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RESEARCH ARTICLE (ORIGINAL)

Brazilian cross-cultural adaptation of the Resilience Safety Culture

Adaptação transcultural brasileira do Resilience Safety Culture
Adaptación transcultural brasileña de Resilience Safety Culture

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Abstract
Background: In health systems, institutional resilience refers to the workers' ability to adapt to preserve their healthy relationship with their work in fast-changing and unpredictable environments.
Objective: To carry out the cross-cultural adaptation of the Resilience Safety Culture for Brazil and healthcare organizations.
Methodology: Methodological study with a six-step adaptation and validation process. The instrument was applied to 145 health professionals in a public hospital.
Results: In the cultural adaptation, the items were adjusted based on the expert judges' analysis with a global content validity index of 0.95 and an internal consistency of 0.91. Confirmatory factor analysis suggested a good-fitting model (X^2/dl = 5.315; SRMR = 0.079; TLI = 0.92; CFI = 0.93; RMSEA = 0.019).
Conclusion: The Brazilian version proved to be valid and reliable with 42 items arranged in 10 domains, differing from the original model. The adapted version should be used in other samples to verify the validity and reliability achieved in this study.

Keywords: organizational culture; validation study; psychometrics; translating; factor analysis, statistical

Resumo
Enquadramento: Nos sistemas de saúde, a resiliência institucional refere-se à adaptação dos trabalhadores, de forma a preservar a relação saudável entre a pessoa e o seu trabalho num ambiente com considerável transformação e imprevisibilidade.
Objetivo: Realizar a adaptação transcultural da *Resilience Safety Culture* para o Brasil e para as organizações de saúde.
Metodologia: Estudo metodológico, cujo processo de adaptação e validação seguiu 6 etapas. O instrumento foi aplicado a 145 profissionais de saúde num hospital público.
Resultados: Na adaptação cultural, os itens foram ajustados conforme análise dos juízes com coeficiente global de validade de conteúdo de 0,95 e consistência interna dos itens 0,91. A análise fatorial confirmatória sugeriu um modelo com índices adequados (X^2/dl = 5,315; SRMR = 0,079; TLI = 0,92; CFI = 0,93; RMSEA = 0,019).
Conclusão: A versão brasileira foi considerada válida e confiável, com 42 itens dispostos em 10 domínios, divergindo do modelo original. Recomenda-se que a versão adaptada seja utilizada em outras amostras, a fim de averiguar a sua validade e confiabilidade alcançadas neste estudo.

Palavras-chave: cultura organizacional; estudo de validação; psicometria; tradução; análise fatorial

Resumen
Marco contextual: En los sistemas de salud, la resiliencia institucional se refiere a la adaptación de los trabajadores para preservar la relación saludable entre la persona y su trabajo en un entorno de considerable transformación e imprevisibilidad.
Objetivo: Realizar la adaptación transcultural de la *Resilience Safety Culture* para Brasil y para las organizaciones de salud.
Metodología: Estudio metodológico, cuyo proceso de adaptación y validación siguió 6 etapas. El instrumento se aplicó a 145 profesionales de la salud en un hospital público.
Resultados: En la adaptación cultural, los ítems se ajustaron de acuerdo con el análisis de los jueces, con un coeficiente global de validez de contenido de 0,95 y una consistencia interna de los ítems de 0,91. El análisis factorial confirmatorio sugirió un modelo con índices adecuados (X^2/dl = 5,315; SRMR = 0,079; TLI = 0,92; CFI = 0,93; RMSEA = 0,019).
Conclusión: La versión brasileña se consideró válida y fiable, con 42 artículos dispuestos en 10 dominios, que difieren del modelo original. Se recomienda que la versión adaptada se utilice en otras muestras para verificar la validez y fiabilidad conseguidas en este estudio.

Palabras clave: cultura organizacional; estudio de validación, psicometría; traducción; análisis factorial

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Introduction

The concept of patient safety emerged more than two decades ago and has been explored by researchers because it is associated with the absence of harm and implies a reactive approach from the institutions (Braithwaite, Hollnagel, & Hunte, 2019). Thus, in contrast to this definition, the concept of resilience in health services focuses on the positive aspects and the skills and competencies of the professionals who do the right thing.

When resilience is understood as a capacity, it means that it is not a fixed concept but a dynamic one that varies and can change continuously (Tjoflåt & Hansen, 2019). Therefore, institutions with high levels of resilience not only develop strategies to avoid error, but they also redefine them to eliminate it by adopting an attitude of learning and encouragement, rather than only a punitive attitude.

Despite the increasing research on safety culture in health institutions, studies on resilience in the health system are still scarce. The instruments used to assess institutional resilience were designed for the area of engineering, thus creating the need to investigate institutional resilience in the health area. Given this context, this study aimed to perform the cross-cultural adaptation of the Resilience Safety Culture (RSC) instrument for health organizations in Brazil.

Background

Resilience is a concept resonating with the current moment in history where several situations, including pandemics and financial disturbances, have become part of our expectations, requiring the ability to anticipate and adapt to uncertain and potentially fast-changing environments (Coze, 2019).

The term institutional resilience derives from resilience engineering and is defined as a new direction for maintaining safety in complex systems (Braithwaite et al., 2019). It refers to the workers' ability to adapt to ensure a healthy relationship with their work in a changing and unpredictable environment, such as the health area.

Resilience is a construct that can be assessed, and the RSC scale was developed based on the dimensions of safety culture and resilience engineering (Shirali, Shekari, & Angali, 2018). However, it is an instrument developed for engineering, and no such instruments were found in the health area.

Thus, to provide a valid and reliable instrument for assessing institutional resilience, this study aimed to adapt the RSC instrument for Brazil and health institutions. This instrument was chosen because it had good psychometric properties (KMO = 0.88; X^2 = 9951; $p < 0.001$) and a Cronbach's alpha of 0.94, demonstrating Acceptable reliability and validity (Shirali et al., 2018).

Methodology

A methodological, cross-sectional study was conducted for the cross-cultural adaptation and validation of the RSC instrument. The study followed these steps to achieve the proposed objective: cross-cultural adaptation and content validity and analysis of psychometric properties.

The RSC instrument contains 66 items arranged in 13 domains: Just Culture; Management of change; Learning culture; Risk assessment/management; Preparedness; Flexibility; Reporting culture; Management commitment; Awareness; Safety management system; Accident investigation; Involvement of staff; and Competency (Shirali et al., 2018). The answers are rated on a 5-point Likert scale ranging from (A) *strongly disagree*, (B) *partially disagree*, (C) *partially agree*, (D) *strongly agree*, to (E) *does not apply*.

Before starting the study, permission was requested from the original scale's author, who agreed with its cross-cultural adaptation for the health field and Brazilian Portuguese.

The cross-cultural adaptation of the original version to the Brazilian health context followed the process proposed by Beaton, Bombardier, Guilemin, and Ferraz (2000).

In the initial translation, two independent bilingual translators, whose mother language was English, translated the instrument into the target language – Brazilian Portuguese. Each of them produced a different version called T1 and T2. One of the translators (T1) had a degree in Portuguese and English languages and did not know the construct studied. The other translator (T2) was a health professional with experience in the translation of instruments.

The researchers performed a synthesis of the translated versions to obtain a single version approved by T2 and called ST12.

In the back-translation, the ST12 version was translated from Portuguese into English by two other independent translators whose mother tongue was the instrument's original language. Both of them were unfamiliar with the construct studied. Each translator produced a version called BT1 and BT2. In the end, another bilingual, non-native translator created a synthesis version called BT12.

After the back-translation, the syntheses - ST12 and BT12 - were sent to a committee of experts/judges composed of 10 health professionals from different Brazilian regions with experience in safety culture and cross-cultural adaptation of instruments in the health area. The number of judges was defined according to Lynn's recommendations (1986) of a minimum of five and a maximum of 10 participants in this process.

The experts received a questionnaire via e-mail and evaluated the instrument's semantic, idiomatic, conceptual, and cultural equivalence. Content validity was assessed using the content validity index (CVI), which should be ≥ 0.8 (Alexandre & Coluci, 2011). The experts also added comments and suggestions in the formulation of the items.

The next step was the pre-test with the target population: health professionals of a tertiary hospital of excellence in transplants, neurosurgeries, and specialized clinical treatment in the state of Ceará. The following inclusion criteria were used: working in the sector for at least 6 months and working at least 20 hours per week on-site.

The professionals who were on holidays, medical leave, or not present at the time of data collection were excluded from the study.

Thirteen health professionals (three physiotherapists, three nurses, two nursing technicians, two pharmacists, two speech therapists, and one occupational therapist) participated in this stage. The professionals carried out the validation process until the absence of new recommendations. This criterion was followed to determine the number of professionals included in this study.

The instrument was applied to 145 health professionals to assess its psychometric properties. The sample was selected using a non-probability convenience sampling method. The professionals were invited to participate in the study and selected according to the same inclusion and exclusion criteria of the pre-test stage. A sample of at least 100 respondents is enough to perform a factor analysis (Hair, William, Babin, & Anderson, 2009).

The instrument's reliability was measured using Cronbach's alpha, which assesses the internal consistency of the items. Values above 0.70 are acceptable (Taber, 2018).

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to measure construct validity. Initially, Kaiser-Meyer-Oklin tests (significant when KMO above 0.6) and Bartlett's test of sphericity (significant *p*-value) were performed to verify the sample's adequacy.

A principal components analysis (PCA) was performed in the EFA, with Varimax rotation and retention of items with factor loadings above 0.5 (Hair et al., 2009).

In the CFA, the following indices were calculated: (a) the Chi-square value (X^2) with degree of freedom (df), in which a value below 5.00 is considered acceptable; (b) the Root Mean Square Error of Approximation (RMSEA), in which values below 0.05 suggest a good fit of the model; (c) the Standardized Root Mean Square Residual (SRMR), whose cutoff value is 0.08 and the closer to zero, the better the model fit; and (d) the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI), whose recommended values are above 0.90 (Hair et al., 2009).

Data were organized and processed using IBM SPSS Statistics software, version 19.0, and factor analysis was performed using the R package Lavaan software. The study was approved by the Ethics and Research Committee of the General Hospital of Fortaleza and obtained favorable opinion no. 2,674.967, CAEE: 85929618.5.3001.5040. All participants signed the consent form and ensured anonymity.

Results

After permission was requested for the cross-cultural adaptation of the instrument to Brazil, the instrument's translation and adaptation lasted 12 months. The translation and back-translation phases lasted 4 months. Then, the experts validated the content, the instrument was applied, and its psychometric properties were assessed.

The experts' committee was composed almost entirely of female participants, with a mean age of 41 years, predominantly nurses, but it also included a physician and a nutritionist. The professionals worked in public and private education and health institutions in the Northeast, Southeast, and Midwest regions of Brazil.

Regarding content analysis, the instrument obtained a content validation index of 0.95 for the total instrument and values ranging from 0.80 to 1 for each item. Twenty-one (31.8%) of the 66 items obtained an agreement index of 1.0. The items with the lowest agreement index were items 29, 45, 55, and 56.

During the translation process, the title of the instrument was translated into Brazilian Portuguese, *Questionário de Cultura de Segurança Resiliente*, but the experts' committee suggested keeping the original name of the instrument - *Resilience Safety Culture - RSC*, adding the expression *versão brasileira* to facilitate its search in databases. The experts' committee also suggested changing the instrument's header, that is, changing the sentence *pensando na sua "unidade" como local de trabalho que você passa a maior parte do tempo* to *pensando na unidade em que você trabalha a maior parte do tempo*. In item 8, suggestions were made to add the definition of "Management of change" at the beginning of the questionnaire, and, as in item 45, examples were added to give a more practical definition of the item.

The term *relatar* (report) was standardized as *notificar* (notify) because report does not necessarily imply notify, and it is not enough for records, analysis, and preventive measures. In item 14, it was suggested to add the World Health Organization's taxonomy of *incidentes e falhas* (incidents and failures) at the beginning of the questionnaire, and in the item, use *incidentes e falhas* instead of using the word *erro* (error; World Health Organization, 2009).

The other changes relate to the composition of sentences and spelling and grammar corrections.

Table 1 describes the changes suggested by the experts' committee, including the original version and the version of the item after the experts' suggestions, as well as the CVI of each item.

Table 1
Changes in the items according to the experts' committee (n = 10)

Items	Original version	Final version after the experts' suggestions	CVI item
Title	Resilience Safety Culture (RSC)	Resilience Safety Culture (RSC) versão brasileira	1.0
	Please answer the following items with respect to your specific unit. Choose your responses using the scale below:	Por favor, responda os itens a seguir pensando na unidade em que você trabalha a maior parte do tempo. Use a escala a seguir para responder aos itens:	1.0
8	I believe the management of change was performed in my workplace as well	Eu acredito que no meu local de trabalho haja gestão das mudanças. (Por exemplo, ao ser inserida uma nova tecnologia na unidade a equipe é devidamente treinada).	0.95
29	I can report near misses without concern and fear.	Posso notificar "*near miss" ou* "quase erro" sem preocupação e medo.	0.85
30	Incidents that occur in the company have always been reported.	Incidentes que ocorrem na unidade sempre são notificados.	0.97
45	In a major emergency condition for important decision making (such as stopping production), permission from my supervisor is necessary.	Numa condição de emergência, na qual preciso tomar uma decisão (como por exemplo, interromper a assistência), preciso da permissão do meu supervisor.	0.85
55	Administrative paperwork influences my workplace's safety/resilience	As normas, rotinas, procedimentos e protocolos influenciam na segurança/resiliência do meu local de trabalho	0.80
56	Information about the flaws and shortcomings of the system must be reported to the competent people of the organization.	As informações sobre falhas e deficiências do sistema de trabalho devem ser reportadas às pessoas responsáveis na organização.	0.82

Note. CVI = Content Validity Index.

For the analysis of the psychometric properties, 145 health professionals filled out the questionnaire, mostly women (84.8%), with a mean age of 33 years. Table 2 shows the characteristics of the professionals who participated in this study.

Table 2
Sample profile in clinical validation (n = 145)

Variables		*n*	(%)
Gender	Male	22	15.2
	Female	123	84.8
Age group	18-40	113	77.9
	41-60	32	22.1
Length of Experience	7 to 11 months	26	17.9
	1 to 4 years	53	36.6
	5 to 10 years	50	34.5
	11 to 20 years	9	6.2
	21 years or more	7	4.8
Employment Contract	State	20	13.8
	Informally employed	119	82.1
	Formally employed	6	4.1
Carga horária semanal de serviço	20 weekly hours	8	5.5
	21 to 39 hours	79	54.5
	40 to 59 hours	35	24.1
	60 to 79 hours	17	11.7
	80 weekly hours or more	6	4.1
Professional Category	Physician	8	5.5
	Resident physician	3	2.1
	Nurse	49	33.8
	Nurse technician	51	35.2
	Pharmaceutic	3	2.1
	Nutritionist	2	1.4
	Physical Therapist	23	15.9
	Occupational Therapist	2	1.4
	Speech Therapist	2	1.4
	Social Assistant	2	1.4
Academic Title	Technician	51	35.2
	Bachelor's degree	16	11.0
	Specialization degree	71	49.0
	Master's degree	5	3.4
	Doctoral degree	2	1.4

Cronbach's alpha for the total *RSC – versão brasileira* was 0.91. Four domains had an alpha higher than 0.70. The domain Competency had the highest internal consistency (0.80). The three domains of Awareness (0.31), Involvement of staff (0.33), and Safety management system (0.48) had values lower than the recommended values. Table 3 presents the scores obtained in the overall questionnaire and the domains.

Table 3
Internal consistency of the questionnaire and the domains of the RSC – versão brasileira

Domains of the Resilience Safety Culture (RSC)	No. of items	Items	Cronbach's alpha
RSC versão brasileira			0.94
Management of change	6	1,2,3,4,5,6	0.69
Just culture	7	17,18,20,21,22,23,24	0.79
Learning culture	6	57,58,59,60,61,62	0.72
Risk assessment/management	5	9,11,12,15,16	0.67
Preparedness	4	49,50,51,53	0.70
Flexibility	6	33,42,44,45,46,47	0.66
Reporting culture	4	25,29,30,31	0.63
Management commitment	6	34,35,36,37,38,40	0.76
Awareness	3	41,43,48	0.31
Safety management system	3	52,54,56	0.48
Accident investigation	3	10,13,14	0.61
Involvement of staff	3	27,28,32	0.33
Competency	3	63,64,66	0.80
Items without a domain	7	7,8,19,26,39,55,65	0.59

KMO was 0.81 and, in Bartlett's test of sphericity, the X^2 was 5987,6; $df = 2145$ and $p < 0.000$. These results reveal that the sample is suitable for factor analysis.
In the EFA, a principal components analysis was used for factor extraction. Thirteen components explained 60.7% of the total variance for each factor, and 23.4% loaded on the first factor. The correlation matrix was rotated by the Varimax orthogonal method, using the 66 items that loaded on their factors. For each factor, items of several domains of the original scale were grouped. Table 4 shows the groupings of items in the components.

Table 4
Results of the rotated component matrix

Factors	Items
1	Just Culture (items 21,23,24), Flexibility (item 44) and Reporting Culture (item 25)
2	All of the items from the domains Competency (items 63,64,66), Learning Culture (item 62) and 1 item that did not belong to any domain in the original scale (item 65)
3	All of the items from the domains Accident Investigation (items 10,13,14) and Risk Assessment/Management (items 11,15)
4	Preparedness (items 50,51,53) and Safety Management System (item 52)
5	Management Commitment (items 38,40), Risk Management (item 16) and items that did not belong to any domain (items 39,28)
6	Reporting Culture (item 35), Flexibility (item 33) and Just Culture (item 20)
7	Management of Change (items 1,2,4) and 1 item that did not belong to any domain (item 8)
8	Flexibility (item 42) and 1 that did not belong to any domain (item 19)
9	Learning Culture (items 57,58) and Reporting Culture (item 34)
10	Just Culture (items 17,18) and Safety Management System (item 56)
11	One item that did not belong to any domain (item 26)
12	One item from the domain Preparedness (item 48)
13	One item from the domain Flexibility (item 45)

Three structural equation models (SEM) were developed in the CFA to verify the most appropriate model fit according to the theoretical and methodological criteria. The first model includes all items of the *RSC versão brasileira*, regardless of factor loading, grouping all loads into a single factor and considering the unidimensional scale due to the explained variance of the first factor in relation to the other factors. Despite presenting a satisfactory RMSEA value (0.017), the SRMR, CFI, and TLI indexes (0.093, 0.922, and 0.919, respectively) were insufficient to fit the model.

The second model includes only items with a factor loading above 0.5, and all loads were grouped in a single factor. Unlike the first model, this model had insufficient X^2/df and RMSEA values (12.2 and 0.032, respectively).
The third model derives from the EFA, including factor loadings above 0.5. Initially, 13 components were proposed following the original instrument's model, but factors 11, 12, and 13 saturated with a single item in the component, which made it impossible to estimate the model. Therefore, to solve this problem, the items were relocated according to the relevant literature. Item 48 was allocated to factor 4, item 26 was allocated to factor 5, and item 45 was allocated to factor 8.
The last model tested had adequate values in all indices, drawing closer to the original scale's values. This model was the one chosen as a suggestion for the adapted version of the RSC for Brazilian Portuguese and the health area. Table 5 shows data on the modeling in the CFA.

Table 5
Summary of the CFA for the three models and the fit indexes

	X^2/d.l*	₊SRMR	±TLI	±CFI	₊RMSEA
1st Model	5.84	0.093	0.919	0.922	0.017
2nd Model	12.2	0.073	0.931	0.938	0.032
3rd Model	5.31	0.079	0.928	0.935	0.019

Note. SRMS = Standardized Root Mean Square Residual; TLI = Tucker Lewis Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation. Reference values: * X^2/df: below 5.00; ₊SRMR and RMSEA: below 0.08; ±TLI and CFI: above 0.9.

Discussion

The use of an instrument, both in the source language and in an environment different from the original one, requires a translation and cross-cultural adaptation process to verify the necessary equivalences and allow the application of a reliable scale that keeps the same characteristics as the original one.
Therefore, in the cross-cultural adaptation of the RSC instrument, the composition of the group of multiprofessional experts with extensive training and experience in the area from different regions of Brazil contributed to obtaining a comprehensive, rigorous, and credible evaluation of the instrument.
This regional diversification of experts is essential in this type of study due to the heterogeneity of the Brazilian population and the use of various regional expressions, which may be unfamiliar to the rest of the country. In addition, the experts' training and professional experience in the area allow greater legitimacy to the process (Arthur et al., 2018).
Considering the changes suggested by the experts, the definition of "Management of change", which is an unusual word in the health environment, was added, as well as the word incident at the beginning of the instrument. The term "Management of change" refers to how we guide, prepare, equip, and support individuals to make successful changes. The management of change practices are organizational interventions that facilitate changes and, when used in the health field, can help management introduce new technologies, routines, or procedures (Machado & Neiva, 2017).
Regarding the term "incidents", in 2009, the World Health Organization developed the International Classification for Patient Safety to standardize a set of patient safety concepts. It defined an incident as "an event or circumstance that could have resulted, or did result, in unnecessary harm to a patient" (Agência Nacional de Vigilância Sanitária, 2014, p. 7). This classification aims to organize information into a structure that enhances the identification, prevention, detection, and reduction of risks within the health system. However, the reduction of incidents is still a major challenge for quality health care. During cross-cultural adaptation, it was also necessary to standardize the term "notify" instead of "report" because the notification of incidents, adverse events, and technical complaints is considered a mandatory act in health organizations. Therefore, it is imperative to disseminate and stimulate practice in daily life. Other researchers who conducted cross-cultural adaptation studies have already inserted examples, as was done in some items in this study (Zambardi et al., 2019; Gonçalves, Arciprete, Barroso, & Pillon, 2018).
Finally, after the experts' committee's assessment, the scale adapted for Brazil proved to have semantic, idiomatic, cultural, and conceptual equivalence. Medeiros et al. (2015) and Souza, Alexandre, and Guirardello (2017) stress the need to combine content validation with other validation types. The instrument went through the construct validation process. During the pre-test with the target population, the instrument suffered no chances, the items were clear, and it was considered interesting and relevant to the topic under analysis.
In the clinical validation of the instrument, the predominance of women among the study participants is justified by the greater presence of women than men in health professions, especially in nursing, and because women are culturally associated with patient care, which in a way influences their decision to choose professions with that purpose (Marinho, Paz, Jomar, & Abreu, 2019).
Regarding the participants' academic title, the majority of the professionals were specialists, which may be because it was a tertiary institution of excellence in specialized care where professionals working in specific sectors are

expected to master their specialty. This addition to the professional curriculum should be encouraged, as it enables personal improvement and development and can be applied in the professional's practices at the institution (Costa et al., 2014).

In the reliability analysis, through the item's internal consistency, the Cronbach's alpha value of the adapted version was very close to that of the original version (Shirali et al., 2018), with inter-domain variation from 0.31 (Awareness) to 0.80 (Competency). In the RSC's original version, the inter-domain variation ranged from 0.67 (Competency) to 0.91 (Preparedness). It should be noted that, in the adapted version, the Competency domain had the highest internal consistency, as opposed to the result of the original version, where it had the lowest internal consistency. It is believed that the items in this domain represent the construct more reliably in the health field. Thus, the instrument is homogeneous, has good consistency and a strong inter-item correlation. Reliability is not a fixed property of the instrument; it may vary according to the instrument's objective, the population, the context, and the instrument may not even be considered reliable according to the different conditions. In this application, even with the change of context, the instrument was consistent (Medeiros et al., 2015).

Concerning the construct analysis, Hair et al. (2009) state that, in the SEM, sample size can affect the model because the analysis of covariance is based on theories with large samples. Thus, hypothetical models can be underestimated. In this way, the model proposed for the Brazilian sample can be reformulated based on new validation studies with larger samples.

Finally, the different structure of the factors in the Brazilian version of the RSC and those in the original version is explained by the relocation of single items in the last three dimensions. Based on relevant literature to the construct, it was possible to allocate the items to more similar and representative factors. Other cross-cultural adaptation studies also found a different number of factors between the proposed models and the original version, reiterating that the changes occur according to the study population (Gonçalves et al., 2018; Stacciarini & Pace, 2017).

A limitation of this study is the lack of studies on the process of translation, adaptation, and validation, including the application of the RSC instrument in other countries and health institutions, making it difficult to discuss and compare results. Another limitation is the sample size in its external validation. As a scientific advancement, this study offers the first instrument in Portuguese language for assessing institutional resilience in the health area, and its use can trigger resilience in health organizations and, thus, maintain patient safety.

Conclusion

The *RSC versão brasileira* is the first valid and reliable version, regarding the items' internal consistency, capable of measuring resilience in health institutions. In the version adapted to Brazilian Portuguese, the instrument had 41 items and six dimensions.

This research concludes one of the stages of the RSC validation process for Brazil and health institutions, but the process is not completed in this study. On the contrary, it implies continuity and can be further explored in other studies with larger samples. It is expected that this instrument will support the research on the vulnerabilities and potential of professionals and management, given the dynamic health scenario, and thus contribute to the improvement of the organizations' adaptive capacity, increasing the quality and excellence in care delivery.

Author contributions

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