

Cross-cultural adaptation of the Caring Ability Inventory to Portuguese

Adaptação transcultural do Caring Ability Inventory para a língua portuguesa

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Keywords

Validation studies; Caregivers; Nursing care; Oncology nursing

Descritores

Estudos de validação; Cuidadores; Cuidados de enfermagem; Enfermagem oncológica

Submitted

April 20, 2016

Accepted

June 30, 2016

Abstract

Objective: Describe the cross-cultural adaptation of the Caring Ability Inventory (CAI) and its validation in Portuguese.

Methods: Methodological study developed in two stages, cross-cultural adaptation, analysis of its reliability (reproducibility and internal consistency), and validity (content and construct). The sample comprised 148 informal caregivers of cancer patients and 64 nurses from a public health service.

Results: In the cross-cultural adaptation of the instrument, a satisfactory content validity was observed. After the pretest, the response scale was changed from seven to five points. The intraclass correlation coefficient was 0.76 and Cronbach's alpha 0.78. Factorial analysis showed that the instrument items did not remain grouped in the original structure. However, they showed a similar internal consistency.

Conclusion: The Brazilian Portuguese version of CAI was shown to be reliable and valid, but new researches are needed to study the variations observed in the factorial distribution between the tool dimensions.

Resumo

Objetivo: Descrever a adaptação transcultural e validação para a língua portuguesa do *Caring Ability Inventory* (CAI).

Métodos: Estudo metodológico desenvolvido em duas etapas, adaptação transcultural e análise da confiabilidade (reprodutibilidade e consistência interna) e validade (conteúdo e construto). A amostra foi composta por 148 cuidadores informais de pacientes com câncer e 64 enfermeiros de um serviço público de saúde.

Resultados: Na adaptação transcultural do instrumento observou-se validade de conteúdo satisfatória. Após o pré-teste, alterou-se a escala de resposta de sete para cinco pontos. O coeficiente de correlação intraclassa foi de 0,76 e o *Alpha* de *Cronbach* de 0,78. A análise fatorial demonstrou que os itens do instrumento não se mantiveram agrupados na estrutura original, porém, mostraram consistência interna semelhante.

Conclusão: A versão do CAI em língua portuguesa mostrou-se confiável e válida, porém novas pesquisas são necessárias para estudar as variações observadas na distribuição fatorial entre as dimensões do instrumento.

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DOI

<http://dx.doi.org/10.1590/1982-0194201600048>



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Conflicts of interest: there are no conflicts of interest to declare.

Introduction

Chronic diseases impose great challenges in health care. Their prevalence, multifactor character, and bio-socio-cultural determinants have implications for the health teams, affected individuals, families, and the community.⁽¹⁾

Chronicity challenges include changes to a healthier lifestyle,⁽²⁾ long periods of rehabilitation, observation, and care by health professionals and/or caregivers.⁽³⁻⁵⁾

This study addresses the chronicity characteristics that result from cancer diagnosis, emphasizing the care demands generated for family members or informal caregivers (ICs).

Studies show that providing care without mastering the necessary skills, associated with both chronic and intensive nature of such care and breaks in the caregivers' daily life entail negative, emotional, and physical consequences. They interfere with the caregivers' ability to meet the patient demands, due to overload and negative impact on their quality of life.⁽⁶⁻⁸⁾

Strategies to reduce caregivers' stress include providing opportunities for them to either become familiar with care actions or increase their skills. Nkongho defines the ability of caregivers to care as being the "potential of the adult person who assumes the role of primary caregiver of a family member or significant person who is in a situation of disabling chronic disease."⁽⁹⁾ She points out that cognitive and attitudinal dimensions, identified and measured according to the indicators of knowledge, courage, and patience are included in this ability, which is based on the Mayeroff's care concept.⁽¹⁰⁾ Among the skills for genuine care, he considers not only the knowledge of him/herself and the other and the technical skills, but also the courage to develop them, patience, and the desire to be with the person who is being cared for.

Nkongho⁽⁹⁾ constructed the Caring Ability Inventory (CAI), which contained 37 items and three dimensions: Knowledge (14 statements), Courage (13 statements), and Patience (10 statements). The answers are organized on a Likert-type scale from 1 (I strongly disagree) to 7 (I strongly agree), result-

ing in a variable score (37-259 points). The higher the score, the higher the level of care ability.⁽⁹⁾ This original version was applied to 537 subjects, being evaluated for total Cronbach's alpha (0.84) and the Knowledge (0.79), Courage (0.75), and Patience (0.71) dimensions.⁽⁹⁾

The absence of adapted and validated instruments in Brazilian Portuguese to measure the caregivers' self-perception of care ability, the care concept adopted by the author,⁽¹⁰⁾ and the international publications on CAI use to measure the care ability of caregivers and other professionals in the health area^(6,11-14) motivated the interest in its translation and cross-cultural adaptation.

Therefore, the aim of this study is to describe the cross-cultural adaptation and validation of the Portuguese version of the Caring Ability Inventory (CAI).

Methods

This methodological study was performed in two stages. In the cross-cultural adaptation stage, the guidelines proposed in the literature were used, including translation, translation synthesis, back translation, expert committee, and pretest of the pre-final version.⁽¹⁵⁾ In the second stage, the reliability (reproducibility and internal consistency) and validity (content and construct) analyzes were performed.⁽¹⁶⁾

For the cross-cultural adaptation, two independent professionals (T1 and T2) translated the instrument with the author's consent, and the results were subjected to analysis by a committee of experts, resulting in the T3 version.

The committee consisted of four nurse professors with care experience and one pedagogue. They met at least two of the following requirements: fluency in English, knowledge of nursing theories, and experience in the translation and validation of research tools.

Two other native English-speaking translators, who did not know the original version and the purpose of the study, back translated the T3 version and produced the Rt1 and Rt2 versions. These versions were evaluated by the same committee, who

produced the RT3 version, analyzed it together with the original and T3 versions for semantic, idiomatic, cultural, and conceptual equivalence, and produced the pre-final version, which was sent to the author to incorporate her comments. We chose the original denomination in English, according to publications in other languages.

In order to verify the psychometric properties, we assumed values for intraclass correlation (0.80) and significance level (0.05) and calculated the sample size, which resulted in a total of 212 participants (148 ICs and 64 nurses).

Subject selection included the premise that responses of nurses, given their specific training for care actions, would show differences in relation to those of ICs regarding instrument attributes and dimensions.

The ICs inclusion criteria were as follows: being aged 18 years or older, performing care actions for at least three months; knowing the patients' diagnosis; and evidencing that they understood the statements. For nurses, having experience in oncology for at least six months in the study institution was required.

Before the pretest was applied, six research assistants received training by applying the instrument in 12 cancer patient's ICs not included in the sample. Difficulty was observed when they had to choose among the Likert-type 7-point scale alternatives the one that best represented the individual opinion. After contact with the instrument author and her consent, the scale was reduced to 5 points (*1 - I strongly disagree; 2 - I disagree; 3 - I neither disagree nor agree; 4 - I agree; 5 - I strongly agree*).

The pre-test was performed in a subsample of 80 subjects (50 ICs and 30 nurses) from a large-size hospital, which is a reference for the care of cancer patients in the southern region of Rio Grande do Sul State (Brazil, May-July 2013). The reliability was verified in the sub-sample using the test-retest Intraclass Correlation Coefficient (ICC), considering the values assigned to "poor" (<0.40), "moderate to good" (0.40 - 0.75), and "excellent" quality (>0.75). The internal consistency was also analyzed in the sample (212 subjects) using the Cronbach's Alpha Coefficient according to the values for "moderate" (0.50-0.70) and "good or excellent" (>0.70) consistency.⁽¹⁷⁾ The correlation between the total score and

all items of the questionnaire was measured by the Spearman linear correlation coefficient.

Calculation of the Content Validity Index (CVI) was used to assess content validity, and a value for minimum agreement (0.80) was adopted.⁽¹⁸⁾

The approach of known groups was used to evaluate construct validity, which was analyzed through the correlation between IC and nurse responses using the *t* and Pearson correlation tests.⁽¹⁹⁾ When the quantitative variables showed a normal distribution, which was verified using the Anderson-Darling test, the *t* test was applied. When the normality hypothesis was rejected, the Mann-Whitney test was used.

Exploratory factorial analysis was another approach used to verify the construct validity, using the principal component method, with three fixed components and varimax rotation. Only items with factor loadings greater than 0.40 or lower than -0.40 were considered pertinent to the dimension under evaluation.⁽¹⁷⁾

The statistical significance level of 5% was adopted, and the analyzes were performed using the SPSS 19.0 and free R software.

The study project was approved by the Research Ethics Committee (CEP UNIFESP; No. 115973), and met the ethical requirements for research on human subjects.

Results

The Expert Committee agreement on CAI content was 86.5%. The items that generated controversy (13.5%) underwent a new evaluation round, being incorporated into the pre-final version of CAI after consensus. This version was subjected to pre-test and became the instrument final version, as it was not changed.

The CAI showed a good overall reproducibility in the test-retest (ICC = 0.76; Dimensions: Knowledge = 0.85; Courage = 0.80; and Patience = 0.79). The overall value for Cronbach's alpha was 0.78 (Dimensions: Knowledge = 0.70; Courage = 0.74; and Patience = 0.63). The instrument items are shown in table 1, being numbered according to the sequence in the original version.

Table 1. Internal consistency of the CAI instrument and its dimensions

Dimensions and Items / CAI Statements	Cronbach's alpha	Correlations (Item vs. total*)	Cronbach's alpha (if item is deleted*)
Knowledge	0.70		
A2 - Today is filled with opportunities		0.16	0.70
A3 - I usually say what I mean to others		0.20	0.70
A6 - I am able to like people even if they do not like me		0.46	0.66
A7 - I understand people easily		0.44	0.66
A9 - I get time to know other people		0.29	0.68
A19 - People can count on me to do what I say I will		0.23	0.69
A22 - I find meaning in every situation		0.35	0.68
A26 - I really like myself		0.34	0.68
A30 - I accept people just the way they are		0.48	0.66
A31 - When I care for someone else, I do not have to hide my feelings		0.24	0.69
A33 - I can express my feelings to people in a warm and caring way		0.38	0.67
A34 - I like talking to people		0.41	0.67
A35 - I regard myself as sincere in my relationships with others		0.45	0.68
A36 - People need space (room, privacy) to think and feel		0.08	0.71
Courage	0.74		
A4 - There is very little I can do for a person who is helpless		0.35	0.72
A8 - I have seen enough in this world for what I need to know		0.40	0.72
A11 - There is nothing I can do to make life better		0.50	0.71
A12 - I feel uneasy knowing that another person depends on me		0.39	0.72
A13 - I do not like to go out of my way to help other people		0.39	0.72
A14 - In dealing with people, it is difficult to let my feelings shown		0.26	0.73
A15 - It does not matter what I say, as long as I do the correct thing		0.34	0.72
A16 - I find it difficult to understand how other persons feel if I have not had similar experiences		0.33	0.73
A23 - I am afraid to leave those I care for, because I am afraid of what might happen to them		0.31	0.73
A25 - I do not like to make commitments beyond the present		0.41	0.72
A28 - New experiences are usually frightening to me		0.42	0.71
A29 - I am afraid to be open and let others see who I am		0.33	0.73
A32 - I do not like to be asked for help		0.26	0.73
Patience	0.63		
A1 - I believe that learning takes time		0.10	0.66
A5 - I can see the need for change in myself		0.34	0.59
A10 - Sometimes I like to be involved and sometimes I do not like to be involved		0.17	0.65
A17 - I admire people who are calm, composed, and patient		0.44	0.57
A18 - I believe it is important to accept and respect the attitudes and feelings of others		0.42	0.59
A20 - I believe that there is room for improvement		0.31	0.61
A21 - Good friends look after each other		0.44	0.58
A24 - I like to offer encouragement to people		0.54	0.55
A27 - I see strengths and weaknesses (limitations) in each individual		0.30	0.60
A37 - I can be approached by people at any time		0.21	0.62
CAI	0.78		

* The correlation analyses are related to the importance of the items in the dimensions, but not to the CAI instrument as a whole; CAI- Caring Ability Inventory

The analysis of CAI construct validity showed a statistically significant difference (p-value <0.05) between ICs and

nurses in the dimensions *Knowledge, Courage, and Patience*, but not in the instrument as a whole (Table 2).

Table 2. Association between answers from informal caregivers (ICs) and nurses (Ns) according to CAI instrument and its dimensions

Dimensions	Groups	Mean	SD	SE	Median	IQ	Minimum	Maximum	n	p-values
Knowledge	ICs	57.82	5.64	0.46	57.0	8.0	44	70	148	<0.001**
	Ns	53.41	4.70	0.59	54.0	6.25	43	61	64	
Courage	ICs	42.72	7.27	0.60	43.5	11.0	21	59	147	<0.001**
	Ns	50.91	5.30	0.66	51.0	6.0	35	63	64	
Patience	ICs	43.20	3.80	0.31	44.0	5.0	29	50	148	0.003*
	Ns	41.80	3.39	0.42	42.0	4.25	35	49	64	
CAI	ICs	143.74	11.05	0.91	145.0	13.25	111	175	148	0.089*
	Ns	146.11	9.17	1.15	147.5	14.25	127	163	64	

SD - Standard deviation; SE - Standard Error; IQ - Interquartile Interval; *Mann-Whitney test; **t test; CAI- Caring Ability Inventory

The correlation between CAI dimensions showed that all of them are positively correlated with the instrument, although the *Courage* and *Patience* dimensions are not correlated. The dimension *Knowledge* is positively correlated with *Patience* and negatively with *Courage*. Therefore, the greater the *Knowledge*, the greater the *Patience* and the lower the *Courage* (Table 3).

Table 3. Spearman's analysis of correlation between CAI instrument and its dimensions

Correlation variable pairs	Estimates	p-values
CAI vs. Knowledge	0.60	<0.001
CAI vs. Courage	0.60	<0.001
CAI vs. Patience	0.58	<0.001
Knowledge vs. Courage	-0.19	0.007
Knowledge vs. Patience	0.60	<0.001
Courage vs. Patience	-0.09	0.206

CAI-Caring Ability Inventory

Exploratory factor analysis showed that the first three components added together explain only 29% of the total variance (37 items), and a modification occurred in the composition of the original dimensions. While excluding the items with non-significant factor loadings, the configuration of dimensions changed as follows: the *Courage* dimension remained with 11 items (all of them equal to the original dimension), *Knowledge* resulted nine items (five from the original dimension), and *Patience* remained with six items (only two from the original dimension). Based on this analysis, the instrument would have 26 items.

Additional analysis of the internal consistency of this new configuration of instrument dimensions showed values for Cronbach's alpha similar to those for the original version (*Knowledge* = 0.75, *Courage* = 0.72, and *Patience* = 0.65).

Discussion

The basic structure of the original instrument regarding number, order, and content of statements was maintained. Adequacy of the Portuguese ver-

sion to the construct is evidenced by the agreement (86.5%) in content validation by the expert committee. Establishing the committee in the first stage of cultural adaptation and the fact that almost all of its members knew the theoretical foundations that sustain the construction of both instrument and construct under analysis, contributed for them to consensually decide the few differences found in interpreting the translation and back translation of the statements.

Regarding reliability of the adapted instrument, a good internal consistency (Cronbach's alpha: 0.78) was observed. This allows us to state that the domains of the instrument and its items are inter-related, measuring the construct under analysis, although the value is smaller than those of the original study⁽⁹⁾ and Spanish version.⁽²⁰⁾

In the analysis of construct validity, a statistically significant difference between ICs and nurses was observed in all dimensions of the instrument (*Knowing* and *Courage* $p < 0.01$; *Patience* $p < 0.003$), and those related to *Knowledge* and *Patience* were positively associated with the ICs. This result may be related to the profile of ICs who participated in the study. They took care of patients for a long time (1-5 years), thus contributing not only to a greater closeness and the tolerance between caregivers and cared people but also to deepen the knowledge of themselves and the other according to the guiding assumptions of the instrument.

In the dimensions in which the ICs showed better performance (*Knowledge* and *Patience*), emphasizing the expressive aspects of care (without neglecting the instrumental ones) is necessary in the ongoing process of training and education of nurses. In the professional practice, nurses should prioritize the care of themselves and the other. However, a gap is observed in the care that they provided when they prioritize the technical procedures and those related to the unit's management instead of the humanistic care. Possibly, this arises from the formation process, which prioritizes the instrumental care as a way to meet the service demands, which are supported by institutional processes and legitimized by rules and routines. Studies point out that nursing education is fragmented, compartmental-

ized, and modulated by instrumental but not emotional skills, a fact that hampers the inter-subjective approach of care praxis.⁽²¹⁻²³⁾

A study conducted to evaluate the differences and level of ability to care as practiced by pharmacists, according to their gender, education level, years of experience and clinical practice, identified a positive and significant correlation between years of practice and CAI score. Pharmacists who were close to patients and those who provided clinical care obtained scores significantly higher than pharmacists involved only in drug management and distribution.⁽¹³⁾

In the present study, nurses' responses were significantly associated with the dimension *Courage* ($p < 0.001$), which is understood by Mayeroff as "being the caregiver's ability to face the unknown - the person to be cared for". Ability to face the unknown requires believing in the growth of the other and his/her own. On the other hand, without the courage to launch into the unknown, such belief would be impossible.⁽¹⁰⁾

In this context, stressing the need to instrumentalize caregivers to care for their family members is important as they experience the physical decline of the person cared for them and the hopelessness of realizing that their efforts are not effective to cure and/or minimize the pain or discomfort of the other. Studies that analyzed the care ability of caregivers of people with chronic disease point out the need for social support, as helplessness feelings experienced over time can, depending on the situation, diminish the caregiver's courage to face the care adversities.^(6,24)

Statistically significant difference was not found between ICs and nurses in the overall score when using the translated instrument. This result is positive, as it indicates that the translated instrument can be applied to professionals and lay caregivers. The diagnosis of care skills achieved through evaluation in the three dimensions allows highlighting the aspects that should be strengthened in the different groups.

An international study used the instrument in the Spanish version to evaluate the effectiveness of a program for the development of care skills in relatives of people with chronic disease, pointed out

that the recognition of needs and potentialities allows to better understand how support to individual and group caregivers can be strengthened.⁽²⁵⁾ Given the considerations on the validity of known groups presented here, we can state that the CAI was able to distinguish between nurses and ICs.

The factor analysis, which was performed to verify the construct validity and confirm the three dimensions of the adapted instrument, showed that the correlations between instrument items and dimensions explain only 29.3% of the variations, thus indicating the need to include variables that were not taken into account in the questionnaire. These results were confirmed by analysis of the appropriate weighting for each question in each of the three instrument dimensions, which were not grouped in a manner similar to what was preconized by the author and did not maintain the same number of statements as in the original groups.

On the other hand, regarding the relationship between the CAI instrument and its dimensions, the Spearman correlation coefficient showed that all dimensions had a positive correlation with CAI and a high level of statistical significance, thus confirming the pertinence of dimensions and their items in relation to the construct which was evaluated.

Differences between the study populations included in the evaluation of psychometric properties of the original instrument could have influenced this result. In the original instrument, the populations comprised nurses (75) and nursing students (527) and in the Portuguese version, the populations comprised nurses (64) and ICs (148). Beyond the difference between the care skills formally acquired by nursing students and those acquired by ICs in their daily practice, the ratio between students and nurses in the original study (1/7.0) was much greater than that between ICs and nurses in the present study (1/2.3).

Another relevant feature of this instrument is its structure, which includes 37 statements that do not discriminate the dimensions into which they are distributed. Thus, the experts and subjects who participated in the validation process analyzed each statement of the instrument relative to the main construct, [i.e.,] the care skills, but not its dimen-

sions in particular. In this context, a possibility was also considered that the new conformation of items in each dimension of the instrument is related to the theoretical share of some of its components, thus causing their migration.

Finally, the fact that a reduction occurred in the Likert scale score (from seven in the original to five in adapted version), could have influenced the results.

Non-availability of other studies on the reliability and validity of CAI performed in Brazil is one of the limitations of this study. Publications in Spanish, which used the instrument to investigate the care provided by relatives of children with cancer⁽²⁶⁾, analyze the effects of an educational program for caregivers^(24,25), and improve care,⁽²⁷⁾ described difficulties in understanding and analyzing the instrument. This has motivated its review with the aim of improving its translation and therefore its psychometric qualities. In this context, a new instrument, with important changes in its theoretical structure, was developed to measure the caregivers' care skills and subjected to face and content validation.⁽²⁷⁾ This shows the need for further studies on the concept of care ability, so that the instruments developed for its measurement are in conformity with the environment in other cultures where they will be used. We propose to conduct a multicenter study to deepen the dimension validation process in order to improve this instrument. We believe that this is a major challenge for its use in practice. However, given the characteristics of chronic diseases and involvement of caregivers in providing care availability of the instrument in Brazil is important. Furthermore, we emphasize the possibility of its use in teaching, research, and health services to identify the potentialities and weak points regarding the caregivers' care abilities and then develop strategies to support them in their tasks of providing humane and safe care for both the being cared for and caregivers.

Conclusion

The translation and cultural adaptation of the Caring Ability Inventory yielded an instrument adapted to the Brazilian culture, and the pre-test

confirmed that its application in Brazil is possible. Evaluation of the psychometric properties allowed us to see that the Brazilian version is reliable, has temporal stability, and internal consistency to assess the caregivers' care abilities. When the construct validity was verified by factor analysis, it was found that the items in each of the instrument dimensions were not grouped together identically to the original inventory and did not keep the same number of items. However, the dimensions and their respective components were found to be correlated by means of the factor loadings, which remained grouped.

In the validation of known groups significant difference was not found between nurses or caregivers for the instrument as a whole. However, difference was observed in the analysis of its dimensions, showing that higher scores were obtained by ICs in the dimensions *Knowledge* and *Patience*, and nurses in *Courage*. At the end of the analyzes, the CAI instrument remained with the 37 original items, but its score on the Likert scale was changed from 7 to 5 points. The psychometric properties of CAI were demonstrated, confirming that assessing the caregivers' care abilities in Brazil is possible. However, continuing the studies to consolidate the process for validation of the new instrument configuration is important.

Collaborations

Rosanelli CLSP, Silva LMG, e Gutiérrez MGR declare that they contributed to the design and development of the research, data interpretation, writing, relevant critical review of the intellectual content, and final approval of the version to be published.

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