

## ORIGINAL ARTICLE

## Translation, Cross-Cultural Adaptation, and Validation of the Hypertension Self-Care Profile (HBP-SCP) for the Brazilian Population

Jussara Almeida de Oliveira Baggio,<sup>1</sup> Beatriz Brito Ribeiro,<sup>1</sup> Jessica Lays Ferreira Ribeiro,<sup>1</sup> Fabricio Brito Silva,<sup>2</sup> Lisiane Fernanda Simeão de Azevedo,<sup>2</sup> Renata Gonçalves Mendes,<sup>3</sup> Aldair Darlan Araújo,<sup>3</sup> Maria Claudia Gonçalves,<sup>2</sup> Rudys Rodolfo de Jesus Tavares,<sup>4</sup> Denilson Menezes Almeida,<sup>5</sup> Daniela Bassi-Dibai<sup>5</sup>

*Medical school of Federal University of Alagoas,<sup>1</sup> Arapiraca, Alagoas – Brazil*

*Postgraduate Program in Environment, Universidade Ceuma,<sup>2</sup> São Luís, Maranhão – Brazil*

*Postgraduate Program in Physical Therapy, Universidade Federal de São Carlos,<sup>3</sup> São Carlos, São Paulo – Brazil*

*Postgraduate Program in Odontology, Universidade Ceuma,<sup>4</sup> São Luís, Maranhão – Brazil*

*Postgraduate Program in Management of Health Programs and Services, Universidade Ceuma,<sup>5</sup> São Luís, Maranhão – Brazil*

### Abstract

**Background:** Self-care in the management of systemic arterial hypertension (SAH) is crucial, and validated instruments can help researchers and health professionals to plan strategies to improve self-care in people with SAH.

**Objective:** The main objective of this study was to translate, cross-culturally adapt, and validate the Hypertension Self-Care Profile (HBP-SCP) for Brazilian Portuguese.

**Methods:** The translation and cross-cultural adaptation was performed in five phases, and the pre-final version was tested in 30 individuals, native speakers of Portuguese with a diagnosis of hypertension. The final version was administered in 100 individuals. The inclusion criteria were: diagnosis of SAH, characterized by systolic arterial blood pressure  $\geq 140$  mmHg and/or diastolic arterial blood pressure  $\geq 90$  mmHg, regular use of antihypertensive medications and over 18 years of age. The present study also used two other questionnaires, previously validated for the Brazilian population, to verify the validity of the construct, the Healthy Habits Perception Questionnaire (HHPQ) and the Quality of Life in Hypertension Mini-Questionnaire (MINICHAL-BRASIL).

**Results:** During the translation and cross-cultural adaptation phase, there were no disagreements. Adequate reliability – intraclass correlation coefficient (ICC)  $\geq 0.89$ , standard error of measurement (SEM)  $\% \leq 4.34$ , minimum detectable change (MDC)  $\% \leq 12.04$  – and internal consistency (Cronbach's alpha  $\geq 0.75$ ) were observed. The behavior domain of HBP-SCP obtained significant correlations ( $p < 0.05$ ) with the self-efficacy domain and HHPQ; the motivation domain with the self-efficacy domain; and the self-efficacy domain with the somatic manifestation domain of MINICHAL-BRASIL. No ceiling and floor effects were observed.

**Conclusions:** The Brazilian Portuguese version of the HBP-SCP has adequate psychometric properties, according to the best scientific recommendations.

**Keywords:** Self-Care; Hypertension; Validation Study.

### Introduction

Systemic arterial hypertension (SAH) is highly prevalent worldwide. In Brazil, according to the latest National Health Survey (NHS), there are more than 38 million people living with SAH,<sup>1</sup> and the prevalence is higher in women, older people, people with a low educational level, and people living in the South and Southeast of Brazil.<sup>2</sup>

SAH treatment is multifactorial and involves antihypertensive medications and changes in lifestyle.<sup>3</sup> The adherence of healthy habits among Brazilian people with the diagnosis of SAH increased in recent years; however, the level of sedentary lifestyle and the consumption of ultra-processed food is still very high.<sup>4</sup> Self-care in the management of SAH is crucial,

**Mailing Address:** Jussara Almeida de Oliveira Baggio

Universidade Federal de Alagoas, Campus Arapiraca, Curso de Medicina, Avenida Empresário Carlos da Silva Nogueira, 16. Postal code: 57036-540. Maceió, AL – Brazil. E-mail: jussarabaggio@gmail.com

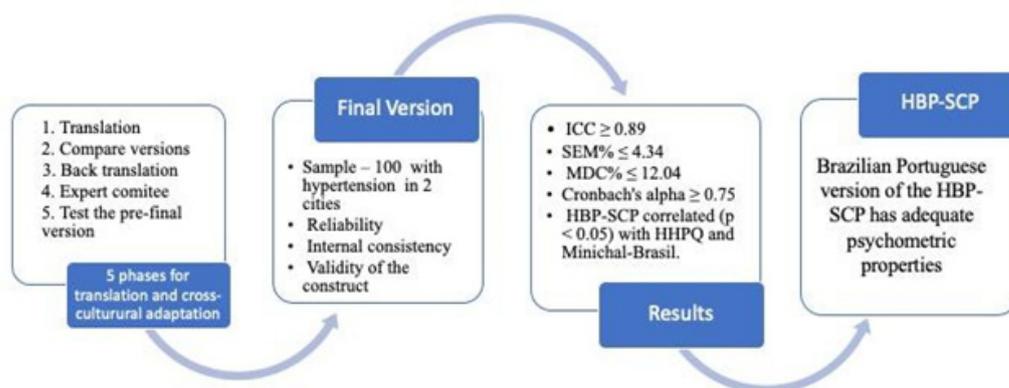
DOI: <https://doi.org/10.36660/ijcs.20230075>

Manuscript received May 24, 2023; revised manuscript June 26, 2023; accepted September 20, 2023.

**Central Illustration:** Translation, Cross-Cultural Adaptation, and Validation of the Hypertension Self-Care Profile (HBP-SCP) for the Brazilian Population

INTERNATIONAL JOURNAL OF  
Cardiovascular  
SCIENCES

### Brazilian Version of HBP-SCP



Int J Cardiovasc Sci. 2023; 36:e20230075

and validated instruments can help researchers and health professionals to plan strategies to improve self-care in people with SAH.

The majority of the instruments available to evaluate self-care in people with SAH have not been rigorously evaluated and do not access all domains related to self-care.<sup>5</sup> For this reason, the Hypertension Self-Care Profile (HBP-SCP) was developed to cover the following areas: the intake of medication, physical activity, low-sodium and low-fat diet, restrictions of alcohol consumption, non-smoker, self-monitoring of blood pressure, weight control, regular doctor visits, and stress reduction.<sup>6</sup> The HBP-SCP also proved to be sensitive in detecting differences among people with and without adequate blood pressure control and showed a good concurrent validity.

The main objective of this study was to translate, cross-culturally adapt, and validate the HBP-SCP for Brazilian Portuguese.

## Methods

### Study design and ethics

This was a cross-sectional study on the translation, cross-cultural adaptation, and validation of a questionnaire. The original authors gave their authorization by e-mail for psychometric analysis. This study was conducted in accordance with

the Guidelines for the Process of Cross-Cultural Adaptation of Self-Reported Measures<sup>7</sup> and the Consensus-based Standards for the selection of health measurement instruments (COSMIN).<sup>8</sup>

This study was approved by the Research Ethics Committee from Ceuma University, logged under protocol number 96301118.0.0000.5084, and all participants validated their participation by signing a free and informed consent form.

HBP-SCP Translation and cross-cultural adaptation

The translation and cross-cultural adaptation follow the criteria of Beaton et al.<sup>7</sup> and were performed in five stages: (1) The translation was made by two independent translators, both were Brazilians and fluent in English; (2) The two translated versions were then compared and adapted to reach a final consensual version; (3) Two independent translators, both English native speakers and fluent in Portuguese, translated the Portuguese version of the questionnaire back to English, with no previous knowledge of the original version of the questionnaire; (4) An expert committee reviewed the original, translated, synthesized, and back-translated versions of the questionnaire, and then defined the pre-final version of the HBP-SCP, and (5) finally, the pre-final version was administered to 30 individuals, native speakers of Portuguese with a diagnosis of hypertension. The respondents' comprehension of the items and responses in the HBP-SCP was evaluated.

## Participants

The sample size for this validation study was based on COSMIN, and a minimum of 100 individuals was recommended.<sup>8</sup> The inclusion criteria were: diagnosis of SAH, characterized by systolic arterial blood pressure  $\geq 140$  mmHg and/or diastolic arterial blood pressure  $\geq 90$  mmHg,<sup>3</sup> the regular use of antihypertensive medications, and being over 18 years of age. Subjects with cognitive impairment, communication problems, or hearing loss with no correction were excluded from the study.

## HBP-SCP

The HBP-SCP was developed by Han et al.<sup>6</sup> and measures the perception of patients with SAH concerning the recommendation of self-care. It consists of 60 items divided into three subscales: Behavior, Motivation, and Self-Efficacy. In these subscales, the instructions change 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. The score for each subscale is 80 points, with a total of 240. Higher scores indicate higher levels of self-care behavior, motivation, and self-efficacy.

## Other questionnaires

Two other questionnaires, which had been previously validated for the Brazilian population in order to verify the validity of the construct, were used. The Healthy Habits Perception Questionnaire (HHPQ) was developed for teenagers to measure their perception of weight control, consumption of healthy foods, and regular practice of physical exercise. The questionnaire contains 30 items and higher scores indicate a better perception of healthy habits.<sup>9</sup>

The Quality of Life in Hypertension Mini-Questionnaire (MINICHAL-BRASIL) was validated by Schulz et al.<sup>10</sup> This questionnaire contains 16 multiple-choice questions organized into two factors – Mental status (10 questions) and Somatic manifestations (6 questions) – together with a final question to verify how the patient evaluates the way that hypertension and its treatment have influenced their quality of life. Lower scores indicate a better quality of life.

## Statistical analysis

Reliability was assessed based on a test-retest model by measuring the intraclass correlation coefficient (ICC),

standard error of measurement (SEM) and minimum detectable change (MDC). The ICC values were interpreted based on the study by Fleiss: for values below 0.40, reliability was considered low; between 0.40 and 0.75, moderate; between 0.75 and 0.90, substantial; and greater than 0.90, excellent.<sup>11</sup> The SEM percentage was interpreted based on the definitions of Ostelo et al.: 5% or less, very good; greater than 5% and less than or equal to 10%, good; greater than 10% and less than or equal to 20%, doubtful; and greater than 20%, negative.<sup>12</sup> Internal consistency was assessed using Cronbach's alpha (values above 0.70 were considered adequate).<sup>13</sup>

To ascertain the validity of the construct, Spearman's correlation coefficient ( $r_s$ ) was used to determine the magnitude of the correlations between the HBP-SCP and the HHPQ, and between the HBP-SCP and the MINICHAL-BRASIL. The  $r_s$  values were interpreted in accordance with the COSMIN recommendations: correlations with instruments measuring similar constructs should be  $\geq 0.50$ ; correlations with instruments measuring related but dissimilar constructs should be 0.30-0.50; and correlations with instruments measuring unrelated constructs should be  $< 0.30$ .<sup>8</sup> We expect correlations  $> 0.50$  between the HBP-SCP domains and  $< 0.30$  with the MINICHAL-BRASIL and HHPQ.

Ceiling and floor effects were evaluated in the present study. By definition, these effects occurred when a number of study participants (set as over 15%) reached the minimum or maximum values of the total score of the questionnaire.

## Results

During the translation and cross-cultural adaptation phase, there were no disagreements or suggestions for changes to the questionnaire. The translated and adapted version of the HBP-SCP was unanimously established by the expert committee. Therefore, this version was then applied to 30 patients with hypertension to assess the level of understanding of the questions. We observed 100% comprehension for all items in the questionnaire. Thus, the final Brazilian Portuguese version of the HBP-SCP was defined.

One hundred participants with hypertension were recruited and included in the study. The data were collected in the cities of Arapiraca, AL, Brazil, and São Luís, MA, Brazil. From this total sample, a sub-sample with 30 participants was used for the test-retest reliability calculations. Table 1 presents the characteristics of the

**Table 1 – Sociodemographic and clinical characteristics of the participants.**

Characteristics	Reliability phase (n = 30)	Validity phase (n = 100)
Age (years)	57.23 (10.85)	63.46 (11.50)
Gender (female)	24 (80%)	74 (74%)
Marital status		
Single	11 (36.7%)	10 (10%)
Married	16 (53.3%)	67 (67%)
Divorced	0 (0%)	8 (8%)
Widower	3 (10%)	15 (15%)
Weight (kg)	75.05 (16.63)	72.82 (16.97)
Height (m)	1.57 (0.05)	1.57 (0.09)
BMI (kg/m <sup>2</sup> )	29.87 (5.44)	29.25 (5.88)
Abdominal circumference (cm)	98.30 (9.57)	97.85 (13.84)
Schooling		
Basic education	25 (83.4%)	75 (75%)
High school	4 (13.3%)	11 (11%)
Higher education	1 (3.3%)	14 (14%)
Chronicity of SAH (years)	10.40 (10.17)	9.48 (8.28)
PAS (mmHg)	132.50 (10.40)	128.76 (13.35)
PAD (mmHg)	92.33 (13.56)	75.15 (18.90)
Physical activity (yes)	6 (20%)	33 (33%)
HHPQ (score)	80.16 (8.51)	84.97 (10.43)
MINICHAL-BRASIL (score)		
Mental state	6.33 (5.04)	6.43 (4.81)
Somatic manifestations	5.20 (2.59)	5.76 (3.84)
HBP-SCP (score)		
Behavior	49.36 (8.21)	52.96 (9.36)
Motivation	72.26 (8.21)	64.25 (5.02)
Self-efficacy	66.30 (8.90)	61.86 (5.24)

Values presented in mean (standard deviation, SD) or number (percentage). BMI: body mass index; SAH: systemic arterial hypertension; HBP-SCP: Hypertension Self-Care Profile; HHPQ: Healthy Habits Perception Questionnaire; MINICHAL-BRASIL: Quality of Life in Hypertension Mini-Questionnaire; PAS: systolic blood pressure; PAD: diastolic blood pressure.

sample, and it was observed that most of the participants were women (74%), married (67%), who were overweight (body mass index: 29.25kg/m<sup>2</sup>), and with more than 9 years of SAH.

Regarding reliability (Table 2), considering the total score of each domain, we observed adequate reliability (ICC  $\geq$  0.89, SEM%  $\leq$  4.34, MDC%  $\leq$  12.04) and internal consistency (Cronbach's alpha  $\geq$  0.75).

To assess the construct validity by means of correlation with a validated questionnaire (Table 3), the following significant ( $p < 0.05$ ) correlations were observed: behavior domain with self-efficacy domain and HHPQ; motivation domain with self-efficacy domain; self-efficacy domain with somatic manifestations domain of MINICHAL, in addition to the two other HBP-SCP domains mentioned above.

No participants achieved a maximum or minimum score of the HBP-SCP domains. Therefore, ceiling and floor effects were not observed.

## Discussion

The Brazilian Portuguese version of HBP-SCP showed a good level of comprehension among participants, with a 100% comprehension in all items of the questionnaire. The HBP-SCP also showed acceptable values of reliability (ICC  $\geq$  0.89) and internal consistency (Cronbach's alpha  $\geq$  0.75). To access construct validity, the HBP-SCP was correlated with HHPQ and MINICHAL-BRASIL, and significant correlations were observed.

The HBP-SCP has already been validated to others languages, and all showed acceptable reliability and validity. The Turkish version<sup>14</sup> and the Chinese version<sup>15</sup> obtained higher values of internal consistency when compared to the Brazilian version. The Turkish version found a Cronbach's alpha of 0.93 for the HBP-SCP-Behavior scale and Motivation scale, and 0.94 for the Self-efficacy scale, while the Chinese version found values of 0.86, 0.94 and 0.93, respectively. However, the literature defines values  $> 0.70$  as adequate for internal consistency,<sup>13</sup> thus showing that the Brazilian version also had an adequate internal consistency.

The ICC values of the Brazilian version of HBP-SCP were higher (ICC 0.93, 0.90, 0.89) when compared to the Turkish<sup>14</sup> (ICC = 0.75, 0.75, 0.76), Mandarin<sup>16</sup> (0.64, 0.57, 0.71), and Malay versions<sup>17</sup> (0.66, 0.65, 0.68). The Mandarin and Malay versions<sup>16,17</sup> used a web-based approach to access the test-retest. The participants filled out the HBP-SCP in a web-based online tool and, after 2 weeks, were instructed to do

**Table 2 – Reliability of the HBP-SCP domains with presentation of mean values, standard deviation (SD), ICC and 95% confidence interval (CI), SEM, MDC, and Cronbach's alpha.**

HBP-SCP	Test	Retest	ICC (95% CI)	SEM (absolute)	SEM (%)	MDC (absolute)	MDC (%)	Cronbach's alpha
Behavior	49.36 (8.21)	51.43 (8.34)	0.93 (0.85, 0.96)	2.19	4.34	6.07	12.04	0.75
Motivation	72.26 (8.21)	72.36 (6.72)	0.90 (0.79, 0.95)	2.36	3.26	6.54	9.05	0.78
Self-efficacy	66.30 (8.90)	65.83 (5.60)	0.89 (0.77, 0.95)	2.40	3.64	6.67	10.09	0.78

*HBP-SCP: Hypertension Self-Care Profile; ICC: intraclass correlation coefficient; SEM: standard error of measurement; MDC: minimum detectable change.*

**Table 3 – Correlation between the HBP-SCP domains and the other questionnaires applied in the study sample (n = 100).**

Questionnaires	HBP-SCP		
	Behavior	Motivation	Self-efficacy
HBP-SCP			
Behavior	rs = 1.000	-	-
Motivation	rs = 0.120, p = 0.236	rs = 1.000	-
Self-efficacy	rs = 0.354, p = 0.001 *	rs = 0.728, p = 0.001 *	rs = 1.000
HHPQ	rs = 0.230, p = 0.021 *	rs = 0.078, p = 0.441	rs = 0.099, p = 0.329
MINICHAL-BRASIL			
Mental state	rs = -0.067, p = 0.508	rs = -0.026, p = 0.794	rs = -0.120, p = 0.235
Somatic manifestations	rs = -0.139, p = 0.168	rs = -0.138, p = 0.172	rs = -0.211, p = 0.035 *

*HHPQ: Healthy Habits Perception Questionnaire; MINICHAL-BRASIL: Quality of Life in Hypertension Mini-Questionnaire; HBP-SCP: Hypertension Self-Care Profile.*

*\* Statistically significant correlation (p < 0.05, Spearman's correlation coefficient).*

the retest, using their own electronic devices. The use of remote assessment is widely used; however, depending on the context and population, caution is necessary. In Brazil, a considerable portion of the population does not have access to the internet and has a low educational level. Similar to our study, the Turkish version used a face-to-face interview and found better results in ICC.<sup>14</sup>

The ideal management of SAH involves pharmacological and non-pharmacological treatment. The latter is based on changes in lifestyle related to reduction in salt intake, the regular practice of physical exercise, an adequate consumption of healthy foods, and weight loss. The success of these measures depends on the correct understanding

and adherence of the patient. For this reason, self-care measures can help the health professional to access and improve treatment adherence.

## Conclusion

The Brazilian Portuguese version of the HBP-SCP has adequate psychometric properties according to the best scientific recommendations.

## Author Contributions

Conception and design of the research: Silva FB, Azevedo LFS, Mendes RG, Araújo AD, Gonçalves MC,

Jesus Tavares RRJ, Menezes D, Bassi-Dibai D; acquisition of data: Baggio JAO, Ribeiro BB, Ribeiro JLF, Araújo AD; analysis and interpretation of the data: Baggio JAO, Ribeiro BB, Ribeiro JLF, Silva FB, Azevedo LFS, Mendes RG, Araújo AD, Gonçalves MC, Jesus Tavares RRJ, Menezes D, Bassi-Dibai D; statistical analysis: Baggio JAO, Bassi-Dibai D; writing of the manuscript: Baggio JAO, Ribeiro BB, Ribeiro JLF; critical revision of the manuscript for intellectual content: Baggio JAO, Silva FB, Azevedo LFS, Mendes RG, Araújo AD, Gonçalves MC, Jesus Tavares RRJ, Menezes D, Bassi-Dibai D.

### Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

## References

- Instituto Brasileiro de Geografia e Estatística. Pesquisa Nacional de Saúde 2019: Percepção do Estado de Saúde, Estilos de Vida, Doenças Crônicas e Saúde Bucal: Brasil e Grandes Regiões. IBGE: Rio de Janeiro; 2020.
- Julião NA, Souza A, Guimaraes RRM. Trends in the Prevalence of Systemic Arterial Hypertension and Health Care Service Use in Brazil Over a Decade (2008-2019). *Cien Saude Colet*. 2021;26(9):4007-19. doi: 10.1590/1413-81232021269.08092021. Epub 2021 Apr 22. PMID: 34586255.
- Barroso WKS, Rodrigues CIS, Bortolotto LA, Mota-Gomes MA, Brandão AA, Feitosa ADM, et al. Brazilian Guidelines of Hypertension - 2020. *Arq Bras Cardiol*. 2021;116(3):516-658. doi: 10.36660/abc.20201238.
- Szwarcwald CL, Souza Júnior PRB, Damacena GN, Stopa SR, Barros MBA, Malta DC. Healthy Lifestyle and Recommendations in Health Care Among Hypertensive and Diabetic Patients in Brazil, 2019. *Rev Bras Epidemiol*. 2021;24(Suppl 2):e210017. doi: 10.1590/1980-549720210017.supl.2.
- Han HR, Song HJ, Nguyen T, Kim MT. Measuring Self-Care in Patients with Hypertension: a Systematic Review of Literature. *J Cardiovasc Nurs*. 2014;29(1):55-67. doi: 10.1097/JCN.0b013e3182775fd1.
- 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):E11-20. doi: 10.1097/JCN.0b013e3182a3fd46.
- Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures. *Spine*. 2000;25(24):3186-91. doi: 10.1097/00007632-200012150-00014.
- Prinsen CAC, Mokkink LB, Bouter LM, Alonso J, Patrick DL, Vet HCW, et al. COSMIN Guideline for Systematic Reviews of Patient-Reported Outcome Measures. *Qual Life Res*. 2018;27(5):1147-57. doi: 10.1007/s11136-018-1798-3.
- Guedes DP, Grondin LMV. Percepção de hábitos saudáveis por adolescentes: associação com indicadores alimentares, prática de atividade física e controle de peso corporal. *Rev Bras Ciências do Esporte*. 2002;24(1):23-45.
- Schulz RB, Rossignoli P, Correr CJ, Fernández-Llimós F, Toni PM. Validation of the Short Form of the Spanish Hypertension Quality of Life Questionnaire (MINICHAL) for Portuguese (Brazil). *Arq Bras Cardiol*. 2008;90(2):127-31. doi: 10.1590/s0066-782x2008000200010.
- Fleiss JL. Design and Analysis of Clinical Experiments. In: Fleiss JL. *The Design and Analysis of Clinical Experiments*. New York: Wiley and Sons; 1999. p. 149-85.
- Ostelo RW, Vet HC, Knol DL, van den Brandt PA. 24-item Roland-Morris Disability Questionnaire was Preferred out of Six Functional Status Questionnaires for Post-Lumbar Disc Surgery. *J Clin Epidemiol*. 2004;57(3):268-76. doi: 10.1016/j.jclinepi.2003.09.005.
- Taber KS. The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*. 2017;48:1273-96. doi: 10.1007/s11165-016-9602-2.
- Kes D, Gökdoğan 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.
- Ma Y, Cheng HY, Sit JWH, Chien WT. Psychometric Evaluation of the Chinese Version of Hypertension Self-Care Profile. *J Cardiovasc Nurs*. 2021;36(5):420-9. doi: 10.1097/JCN.0000000000000708.
- Ngoh SHA, Lim HWL, Koh YLE, Tan NC. Test-Retest Reliability of the Mandarin Versions of the Hypertension Self-Care Profile Instrument. *Medicine*. 2017;96(45):e8568. doi: 10.1097/MD.00000000000008568.
- Seow KC, Yusoff DM, 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):e016152. doi: 10.1136/bmjopen-2017-016152.

## Sources of Funding

There were no external funding sources for this study.

## Study Association

This study is not associated with any thesis or dissertation work.

## Ethics Approval and Consent to Participate

This study was approved by the Ethics Committee of the Comitê de Ética do Centro Universitário do Maranhão (CEUMA) under the protocol number 96301118.0.0000.5084. All the procedures in this study were in accordance with the 1975 Helsinki Declaration, updated in 2013. Informed consent was obtained from all participants included in the study.

