ORIGINAL ARTICLE

# Psychometric Properties of The Indonesian Version of Hypertension Self Care Profile

Salami Salami[1,2], Soon Siew Choo[2], Faridah Mohd Said[3], Angga Wilandika[1]

[1] Nursing Department, Faculty of Health Sciences, Aisyiyah University Bandung, 40264, West Java – Indonesia,
[2] Mahsa University Malaysia, Jln SP 2, Bandar Saujana Putra, 42610 Jenjarom, Selangor, Malaysia
[3] Lincoln University College, Wisma Lincoln, 12-18, Jalan SS 6/12, 47301 Petaling Jaya, Selangor, Malaysia

## ABSTRACT

**Introduction:** Uncontrolled hypertension is a leading cause of death worldwide and self-care is one of the essential management strategies. However, data regarding the psychometric properties of self-care instruments in the Indonesian context is lacking. This study aims to validate the Hypertension Self-care Profile (HBP SCP) instrument in the Indonesia version. **Methods:** A forward-backward translation technique was used for the Hypertension (HBP SCP) questionnaire. This questionnaire had three domains namely motivation, self-efficacy, and behavior. It was completed by a total of 191 respondents and the survey was conducted from September to December 2021 in the Health Primary Care Bandung West Java, Indonesia. The Cronbach's alpha was used to test the reliability scale, the content validity index was assessed by five experts, and item inter-correlation was analyzed to test the total items. **Results:** The results showed that the content validity index was in the excellent category with a value of 0.89. The Cronbach's alpha coefficient was 0.875, indicating satisfactory internal consistency. Furthermore, the total items correlation had a significance value of 0.05 (df = N-2) for the three scales namely 0.353-0.742, 0.302- 0.642, and 0.237-0.649 for motivation, self-efficacy, and behavior, respectively. **Conclusion:** The Indonesian version of the Hypertension HBP SCP instrument is valid and reliable.
*Malaysian Journal of Medicine and Health Sciences* (2023) 19(4):231-236. doi:10.47836/mjmhs19.4.34

**Keywords:** Hypertension, Validity, Reliability, Self-care profile

**Corresponding Author:**
Salami Salami, M.Kep
Email: salami@unisa-bandung.ac.id
Tel: +62 (022)7305269

## INTRODUCTION

Hypertension remains one of the global health problems despite the easy diagnosis method and adequate antihypertensive drugs available at the primary care level. In reality, there are still several challenges that must be faced in controlling the disease.

According to data released by WHO (1), several millions people globally are known to have hypertension. The disease is more prevalent among the population between the ages of 30 and 70 with an estimated value of approximately 1.28 billion people. Furthermore, about 46% of people are unaware that they have hypertension, while only 21% of adults, or one in five are disease-free. Uncontrolled hypertension can lead to catastrophic consequences such as coronary heart disease, myocardial infarction, and stroke/Cerebral Vascular Accident (CVA) (2,3).

According to data from the Indonesia Family Life Survey (IFLS), although hypertension is still widespread, only 42.9% of people are aware of their status. Additionally, only 11.5% of this amount underwent therapy, and only 14.3% had their condition under control (4,5). Chronic diseases such as hypertension require lifelong care and adherence to a disease management regimen.

The adequate management of hypertension is closely related to patient behavior factors. Self-care behavior carried out by patients is a significant part of disease management efforts. The American Heart Association (AHA) recommends behavior modification to manage hypertension and the use of medications. Suggested behavior modifications include a low salt diet, healthy diet, healthy drinks, physical activity, avoiding smoking habits, controlling body weight and alcohol, reducing stress and air pollution, as well as exposure to cold air (6,7).

Self-care is defined as an individual activity that aims to meet life's necessities, maintain health, and prosper both in health as well as illness (1). The theory emphasizes individual initiative in maintaining health (8) and this ability must be supported by motivation along with self-efficacy. Bandura stated that self-efficacy is a person's belief in their ability to organize and complete a task (9).

Self-care behaviors by patients with hypertension have been linked to significant improvements in blood pressure control, enhancement in their quality of life, and reduced healthcare costs (10). In contrast, inadequate self-care management is associated with an increased rate of illness complications and HTN-related death. A major risk factor for early death and the worldwide burden of disability is poor blood pressure control in hypertensive patients (Disability Adjustment Life Years). The economic side of this issue is also another effect. Based on a recent study, uncontrolled HTN has an estimated USD 47.5 billion annual cost to countries in healthcare, medication, and missed workdays (11).

The data indicated that self-care management carried out by patients must be monitored and provided with adequate support. Successful management of hypertension requires adequate self-care (12). The first step in treatment is to identify the self-care that has been carried out by the patient. Furthermore, several tools have been developed, such as H-SCALE (Hypertension Self-Care Activity Level Effects). This instrument is used to assess medication adherence, weight management, DASH diet, physical activity, smoking exposure, and alcohol intake. Another instrument is the Self-Care of Hypertension Inventory (SC-HI) which measures maintenance, monitoring, and management appropriate for persons with chronic HTN (13,14). In addition to these two instruments, there is also the hypertension self-care profile (HBP SCP). This questionnaire was developed by Rae Han et al., at Johns Hopkins University (13). It has three domains which are motivation, self-efficacy, and behavior.

This instrument has been tested in the Turkish, Malay, and Mandarin versions with evidence of good validity and reliability (15–17). In Indonesia, the instrument on self-care in hypertensive patients is still lacking. Therefore, this study aims to evaluate the Indonesian version of the psychometric properties of the Hypertension Self-care Profile (HBP SCP) instrument. The questionnaire was validated in all three domains to be utilized in a broad range of settings.

## MATERIALS AND METHODS

### Study Design

This study was conducted using a cross-sectional technique and the sample size was 191 respondents. It referred to the COSMIN study, stating that about 150-199 respondents are adequate for cross-cultural validity (13). The inclusion criteria included patients suffering from hypertension for more than one year, aged over 18 years, not pregnant, not suffering from mental disorders, able to read and write in Indonesian, and willing to participate as respondents.

Data were taken by simple random sampling from medical records at Primary Health Center Bandung West Java according to the inclusion criteria set. After checking the respondents' numbers, data were collected and informed consent to participate in the survey was received. Data were taken from 199 respondents, but 8 were not suitable, hence, they were replaced. The survey was carried out at PHC from September to December 2021 by filling out the HBP SCP questionnaire guided by an assistant. In addition, the questionnaire also included patients' demographic variables.

### Phase I Translation Procedures and Content Validation

#### *Translation Procedures*

Permission to translate SCP was obtained from Prof. Rae Han of John Hopkin University, who developed this instrument. Afterward, the English version was translated into Bahasa Indonesia by two translators, namely a certified English translator and an English nursing lecturer at Aisyiyah University Bandung. The Indonesian version was then translated back by an English translator.

#### *Content Validation*

First Step: The instrument was reviewed, assessed, and then adjusted by five experts from various professions namely doctors, clinic nurses at primary health care, nursing lecturers, pharmacist, and anthropologists. This assessment had three criteria including representativeness, relevance, and clarity. The experts' assessment was carried out with a 4 -point scoring system. The rating items are on a scale of 1-4 which includes 1 = not relevant, 4 = highly relevant, 1 = not representative 4 = highly representative, and 1 = not clear, 4 = very clear). The overall score provided was used to calculate item CVI and then divided by the total number of experts. Meanwhile, excellent content validity should be composed of 0.80 CVI, or higher (18).

Second Step: A pilot testing was conducted to identify problems such as anticipating confusing questions for respondents before implementing the complete survey. The sample size was 10 respondents, according to a previous study which suggested 10–25 respondents for a pilot study (19), as shown in figure 1.

### Phase II Psychometric Validation

The HBP SCP questionnaire was developed based on Orem's self-care and Motivational Interviewing Model. It has three domains including motivation, self-efficacy, and self-care behavior, which altogether have 60 question items. Each domain has 20 question items. Furthermore, the questions cover multiple items such as a low-salt diet, exercise, taking medication, weight management, home blood pressure monitor, smoking and alcohol consumption, visiting a doctor, as well as stress management.

The instrument was assessed using a 4-point ordinal scale and the motivational domain question is as follows: "How important do you think it is to do?" Moreover,

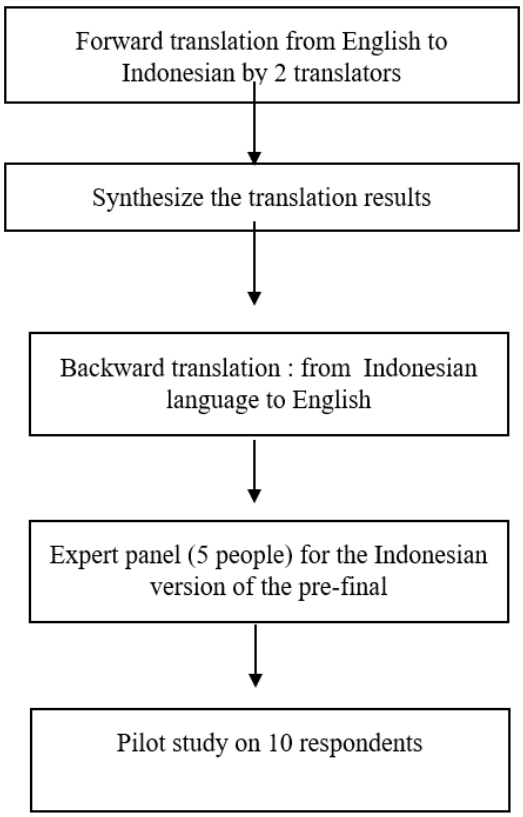


**Figure 1: Instrument Adaptation Process**

the answers prepared for the question were sorted from 1= unimportant and 4= very important. For self-efficacy questions, the question is as follows; "How confident are you in doing a particular task?" and the answer items include 1 = not sure and 4 = very sure. Meanwhile, the question "How often do you do it?" was asked for the behavioral domain with answer items of 1 = never, 2 = sometimes, 3 = often, and 4 = always.

### Data Analysis

Data analysis was performed with SPSS version 26, and the demographic data was calculated using descriptive statistics to determine the mean, standard deviation, and frequency. Internal consistency of HBP SCP was measured using Cronbach's Alpha statistic. Alpha values > 0.78 were considered acceptable, while good and excellent internal consistency values should be > 0.8, and > 0.9, respectively (20).

The item-total correlation was tested to determine if any item in the scale was inconsistent with the average behavior of the other items. A total item correlation of 0.15 to 0.20 is recommended for scales measuring broad characteristics, while 0.40 to 0.50 is required for scales that have narrower characteristics (21). Results are acceptable when the correlation of items with total items is 0.30 or higher (22).

### Ethical Consideration

An ethics test letter was obtained from the ethics committee of Mahsa University Malaysia with letter number Mahsa/Nur/Ph.D./C44 (01). Permission was also sought from the Ministry of Health of Indonesia through the Bandung City Health Office.

## RESULTS

### Demographic Data

The background characteristics of the respondents in this study are shown in Table 1. More than half or 54.6% were elderly, while the mean (SD) age with a value of 10.2 was 56.2 years. Furthermore, the majority of respondents or 82.7% were females, while over half, or > 59.7 % have been diagnosed with HTN for 1-5 years. About two fifth or 43.4% had a low education level, and 46,6% had normal BMI as shown in Table I.

**Table I: Characteristic of Participants**

| Age/year | Frequency n=191 | Percentage | Mean (SD) |
|---|---|---|---|
| **<40** | 25 | 13.1 | 58.29 (10.21) |
| **40-59** | 62 | 32.5 | |
| **>60** | 104 | 54.4 | |
| **Gender** | | | |
| male | 33 | 17.3 | |
| female | 158 | 82.7 | |
| **Educational level** | | | |
| Low education | 83 | 43.5 | |
| Intermediate | 82 | 42.9 | |
| Higher | 26 | 13.6 | |
| **Duration of hypertension** | | | |
| 1-5 years | 114 | 59.7 | |
| 5-10 years | 57 | 29.8 | |
| >10 years | 20 | 10.5 | |
| **Body Mass Index (BMI )** | | | |
| Less | 2 | 1.0 | 25.66 (3.81) |
| Normal | 89 | 46.6 | |
| Overweight | 36 | 18.8 | |
| obesity | 64 | 33.6 | |

### Content Validity Index (CVI)

The content validity index (CVI) obtained from 5 experts was higher with a value of 0.89, indicating that the question is satisfactory. The experts suggested minor modifications for 3 questions to improve understanding. Sentence modifications were carried out in question 2, 6, and 11.

Question 2 about " Do you read nutrition facts label to check information on sodium content?" was modified to "Do you read the content of salt (sodium) on food packaging?" in Bahasa Indonesia (Membaca kandungan garam (natrium) pada kemasan makanan). Meanwhile, question 10 about "Do you eat less foods that are high in saturated fats such as red meat, butter or trans fat including lard?" was modified to "Is your limit total calorie intake from fat less than 65 grams daily?". In the

Indonesian questionnaire version, the use of the term "gram" size was omitted and replaced with the term commonly used, namely tablespoon.

Table II shows the analysis and reliability of the HBP SCP with the result of reliability being 0.857, while for the self-efficacy domain, the average was 60.70 and the SD was 7.28. The motivation domain was 0.884, while the average value was 66.01 with SD of 7.37. Furthermore, the behaviour domain was 0. 85 with an average value of 57.48 and SD of 9.00. The total Cronbach alpha score was 0.923 and the results showed that this instrument is reliable.

**Table 2 The Item Analysis and Reliability of The HBP SCP**

| Domain | Mean (SD) | Cronbach's alpha (n = 191) | Item-total correlation range (n = 191) |
|---|---|---|---|
| Motivation | 66.01 (7.37) | 0.884 | 0.353 – 0.742 |
| Self efficacy | 60.70 (7.28) | 0.857 | 0.302 -0.642 |
| Behaviour | 57.48 (9.00) | 0.850 | 0.237- 0.649 |

### Validity Test

The validity construct was calculated using item-total correlation for three domains namely self-efficacy, motivation, and behaviour which had values of 00.302-0.642, 0.353-0.742 and 0.237-0.649, respectively. Based on the results of the item-total correlation (ITC), for the self-efficacy domain, item question number 19 about "engaging in activities that can lower stress such as deep breathing, and meditation" dominated the minor range of 0.302, while the most extensive range of 0.642 occurred in item number 16 about "Forget to fill your prescriptions?". The smallest value for the motivation domain was 0.353 on "See a doctor regularly" and 0.742 on "Keep your weight down?" for questions 17 and 2, respectively. The value of the behavioral domain was 0.283 for question 5, and 0.576 for question 2 about "read the nutrition facts label to check information on sodium content". This result showed that the value of the respondents' perception level is in the moderate to high range with the ITC score as shown in Table II.

The exploratory factor analysis (EFA) test was carried out using the SPSS, while Kaiser-Meyer-Olin (KMO) method and the Bartlett roundness test were also performed. The KMO result was 0.79, and the Bartlett test had a 1257.87 significance of 0.00 points. This implies that the data are suitable for further exploratory factors.

## DISCUSSION

This study aims to validate HBP SCP in the Indonesian version and the results indicated that the instrument has good reliability and validity. This is consistent with the original English version of the instrument developed in North America. The three domains of this test are self-efficacy, motivation, and behavior. They had item-total correlations ranging from 0.20 to 0.63 for behavior, 0.46 to 0.70 motivation, and 0.40 to 0.74 for the self-efficacy scale. Meanwhile, for Internal consistency, reliability coefficients ranged from 0.83 to 0.93. There was excellent validity evidence for the three domains and good reliability estimates (23).

The results in this study were validated using the WHO guidelines (24), overall, all the question items tested for their reliability and validity showed excellent results. Based on the CVI results, a value of 0.89 is considered satisfactory but most of the experts proposed modifying three questions about food labels, fat content, and examples. This modification was carried out to make it easier for respondents to understand the questionnaire. The sentence modifications did not change the question content of the original questionnaire.

The final instrument was given an example tool that is familiar with daily activities for easy understanding. The results can be used by healthcare workers to evaluate how hypertensive patients carry out self-care. The assessment can be performed together or independently for each of the three domains. Good self-care behavior tends to reduce the number of complications caused by hypertension, such as kidney failure or stroke, and it helps prevent premature death. Furthermore, hypertensive patients require sufficient social support from their families and healthcare professionals to practice adequate self-care (25).

Similar to other domains, self-efficacy is also essential in self-care among hypertensive patients (14). Several studies on the Salt Reduction Efficacy Maintenance (SREM) instrument carried out in Indonesia reported that the self-efficacy factor is an essential element in efforts to manage self-care in people with hypertension (26). Another domain that was tested psychometrically in this study is motivation. Low motivation is often associated with the difficulty of hypertensive patients in receiving information and undergoing lifelong treatment for this disease.

These results are in line with a study conducted in Turkey, which reported that the three validated exams of the HBP SCP instrument have good reliability and validity (15). Similarly, the validation results obtained in Asia confirmed that the reliability and validity of this instrument are good (17,27).

One of the limitation of this instrument is that many of the questions were quite long which made it difficult to sustain the respondents' attention, specifically among the elderly. Therefore, a brief version of the HBP SCP instrument is recommended.

## CONCLUSION

The Indonesian version of the Hypertension HBP SCP instrument is valid and reliable, hence, it can be used in an Indonesian setting.


## ACKNOWLEDGEMENTS

The authors are grateful to LPPM Universitas Aisyiyah, Bandung, West Java, Indonesia, for the financial support provided and all parties who have cooperated in this study.


## REFERENCES


1. World Health Organization. Self-care in the Context of Primary Health Care; Report of the Regional Consultation Bangkok, Thailand, 7-9 Januari 2009. World Heal Organ [Internet]. 2009;(January):7–9. Available from: http://www.searo.who.int/entity/primary_health_care/documents/sea_hsd_320.pdf
2. Rapsomaniki E, Timmis A, George J, Pujades-Rodriguez M, Shah AD, Denaxas S, et al. Blood pressure and incidence of twelve cardiovascular diseases: Lifetime risks, healthy life-years lost, and age-specific associations in 1·25 million people. Lancet. 2014;383(9932):1899–911. doi: 10.1016/S0140-6736(14)60685-1.
3. Kaptoge S, Pennells L, De Bacquer D, Cooney MT, Kavousi M, Stevens G, et al. World Health Organization cardiovascular disease risk charts: revised models to estimate risk in 21 global regions. Lancet Glob Heal. 2019;7(10):e1332–45. doi: 10.1016/S2214-109X(19)30318-3.
4. Peltzer K, Pengpid S. The Prevalence and Social Determinants of Hypertension among Adults in Indonesia: A Cross-Sectional Population-Based National Survey. Int J Hypertens. 2018;2018. doi: 10.1155/2018/5610725.
5. KEMENKES. Hasil Utama Riskesdas Tentang Prevalensi Diabetes Mellitus di Indonesia 2018. Has Utama Riskesdas Tentang Prevalensi Diabetes Melitus di Indones 2018. 2018;8.
6. Unger T, Borghi C, Charchar F, Khan NA, Poulter NR, Prabhakaran D, et al. 2020 International Society of Hypertension Global Hypertension Practice Guidelines. Hypertension. 2020;75(6):1334–57. doi: 10.1161/HYPERTENSIONAHA.120.15026.
7. Beigi MAB, Zibaeenezhad MJ, Aghasadeghi K, Jokar A, Shekarforoush S, Khazraei H. The effect of educational programs on hypertension management. Int Cardiovasc Res J. 2014;8(3):94–8.
8. Eghbali-Babadi M, Feizi A, Khosravi A, Nouri F, Taheri M, Sarrafzadegan N. Development and evaluation of the psychometric properties of a hypertension self-care questionnaire. ARYA Atheroscler. 2019;15(5):241–9. doi: 10.22122/arya.v15i5.1835.
9. Flammer A. Self-Efficacy. 2018;(December 2001). doi:10.1016/B978-0-08-097086-8.25033-2
10. Yildiz E, Erci B. Effects of self-care model on blood pressure levels and self-care agency in patients with hypertension. Int J Health Sci (Qassim) [Internet]. 2016;4 No. 1,(ISSN: 2372-5060):42–3. Available from: http://www.embase.com/search/ results?subaction=viewrecord&from=export&id=L71932702%0A http://www.anakarder.com/sayilar/116/buyuk/akd suppl.2.pdf
11. Olin BR. Hypertension: The Silent Killer: Updated JNC8 Guideline Recommendations Associate Clinical Professor of Pharmacy Practice, Drug Information and Learning Resource Center. 2015;
12. Melaku T, Bayisa B, Fekeremaryam H, Feyissa A, Gutasa A. Self-care practice among adult hypertensive patients at ambulatory clinic of tertiary teaching Hospital in Ethiopia: a cross-sectional study. J Pharm Policy Pract. 2022;15(1):1–11. doi: 10.1186/s40545-022-00421-3.
13. Dickson VV, Lee C, Yehle KS, Abel WM, Riegel B. Psychometric Testing of the Self-care of Hypertension Inventory. J Cardiovasc Nurs. 2017;32(5):431–8. doi: 10.1097/JCN.0000000000000364.
14. Warren-Findlow J, Basalik DW, Dulin M, Tapp H, Kuhn L. Preliminary validation of the hypertension self-care activity level effects (H-SCALE) and clinical blood pressure among patients with hypertension. J Clin Hypertens. 2013;15(9):637–43. doi: 10.1111/jch.12157.
15. Kes D, Gukdoğan F. Reliability and validity of a Turkish version of the hypertension self-care profile. J Vasc Nurs. 2020;38(3):149–55. doi: 10.1016/j.jvn.2020.05.001.
16. Salim H, Lee PY, Sazlina SG, Ching SM, Mawardi M, Shamsuddin NH, et al. The self-care profiles and its determinants among adults with hypertension in primary health care clinics in Selangor, Malaysia. PLoS One. 2019;14(11):1–14. doi: 10.1371/journal.pone.0224649
17. Ngoh SHA, Lim HWL, Koh YLE, Tan NC. Test-retest reliability of the Mandarin versions of the Hypertension Self-Care Profile instrument. Med (United States). 2017;96(45):1–5. doi: 10.1097/MD.0000000000008568.
18. Yusoff MSB. ABC of Content Validation and Content Validity Index Calculation. Educ Med J. 2019;11(2):49–54. doi: 10.21315/eimj2019.11.2.6
19. Chaudhary AK, Israel GD. The savvy survey # 8 : Pilot testing and pretesting methods of pretesting. Agric Educ Commun Dep UF/IFAS Ext [Internet]. 2014;December(AEC402):1–6. Available from: http://edis.ifas.ufl.edu.
20. Taber KS. The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. Res Sci Educ. 2018;48(6):1273–96. doi: 10.1007/s11165-016-9602-2
21. Clark LA, Watson D. Constructing Validity: Basic Issues in Objective Scale Development. Psychol

Assess. 1995;7(3):309–19. doi: 10.1037/1040-3590.7.3.309
22. Hair J. Multivariate Data Analysis.pdf. Vol. 8 edition, Australia : Cengage. 2017. p. 758.
23. Han HR, Lee H, Commodore-Mensah Y, Kim M. Development and validation of the hypertension self-care profile: A practical tool to measure hypertension self-care. J Cardiovasc Nurs. 2014;29(3):1–16. doi: 10.1097/JCN.0b013e3182a3fd46.
24. Guidelines T. CPQO Cereb Palsy Qualit Life. 2013;(July).
25. Salami S, Wilandika A. Hubungan Efikasi Diri dan Dukungan Sosial dengan Self Care Management Penderita Hipertensidi Wilayah Kerja Puskesmas Cijagra Lama Bandung. J Keperawatan [Internet]. 2018;5(6):99–106. Available from: http://journal.unisa-bandung.ac.id/index.php/jka/article/view/75
26. Irwan AM, Kato M, Kitaoka K, Ueno E, Tsujiguchi H, Shogenji M. Development of the salt-reduction and efficacy-maintenance program in Indonesia. Nurs Heal Sci. 2016;18(4):519–32. doi: 10.1111/nhs.12305.
27. Seow KC, Mohamed Yusoff D, Koh YLE, Tan NC. What is the test-retest reliability of the Malay version of the Hypertension Self-Care Profile self efficacy assessment tool? A validation study in primary care. BMJ Open. 2017;7(9):1–5. doi: 10.1136/bmjopen-2017-016152.