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Development and Validation of the Hypertension Self-Care Profile: A Practical Tool to Measure Hypertension Self-Care

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Abstract

Background—Adequate self-care is crucial for blood pressure (BP) control. A number of hypertension (HBP) self-care instruments are available, but existing tools do not capture all the critical domains of HBP self-care and have limited evidence of reliability and validity.

Objective—The purpose of this study was to develop and validate a new tool—the HBP Self-Care Profile (HBP SCP)—in a sample of inner-city residents.

Methods—The HBP SCP encompasses comprehensive domains of HBP self-care behaviors. Guided by two validated theoretical approaches—Orem’s self-care model and Motivational Interviewing—the HBP SCP includes three scales that can be used together or independently: Behavior, Motivation, and Self-Efficacy. The sample included 213 English-speaking inner-city residents with HBP (mean age = 68.6 years; 76.1% female; 81.7% African American).

Results—Item-total correlations ranged from 0.20 to 0.63 for Behavior, 0.46 to 0.70 for Motivation, and 0.40 to 0.74 for Self-Efficacy scales, meeting the cutoff set a priori at 0.15. Internal consistency reliability coefficients ranged from 0.83 to 0.93. Concurrent and construct validities of the HBP SCP were achieved by significant correlations between HBP SCP scales and theoretically selected study instruments ($P < 0.05$ for all correlation coefficients). The HBP SCP-Behavior scale also successfully discriminated between those with or without BP control ($P < 0.05$).

Conclusions—The reliability and validity of the HBP SCP were supported in this sample of inner-city residents with HBP. The high reliability estimates and strong evidence of validity should allow researchers to use the HBP SCP to assess and identify gaps in HBP self-care behavior, motivation, and self-efficacy. Future research is warranted to evaluate the HBP SCP in diverse ethnic and age samples of hypertensive patient populations.

Keywords

hypertension; self-care; instrument; validation

INTRODUCTION

Multiple complications and premature mortality from HBP create significant burdens for hypertensive individuals, their families, and society. Despite numerous published HBP management and behavioral treatment guidelines,^{1,2} BP control rates are generally low in the United States, particularly among racial/ethnic minorities compared to the general

population (17% vs. 30%).³ Although the effectiveness of pharmacotherapy in HBP is well established, many individuals are reluctant to initiate therapy, and a substantial number of patients (42%) fail to fill prescriptions.⁴ In addition, more than one-third (38%) of people with HBP are obese compared to 20% of non-hypertensives.⁵

Self-care is defined as “actions directed toward oneself or the environment to regulate one’s functioning in the interest of one’s life, integrated functioning, and well-being.”⁶ While self-care is multidimensional as it relates to chronic disease management,^{7,8} adherence is used to describe the congruence between recommended practice and actual behavior⁹ and can therefore be considered part of self-care practices. The major areas of self-care for HBP care and management include medication taking and a number of lifestyle factors such as non-smoking, weight management, low-sodium and low-fat diet, physical activity, moderation in alcohol consumption, self-monitoring of BP, regular doctor visits, and stress reduction.^{5,10–15} Studies have shown that problems with these self-care behaviors are key elements in explaining the episodes of stroke and early death from HBP.^{5,16}

One of the major reasons for the suboptimal adoption of self-care among people with HBP is the lack of evaluation tools that are sensitive and relevant for the affected population. Most tools used in HBP self-care research, such as the Hill-Bone Adherence Scale and Morisky Scale, are not comprehensive—often exclusively addressing medication taking behavior—or have incongruent theoretical frameworks and inadequate psychometric quality.¹⁷ Given the rapidly growing aging population and the sharp increase in the prevalence of HBP in the United States,¹⁸ HBP researchers need to devote greater effort to establish a theoretically grounded, valid, and reliable instrument that captures the multiple critical domains of self-care behaviors in people with HBP. This study was designed to develop and test the psychometric properties of a new HBP self-care assessment tool—the Hypertension Self-Care Profile (HBP SCP)—in a sample of English-speaking inner-city residents with HBP.

METHODS

Setting and Sample

A cross-sectional descriptive study design was used to collect psychometric data regarding the new HBP SCP tool. Study inclusion criteria included the following: (1) age 18 years and older, (2) able to read and write in English, and (3) on antihypertensive medication(s). Individuals with an acute or terminal condition (e.g., myocardial infarction, terminal cancer), psychiatric diagnosis (e.g., schizophrenia or cognitive impairment), or other conditions that precluded participation in the study were not eligible. A total of 213 eligible participants from an inner city were enrolled in the study. The recruited number of participants was consistent with the recommended minimum sample size of 100 to 150 for exploratory factor analysis.¹⁹

Procedures

After approval from the Johns Hopkins Institutional Review Board, trained research assistants (RAs) recruited eligible participants by providing BP screenings at community-based settings (senior centers, clinics, senior housing). At the BP screening events, potential participants had their BP measured by trained RAs. Copy of their BP as well as educational materials on HBP were given to the participants if they were interested. After each participant provided written informed consent, the study questionnaire including the HBP SCP was administered and completed by self-report (including weight and height). Participants received \$20 for completing the questionnaire.

Measurements

A questionnaire was developed to assess the study participants' sociodemographic characteristics and medical histories. In addition, a number of study instruments were used to test the validity of the HBP SCP (see Analysis Section for more details).

Hypertension Self-Care Profile (HBP SCP)

Item generation: We used multiple methods to create a comprehensive pool of potential items for the HBP SCP. First, we searched the literature for current practice guidelines on HBP self-care.¹⁰ We also collected relevant items from educational materials such as pamphlets, brochures, and websites published by the Centers for Disease Prevention and Control, the American Heart Association, the National Heart, Lung, and Blood Institute, and from existing validated HBP self-care instruments such as the Hill-Bone Adherence Scale²⁰ and Morisky Medication Scale.²¹ The items for the HBP SCP encompassed self-care behaviors in the following areas which are crucial to control BP: medication taking and lifestyle factors such as physical activity, low-sodium and low-fat diet, restricting alcohol consumption, non-smoking, self-monitoring of BP, weight control, regular doctor visits, and stress reduction.^{5,10-15} Subsequently, an expert panel (N = 12) of clinicians, researchers, and community health workers with extensive experience in HBP care rated each item for its relevance using a 4-point scale, with 1 being "not relevant" and 4 being "very relevant."²² A content validity index was calculated by the proportion of experts who gave an item a rating of 3 or 4. Items with at least 80% of endorsement rates were retained,²² yielding 20 HBP self-care behavior items.

HBP SCP structure: To maximize the utility of our tool, the instrument format was based on two validated theoretical approaches: Orem's self-care model⁶ and Motivational Interviewing (MI).²³ Orem's self-care model is one of the most widely used models in health promotion interventions.^{24,25} Orem's model explains how people enable themselves to engage in self-care and perform deliberate actions such as medication taking or physical activity.²⁶ Understanding one's conditions and performing actions to meet one's self-care needs are key components of self-care.^{6,26} MI provides a means of facilitating the self-care process. Sharing common constructs with well-validated theories such as Social Cognitive Theory and the Health Belief Model, MI is based on promoting commitment to change (i.e., motivation) and on developing the confidence to make a behavioral change.²⁷ Motivation has been linked to behavior changes in patients with substance use.²⁸ Likewise, self-efficacy has been a strong predictor of self-care—medication taking, physical activity, diet, and weight control—in patients with HBP and heart failure.²⁹⁻³² Building on these two theoretical approaches, the HBP SCP was structured to include three scales that can be used concurrently or independently: Behavior, Motivation, and Self-Efficacy. We used the HBP SCP-Behavior scale to create Motivation and Self-Efficacy scales by changing the instructions from "How often do you do the following?" to "How important is it for you to do the following?" and "How confident are you that you could do the following?" respectively. Each HBP SCP scale included 20 items written at the 6th grade reading level, with higher scores indicating higher levels of HBP self-care behavior, motivation, and self-efficacy.

Pilot testing: The prototype of the HBP SCP was then reviewed by 16 patients with HBP (male = 4, female = 12) from the target inner-city community. Two focus groups of eight participants each were held to assess the readability, relevancy, and cultural congruence of the items on the HBP SCP. Each focus group lasted for about an hour. While the readability, relevancy, and cultural congruence of the items on the HBP SCP were generally acceptable, several editorial changes were made as a result of the focus groups, such as providing more examples for some of the questions for ease of understanding, replacing some words such as

antihypertensive medicine with more commonly used terms such as *blood pressure medicine*. Each focus group participant received \$20 for his/her time.

Hill-Bone Adherence Scale—The Hill-Bone Adherence Scale²⁰ is one of the most popular instruments that measure a patient's non-adherence to HBP treatment. Hence, higher scores on the Hill-Bone Scale indicate lower adherence (i.e., higher non-adherence). The scale consists of 14 items assessing non-adherence to medication taking, sodium intake, and appointment keeping. The Hill-Bone Adherence Scale—in particular the medication subscale—has demonstrated acceptable reliability and construct validity in several independent populations of African Americans, non-Hispanic whites, and Korean patients.^{20,33} In addition, noncompliance assessed by the scale predicted higher BP in black patients in the United States and in South Africa, indicating predictive validity.^{20,34} The alpha coefficient of the Hill-Bone Scale was 0.70 in the study sample.

Morisky Medication Adherence Scale-8—The Morisky Medication Adherence Scale-8²¹ consists of 8 items assessing medication taking. The original scale included only 4 items which had low sensitivity and poor internal consistency reliability.³⁵ The revised 8-item version has demonstrated improved reliability and sensitivity.²¹ The reliability coefficient was 0.68 in our study sample.

Patient Health Questionnaire-9—The Patient Health Questionnaire (PHQ)-9 was used to measure the severity of depressive symptoms. The PHQ-9 is based on the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV), and has 9 items scored from 0 (not at all) to 3 (nearly every day).³⁶ Participants are asked whether they have experienced any symptom(s) over the past 2 weeks. Total scores range from 0 to 27. The PHQ-9 has demonstrated acceptable reliability, validity, sensitivity, and specificity in community samples.^{36–39} The alpha coefficient of the scale was 0.83 in our study sample.

Blood Pressure—Measurements of systolic blood pressure (SBP) and diastolic blood pressure (DBP) were obtained by trained RAs using the A&D UA-767 (A&D Company, Ltd, Tokyo, Japan) after the participant had been seated for 5 minutes.⁴⁰ The A&D UA-767 device is a fully automated device based on the oscillometric method and has been validated against a mercury sphygmomanometer.⁴¹ The second and third BP readings recorded in mmHg were averaged to obtain the mean BP. BP control was defined as BP <140/90 mm Hg (<130/80 mm Hg for patients with diabetes).¹⁰

Analysis

Data analysis began with the compilation of descriptive statistics of the sample. A multiple analytical approach was employed to test the psychometric properties of the new tool—the HBP SCP. First, the reliability of the HBP SCP was estimated using item analysis and Cronbach's alpha coefficients. Item-total correlations above 0.15 and alpha coefficients above 0.70 were considered acceptable.⁴² Validity testing of the HBP SCP was done by assessing the underlying factor structure of the HBP SCP scales with exploratory factor analysis. Items with factor loadings above 0.30 were considered adequate.¹⁹ To provide evidence of concurrent validity, we also examined the pattern of inter-correlations among the HBP SCP-Behavior, Hill-Bone Adherence Scale, and Morisky Medication Scale-8. We hypothesized that there would be statistically significant negative correlations of the HBP SCP-Behavior with the Hill-Bone and Morisky scales—higher scores on the existing self-care behavior scales represent lower adherence. A contrast group approach was then used to test the discriminant validity of the HBP SCP-Behavior by using an independent sample *t*-test on two groups: those with BP control versus those without. We hypothesized that those with BP control would have higher self-care behavior scores, as measured by HBP SCP-

Behavior, than those without BP control. Finally, the construct validity of the HBP SCP was tested by correlating HBP self-care behavior with three theoretically relevant variables: motivation, self-efficacy, and depression. Specifically, we hypothesized that there would be significant positive correlations of HBP SCP-Behavior with Motivation and Self-Efficacy scales^{28–32} and a negative correlation with depression as measured by the PHQ-9.⁴³ Statistical significance was determined at $P = 0.05$ for all tests.

RESULTS

Sample characteristics

The characteristics of the study sample are summarized in Table 1. The participants were generally elderly (mean [SD] = 68.6 [12.3] years) with the majority being female (76.1%), African American ethnicity (81.7%), and unemployed (85%). About 62% had obtained a high school education or less and 61% lived alone. Most participants (97.2%) reported that they had some form of health insurance. The mean SBP and DBP were 135.2 mmHg (± 22.2) and 75.2 mmHg (± 12.2), respectively. BP control was observed in 61% of participants. The mean Body Mass Index (BMI) was 30.6 (± 7.9) with 31% of participants classified as overweight and 48.4% as obese. More than two thirds (70%) of the sample had a family history of HBP with mean years of HBP history being 14.2 (± 12.6). In addition, nearly three out of five (57.3%) reported one or more comorbid conditions.

Descriptive psychometric statistics

Table 2 presents item means, standard deviations, item-total correlations, and Cronbach's alpha coefficients for the HBP SCP scales. Item mean scores for HBP SCP scales ranged from 2.79 to 3.58 on a 1–4 point scale. All item-total correlations were above the cutoff set a priori at 0.15, ranging from 0.20 to 0.63 for Behavior, 0.46 to 0.70 for Motivation, and 0.40 to 0.74 for Self-Efficacy scales. Likewise, alpha coefficients of the HBP SCP scales were also high, yielding 0.83 for Behavior, 0.93 for Motivation, and 0.91 for Self-Efficacy.

Exploratory factor analysis

Principal axis factoring was performed on each of the three scales of the HBP SCP. Single factor with an eigenvalue >1 was extracted for each scale, explaining 23.6%, 40.9%, and 36.8% of the total variance in HBP self-care behavior, motivation, and self-efficacy, respectively. While most item-factor loadings were well above the desirable range of factor loadings (>0.30),¹⁹ inspection of each item-factor loading revealed that four items on the Behavior scale (1–engaging in regular physical activity, 14–measuring BP at home, 15–forgetting to take blood pressure medicine, and 16–forgetting to fill prescriptions) had factor loadings less than 0.30 (see Appendix 1). Given their importance—each item representing a critical yet different aspect of HBP self-care—these items were retained in the final set of items for the Behavior scale.

Concurrent, discriminant, and construct validity testing

Pearson's correlation coefficients of HBP SCP-Behavior with existing HBP self-care instruments were moderately strong ($r = -0.493$ with the Hill-Bone scale and $r = -0.393$ with the Morisky scale; $P < 0.001$ for all correlation coefficients), indicating concurrent validity. We assessed discriminant validity for the HBP SCP-Behavior by testing the hypothesized relationship between HBP self-behavior and HBP control. The scores on the Behavior scale were significantly but weakly and inversely correlated with both SBP and DBP values ($r = -0.137$, $P = 0.045$ and $r = -0.235$, $P = 0.001$, respectively). As hypothesized, patients with controlled BP also had significantly higher HBP SCP behavior scores than those with uncontrolled BP ($t = -2.003$, $P = 0.046$).

To test the construct validity of the HBP SCP, we examined the correlation coefficients between the HBP SCP scales and existing HBP self-care instruments as well as PHQ-9 (see Table 3). The HBP SCP-Behavior showed statistically significant positive correlations with Motivation ($r = 0.416, P < 0.001$) and Self-Efficacy ($r = 0.539, P < 0.001$), and a negative correlation with depression ($r = -0.328, P < 0.001$). Also, both Motivation and Self-Efficacy scales were significantly and negatively correlated with the Hill-Bone scale ($r = -0.326$ and $r = -0.407, P < 0.001$ for all correlation coefficients) and the Morisky scale ($r = -0.289$ and $r = -0.326, P < 0.001$ for all correlation coefficients).

DISCUSSION

Our instrument development approach was based on valid theoretical frameworks,^{6,23} built on evidence-based published guidelines of HBP care,¹⁰ and addressed the most salient and comprehensive dimensions of HBP patient-relevant self-care areas. Our study findings support the sound psychometric properties of the new tool—the HBP SCP. Item-total correlations for the items on the HBP SCP were all within the acceptable range of 0.15,⁴² with excellent internal consistency coefficients well above the acceptable level of reliability of 0.70 for all three scales included in the HBP SCP. The high reliability estimates should allow researchers to use the HBP SCP with confidence.

We observed that the factor loadings of HBP SCP items were generally adequate, except for items 1, 14, 15, and 16 on the Behavior scale that asked questions about physical activity, self-monitoring of BP, and medication taking. The finding may be due, in part, to the high prevalence of comorbidity observed in our sample: More than half of the sample reported one or more comorbid conditions. Comorbidity has been associated with a number of self-care behaviors such as lower medication adherence among individuals with chronic conditions including HBP.⁴⁴ The HBP management burden—in addition to complex medication regimens and possible functional decline that often accompany comorbidities in elderly patients^{45,46}—might have contributed to the relatively low factor loadings observed for the four items on the Behavior scale. Further evaluation is needed to confirm the functioning of these items in diverse samples.

HBP self-care behavior has been directly associated with control of HBP and with prevention of HBP complications such as stroke and early death.^{5,10,16} The HBP SCP-Behavior scale was sensitive in detecting differences among persons with and without adequate HBP control. The scale also had good concurrent validity against two of the most popular HBP self-care measures: Hill-Bone and Morisky scales. As reported in a recent systematic literature review,¹⁷ one critical disadvantage of existing HBP self-care instruments is the inability to fully capture multiple dimensions of HBP self-care; the existing instruments have been used to assess only partial aspects of HBP self-care, mainly medication taking.¹⁷ While medication adherence significantly contributes to BP control,¹⁶ rigorously designed clinical trials^{47,48} and meta-analyses^{8,49,50} have confirmed the importance of lifestyle factors in the prevention and treatment of HBP. Comprehensive assessment of HBP self-care is an important first step to identify individuals in need of HBP education and the assessment is particularly important in clinical trials, so that changes in measurements of HBP self-care across different domains can translate into important benefits for the patient. The HBP SCP-Behavior scale is a new tool that can fully capture the multiple critical dimensions of HBP self-care as identified in the current literature. Future research is warranted to test the usefulness of the HBP SCP-Behavior scale as an outcome measure.

While the published instruments have often been developed without a clear theoretical framework,¹⁷ our validated theory-based approach to developing the HBP SCP allows us to

assess patient-centered operational perspectives that can directly affect operations of self-care: motivation and self-efficacy. Motivation and self-efficacy in performing self-care are central factors in facilitating adherence and lifestyle changes among chronically ill patients.^{27,51} Therefore, improving HBP patients' motivation and self-efficacy may be a promising avenue for enhancing self-care and, eventually, achieving BP control, as evidenced by a few recent clinical trials.^{52–54} By incorporating the theoretical underpinnings of Orem and MI^{6,23} into the HBP SCP, self-care areas that require commitment change and confidence building can be identified and researchers can focus on these areas to assist patients in improving their HBP self-care.

This study presents promising findings about the HBP SCP as a new tool to measure HBP self-care behavior, motivation, and self-efficacy together or separately. Yet, there are a number of limitations to consider. The study sample included older (66.2% were 65+ years), English-speaking inner-city residents who were predominantly African Americans (81.7%), hence limiting the generalizability of the findings to younger patients with HBP from other ethnic backgrounds. With the increasing prevalence of HBP and poor BP control among younger individuals in the United States,⁵⁵ it is important to validate the HBP SCP in younger patients. Likewise, despite the heightened HBP burden among underserved ethnic minorities—particularly linguistically isolated U.S. subpopulations—the limited application of HBP self-care instruments is of concern.^{5,17,56} The utility of the HBP SCP needs to be evaluated in non-English speaking patients. In addition, it can be assumed that participants who volunteered to participate in our study were likely to be more interested in their health and HBP management than those who did not participate. Therefore, the level of HBP self-care reported in this study might have been an overestimate of HBP self-care behavior, motivation, and self-efficacy in the larger HBP population, limiting the generalizability of the findings.

Conclusions

In conclusion, the reliability and validity of the HBP SCP was supported in this sample of inner-city residents with HBP. With continued validation, clinicians can use the HBP self-care gaps demonstrated on the HBP SCP to provide the basis for additional hypertensive management education for patients with HBP. Future research is warranted to evaluate the HBP SCP in other ethnic samples of hypertensive patient populations with diverse age range. With the goal in mind of identifying quality items with good discriminability across ethnicities, more advanced item assessment techniques such as item response theory may be useful in selecting and assessing HBP self-care items that have potential for broader use.

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Appendix 1

Table 4

Factor loadings of the HBP SCP-Behavior scale

Direction: Listed below are common recommendations for persons with hypertension. How often do you do the following?	
Items	Factor loading
1. Take part in regular physical activity (e.g., 30 minutes of walking 4–5 times per week)?	.283
2. Read nutrition facts label to check information on sodium content?	.582
3. Replace traditional high-salt foods (e.g., canned soups, Oodles of Noodles) with low-salt products (e.g., homemade soups, fresh vegetables)?	.585
4. Limit use of high-salt condiments (e.g., ketchup)?	.562
5. Eat less than 1 teaspoon of table salt per day (6 grams)?	.539
6. Eat less foods that are high in saturated (e.g., red meat, butter) and trans fat (e.g., shortening, lard)?	.662
7. Use broil, bake or steam instead of frying when cooking?	.606
8. Read nutrition label to check info on saturated (e.g., butter, red meat) and trans fat (e.g. lard, shortening)?	.719
9. Replace traditional high-fat foods (e.g., deep fried chicken) with low-fat products (e.g., baked chicken)?	.716

Direction: Listed below are common recommendations for persons with hypertension. How often do you do the following?

Items	Factor loading
10. Limit total calorie intake from fat (less than 65 grams) daily?	.647
11. Eat 5 or more servings of fruits and vegetables daily?	.471
12. Practice moderation in drinking alcohol daily (2 glasses or less for men; 1 glass or less for women)?	.406
13. Practice non-smoking?	.327
14. Check your blood pressure at home?	.200
15. Forget to take your blood pressure medicine?	.244
16. Forget to fill your prescriptions?	.189
17. Keep your weight down?	.348
18. Monitor situations that cause a high level of stress (e.g., arguments, death in the family) resulting in blood pressure elevation?	.311
19. Engage in activities that can lower stress (e.g., deep breathing, meditation)?	.335
20. See a doctor regularly?	.375

Appendix 2

Table 5

Factor loadings of the HBP SCP-Motivation scale

Direction: Listed below are common recommendations for persons with hypertension. How important is it to you to do the following?

Items	Factor loading
1. Take part in regular physical activity (e.g., 30 minutes of walking 4–5 times per week)?	.481
2. Eat less processed foods (e.g., canned or frozen goods, lunch meats)?	.548
3. Read nutrition facts label to check information on sodium content?	.669
4. Replace traditional high-salt foods (e.g., canned soups, Oodles of Noodles) with low-salt products (e.g., homemade soups, fresh vegetables)?	.723
5. Limit use of high-salt condiments (e.g., ketchup)?	.674
6. Eat less than 1 teaspoon of table salt per day (6 grams)?	.722
7. Eat less foods that are high in saturated (e.g., red meat, butter) and trans fat (e.g., lard, shortening)?	.716
8. Use broil, bake or steam instead of frying when cooking?	.673
9. Read nutrition label to check information on saturated (e.g., butter, red meats) and trans fat (e.g., lard, shortening)?	.676
10. Replace traditional high-fat foods (e.g., deep fried chicken) with low-fat products (e.g., baked chicken)?	.712
11. Limit total calorie intake from fat (less than 65 grams) daily?	.624
12. Eat 5 or more servings of fruits and vegetables daily?	.674
13. Practice moderation in drinking alcohol daily (2 glasses or less for men; 1 glass or less for women)?	.574
14. Practice non-smoking?	.608
15. Check your blood pressure at home?	.536
16. Take your blood pressure medicine?	.648
17. Get your prescription filled?	.606
18. Keep your weight down?	.669

Direction: Listed below are common recommendations for persons with hypertension. How important is it to you to do the following?

Items	Factor loading
19. Try to stay away from anything and anybody that causes stress?	.643
20. See a doctor regularly?	.541

Appendix 3

Table 6

Factor loadings of the HBP SCP-Self-Efficacy scale

Direction: Listed below are common recommendations for persons with hypertension. How confident are you that you could,

Items	Factor loading
1. Take part in regular physical activity (e.g., 30 minutes of walking 4–5 times per week)?	.407
2. Eat less processed foods (e.g., canned or frozen goods, lunch meats)?	.773
3. Read nutrition facts label to check information on sodium content?	.677
4. Replace traditional high-salt foods (e.g., canned soups, Oodles of Noodles) with low-salt products (e.g., homemade soups, fresh vegetables)?	.707
5. Limit use of high-salt condiments (e.g., ketchup)?	.692
6. Eat less than 1 teaspoon of table salt per day (6 grams)?	.682
7. Eat less foods that are high in saturated (e.g., red meat, butter) and trans fat (e.g., lard, shortening)?	.744
8. Use broil, bake or steam instead of frying when cooking?	.674
9. Read nutrition label to check information on saturated (e.g., butter, red meats) and trans fat (e.g. lard, shortening)?	.630
10. Replace traditional high-fat foods (e.g., deep fried chicken) with low-fat products (e.g., baked chicken)?	.725
11. Limit total calorie intake from fat (less than 65 grams) daily?	.694
12. Eat 5 or more servings of fruits and vegetables daily?	.560
13. Practice moderation in drinking alcohol daily (2 glasses or less for men; 1 glass or less for women)?	.480
14. Practice non-smoking?	.532
15. Check your blood pressure at home?	.450
16. Take your blood pressure medicine?	.486
17. Get your prescription filled?	.551
18. Keep your weight down?	.473
19. Try to stay away from anything and anybody that causes any kind of stress?	.534
20. See a doctor regularly?	.446

What's New and Important?

- While there is no standard to measure the level of HBP self-care, we developed the Hypertension Self-Care Profile (HBP SCP) based on validated theoretical approaches to assess patients' HBP self-care behavior, motivation, and self-efficacy.
- The reliability and validity of the newly developed HBP SCP was supported in a sample of inner-city residents with HBP.
- The HBP SCP can be used together or separately and is relatively short (20 items for each scale). Because the reading level is at the 6th grade level, the HBP SCP can be easily self-administered. Clinicians can review items on the HBP SCP with patients to offer feedback about areas where additional assistance is needed and tailor educational interventions to the patient's level of behavior, motivation, and self-efficacy.

Table 1

Sample characteristics (N = 213)

Variable	%	Mean(SD)
Age, yrs (range = 30–95)		68.6 (12.3)
<55	13.6	
55–64	20.2	
65–74	32.4	
75+	33.8	
Female	76.1	
Ethnicity		
African American	81.7	
Caucasian	15.5	
Other	2.8	
Unemployed	85.0	
High school or less	61.5	
Living alone	60.6	
Health insurance [†]	97.2	
Private Plan	35.7	
Medicare	62.4	
Medicaid	10.4	
Military healthcare	3.3	
Other	12.7	
SBP, mm Hg (range = 86–211)		135.2 (22.2)
DBP, mm Hg (range = 39–115)		75.2 (12.2)
BP control [‡]	61.0	
BMI, kg/m ² (range = 11–58)		30.6 (7.9)
Normal (<25)	20.7	
Overweight (25 – <30)	31.0	
Obese (30+)	48.4	
Family history of HBP	70.0	
Years of HBP (range <1–65)		14.2 (12.6)
Comorbidity [§] (range 0–6)		1.1 (1.2)
0	42.7	
1	33.2	
2	11.4	
3+	12.8	

[†]Adds more than 100% due to multiple responses allowed.

[‡]Defined as BP <140/90 mm Hg (<130/80 mm Hg for patients with diabetes).

[§]Included myocardial infarction, diabetes, heart failure, stroke, kidney failure/damage, and angina.

Table 2

Reliabilities of HBP SCP scales

Scale	No. of items (response format)	Item mean (SD)	Item-total correlation (Range)	Cronbach's alpha
Behavior	20 (4-point [1-4] Likert)	2.79 (0.38)	.20 – .63	.83
Motivation	20 (4-point [1-4] Likert)	3.58 (0.14)	.46 – .70	.93
Self-Efficacy	20 (4-point [1-4] Likert)	3.47 (0.18)	.40 – .74	.91

Table 3

Correlations between HBP SCP scales and relevant study instruments

Scale	1	2	3	4	5	6
1. HBP SCP-Behavior	--					
1. HBP SCP-Motivation †	.416**	--				
2. HBP SCP-Self-Efficacy	.539**	.653**	--			
3. Hill-Bone scale	-.493**	-.326**	-.407**	--		
4. Morisky scale	-.393**	-.289**	-.326**	.543**	--	
6. PHQ-9 ‡	-.328**	-.257**	-.313**	.192*	.428**	--

† N = 212 and

‡ N = 211 due to missing responses.

* P < 0.05,

** P < 0.001.