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Health Perceptions, Stroke Risk and Readiness for Behavior Change: Gender Differences in Young Adult African Americans

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Abstract

The presence of traditional cardiovascular risk factors has increased among young African American (AA) adults, making them more susceptible to stroke. We examined baseline data from the Stroke COunseling for Risk REduction (SCORRE) study to describe health perceptions, stroke risk, and readiness for behavior change along with gender differences in a cohort of young AA. Self-administered questionnaires were used to assess perceptions of general health, stroke risk, competence to live a healthy lifestyle and readiness for behavior change. Actual stroke risk was measured using the American Heart Association (AHA) Life's Simple 7® (LS7) program. Data were collected from 116 participants (86 women, 30 men) who had a mean age of 24.6 (SD = 4.5). On average participants had 2.6 (SD = 1.1) out of 7 risk factors for stroke, rated their overall health at the midpoint of the scale ("good"), perceived a low risk of future stroke, felt competent they could live a healthy lifestyle, and were not at a stage of readiness for behavior change. A significantly higher proportion of men than women met AHA recommendations for physical activity (77% vs. 49%; $p<.01$), but had blood pressure readings ≥ 120/80 (70% vs. 34%; $p<.01$), and smoked cigarettes/cigars (20% vs. 2% $p<.01$). Fewer men than women were at a stage of readiness for behavior change to reduce stroke risk (13% vs. 40%; $p<.01$). Stroke risk needs to be assessed early in AA and the LS7 can be used to assess and communicate risk. Understanding gender differences may help with tailoring stroke prevention education and treatment programs.

Keywords

Stroke; Young Adult; African American; Ideal Health; Behavior Change

The average age of first-stroke is declining, as the incidence of young stroke increases [1]. African Americans have a greater susceptibility to early-onset stroke and continue to experience higher stroke morbidity, mortality, and cost compared to other racial/ethnic groups [2]. For African American men, the incidence of stroke is greater than African

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American women at ages < 55 years [2]. Thus, it is important to develop effective tailored interventions to reduce stroke risk among African Americans that incorporate age, culture, and gender relevant content. Research has shown that the traditional cardiovascular risk factors (i.e. hypertension, diabetes, obesity) are contributing to this increase in young stroke [1, 3]. Therefore, understanding young adult African Americans' awareness of stroke risk in relation to their lifestyle behaviors, along with potential gender differences is important.

Several large epidemiology trials like the Reasons for Geographic and Racial Differences in Stroke (REGARDS) study [4] and Jackson Heart study [5] have found that achieving ideal cardiovascular health, based on the American Heart Association's Life Simple 7 (LS7) [6], was associated with lower stroke risk. The LS7 consists of seven modifiable stroke risk factors: four health behaviors (physical activity, diet, smoking and weight) and three health risk factors (blood pressure, fasting blood glucose and total cholesterol). Maintaining a healthy lifestyle in young adulthood has been associated with reduced cardiovascular disease risk (i.e. less hypertension, diabetes, obesity) in middle age [7], and improvements in diet or physical activity alone can reduce stroke risk by up to 30% [2]. We reported that at-risk, young to middle aged, African American men and women had inaccurate perceptions of future stroke risk which may hinder risk reduction efforts [8–9]. Understanding stroke risk and actively engaging in preventive self-care can reduce the risk of stroke and its lifelong complications [2].

The purposes of this secondary data analysis are to: 1) describe baseline (pre-intervention) data of health perceptions, stroke risk, and readiness for behavior change in a sample of young adult African Americans from the Stroke COunseling for Risk REduction (SCORRE) study [10], and 2) explore gender differences among these concepts. The SCORRE study tested an 8-week, theory-based, age-and culturally relevant intervention designed to improve accuracy of perceived stroke risk and promote lifestyle behavior change to reduce stroke risk in African Americans 20–35 years old [10]. The components of the SCORRE intervention focused on stroke risk assessment and stroke risk factor education [10].

Methods

A descriptive, comparative design was used to examine baseline data from the larger SCORRE intervention study. Data collection included self-administered questionnaires and biophysiological measures.

Sample

Convenience and snowball sampling were used to recruit potential participants from an urban University and surrounding community. Recruitment strategies included flyers, word of mouth and a popular internet site for classified listings. The inclusion criteria were 1) self-identified as African American/Black; 2) aged 20 to 35 years old; and 3) able to read, write and speak English. Once participants completed their baseline visit (N=116), only those who had at least one risk factor for stroke (N=106), were then randomized to treatment groups. For the purposes of this secondary data analysis, baseline data of the 116 participants initially enrolled are reported.

Instruments

An investigator-developed form was used to collect baseline data on demographic characteristics of the sample. The single item general self-rated health question was used to measure perception of overall health status [11]. Participants were asked, “Would you say your health is generally poor, fair, good, very good, or excellent?” The single-item general self-rated health measure has been found to be valid and reliable [11].

Perceived Risk of Future Stroke—was measured by asking participants to rate their risk or chances of having a stroke in the next 10–20 years using a 0 to 10 scale, with 0 being “no risk” and 10 being “high risk”. Similar single-item measures have been used in prior research [12].

Actual Risk of Stroke: Actual risk of stroke was based on actual modifiable stroke risk factors measured with the AHA LS7 cardiovascular health score [6]. The seven risk factors or metrics from the LS7 were collected using subjective and objective measures. Diet, physical activity, and cigarette smoking were based on standardized self-report measures; the LS7 five diet questions [6], the modified Godin Leisure-Time Exercise Questionnaire [13], and the CDC Behavioral Risk Factor Surveillance System for smoking [14]. For the objective health measures, sitting blood pressure was measured with an Omron® non-invasive blood pressure monitor using standard protocol [15]. With participants wearing light clothing and no shoes, height and weight measurements were taken using a HealthoMeter® BMI digital scale. Blood glucose and cholesterol were assessed using a finger prick blood test after participants fasted for at least 8 hours. The CardioChek® professional test system was used to analyze results.

Once the measures were obtained, results were entered into the LS7 program to calculate the overall cardiovascular health score. The overall score is calculated based on how each risk metric is categorized (See Table 1): “ideal” = 2 points, “intermediate” = 1 point, and “poor” = 0 points. The points are then summed, divided by the total possible sum (i.e. 14) and multiplied by 10 to obtain the overall cardiovascular health score. The scores range from 0–10, with higher scores indicating better cardiovascular health, which has been associated with lower stroke risk [4,5]. For descriptive purposes, a non-modifiable risk factor, family history of stroke, was also collected using a self-report single item.

Accuracy of Perceived Stroke Risk: Accuracy of perceived stroke risk was determined by comparing two measurements and then grouping the results into three future stroke risk categories: accurate, underestimated and overestimated. The two measures used were the single-item, 0 −10 response of the participant’s perceived stroke risk compared to the reversed 0–10 LS7 overall cardiovascular health score associated with actual stroke risk. Participants who accurately estimated their risk of future stroke had a perceived risk score within 2 points (+/− 0 to 2) of their LS7 score; those identified as underestimating their risk of future stroke had a perceived risk score of 0 or > 2 points below their LS7 score, and those who overestimated their risk had a perceived risk score > 2 points above their LS7 score. This estimation of perceived risk accuracy was guided by prior research [16].

Perceived Competence to Live a Healthy Lifestyle—was measured with the 4-item Perceived Competence Scale (PCS) [17]. Perceived competence is an individual's feelings or perceptions of competence regarding a specific behavior or domain, and the items on the PCS can be adapted to that behavior or domain [18]. For the SCORRE study, the behavior was "living a healthy lifestyle" to lower risk of stroke. The broad term, living a healthy lifestyle, encompassed healthy lifestyle activities (e.g. healthy diet, physical activity, smoking cessation). Responses are on a 7-point Likert scale ranging from 1= "not at all true" to 7= "very true", with higher average scores indicating higher perceived competence. The original PCS has been validated in prior studies [16] and the internal consistency reliability in this study was .92.

Readiness for Behavior Change: The Behavior Change Adoption Process, adapted for stroke, was used to identify readiness for behavior change. This 7-item survey was based on the Precaution Adoption Process Model and has been validated with a sample of women with lupus to predict stage placement for engaging in behaviors to prevent cardiovascular disease [19]. Readiness ranged from Stage 1: "I don't think I'm at risk for stroke" to Stage 7: "I have made changes in my behaviors for at least 6 months to decrease my chances of having a stroke." Participants read the statements and selected the one that best represented their stage of behavior change.

Procedures

This study was approved by a University Institutional Review Board, and all activities have been performed in accordance with the ethical standards as described by the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. Participant recruitment occurred from March 2017 through October 2017. After potential participants were screened, met initial study criteria, and agreed to participate, an appointment time was set. At baseline, the study was explained and written informed consent was obtained. Participants completed all self-report baseline questionnaires. The investigator, an adult health nurse practitioner, then questioned participants about their health, social and family histories and obtained physiological measures (i.e., blood pressure, glucose, cholesterol, height and weight). All stroke risks were documented on a Stroke Risk Assessment form. Information from the form was entered the LS7 program to obtain the overall cardiovascular health score.

Data Analysis

Descriptive statistics were used to characterize the sample and major study variables. Gender differences were examined using Chi Square analysis or independent sample t-test as appropriate. An alpha of 0.05 was used as the cutoff for significance.

Results

On average, participants (N=116) were about 25 years old, mostly women (74%), college students (69%), and the majority had health insurance (79%), primarily from commercial plans (e.g. Blood Cross Blue Shield, United Healthcare, Cigna, Kaiser Permanente) [Table 2]. Participants had an overall LS7 cardiovascular health mean score of 7.4 out of 10. These

young adults averaged almost three modifiable stroke risk factors (i.e. 3 LS7 metrics not in ideal range). The prevalence in the number of ideal health metrics met by participants was: 1 (1%), 2 (3%), 3 (17%), 4 (32%), 5 (29%), and 6–7 (17%). The majority (97%) did not meet LS7 recommendations for healthy diet, 56% were overweight/obese and 44% were not meeting AHA physical activity recommendations (Table 3). Based on the LS7 categories for blood pressure (Table 1), 43% of participants had blood pressure readings defined as "intermediate" (n= 43, 37%) or "poor" (n= 7, 6%). This study took place prior to the release of the 2017 Hypertension Guidelines [20]. With the new guidelines, the number of participants considered to have "poor" blood pressure readings would increase to 27 (23%), which would result in a lower overall cardiovascular health score (i.e. increased stroke risk). The breakdown of participants' blood pressure readings, based on the 2017 guidelines, are described in the footnote of Table 3.

For non-modifiable risk factors which increase overall risk, all participants self-identified as African American/Black and about 1/3 reported a first-degree family history of stroke (Table 2). On average, participants rated their overall health at the midpoint of the scale, "good" and perceived a low risk of future stroke (Table 2). They felt competent in their ability to live a healthy lifestyle (Table 2) and were not at a stage of readiness for behavior change to decrease their stroke risk (Table 4). Lastly, when comparing perceived versus actual stroke risk (i.e. LS7 health score), more than half either underestimated or overestimated their perceived risk of future stroke.

Gender Differences

For gender differences in demographic characteristics of the sample, about 20% more men than women were working full or part-time compared to not working (Table 2). There were no significant gender differences in perceptions of general health, perceptions of future stroke risk, or perceived competence to live a healthy lifestyle. Mean LS7 cardiovascular health scores and ideal health metrics also were similar between men and women; however, there were differences in three stroke risk factors as shown in Table 3. A significantly greater proportion of men than women had elevated blood pressure readings (i.e. ≥ 120/80). More men than women had blood pressure readings categorized as "intermediate" (57% versus 30%) and "poor" (13% versus 4%) according to the LS7 (Table 1). When implementing the 2017 hypertension guidelines, there was a similar gender difference in the "elevated" category but not for the "Stage 1" or "Stage 2" hypertension categories (Table 3). Although only few people smoked, men were more likely to smoke cigarettes than women. Women had significantly lower physical activity levels than men. No gender differences in diet, BMI, glucose or cholesterol were observed. For stage of readiness for behavior change to reduce stroke risk (Table 4), when the stages were categorized as "not ready for behavior change" (i.e. pre-contemplation, contemplation) and "ready for behavior change" (i.e. planning and action), there were significantly more women (n=34, 40%) "ready for behavior change" than men χ^2 (1, n=4, 13%) =6.9 p =.008. More than half (63%) of the men and fewer (45%) women selected "I don't think I'm at risk of stroke" for their current stage of behavior change.

Discussion

This cohort of young, mostly educated African American adults had modifiable stroke risk factors (i.e. obesity, hypertension) identified as contributors to young stroke, and generally they did not meet AHA LS7 recommendations for healthy diet and physical activity. These risk factors also were the most commonly observed in larger studies examining ideal cardiovascular health based on the LS7. In the Innovative Approaches to Diet, Exercise, and Activity (IDEA) Study, young adults (*N*=335, median age 30.9, 19% non-White) had a median of 4 out of 7 cardiovascular health metrics in ideal range [21], similar to SCORRE findings. However, the percentage of SCORRE participants with individual metrics in ideal range was 2–31% higher for all factors, except blood pressure (57% vs. 68% ideal). Inclusion criteria for IDEA included having a BMI ≥ 25, which may explain some of the differences. In the National Health and Nutrition Examination Survey (NHANES), 32.7% of participants aged 20–39 years averaged ≥5 ideal health metrics [2], compared to 46% of SCORRE participants.

In the Jackson Heart Study, only 17% of the middle-aged African American participants (*N*=4,702) averaged ≥ 4 metrics in ideal range [5], a much lower percentage than the young adults in SCORRE (78%). Participants in the Jackson Heart Study with ≥ 4 ideal cardiovascular health metrics had a lower risks of incident cardiovascular disease, including stroke, compared to those with 0–1 metric (hazard ratio, 0.29; 95% CI=0.17, 0.52; p<0.001). In the REGARDS study (*N*=22,914, mean age 65 years, 42% Black), 3% of Black and 11% of White, older adults, had ≥ 5 metrics in ideal range [4], compared to 46% in SCORRE. REGARDS researchers found as the number of ideal cardiovascular health metrics increased, the risk for stroke decreased. Lastly, in a systematic review and meta-analysis (i.e. 12 studies, 210,443 adults, mean age 59.4) of ideal cardiovascular health, participants with ≥ 3 ideal metrics, had a significantly lower hazard for cardiovascular disease incidence than those who had 0–2 metrics [22]. The percentage of participants in each metric category was 13% (≥ 5 metrics; ideal), 50% (3–4 metrics; intermediate) and 37% (1–2 metrics; poor). In the SCORRE study, the percentages were 46%, 49%, and 4% respectively, indicating better overall cardiovascular health.

Ideal cardiovascular health metrics of SCORRE participants were comparable or better than young adults in IDEA and NHANES, and better than studies of middle to older age adults. SCORRE participants were younger than participants in other studies and the majority had some college education which may explain the differences in overall cardiovascular health. Regardless, these younger adults had lifestyle behaviors (i.e. overweight/obesity, poor diet, and low physical activity) that, if unchanged, may lead to the development of other stroke risk factors (e.g. hypertension, diabetes and high cholesterol) over time. Thus, addressing these risk factors early is essential. Research has demonstrated that maintaining or improving cardiovascular health in young adulthood can delay or prevent cardiovascular events later in life [7, 22]. Additionally, a one point higher cardiovascular health score can lower stroke risk by 8% [4]. Along with the racial/ethnic disparities in stroke, there is evidence that African Americans/Blacks tend to have fewer ideal cardiovascular health metrics than non-Hispanic Whites, as young adults [23] and as middle-older age adults [4, 24]. Cardiovascular health can decline with age and African Americans are more susceptible

to lower cardiovascular health profiles, particularly the development of hypertension. Therefore, addressing healthy lifestyle components early and targeting those young adult African Americans with few ideal cardiovascular health metrics, may help to improve their metrics, thereby reducing stroke risk and stroke.

Of concern is most of the young adults in our study viewed their health as less than optimal, and despite feeling competent in their ability to live a healthy lifestyle, most were not at a stage of readiness for behavior change to decrease their chances of having a stroke. These findings suggest an incongruence between these young adults' perceived health and/or actual risk factors in relation to their susceptibility to stroke, as evidenced by inaccurate stroke risk perceptions. Young adults may not be ready to change their behaviors because they do not perceive stroke as a threat and feel they are living or potentially can live a healthy lifestyle later in life to prevent a future stroke. Inaccurate stroke risk perceptions among at-risk groups are common [11], and research has demonstrated that young adults lack awareness of the risk factors for cardiovascular diseases [25–26]. In addition, most of the participants in this study were working college students who may not consider health as a priority because of other demands.

Tailored interventions are needed to increase awareness of stroke risk, the significance of living a healthy lifestyle in young adulthood, and strategies for achieving ideal cardiovascular health. Providing feedback to young adults about their health indicators (e.g. blood pressure) outside of healthcare settings has been found to promote lifestyle modification (e.g. further blood pressure screening for hypertension diagnosis, reduced alcohol consumption, increased exercise, smoking cessation and weight loss) [27]. Expanding stroke health screenings and education in community sites frequented by young African American adults (e.g. colleges/Universities, trade schools, churches, beauty/barber shops, recreation centers) could be beneficial [9, 28–29, 34] in helping them recognize their stroke risk. Those young adults with concerning cardiovascular/stroke risk (e.g. those with few ideal health metrics), should be encouraged to see their primary care provider to address risk factors and discuss prevention and/or management. Most of the young adults at higher risk in this study had insurance which should facilitate seeking care.

There is growing evidence of the benefits of achieving ideal cardiovascular health based on the AHA Life's Simple 7 program [4–5]; the LS7 could be used to initiate conversations about lifestyle, cardiovascular health and stroke. Other frequently used cardiovascular risk estimation tools (e.g. American College of Cardiology/American Heart Association Cardiovascular Risk Algorithm, Framingham Risk Score) [30] may not be suitable for promoting health in young adults as many exclude the important lifestyle measures (i.e. diet, physical activity, smoking) that over time may contribute to major stroke risk factors (i.e. hypertension, diabetes, obesity) and stroke [2]. Although more long-term studies are needed to determine the utility and effectiveness of the LS7 as a communication tool to initiate lifestyle behavior change to reduce stroke risk, it shows promise. Feasibility of the LS7 in community settings has been demonstrated [9, 31], the ideal cardiovascular health score was found to be better than the Framingham risk equation in detecting cardiovascular health changes in young adults enrolled in a behavioral weight loss intervention [32]; and analyses

of the primary outcome data for the SCORRE intervention study 8-week follow up data are underway.

The gender differences found in this study may lay the foundation for future research and practice. Consistent with other studies involving African Americans, there were significantly fewer men (n=30) than women (n=86) who participated in the study. However, men had more concerning stroke risk factors (e.g. elevated blood pressure, smoking) and were only in the pre-contemplation phase of readiness for behavior change, the lowest and most challenging phase to motivate change. African American men often face challenges in addressing their health, such as family priorities, difficult life experiences, unmet psychosocial needs, and lack of social support [33]. There is a dearth of literature on interventions designed for Black/African American men's health, including no primary stroke prevention programs tailored to young, African American men. Recent recommendations to involve more Black/African American men in interventions and in healthcare decision-making processes have been made [33–36].

Although our study found higher rates of elevated blood pressure readings among African American men, it does not negate the importance of addressing possible hypertension early among African American women as well. Recent findings from the Coronary Artery Risk Development in Young Adults (CARDIA) study indicated that among Black and White adults (n=3,890) aged 18–30 years without hypertension at baseline, incidence of hypertension by age 55 years was 75.5% for Black men, 75.7% for Black women, 54.5% for White men and 40% for White women [37]. Predictors of the incidence of hypertension included higher blood pressure category at baseline (e.g. 120 to 139/80–89), parental history of hypertension, higher BMI, and lower adherence to the Dietary Approaches to Stop Hypertension (DASH) diet. These or similar factors were observed in the SCORRE sample at baseline, which offers guidance for targeting those at higher risk and tailoring interventions for young adult African Americans.

The finding regarding women being less physically active than men is not surprising as there is strong evidence supporting this outcome [38–39]. This gender difference in young adulthood is important, because it could contribute to the differences in overweight and obesity, diabetes and metabolic syndrome later in life, with diabetes [40–41] and metabolic syndrome [42] being stronger stroke risk factors for women than men. In SCORRE, 61% of women versus 43% of men had BMIs categorized as overweight or obese, and although the finding was not statistically significant (Table 3), the clinical significance may be related to the lack of physical activity among women. The gender and race differences in BMI cutoffs [43,44] should be considered when interpreting the BMI findings. Despite this, more intense work is still needed to help young African American women overcome the barriers to physical activity and maintain healthy weights. The interest to participate in the SCORRE study and somewhat higher stage of readiness for behavior change among the young women lends to their desire to potentially improve their lifestyle behaviors.

The increase of stroke in young adults and continued disparities in stroke among African Americans calls for further exploration of effective strategies to address this public health issue. Strengths of this study include limited prior research among this population including

examinations of gender differences. Potential limitations are the descriptive/exploratory design with self-reporting of physical activity, diet and smoking. Blood pressure readings were obtained at one visit, therefore a diagnosis of hypertension based on recommendations could not be made. The small sample size and nonrandom sample of mostly college students, recruited from one institution, limits the generalizability of the findings.

Conclusions

More needs to be done early in life to make health a priority among African Americans including expanding outreach for stroke risk assessment and education. A focus on improving diet and physical activity, achieving healthy weight and blood pressure goals are key. The LS7 is a simple, free, web-based program that may be useful for clinicians and researchers in community and clinical settings to identify individuals at risk of stroke and other cardiovascular diseases, to increase risk awareness, and to strategize for lifestyle behavior changes to reduce stroke risk. African American men may require different recruitment approaches, motivational strategies and resources than women to initiate lifestyle change to achieve ideal cardiovascular health.

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Table 1.

American Heart Association's Life's Simple 7 Cardiovascular Health

Risk Factor	Ideal 2 points	Intermediate 1 point	Poor 0 points
Health Behaviors			
[a] Diet	4–5 healthy components	2–3 healthy components	0–1 healthy components
Physical Activity	≥75 min/wk vigorous or ≥150 min/wk moderate or equivalent	1–74 min/wk vigorous or 1–149 min/wk moderate or equivalent	No moderate or vigorous activity
Smoking	Never smoked or quit ≥ 12 months ago	Former smoker, quit ≤ 12 months before	Current smoker
BMI	<25kg/m^2	25 – 29.9 kg/m^2	≥ 30 kg/m^2
Health Factors			
[b] Blood pressure	SBP <120 mmHg and DBP < 80 mmHg	SBP: 120–139 mmHg and/or DBP: 80–89 mmHg or treated to <120/<80 mmHg	SBP ≥140 mmHg and/or DBP ≥90 mmHg
Blood Glucose	< 100 mg/dl	Treated to < 100 mg/dl or Untreated 100–125 mg/dl	≥126 mg/dl
Total Cholesterol	<200 mg/dl	Treated to < 200 mg/dl or Untreated 200–239 mg/dl	≥ 240 mg/dl

Table adapted from AHA definitions for ideal cardiovascular health [2].

[a] consume ≥ 4.5 cups/d fruits and vegetables, ≥ 2 servings/wk of fish, ≥ 3 servings/d of whole grains, no more than 36 oz/wk of sugar-sweetened beverages and sodium <1500mg/dl questions.

[b] The SCORRE study was conducted prior to the release of the 2017 Hypertension Guidelines.

Table 2.

Sample Characteristics by Total Sample and Gender

Characteristics	Total *N*=116	Men *n*=30	Women *n*=86	*p*-value
	M (SD)			
Age in years	24.6 (4.5)	25.1 (4.4)	24.4 (4.5)	.490
Years of education	14.9 (1.5)	14.8 (1.2)	14.9 (1.6)	.845
[a] LS7 cardiovascular health score	7.4 (1.3)	7.3 (1.4)	7.4 (1.2)	.826
Number of ideal health metrics out of 7	4.4 (1.1)	4.4 (1.2)	4.4 (1.1)	.944
[b] Perceived risk of future stroke	2.5 (2.2)	2.4 (2.4)	2.5 (2.1)	.790
Perceived competence to live a healthy lifestyle	5.9 (1.1)	6.1 (1.3)	5.8 (1.1)	.271
	n (%)			
Had health insurance	92 (79)	26 (87)	66 (77)	.248
[c] Employed	78 (67)	25 (83)	53 (62)	.029
First-degree family history of stroke	34 (29)	9 (30)	25 (29)	.923
General Perception of Health				
Excellent/Very Good	43 (37)	14 (47)	29 (34)	.422
Good	38 (33)	9 (30)	29 (34)	
Fair/Poor	35 (30)	7 (23)	28 (33)	
Accuracy of perceived stroke risk				
Accurate	54 (47)	14 (47)	40 (47)	.852
Underestimate	35 (30)	10 (33)	25 (29)	
Overestimate	27 (23)	6 (20)	21 (24)	

[a] out of possible 10 (higher=better health);

[b] 0–10 scale (higher=higher perceived risk);

[c] the reference group for employed is unemployed (i.e. not working, volunteer work, on disability)

Table 3.

Percentage of African American Young Adults Not in Ideal Range on Stroke Risk Factors and Gender Differences

LS7 Factors Not in Ideal Range	**Total *N*=116**	**Men *n*=30**	**Women *n*=86**	***p*-value**
n (%)				
Diet < 4 out 5 dietary components met per day	112 (97)	29 (97)	83 (97)	.968
Physical Activity <75 minutes vigorous or <150 minutes moderate met per week	51(44)	7 (23)	44 (51)	.008
[a] BMI ≥ 25 kg/m^2	65 (56)	13 (43)	52 (61)	.104
[b] Blood Pressure ≥ 120/80 mmHg	50 (43)	21 (70)	29 (34)	.001
Blood Cholesterol ≥ 200 mg/dl	10 (9)	1 (3)	9 (11)	.231
Fasting Blood Glucose ≥ 100 mg/dl	7 (6)	2 (7)	5 (6)	.954
Current Smoker/Quit in past year	8 (7)	6 (20)	2 (2)	.001

[a] BMI ≥ 30kg/m^2 men = 6 (20%) and women = 29 (34%); $p = .54$;

[b] 2017 Hypertension Guidelines categories - Elevated: Systolic between 120–129 and diastolic <80, men = 13 (62%) and women 10 (34%); $p < .05$; Stage 1: Systolic between 130–139 *or* diastolic between 80–89 mmHg, men = 4 (13%) and women = 16 (19%); $p = .510$; Stage 2: Systolic at least 140 *or* diastolic at least 90mmHg men = 4 (13%) and women = 3 (3%); $p = .051$

Table 4.

Stages of Readiness for Behavior Change for Stroke Risk Reduction by Gender

Stage of Behavior Change	Total *N*=116	Men *n*=30	Women *n*=86	*p*-value
Not Ready for Behavior Change *n*(%)				.008
Precontemplation				
1. I don't think I'm at risk for stroke.	58 (50)	19 (63)	39 (45)	
2. I know I am at risk for stroke, but I have not thought about it.	9 (8)	3 (1)	6 (7)	
Contemplation				
3. I am thinking about changing my behaviors to decrease my chances of having a stroke, but I have not made up my mind if it is something I want to do.	9 (8)	3 (1)	6 (7)	
4. I have thought about changing my behaviors to decrease my chances of having a stroke, but I have decided against it.	2 (2)	1 (3)	1 (1)	
Ready for Behavior Change *n*(%)				
Preparation				
5. I have decided to change some of my behaviors to decrease my chances of having a stroke, but I have not started doing them yet.	15 (13)	2 (7)	13 (15)	
Action				
6. I have changed some of my behaviors within the last month to decreases my chances of having a stroke.	8 (7)	1 (3)	7 (8)	
7. I have made changes in my behaviors for at least 6 months to decreases my chances of having a stroke.	15 (13)	1 (3)	14 (16)	

Note: Chi Square conducted on four categories: Precontemplation, Contemplation, Preparation, and Action $\chi^2(3, N=116) = 7.1, p=.07$