicions about their doctors because many claimed they were not adequately informed about their impending strokes.

Although participants were generally pleased to learn about free community-based screening programs, some were doubtful they could benefit from these resources. Many could not participate in these programs because they could not drive by themselves, and thus needed assistance from relatives and friends. Unfortunately, many helpers of the old only have free time during weekends when these services were either closed or the programs had been completed. There was general agreement by participants

in all the groups that if free hypertension screening were readily available to them, many middle-aged and older African-Americans would participate in these programs despite the expressed concerns some might have about the results of such screenings.

## 4. Discussion

This study identified a number of beliefs about blood pressure control among middle aged and older African-Americans. It also identified barriers they faced in their desire to be screened for hypertension and related diseases. The identified barriers include inability to pay for screening, lack of insurance, lack of information about available community resources, and fear of what screening may uncover.

Results from the study suggest a need for continued education of African-Americans in general, and the middle-aged and older adults in particular about the dangers of hypertension. It is also important to inform adult African-Americans that hypertension is a serious risk factor for stroke and other cardiovascular diseases. Educational programs must be linked with the provision of information about the asymptomatic nature of hypertension, and the role of regular screening as the best way to detect it. The general lack of knowledge expressed by participants about hypertension confirms previous reports of existing significant deficits in knowledge, and a variety of myths regarding heart disease prevention among this population [42,43].

Although a few used physical symptoms like headaches and dizziness for their definition of hypertension, some participants who had been diagnosed with hypertension were surprised because, prior to the diagnosis they had had no physical symptoms of the disease. In this sense, many of the participants in this study were similar to the African Americans in the study published by Bailey [42] and by Kronish, Leventhal, and Horowitz [43]. Many of those sampled in these studies depended on physical symptoms for their definition of hypertension. For hypertensive participants in the present study, the absence of physical symptoms was evidence of good health until blood pressure measurement revealed their unhealthy condition. The larger point with this finding is that although improved recognition of systolic blood pressure (SBP) is a major factor in the prevention and treatment of hypertension, many do not understand the importance of SBP or the current status of their blood pressure control [28]. Sanne, Muntner, Kawasaki, Hyre, and DeSalvo [44] found hypertension knowledge deficits in specific content areas and among certain subgroups of their study. They advocated for educational programs focusing on newly diagnosed hypertensive patients and aimed at filling targeted knowledge deficits as a cost-effective approach to increase hypertension knowledge in similar populations. The recent report of global poor knowledge of the nature of hypertension [45] underscores the need for consistent education of the population about the disease.

Paradoxically, although many participants were not well informed about the nature of hypertension and its related diseases, they were all adequately informed about the risk factors for these diseases. Individuals with prior hypertension diagnosis and recommendations from their

doctors were now much more aware of the need to reduce salt consumption. The reduction in salt consumption is an effective step in reducing hypertension among adult African Americans as studies have shown that an estimated 11 million fewer adults would be hypertensive if they reduced their average daily consumption of salt from the current levels of more than 3,400 mg/day to no more than 2,300 mg/day. Indeed, a further reduction of 16.4 million cases of hypertension could be achieved if salt intake were to be reduced from current levels to the recommended intake of no more than 1,500 mg/day [46]. Many participants, however, had difficulties with the reduction of salt intake because of the scarcity of sodium free foods. Indeed, nearly 80% of the salt consumed by U.S. adults comes from packaged, processed and restaurant foods [47].

These results suggest two important points. First, there is a need for community wide dietary programs to inform and educate middle-aged and older African-Americans about ways to prepare food without using canned foods many of which contain sodium. Second, because many patients generally follow recommendations from their doctors, primary care physicians can be effective in recommending life style changes especially to older African-Americans. African-American physicians generally do well in addressing hypertension issues among African Americans [48] and this can significantly reduce the incidence of the disease. Nurses and other health professionals could do a better job of alerting non-minority doctors about the urgent need to advice their patients whose blood pressure and weight may be problematic [48].

The scant discussion of reductions in body weight in this study suggests that not many participants perceived it as an important risk factor for hypertension. Similar to previous findings [49], obesity, was not mentioned as a causative factor of hypertension. Although life style changes including weight control, increased physical activity, and reduced intake of salt could lead to the reduced risk of developing hypertension [50], African American have difficulty achieving these changes, with obesity classes 2 and 3 being the highest for this group for both males and females [51]. Forty-three percent of women and 26% of African American men in a study were found to be inactive [52]. The need for middle-aged and older African-Americans to reduce their weight has to be emphasized on a continuous basis by health care professionals because even slight reductions in weight lead to substantial blood pressure reductions in overweight people [53,54].

The data from this study suggest that many participants were generally aware of the effect of fat consumption on hypertension and coronary heart disease. Comments from many participants suggested that they were making some effort to curtail their consumption of diets high in saturated fat. Indeed, many remarked that they were now consuming larger quantities of fruits and vegetables than they used to. These developments offer hope that through consistent education some changes can be made in the food preferences of older African-Americans most of whom grew up with diets high in saturated fat. Despite these small positive steps, there are some for whom greater effort may be required to make them change their dietary preferences. These individuals expressed

unwillingness to forgo "soul food" despite acknowledging their usually high fat content. It is known that many African Americans, like Southerners in general, prefer fried and baked foods that are usually high in total saturated fat. It is for such individuals that persistent effort must be made to effect changes in their dietary preferences.

The prevalence of low physical activity among African-Americans was evident in the data from this study, and confirms the low participation by African Americans, particularly from middle age and onward, in physical activity. Only about 40 percent of African American men and 30 percent of African American women report engaging in any kind of regular activity [28]. It has been suggested that the lack of suitable programs, prohibitive costs, and the reluctance to enter a new experience without the support of family and friends could account for low participation in such program by African-Americans [29]. The discussions showed that participants were aware of the need for regular exercise. These individuals expressed concerns, however, about safety while walking or engaging in other forms of outdoor exercise. Others lamented the limited avenues and programs to promote and facilitate exercise. Such information needs to be used in designing programs than can appeal especially to older African-Americans. There is also a need to find better avenues for encouraging exercise among older African-Americans. Increased physical activity is recommended not only to facilitate weight reduction but also as a primary blood pressure control strategy [1].

Stress was identified as a risk factor for hypertension by participants. They believed that inability by many African-Americans to make ends meet, or attempts by some to maintain lifestyles beyond their means predisposed them to hypertension. The effect of daily stress on hypertension has often been stated in the literature. A review [55] found high "John Henryism" to contribute to the positive association between socio-economic status and blood pressure. Coping with adversity for many African-Americans is accompanied by a strong activation of the sympathetic nervous system involving sharp increases in heart rate and systolic blood pressure [56]. "John Henryism," a synonym for the heightened exposure to economic and social adversity and strong behavioral dispositions to confront such adversity with determined effort, has been hypothesized as a risk factor for hypertension [57]. It has been argued that frustration occurs often for these individuals because they lack the requisite skills usually obtained during the educational process (i.e., problem solving, negotiations, communication) for dealing with adversities. This deficit, in turn, might lead to autonomic nervous system stimulation that causes the elevation of blood pressure.

Some participants in this study attributed experienced stress to attempts by African-Americans to "keep up with the Jones'" while others believed the propensity to worry is inherited from parents and ancestors of African-Americans. Participants often spoke about their acquaintances who often refused assistance even though they were in need of help. This attitude was said to emanate from "Black pride." Whereas participants expressed the thought that stress and worries were inimical to good health, some lamented that they could not stop worrying about mundane needs and concerns. The

participants expressed that they coped with stress and worries by "praying to the man upstairs." The church community offers a social support network for members, and may play a useful role in mitigating the effects of stress on middle-aged and older African-Americans.

Lifestyle modification is an important component in the control of hypertension. This control mechanism is a point that needs to be emphasized for African-Americans generally, and especially for the middle-aged and older. Modifications in diet, reduction in sodium intake, weight, and increased exercise are all important for the control of hypertension [1].

The overwhelming barrier to participation in hypertension screening identified in the present investigation was that of affordability of services. Because many other aspects of hypertension screening depend on the economics of the process, there is urgent need to make screening services as affordable as possible if middle-aged and older African-Americans are to readily participate in these programs. The issue of affordability is related to the skeptical views many African-Americans have about the medical system. Because many older African-Americans are unable to afford the cost of screening, they may underutilize available services that may help the prevention of hypertension with its related consequences.

Some African-Americans may also be concerned with the ability to maintain their health if screening should identify conditions for which they may need constant medical attention. Although underutilization of medical services continues to be a problem for minority adults, this pattern may not change until they become less skeptical of the medical system. It appears the best way to increase screening and promote health service utilization requires making these services free for the middle-aged and older adults who are unable to afford the cost. When services are offered free of charge, there is a need for wide publicity of these programs. Furthermore, to decrease the reliance of older African-Americans on hospital emergency rooms as a primary source of medical care, greater efforts must be made to provide these individuals with information concerning the accessibility and availability of appropriate sources of care. Churches, and radio stations that cater to the African-American population are the best avenues for publicizing such screening services.

Contrary to previous findings by Bailey [42,58] and recently by Kronish, Leventhal, and Horowitz [43], the African-Americans in the present study showed little preference for home remedies and non-prescribed medicines for dealing with hypertension. Many spoke about how their parents treated them for common ailments with herbs and oils while they were children. Although they lamented the loss of such knowledge by the present generation, a majority expressed their preference for care by trained and certified health professionals. It was uncertain whether this preference for modern medicine in hypertension control was due to their Christian beliefs, or the dearth of herbalists, and magic store vendors in the area. It is likely the availability of indigenous health practitioners as pertains in larger metropolitan areas in America influences some African-Americans in their choice of hypertension treatment.

It may be concluded that despite the persistence of some West African ethnomedical beliefs about health

among some African-Americans [42] many prefer modern medical avenues for the control of hypertension. The barriers to utilizing these avenues remain the lack of information about hypertension and related diseases, especially stroke, the costly process involved in utilizing available resources, and lack of individual motivation for lifestyle changes. Researchers and health care practitioners need to be informed about these barriers if they are to succeed in bringing hypertension among middle-aged and older African-Americans under control.

A limitation of this investigation is the purposive, and nonprobabilistic sampling of participants which makes it difficult to extrapolate findings to the larger population of African-Americans. The results, nevertheless, suggest that poor knowledge about hypertension and its related diseases, as well as perceived barriers to their screening among middle-aged and older African-Americans in the Cape Fear region of North Carolina, require urgent community efforts to address the problem if the diseases is to be brought under control in this population.

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## Statement of Competing Interests

The author has no competing interests.

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