Adaptation and Validation of the Capacity Scale for Informal Caregivers of Elderly Stroke Patients to be Used in Brazil

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Background and Purpose: The Portuguese instrument for informal caregivers' skills providing care of aged people after a stroke (ECPICID-AVC) evaluates the capacities that informal caregivers must have for supporting aged stroke survivors. The purpose was to adapt and validate the ECPICID-AVC to be used in Brazil. **Methods:** A methodological study was conducted. **Results:** The terms with the lowest degree of comprehension were adapted. The factor analysis suggested the exclusion of three items and that the remaining be grouped into six domains. The factor loadings varied from 0.525 to 0.924. The internal intra-assessor consistency was satisfactory (ICC = 0.94, CI 95%). Total reliability was considered excellent (Cronbach's alpha = 0.914). **Conclusions:** The ECPICID-AVC is considered appropriate for using in Brazil.

Keywords: aged; caregivers; education; stroke; psychometrics; validation studies

There are currently around 15 million people beset by stroke. Approximately 5 million have become dependent on healthcare assistance (World Health Organization [WHO], 2017a). Among the elderly population, stroke is the second highest cause of death in the world and is considered one of the leading causes of morbidity and mortality (WHO, 2017b). In Brazil, between January and December 2017, 152,221 people were hospitalized for stroke. Of these, 109,365 (71.8%) were elderly people. Among the elderly, 18,518 (16.9%) of the hospitalizations resulted in death, representing a proportional stroke mortality rate of 16.93 per 100,000 inhabitants in this group (Departamento de Informática do Sistema Único de Saúde, 2018).

Around the world, 60% of stroke survivors die from complications or become dependent on care (WHO, 2016). In Brazil, the family is the main source of informal care/support for the elderly who have functional limitations (Lima-Costa, Peixoto, Malta, Szwarcwald, & Mambrini, 2017). Caregivers report a lack of information about the causes and effects of strokes, along with a lack of practical capacity to implement this care, such as: prevention of pressure ulcers (bedsores) and falls, issues with mobility and transferring, bathing, diet, dressing, undressing, eating, and hydrating (Araújo, Cabrita, & Lage, 2014).

A study conducted in the USA developed a theoretical model that suggests how to improve the capacity of informal caregivers to support their elderly stroke patients. One of the steps in this model involves the identification and prioritization of gaps between the needs of the elderly and the commitment and capacity of the caregiver (Lutz et al., 2017).

BACKGROUND AND CONCEPTUAL FRAMEWORK

The guidance and care provided by informal caregivers are essential for preventing new stroke and reducing hospital readmission (Araújo, Lage, Cabrita, & Teixeira, 2015). Two scales are available in the literature that measure the difficulties and limitations faced by informal caregivers for the elderly: the Preparedness for Caregiving Scale (Archbold, Stewart, Greenlick, & Harvath, 1990), which is a self-assessment instruments comprising eight items that assess ample caregiving aspects, and the Capacity Scale for Informal Caregivers of Elderly Stroke Patients (ECPICID-AVC) (Araújo et al., 2015; Araújo, Lage, Cabrita, & Teixeira, 2016). The ECPICID-AVC was developed in Portugal and aims to confer the capacity of caregivers to care for elderly stroke patients. The concept of "capacity" discussed in the ECPICID-AVC originates from Cognitive Social Theory presented by Bandura (1997), which encompasses knowledge, skills, and competencies.

The ECPICID-AVC was based on the Nursing Interventional Classification (NIC) and was designed to be used within inpatient and home contexts. The results of the original scale validation showed a high psychometric power to gauge the capacity of caregivers to care for elderly stroke patients (Cronbach's alpha = 0.83, ICC = 0.988, CI 95% = 0.984–0.991 and exploratory factor analysis with factor loadings greater than 0.40) (Araújo et al., 2016). The scale is an important tool that contributes to improving the care of elderly stroke patients. It also supports nurses to assess and optimize their strategies to educate informal caregivers. In Brazil, there is no scale to assess the capacities of these caregivers.

This article proposes that the Brazilian version of the ECPICID-AVC will maintain the same psychometric properties as the original. The objective of this study was to adapt and validate the ECPICID-AVC scale for use with informal caregivers of elderly stroke patients in Brazil.

METHODS

The study was conducted in two phases: transcultural adaptation and validation. The transcultural adaptation process was in line with the presuppositions of Beaton, Bombardier, Guillemin, and Ferraz (2007) and included the following sub-stages: Panel of Specialists, Consumer feedback, and Feedback from original authors of the scale. The validation phase was divided into data collection and evaluation of the psychometric properties. This study

respected the internationally accepted methodology for cultural-linguistic adaptation of result measurements, using the COSMIN checklist (Mokkink et al., 2010).

Design

A methodological study (Wood & Haber, 2001) related to adaptation and validation of instruments.

Sample and Setting

The study was conducted in two public hospitals in the south of Brazil. Both provide stroke-patient care and part of the Brazilian Stroke Network.

Study participants were separated into three specific phases: a panel of specialists, consumer feedback, and validation with informal caregivers. The panel of specialists was composed of five professionals with expertise in the fields of elderly health and home care and a Portuguese language professor (Beaton et al., 2007; Hutz, Bandeira, & Trentini, 2015). The consumer feedback and validation phases included a nonprobability sample of 30 and 160 informal caregivers of the elderly, respectively. The caregivers were selected from those who provided inpatient or outpatient (Home Care Service (HCS)) care to the elderly (Beaton et al., 2007; Hair, 2009).

Caregivers were aged over 18 years old and provided care to the elderly who had a stroke diagnosis and who presented with initial functional disability according to the score on the Modified Rankin Scale (mRankin). The mRankin allows for the functional assessment of stroke patients through a point system at the time of discharge, with a minimum of 2 (slight incapacity) and a maximum of 5 (severe incapacity) (Van Swieten, Koudstaal, Visser, Schouten, & Van Gijn, 1988). Elderly patients had to be undergoing treatment at the neurovascular outpatient facility or HCS; the period between hospital discharge after the stroke and the first interview with the caregiver should be between 15 days and 12 months, this being the necessary time for the caregiver to experience providing care to the elderly dependent person. Participants who could not be contacted following three attempts on different days and different times were excluded.

Data Collection

During the adaptation phase, the panel of specialists stage was held over three on-site meetings to obtain consensus. The specialists assessed the validity of the scale content and the semantic, idiomatic, experiential, and conceptual equivalences (Beaton et al., 2007; Hutz et al., 2015).

Caregivers were asked about their sociodemographic data (age, sex, education, marital status, and occupation) and aspects related to the care (relationship with the elderly, if they reside with the elderly, time of care, age of the elderly person, if another person helps with care, income of the elderly person, and financial situation of the caregiver). In the consumer feedback stage, the ECPICID-AVC was applied face-to-face and the caregivers discussed their understanding of each item in the instrument. If the caregivers had doubts about a question, they were asked if they would present it differently. As such, it was possible to assess the comprehension of the scale by caregivers, permitting a discussion of these points in a meeting with the panel of specialists once the consumer feedback stage had been completed. An agreement rate of 80% was used among caregivers as decision criteria regarding the clarity of the item in the instrument (Wynd, Schmidt, & Schaefer, 2003). Once

the consumer feedback was completed and approved by the panel of specialists, the final version of the scale was sent to the original authors of the ECPICID-AVC scale (Araújo et al., 2016).

During the validation phase, the final version of the ECPICID-AVC scale was applied either face-to-face or via telephone. In the retest stage, only the ECPICID-AVC scale was applied, at an interval of 15 days (±2 days) from the date of the first interview, to the odd numbered caregivers (*n* = 80 caregivers), defined according to inclusion sequence in the study. The same form that was used for the first data collection was used for the retest data collection.

Researchers assistants were trained to undertake the study activities, and all were in possession of the ECPICID-AVC application guide for consultation during the interview. This was based on the education intervention protocol for family caregivers of elderly stroke patients (Santos, 2017) and is related to the aspects that must be assessed when observing the caregiver's response to each item of the scale.

Ethical Considerations

The authors of the ECPICID-AVC scale accepted that the scale could be adapted and validated for use in Brazil. All study participants signed a Term of Informed Consent. The research project was approved by the Ethical Research Board of Hospital de Clínicas de Porto Alegre (HCPA) and Grupo Hospitalar Conceição (GHC), under numbers 160580 and 17152, respectively.

Data Analysis

Data was analyzed using the software Statistical Package for the Social Sciences (SPSS), version 20.0.

Trustworthiness, confidence, internal consistency, accuracy, and reliability were assessed by means of Cronbach's alpha and internal intra-assessor consistency (test-retest), by means of the Intraclass Correlation (ICC). The validity of the scale was verified through content validity, based on the judgment of a panel of specialists. Construct validity was tested through an exploratory factor analysis.

To undertake the exploratory factor analysis, items from the ECPICID-AVC marked as "Not applicable" (NA) were replaced by the caregiver's average score in other completed items. This was necessary due to the high proportion of NA responses presented in the data analyses, as in the case of the items related to nasoenteric/gastronomy probe. This analysis was chosen as it was felt that caregivers would respond similarly to the other items.

A significance value of $p < .05$ was considered. There was no loss percentage for the analyzed items.

RESULTS

Transcultural Adaptation

Panel of Specialists. The concept of capacities in the ECPICID-AVC were initially discussed and, once the content of the scale was explained, changes were suggested to ensure cultural issues were addressed. Original phrasing and meaning were preserved where possible.

Concerning the title of the original scale, the specialists suggested that the Portuguese language term "Informal Care Provider" would be replaced by "Informal Caregiver." This term is more commonly used by the specialists. The final title was: "Escala de Capacidades do Cuidador Informal de Idosos Dependentes por AVC – ECCIID-AVC (Capacity Scale for Informal Caregivers of Elderly Stroke Patients)."

Regarding the item response options in the original instrument (1—Does not demonstrate; 2—Demonstrates moderately; 3—Demonstrates; 4—Demonstrates completely), the word "Moderately" was replaced by "Partially." The help would originate from a person and, as such, the term "partially" would be better suited. It was also suggested by specialists that a new answer option should be added: "NA—not applicable," considering that this would be the correct answer when the caregiver does not perform an activity due to the elderly person still maintaining independence.

Concerning the items of the instrument, two were excluded and two others added. Further, certain items were modified and terms changed to facilitate comprehension among a population that has no experience in the field of healthcare. The changes made and their respective justifications are described in Table 1.

TABLE 1.   Description and Justification of Modifications of Items From the ECPICID-AVC During the Panel of Specialists Stage, Brazil, 2020

ECPICID-AVC	ECCIID-AVC	Justification
1. Prepare meals in accordance with the prescribed diet plan.	1. Prepare meals in accordance with the prescribed or guided diet plan.	The term "or guided" was included because, within a Brazilian context, a diet is not only prescribed, it is also guided.
2. Place foods on the side of the dish on which the elderly person is less dependent.	2. Place food and utensils on the side on which the elderly person is less dependent.	The word "utensils" was included to make clear that it is not only the food, but also the utensils, like knives and forks, that must be placed on the side on which the elderly person is less dependent.
3. Monitor food ingestion.	3. Control food ingestion.	The word "monitor" was replaced with "control," as it is more suitable in the sense that the caregiver is helping the elderly person in the process of ingesting food. It also facilitates comprehension.

(*Continued*)

TABLE 1.   Description and Justification of Modifications of Items From the ECPICID-AVC During the Panel of Specialists Stage, Brazil, 2020 (*Continued*)

ECPICID-AVC	ECCIID-AVC	Justification
4. Provide necessary technical aid to facilitate feeding.	4. Provide necessary technical aid to facilitate feeding.	Item maintained unchanged.
5. Monitor swallowing.	5. Monitor swallowing.	Item maintained unchanged.
6. Prepare meals adequately.	6. Prepare meals adequately.	Item maintained unchanged.
7. Reintroduce food content to the stomach and feed (food content ≤ 100 mL).	Excluded.	Item excluded, as this practice is not applicable to a Brazilian context.
8. Reintroduce food content and delay the meal (food content > 100 mL).	Excluded.	Item excluded, as this practice is not applicable to a Brazilian context.
	Added: 7. Aid in the administration of medication as per the medical prescription.	Item added as it is an important activity, frequently performed by caregivers in a Brazilian home context, and one that guarantees the safety of the patient, preventing medication mistakes.
	Added: 8. Hydrate the skin.	Item added as is as an important activity, frequently performed by caregivers in a Brazilian home context, and one that prevents pressure injury.
9. Flush the tube with water if it becomes obstructed during feeding.	9. Flush the tube with water if it becomes obstructed during the administration of diet and medication.	The word "feeding" was replaced with "diet" (in items: 9, 10 and 11), as a meal in this case would constitute tube feeding. In addition, the term "diet" is used more regularly in the local context. "Medication" was included (in items: 9, 10, and 11), due to this activity being necessary in the case of obstructions during the administration of medication.

(*Continued*)

TABLE 1.   Description and Justification of Modifications of Items From the ECPICID-AVC During the Panel of Specialists Stage, Brazil, 2020 (*Continued*)

ECPICID-AVC	ECCIID-AVC	Justification
10. Wash the tube at the end of the meal.	10. Flush the tube with water after administering the diet and medication.	The word "wash" was replaced with "flush the tube with water" to better explain the process to caregivers, as the introduction of water is how the tube should be washed, immediately after the administration of the diet and medication.
11. Clamp the tube at the end of the meal.	11. Seal the tube at the end of the diet and medication.	In Brazil, the word "clamp" refers to a term used in professional practice, "clamping," and has therefore been replaced with "seal," as it is understood that the tube be sealed after administration of the diet and medication.
12. Provide hygiene material.	12. Prepare hygiene material.	The word "provide" was replaced by "prepare," as this would be more suited to the context of the caregiver assisting the elderly person with the hygiene process.
13. Monitor while bathing.	13. Assist while bathing.	The word "monitor" was replaced with "assist" (in items: 14, 18, 22, 23, and 28). The specialists postulated that it is the caregiver that assists in the process and the word "monitor" could give the idea of merely "observing," and not to actively assist in the process.
14. Monitor oral hygiene.	14. Assist with oral hygiene.	Justification of item 13.
15. Maintain an aspect of neatness.	15. Maintain a neat appearance.	Replace "aspect" with "appearance," as the specialists believed that the item would be clearer this way.

TABLE 1. Description and Justification of Modifications of Items From the ECPICID-AVC During the Panel of Specialists Stage, Brazil, 2020 (*Continued*)

ECPICID-AVC	ECCIID-AVC	Justification
16. Provide necessary technical aid to facilitate personal hygiene.	16. Provide necessary technical aid to facilitate personal hygiene.	Item maintained unchanged.
17. Ensure privacy while using the toilet.	17. Ensure privacy while using the toilet, when changing diapers and bathing.	The item was modified to include the expression "when changing diapers and bathing," as, according to the authors of the original scale,[a] the term "using the toilet" encompasses other issues such as changing diapers. The specialists felt that the addition of the activities would be better suited to the Brazilian reality.
18. Monitor toilet wiping.	18. Assist in toilet wiping and changing diapers.	Justification of items 13 and 17.
19. Provide necessary assistance when using the toilet.	19. Provide necessary technical aid for toilet routines.	The term "using the toilet" was replaced with "for toilet routines," as the latter is understood to include both the use of the toilet and the disposal of diapers.
20. Provide technical aid to facilitate dressing.	20. Provide necessary technical aid to facilitate dressing.	The word "necessary" was added to make it clearer.
21. Provide necessary technical aid to facilitate undressing.	21. Provide necessary technical aid to facilitate undressing.	Justification of item 20.
22. Monitor as the person dresses.	22. Assist the person while dressing.	Justification of item 14.
23. Monitor as the person while undress.	23. Assist the person while undressing.	Justification of item 14.
24. Assess the person's capacity to transfer themselves.	24. Assess the person's capacity to transfer themselves.	Item maintained unchanged.
25. Adopt body mechanics principles while performing the transfer technique.	25. Adopt body mechanics principles while performing the transfer technique.	Item maintained unchanged.

(*Continued*)

TABLE 1. Description and Justification of Modifications of Items From the ECPICID-AVC During the Panel of Specialists Stage, Brazil, 2020 (*Continued*)

ECPICID-AVC	ECCIID-AVC	Justification
26. Explain the transfer technique to the person.	26. Explain the transfer technique to the person.	Item maintained unchanged.
27. Provide technical transfer aid.	27. Provide technical transfer aid.	Item maintained unchanged.
28. Monitor while transferring.	28. Assist while transferring.	Justification of item 14.
29. Adopt body mechanics principles while performing the positioning technique.	29. Adopt body mechanics principles while performing the positioning technique.	Item maintained unchanged.
30. Place in all decubitus positions.	30. Alter the decubitus positions.	The term "place in all" was replaced with "alter," in order to make the item more comprehensible.
31. Provide technical positioning aid.	31. Provide technical positioning aid.	Items maintained unchanged.
32. Assess the need to alter positioning.	32. Assess the need to alter positioning.	Item maintained unchanged.

[a]Araújo, O. S. S. L. (2015). *O cuidado informal a pessoas idosas dependentes no autocuidado após um acidente vascular cerebral: avaliação do impacto do programa InCARE na capacitação dos cuidadores*. Doctoral thesis, Escola Superior de Enfermagem, Universidade de Lisboa, Portugal.

When the specialists had doubt regarding item comprehension, the author of the original instrument was consulted. At the end of this stage, the ECCIID-AVC was unanimously approved by the specialists to continue on to the consumer feedback stage.

Consumer Feedback. According to the characterization of caregivers at this stage, 83.3% were women, with a mean age of 53.1 (± 12.5) years old, with a mean of 10.1 (± 4.1) years of education and 53.3% were adult children of the patient.

Six items did not reach an 80% degree of agreement for comprehension. Thus, another meeting was held with the consensus of specialists, upon which the results of the consumer feedback were presented and changes to the scale were suggested. The terms that were hard to understand among caregivers were reviewed. However, despite only a few items not obtaining the 80% comprehension agreement, it was decided that these and the other items with similar phrases would all be reviewed, in order to maintain the homogeneity of the scale terms. Using the scale comprehension assessment instrument, researchers determined which items were difficult to understand. The terms responsible for erroneous comprehension on the part of the caregivers were replaced. The sequence of items in the scale was also organized in a way to present similar items in groups. Table 2 presents the changes made to scale items and their justifications, suggested by the panel of specialists after the application of the consumer feedback.

TABLE 2.   Modifications and Justifications of Items From the ECCIID-AVC Before and After the Consumer Feedback, Brazil, 2020

ECCIID-AVC Prior to the Consumer Feedback	Degree of Agreement (%)	ECCIID-AVC After Consumer Feedback	Explanation
2- Place food and utensils on the side on which the elderly person is less dependent.	96.7	3- Place food and utensil on the side on which the elderly person shows greater dependence to stimulate the affected member.	It was noted that food and utensils were placed on the side of elderly patient with the highest dependence, as recommended by the health team upon discharge from the hospital, in order to stimulate the affected member. As such, the term "less dependent" was changed to "greater dependence," considering that this is a guideline different from the Portuguese reality.
4- Provide necessary technical aid to facilitate feeding.	73.3	4- Provide support and/or materials necessary to facilitate feeding.	Using the scale comprehension assessment instrument, it was noted that the term "technical aid" was responsible for erroneous comprehension on the part of the caregivers regarding the questioned item. As such, it was replaced with "Provide support and/or materials".
16- Provide necessary technical aid to facilitate personal hygiene.	83.3	13- Provide support and/or materials necessary to facilitate personal hygiene.	
19- Provide necessary technical aid for toilet routines.	56.7	18- Provide support and/or materials necessary to facilitate urinary and intestinal toilet routines.	To make the item about feeding clearer, this item was complemented with "urinary and intestinal".
20- Provide necessary technical aid to facilitate dressing.	86.7	20- Provide support and/or materials necessary to facilitate dressing.	

(*Continued*)

TABLE 2.   Modifications and Justifications of Items From the ECCIID-AVC Before and After the Consumer Feedback, Brazil, 2020 (*Continued*)

ECCIID-AVC Prior to the Consumer Feedback	Degree of Agreement (%)	ECCIID-AVC After Consumer Feedback	Explanation
21- Provide necessary technical aid to facilitate undressing.	86.7	22- Provide support and/or materials necessary to facilitate undressing.	
27- Provide technical transfer aid.	76.7	26- Provide support and/or materials necessary for the elderly person to transfer themselves from one place to another.	
31- Provide technical positioning aid.	90	29- Provide support and/or materials necessary to position the elderly patient.	
24- Assess the person's capacity to transfer themselves.	93.3	24- Assess the elderly person's capacity to transfer themselves from one place to another.	These items were complemented with the term "elderly" as the ECCIID-AVC is aimed at the care of elderly people.
26- Explain the transfer technique to the person	86.7	25- Explain to the elderly person about the right way to transfer themselves from one place to another.	Besides the item "Provide support and/or materials necessary for the elderly person to transfer themselves from one place to another," the words "from one place to another" were also added at the end of the sentence to maintain homogeneity and facilitate comprehension.
28- Assist while transferring.	96.7	27- Assist the elderly person to transfer themselves from one place to another.	

(*Continued*)

TABLE 2.   Modifications and Justifications of Items From the ECCIID-AVC Before and After the Consumer Feedback, Brazil, 2020 (*Continued*)

ECCIID-AVC Prior to the Consumer Feedback	Degree of Agreement (%)	ECCIID-AVC After Consumer Feedback	Explanation
25- Adopt body mechanics principles while performing the transfer technique.	73.3	28- Employ the correct posture when transferring an elderly person from one place to another.	The expression "adopt body mechanics principles," "transfer technique," and "positioning technique" were replaced with expressions that were easier to understand, as the caregivers presented comprehension difficulties.
29- Adopt body mechanics principles while performing the positioning technique.	76.7	31- Employ the correct posture to position each part of the elderly person's body correctly.	
30- Alter the decubitus positions.	30	32- Change the body position of the elderly person when they are laying down.	The term "decubitus" is commonly used in the area of health, but, very often, it is unknown to the general population and as such the term was replaced to facilitate comprehension.
32- Assess the need to alter positioning.	96.7	30- Assess the need to change the body position of the elderly person.	To maintain homogeneity with the previous item, the term "alter positioning" was replaced with "change the body position of the elderly person."

The scale was also modified in terms of scoring. In the consumer feedback phases, the possible responses were 0 to 4 (0—NA; 1- does not demonstrate; 2—demonstrates partially; 3—demonstrates; 4—demonstrates completely) and the scale scores varied from 32 to 128 points. Following the consumer feedback, the range of possible responses was changed to: 0—Does not demonstrate; 1—Demonstrates partially; 2—Demonstrates; and 3—Demonstrates completely. As such, the scale scores would vary from zero to 96 points, and the scale calculation is proportional to the options marked as NA—not applicable in the adapted version. Thus, a caregiver that does not perform an activity due to a lack of need (elderly person independent in this activity) will not be compared to another caregiver that does not perform the activity because they do not know how. The specialists understood that a caregiver that did not demonstrate a capacity, in the assessed item, should not score (score = 0), which made the scale score clearer and more logical.

Feedback From Original Authors of the Scale. The final version of the ECCIID-AVC was sent to the authors of the original instrument, describing all the changes made. The authors could verify whether the scale maintained equivalence in relation to the original instrument. They approved the adaptation and validation of the ECPICID-AVC scale for use in Brazil.

Validation Phase

The study sample was composed predominantly of female caregivers (82.5%), with a mean age of 49.6 ± 13.1 years old and 9.6 ± 3.8 years of education. The average age of the elderly patients was 73.0 (± 8.7) years and the period of their hospitalization was 12 (7–18) days. Regarding functional assessment (mRankin) at the time of discharge, 32.5% patients presented slight disabilities. The majority of cases had ischemic strokes (89.4%).

The average of the caregiver in the completed items was very similar to the corrected average, replacing the options marked as NA - not applicable. Thus, it was possible to preserve the performance of each individual on the scale and ascertain the psychometric properties of the ECCIID-AVC. Caregivers obtained a median of 2 in the score of the items on the scale.

In the exploratory factor analysis, the items "Closes the tube following feeding and medication" and "Introduces water in the event the tube is blocked during feeding and medication"; "Provides necessary support and/or materials to facilitate dressing" and "Provides necessary support and/or materials to facilitate undressing"; "Helps the person dress" and "Helps the person undress" observed perfect correlation (correlation = 1). Thus, it was necessary to exclude items "Closes the tube following feeding and medication," "Provides necessary support and/or materials to facilitate undressing"; and "Helps the person undress" to avoid repetition.

Following the exclusion process, the remaining items from the ECCIID-AVC were grouped into six areas, explaining 70.52% of total variance. The Cronbach's alpha total for the ECCIID-AVC with 29 items was 0.914 (Table 3).

Regarding internal intra-assessor consistency, no significant difference was noted between the test (2.56 ± 0.39) and retest (2.65 ± 0.38) averages, with $p < .001$. ICC was 0.94 (CI 95%, 0.91–0.96).

TABLE 3. Placement of Items in their Respective Domains Following Factor Analysis, Factor Loading of Items, Cronbach's Alpha for Domains and the Total Cronbach's Alpha for the 29 Items of the ECCIID-AVC, Brazil, 2020

Domain 1	Factor Loading	Cronbach's Alpha
Flush the tube with water if it becomes obstructed during the administration of diet and medication.	0.529	0.926
Flush the tube with water after administering the diet and medication.	0.593	
Prepare hygiene material.	0.755	

(*Continued*)

TABLE 3.   Placement of Items in their Respective Domains Following Factor Analysis, Factor Loading of Items, Cronbach's Alpha for Domains and the Total Cronbach's Alpha for the 29 Items of the ECCIID-AVC, Brazil, 2020 (*Continued*)

Domain 1	Factor Loading	Cronbach's Alpha
Provide support and/or materials necessary to facilitate personal hygiene.	0.708	
Assist while bathing.	0.758	
Assist with oral hygiene.	0.587	
Maintain a neat appearance.	0.575	
Ensure privacy while using the toilet, when changing diapers and bathing.	0.623	
Provide support and/or materials necessary to facilitate urinary and intestinal toilet routines.	0.738	
Assist in toilet wiping and changing diapers.	0.838	

Domain 2	Factor Loading	Cronbach's Alpha
Provide support and/or materials necessary to facilitate dressing.	0.596	0.899
Assist the person while dressing.	0.559	
Assess the elderly person's capacity to transfer themselves from one place to another.	0.713	
Explain to the elderly person about the right way to transfer themselves from one place to another.	0.812	
Provide support and/or materials necessary for the elderly person to transfer themselves from one place to another.	0.778	
Assist the elderly person to transfer themselves from one place to another.	0.681	
Provide support and/or materials necessary to position the elderly patient.	0.632	
Assess the need to change the body position of the elderly person.	0.525	

Domain 3	Factor Loading	Cronbach's Alpha
Provide support and/or materials necessary to facilitate feeding.	0.681	0.816
Control food ingestion.	0.924	
Monitor swallowing	0.907	
Aid in the administration of medication as per the medical prescription.	0.469	

(*Continued*)

TABLE 3.   Placement of Items in their Respective Domains Following Factor Analysis, Factor Loading of Items, Cronbach's Alpha for Domains and the Total Cronbach's Alpha for the 29 Items of the ECCIID-AVC, Brazil, 2020 (*Continued*)

Domain 4	Factor Loading	Cronbach's Alpha
Prepare meals in accord with the prescribed or guided diet plan.	0.879	0.777
Prepare meals adequately.	0.827	
Change the body position of the elderly person when they are laying down.	0.578	
Domain 5	**Factor Loading**	**Cronbach's Alpha**
Employ the correct posture when transferring an elderly person from one place to another.	0.840	0.736
Employ the correct posture to position each part of the elderly person's body correctly.	0.828	
Domain 6	**Factor Loading**	**Cronbach's Alpha**
Place food and utensil on the side on which the elderly person shows greater dependence to stimulate the affected member.	0.775	0.461
Hydrate the skin.	0.711	
CRONBACH'S ALPHA		0. 914

DISCUSSION

Transcultural Adaptation

The process for the transcultural adaptation of the ECCIID-AVC for use in Brazil did not include the sub-stages of translation, translation summary, and back translation as the scale was adapted from the Portuguese language spoken in Portugal to the Portuguese language spoke in Brazil, in accordance with the adopted references (Beaton et al., 2007). However, despite having been reduced to fewer stages, there was a noted need to adjust 30 of the instrument's 32 items. This data reiterates the existing differences between cultures regarding the developed practice and the terms used, beyond the actual language (Beaton et al., 2007; Perini, 2017).

Besides adapting items, it was also necessary to add and exclude some aspects that were present in the target culture and absent in the instrument. This was similar to another instrument adaptation and validation study (Valer, Aires, Fengler, & Paskulin, 2015). In the ECCIID-AVC, included items were those relevant to medication and skin hydration. The two items excluded from the scale referred to aspects not used in Brazilian culture. In addition to the adjustments made to the instrument items, Beaton et al. (2007) reiterated the need to modify response options, instruction and scores, if necessary. In this study, adjustments were made to the title, to items, to response options and the instrument score.

The composition of the Panel of specialists is fundamental to ensuring the transcultural equivalence of the adapted instrument, with the inclusion of health professionals, psychometric technicians, and linguists highly recommended (Beaton et al., 2007; Gorenstein,

Yuan-Pang, & Hungerbühler, 2016). In this study, face-to-face meetings among the specialists were essential to the scale being assessed in all of its aspects.

In the consumer feedback stage, application of the instrument and comprehensibility of scale items and responses was assessed by interviewees (Beaton et al., 2007). Similar to the global health scale transcultural adaptation process for the Patient-Reported Outcomes Measurement Information System (PROMIS), a consumer feedback of this study was performed to identify and correct possible errors related to the comprehension of each item, using a comprehension criterion of 80% (Zumpano, Mendonça, Silva, Correia, Arnold, & Pinto, 2017). In particular, the term "technical help" was used in the original instrument, as it was linked to ICNP (International Classification for Nursing Practice) taxonomy used in Portugal. However, in Brazil, especially within the field of data collection for this study, the NANDA-I taxonomy was employed, thereby explaining the difficulty in comprehending the term, even by specialists, and justifying its replacement.

As in another study on the transcultural adaptation of instruments in line with Beaton and colleagues (Beaton et al., 2007), a review by the authors of the original instrument was judged important to ensure that each stage of the transcultural adaptation process was followed and that the adapted instrument was equal to the original instrument (Pereira, Lam, & Gir, 2017). The quality of the adaptation process determines the validity of the instrument in assessing the construct in question (Pereira et al., 2017).

Validation

An exploratory factor analysis of the ECCIID-AVC allowed for the development of a scale with 29 items grouped into six domains, with factor loadings varying from 0.525 to 0.924. On the original scale, the 32 items were split into eight domains and the factor loadings varied from 0.369 to 0.962 (Araújo et al., 2016). As with other validation studies, response options were identified that were marked as not applicable (absent data) and an item score was replaced by the average in order to proceed with the exploratory factor analysis, as recommended by Tabachnick and Fidel (Freitas, Schelini, & Perez, 2017; Nogueira, Seidl, & Tróccoli, 2016; Tabachnick & Fidel, 2001).

Most of the items in the ECCIID-AVC (15) presented a factor loading considered excellent (>0.71) (George & Mallery, 2003; Pasquali, 2009). Recent instrument validation studies have presented factor loadings lower than those encountered in the ECCIID-AVC, thereby reiterating the quality of the domains found (Alhalal, Ford-Gilboe, Wong, & AlBuhairan, 2017; Andrade et al., 2017).

Concerning the exclusion of three items, changes to the instrument's factor structure is expected due to sampling characteristics, especially with complex instruments, which present a high number of items and factors (Borsa, Damásio, & Bandeira, 2012). In the original scale, after the exploratory factor analysis, it was necessary to exclude certain items.

Only domain 6 presented a Cronbach's alpha below the accepted level. Conversely, the total Cronbach's alpha of the ECCIID-AVC was 0.914, reflecting excellent fidelity to the scale (Hutz et al., 2015). Furthermore, the ICC of 0.94 (CI 95% 0.91–0.96) shows the almost full extent of agreement (temporal stability) of the ECCIID-AVC (Hutz et al., 2015; Miot, 2016).

The internal consistency of the ECCIID-AVC was greater than that presented in the original scale, with a Cronbach's alpha of 0.83. The ICC of 0.988 (CI 95% 0.984–0.991) for the ECPICID-AVC appears similar to the scale to be validated (Araújo et al., 2016). Note

that the *Preparedness for Caregiving Scale*, for use with Italian caregivers for elderly stroke patients, presented a Cronbach's alpha of 0.94 and ICC of 0.92 (CI 95% 0.89–0.94), results that are almost identical to those found in this study (Pucciarelli et al., 2014). However, it is worth pointing out once again that, originally, the Preparedness for Caregiving Scale was developed for use with Caregivers for the elderly in general and does not discuss specific issues of elderly care following a stroke.

The results of the ECCIID-AVC revealed that the caregivers scored an average of 2 for each item of the scale, demonstrating the capacity to perform care activities. These findings may be linked to the severity of the illness and the countless tasks performed by the caregivers, which in turn develops their capacities to perform care activities over time. Similar to results shown in another study, they provided care that called for capacity and expertise, in spite of their low education levels (Silva, Alves, Dantas, Kelmer, & Rios, 2016).

The scales available in the literature to date have focused on the burden experienced by caregivers (regardless of whether they are in a professional or informal role). Few have specifically assessed the burden of informal caregivers. In addition, no other study has developed a scale specifically for informal caregivers for elderly stroke patients. As such, the availability of an adapted and validated capacity scale for this specific group allows nurses to recognize the care needs and instruct these caregivers. This will ultimately help caregivers correctly perform care activities, especially in developing countries where there is often a lack of health resources available (Couto, Castro, & Caldas, 2016).

The development of an instrument that assesses the capacities of informal caregivers for elderly stroke patients within a Brazilian context is an innovative proposal. However, certain limitations were identified during the study performance. The first regards the probabilistic sampling. As only caregivers for the elderly from the South of Brazil participated, results cannot be generalized to other regions of the country. Furthermore, the lack of ECPICID-AVC validation studies in other countries, as well as the absence of publications on the use of the instrument in outpatient services make comparisons with other studies somewhat challenging. Similarly, these findings are difficult to contextualize given the limited amount of research in this area that is conducted in Brazil.

Nursing Implications for Practice

The ECCIID-AVC is a useful tool for clinical practice, nursing research programs focused on care for elderly stroke patients and for educating informal caregivers. The scale helps to identify problems, facilitates development of interventions, and measures the quality of the care provided to this part of the population. The results of this study can be used for management, planning, and creation of health policies.

This study supports qualified health professionals to instruct informal caregivers on how to look after elderly stroke patients. In addition, the scale shows potential to become a care technology that is used by nurses in outpatient and home care contexts.

CONCLUSION

With the adaptations complete, satisfactory internal intra-assessor consistency and excellent reliability, the ECCIID-AVC is considered suitably adapted and validated for use

within the Brazilian context, in clinical practice and research. Additionally, it shares similar agreement and psychometric properties to the original scale.

Considering the social and cultural diversity of the country, additional observational studies that use the ECCIID-AVC in the home care context should be carried out in other regions of Brazil, in order to check if the scale presents similar psychometric properties. Furthermore, validation and application of the scale in other countries would allow data comparison among different social and cultural contexts.

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