Stressors at the intensive care unit: the brazilian version of the Environmental Stressor Questionnaire

ESTRESSORES EM UNIDADE DE TERAPIA INTENSIVA: VERSÃO BRASILEIRA DO *THE ENVIRONMENTAL STRESSOR QUESTIONNAIRE*

ESTRESORES EN UNIDAD DE TERAPIA INTENSIVA: VERSIÓN BRASILEÑA DEL *ENVIRONMENTAL STRESSOR QUESTIONNAIRE*

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ABSTRACT

The objective of the present study was to perform the cultural adaptation of The Environmental Stressor Questionnaire - ESQ for the Brazilian Portuguese, as well as to verify its reliability and validity. In order to ensure the equivalence between the original instrument and the Brazilian version, all methodological steps recommended in the literature regarding cultural adaptation were followed. The Brazilian version of the ESQ was applied to 106 ICU patients in two hospitals (public and private) in the interior of São Paulo State. Reliability was evaluated in relation to internal consistency and stability (test e retest) and the convergent validity was determined by the correlation between ESQ and generic questions about ICU stress. Reliability was satisfactory with Cronbach's Alfa = 0,94 and stability (ICC=0,861; IC95% 0,723; 0,933). ESQ total score displayed strong correlation with the generic questions about stress (r=0,70; p<0,0001), thus confirming the convergent validity. The conclusion was that the ESQ adapted for Brazilian culture is a reliable instrument for evaluation of stressors in the ICU.

KEY WORDS

Inpatients.
Intensive Care Units.
Stress.
Reproducibility of results.
Validity of tests.

RESUMO

Este estudo teve como objetivo realizar a adaptação cultural do The Environmental Stressor Questionnaire - (ESQ) para a língua portuguesa do Brasil e verificar sua confiabilidade e validade. Foram empregadas as etapas metodológicas recomendadas pela literatura para adaptação cultural. A versão brasileira do ESQ foi aplicada a 106 pacientes de Unidade de Terapia Intensiva (UTI) de dois hospitais, público e privado, do interior do Estado de São Paulo. A confiabilidade foi avaliada quanto à consistência interna e estabilidade (teste e reteste); a validade convergente foi verificada por meio da correlação entre o ESQ e questão genérica sobre estresse em UTI. A confiabilidade foi satisfatória com Alfa de Crombach=0,94 e Coeficiente de Correlação Intraclasse=0,861 (IC95% 0,723; 0,933). Constatou-se correlação entre o escore total do ESQ e a questão genérica sobre estresse (r=0,70), confirmando a validade convergente. A versão brasileira do ESQ mostrou-se uma ferramenta confiável e válida para avaliação de estressores em UTI.

DESCRITORES

Pacientes internados.
Unidades de Terapia Intensiva.
Estresse.
Reprodutibilidade dos testes.
Validade dos testes.

RESUMEN

Este estudio tuvo como objetivo realizar la adaptación cultural del Environmental Stressor Questionnaire (ESQ) a la lengua portuguesa de Brasil y verificar su confiabilidad y validez. Fueron empleadas las etapas metodológicas recomendadas por la bibliografía para la adaptación cultural. La versión brasileña del ESQ fue aplicada a 106 pacientes de Unidad de Terapia Intensiva (UTI) de dos hospitales, público y privado, del interior del estado de San Pablo, Brasil. La confiabilidad fue evaluada respecto de la consistencia interna y la estabilidad (test y retest); la validez convergente fue verificada a través de la correlación entre el ESQ y pregunta genérica acerca de estrés en UTI. La confiabilidad fue satisfactoria, con Alfa de Cronbach = 0,94 y Coeficiente de Relación Intraclase = 0,861 (IC 95%; 0,723; 0,933). Se constató correlación entre el puntaje total del ESQ y la pregunta genérica sobre estrés (r = 0,70), confirmado la validez convergente. La versión brasileña del ESQ se mostró como una herramienta confiable y válida para la evaluación de estresores en UTI.

DESCRIPTORES

Pacientes internos.
Unidades de Terapia Intensiva.
Estrés.
Reproducibilidad de resultados.
Validez de las pruebas.

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INTRODUCTION

The global literature evinces that the Intensive Care Unit (ICU) is a stressful place, where patients experience physical and psychological discomfort due to the environment characteristics, characterized by a large amount of equipment, professionals and procedures that interrupted the circadian cycle, hindering the patients' sleep and welfare[1].

Despite the lack of a consensus on the terminology and genesis of the psycho-affective and behavioral disorders that occur in ICU patients, it has been argued that scientific and clinical approaches about stress and stress disorders in these units would require the identification of stressors and stress-response measures[2]. Stressors are stimuli or situations that produce stress as response. The stress response is a physiological reaction caused by the perception of adverse and frightful situations that include responses in many somatic systems, depending on the intensity and quality of the stressors[2]. In ICUs, there are several conditions that can trigger stress responses in patients[3]. Any type of stressor or situation demanding physical or psychological adaptation, i.e., representing a threat or a challenge, is considered a stressor. Sleep deprivation, loneliness, fear and anxiety are considered psychological stressors. Also, subjection to healthcare professionals, the distress of relatives, impersonal treatment, insecurity and other situations causing anxiety and distress are mentioned. Among the environmental stressors, the unknown environment, noise and people are noted, among others[1]. Since most stressors are subjected to interventions to better adapt the patient to the ICU environment, an accurate assessment became an important challenge for healthcare professionals all over the world.

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Findings about the development and assessment of a scale that would measure stress in hospitalized patients – Hospital Stress Rating Scale, or HSRS[4] were published in 1973. Later, this scale was adjusted, resulting in an instrument named Ballard Q-short[5], developed to investigate how patients perceive the ICU stressors. The instrument was revised in 1985[6] with the inclusion of stressors related to intubation and ICU psychosis and named *Intensive Care Unit Environmental Stressor Scale – ICUESS,* with 42 items.

Another eight items were incorporated to this instrument according to suggestions from a previous study[7], resulting in a questionnaire with 50 items named *Environmental Stressor Questionnaire (ESQ)*[8].

In Brazil, it is worth noting the existence of the translated version of the ICUESS, with 42 items[9-10]. However, this version was simply translated into Brazilian Portuguese, without undergoing all the stages of the cultural adaptation process (back-translation, evaluation by a committee of experts and pre-testing) recommended by literature for the cultural adaptation of instruments.

Recently, studies were published in the national [11] and international[12-13] literature about the assessment of stressful factors in the ICU with the application of the ICUESS, reporting a satisfactory reliability. However, no studies were found in literature focusing on the application and assessment of the psychometric properties of the ESQ, with 50 items.

Considering the importance of the identification and measurement of stressor agents in ICUs to outline interventions that minimize the impact of such factors during the permanence of the patient in these units, it becomes relevant to create a measuring instrument that is psychometrically reliable and valid for Brazilian culture.

OBJECTIVES

The aim of the study was perform the cultural adaptation of the *Environmental Stressor Questionnaire (ESQ)* for Brazilian Portuguese and verify its reliability and validity.

METHOD

Study Design

This is a methodological study designed to develop a data collection instrument.

Study Place

The study was developed in two ICUs in two hospitals in the state of São Paulo, one public and the other private.

Subjects

Overall, 106 patients took part in the study, with admission periods varying between 72 hours and seven days in adult ICUs. This period is described in literature as the period where psychoaffective disturbs associated with ICU hospitalization arise[5]. The study subjects were oriented patients capable of effective verbal communication. Those with history of psychiatric disorders, cognitive deficits and previous ICU admissions were excluded.

Sample size

All the patients who met the inclusion criteria in the period determined for data collection were interviewed. The sample size was determined according to the analysis of the number of patients receiving care in ICUs and the variables that comprise the ESQ, being estimated in 100 cases.

Methodological procedure for the Cultural Adaptation of the ESQ

The methodological procedure for the cultural adaptation of the ESQ was performed according to the literature recommendations[14-15]. Permission was granted by the au-

thor to culturally adapt the instrument, which was submitted to the following stages of cultural adaptation process:

A) Translation of the ESQ into Portuguese: performed independently by two English-fluent translators, whose mother language was Brazilian Portuguese. Only one of the translators was informed about the conceptual structure and goals of the scale to be translated, according to the guidelines established in literature[14].

Considering that 40 items of the ESQ had already been translated into Brazilian Portuguese in a previous study (at that time under the name of ICUESS)[9], the current study focused on the translation of the last 10 items that were recently added to the ICUESS, resulting in the ESQ. The translated versions were analyzed and confronted by researchers and a mediator – a professional translator – until a consensus was reached. Afterwards, a single version with 50 items (40 of them translated in a previous study[9] and 10 translated in the present study), named translated ESQ version, was submitted to the other stages recommended for cultural adaptation, as seen below.

B) Back-translation: The 50-item translated version was submitted to back-translation by two other translators, whose native language was English. These translators had not been informed about the concepts and goals of the ESQ and had no formal education in the healthcare area. Two back-translated versions were obtained at the end of this stage. A synthesis of these two versions was carried out.

C) Evaluation of the Committee of Experts: The translated version and the back-translated versions of the ESQ were submitted to a Committee of **Experts** to evaluate the semantic, linguistic, cultural and conceptual equivalences, and clarity of the translated version of the ESQ.

The committee had five experts who were fluent in the Brazilian language and met at least one of the following criteria: knowledge and experience in cross-cultural adaptation and application of measuring instruments, being skilled in the recognition of English expressions and being fluent in Brazilian Portuguese. The experts analyzed the instrument with a scale of equivalence. The items rated as *not equivalent* or *not possible to evaluate* in the scale of equivalence were submitted to qualitative analysis, until the judges reached an agreement for the elaboration of the final version of the ESQ.

D) Pre-testing: The final version of the ESQ was applied to 30 ICU patients, in order to check its acceptability. After the pre-testing results were analyzed, the adapted version for the Brazilian Portuguese language was obtained.

Data Collection

The Brazilian version of the ESQ was administered to 106 ICU patients in two hospitals (one public and one private), from April to July 2006, according to the following stages:

• *First stage:* acquisition of data for sociodemographic and clinical characterization of the subjects, followed by a structured interview for the application of the Brazilian version of the ESQ.

• *Second stage:* performed five days after the first stage, consisted in the (re)application of the ESQ (re-testing) in 28 subjects who took part in the application of the Brazilian version of the ESQ (testing).

It was not possible to interview all the patients who took part in the test during the re-test, since the average ICU hospitalization time for these patients was 3.7 days, i.e., less than the recommended period for the re-test. As such, 28 subjects were interviewed in the re-test.

Data collection instrument

The following data collection instruments were used:

A) An instrument of *Clinical and Sociodemographic Characterization*, submitted to content validation;

B) *The Environmental Stressor Questionnaire – ESQ:* a modified version of the ICUESS, focused on the measurement of ICU stressors[8], with 50 items assessed with a 5-point likert-type scale: (1) not stressful; (2) moderately stressful; (3) very stressful; (4) extremely stressful and (0) not applicable, which may be used if the patient has not experienced some of the stressful event(s) listed in the ESQ[12]. The total score is obtained by means of the sum of the answers of the 50 items, with a possible range of 0-200, and, the higher the result, the higher the stress perceived by the patient. The average scores are calculated for each of the 50 items and ranked from the most stressful to the least stressful[12]. After answering the ESQ, the respondents are asked to choose the three most stressful factors of the 50-item list[8-10]. The ESQ also has two open-ended questions about suggestions of inclusion of items to the scale and comments about the instrument.

Data analysis

The data obtained were ported into the Excel for Windows/2003 software, and later for the Statistical Analysis System (SAS), v. 8.02 for the following analysis:

• **Reliability**: Internal consistency was evaluated using Cronbach's alpha coefficient. The criterion of alpha > 0.70 was established as evidence of satisfactory internal consistency reliability. Stability, i.e., the agreement between repeated measurements obtained by testing-retesting was evaluated using the Intra-class Correlation Coefficient (ICC). The criterion of ICC > 0.90 was established as evidence of stability[16].

• **Validity:** convergent validity of ESQ Brazilian version was tested against the score obtained with the application of the generic question (How stressful was it for you to be hospitalized at the ICU?) using Pearson's correlation coefficient. A four-point likert-type scale was used (4. Extremely stressful; 3. very stressful; 2. Moderately stressful and 1. Not stressful). Correlations near 0.30 were considered satisfactory; between 0.30 and 0.50 were considered of moderate magnitude and over 0.50, strong magnitude[17].

Ethical aspects

The research project was approved by the Research Ethics Committee, Faculty of Medical Sciences – State University of Campinas (Process #314/2005).

RESULTS

The study results are presented according to the stages of cultural adaptation recommended by international literature.

Evaluation of the Committee of Experts

Changes in the title, wording of some items, layout and orientations for filling out the Brazilian version of the ESQ were suggested at this stage. The proposed title for the Brazilian version of the ESQ, *Questionário de fatores de estresse ambiental*, was changed to *Escala de Avaliação de Estressores em Unidade de Terapia Intensiva*, considered more representative of the set of items and ESQ goals. For the instrument layout, the inclusion of dotted lines was suggested to separate each item and columns for the scores (extremely stressful, very stressful...), to make it easier for the respondent to visualize the items and the scoring scale. For the orientations on filling out the instrument, the need of elaborating a concise and clear text was noted, where it would be possible to distinguish between the presentation of the goals of the instrument and instructions for filling it out. Changes in item #2, *The nurse does not introduce herself by name*, due to the necessity of adaptation to the Brazilian reality, regarding the professional categories working at the ICU – the nurse and the nursing technician. The wording of the item was altered to include the expression *The member of the nursing staff*. The same was done for items #8 and #14.

Pre-testing assessment

Of the 30 patients studied at this stage, 16.6% had difficulties to understand item #39, *Feeling bored*; 6.6% (2/30) could not understand questions #37, *Not having control over yourself* and #47, *Being unable to perform your role in the family*; 3.3% of the patients could not understand item #23, *Not knowing when the procedures will be performed on you*, item #46 *Not knowing the time you will remain at the ICU* and item #50, *Feeling pressured to agree to the treatment*. This result was submitted to evaluation of the Committee of Experts and modified according to a criterion suggested in a previous study[18], which states that the wording of the questions should be revised when 15.0% of the patients object to the proposed wording. Therefore, item #39 was changed to *Feeling annoyed*.

Sociodemographic and Clinical characterization

All the 106 patients selected for the study were admitted into public (49.1%) and private (50.9%) ICUS of hospitals in the state of São Paulo. The sociodemographic and clinical characteristics of the studied subjects are shown in Table 1.

Table 1 – Sociodemographic and clinical characteristics of patients admitted in Intensive Care Units in hospitals in the State of São Paulo – Campinas, 2006

	(%)	Average (SD)	Median	Observed variation
Age (years)		57.4 (15.1)	59	18-85
Gender				
Male	56.6			
Female	43.4			
Education (years)		8.5 (4.5)		0-21
Employment				
Active	37.1			
Inactive	62.9			
Monthly individual income* (n=40)		3.7 (7.1)		
Monthly family income* (n=40)		5.9 (7.3)		
Religious beliefs				
Yes	90.5			
No	9.5			
Reason for ICU admission				
Cardio-circulatory diseases	68.9			
Digestive diseases	20.7			
Respiratory diseases	4.7			
Urinary system diseases	1.9			
Others	3.7			
Number of associated clinical conditions		2.2 (1.7)	2.0	0-7
Type of treatment				
Surgical	64.1			
Clinical	34.0			
Clinical and surgical	1.9			
Number of medications		7.1 (2.3)		1-13
Length of the ICU stay**		3.7 (1.2)		3-7

*Minimum wage; **in days Note: (n=106)

Slightly over half the subjects were male (56.6%), average age was 57.4% (± 15.1), with 8.5 (± 4.5) years of education. Most (68.9%) had cardio circulatory diseases, with an average of 2.2 (± 1.7) associated clinical conditions, 64.1% had been submitted to surgical treatment. Among all the patients, 69.8% used psychoactive medication, with 46.2% of them used an average of 0.99 (± 0.91). The average length of the ICU stay was 3.7 (± 1.2) days.

The ranking of the ESQ items, according to the average and median test scores (n=106) resulted in a total average score of 116.5 (± 34.3) (Table 2).

Table 2 - Ranking of the 50 items in the *Environmental Stressor Questionnaire* - ESQ according to the average and median scores obtained from inpatients at Intensive Care Units in hospitals in the state of São Paulo - Campinas, 2006

ESQ Items	Rank	Average	SD	Median	Variation
Feeling pain	1	3.4	1.0	4.0	0-4
Not being able to eat	2	3.3	1.0	4.0	0-4
Being unable to perform your role within the family	3	3.3	1.0	4.0	0-4
Not knowing the length of the ICU stay	4	2.9	1.2	4.0	0-4
Having the lights constantly on	5	2.8	1.1	3.0	0-4
Being pierced by needles	6	2.8	1.2	3.0	0-4
Being thirsty	7	2.8	1.3	3.0	0-4
Being unable to move your hands or arms due to intravenous serum or medication	8	2.8	1.3	3.0	0-4
Not having privacy	9	2.7	1.3	3.0	0-4
Having financial concerns	10	2.7	1.4	3.0	0-4
Being afraid of dying	11	2.7	1.5	4.0	0-4
Listening to the noise and alarms of the medical devices	12	2.7	1.2	3.0	0-4
Listening to other patients moaning	13	2.7	1.3	3.0	0-4
Being in a very warm or very cold room	14	2.7	1.4	3.0	0-4
Missing your spouse or partner	15	2.7	1.4	3.0	0-4
Nurses and doctors speaking too loudly	16	2.6	1.3	3.0	0-4
Having tubes inside your nose and/or mouth	17	2.6	1.6	3.0	0-4
Being afraid of catching AIDS	18	2.6	1.5	3.0	0-4
Not knowing when the procedures will be performed on you	19	2.6	1.2	3.0	0-4
Seeing your family and friends only for a few minutes every day	20	2.6	1.3	3.0	0-4
Being strapped to tubes and drains	19	2.5	1.4	3.0	0-4
Listening to your heart monitor go off	20	2.5	1.2	3.0	0-4
Not being able to communicate	21	2.5	1.5	3.0	0-4
Feeling annoyed	24	2.5	1.4	3.0	0-4
Listening to unknown sounds and noises	25	2.4	1.2	3.0	0-4
Listening to people talking about you	26	2.4	1.2	2.0	0-4
Having an uncomfortable bed and/or pillows	27	2.3	1.4	3.0	0-4
Not having control over yourself	28	2.3	1.5	3.0	0-4
Smelling strange smells around you	29	2.2	1.4	2.0	0-4
Hearing the nursing team speak with terms that you do not understand	30	2.1	1.2	2.0	0-4
Not knowing what time it is	31	2.1	1.5	2.0	0-4
Being awakened by the nursing staff	32	2.0	1.2	2.0	0-4
Listening to the telephone ringing	33	2.0	1.2	2.0	0-4
Not receiving explanations about your treatment	34	2.0	1.5	2.0	0-4
Having to look up at the details in the ceiling	35	2.0	1.3	2.0	0-4
Feeling pressured to agree to the treatment	36	2.0	1.5	2.0	0-4
Receiving care from doctors that you do not know	37	2.0	1.2	1.0	0-4
Having strange devices around you	38	1.9	1.2	1.0	0-4
Having to use oxygen	39	1.9	1.4	2.0	0-4
Not knowing what day today is	40	1.9	1.5	3.0	0-4
Feeling that the nursing staff pays more attention to the devices than to you	41	1.9	1.3	2.0	0-4
Seeing serum bags hanging over your head	42	1.8	1.1	1.0	0-4
Feeling that the nursing staff is in a hurry	43	1.8	1.2	2.0	0-4
Not knowing exactly where you are	44	1.8	1.7	1.0	0-4
Observing treatments being administered to other patients	45	1.7	1.6	1.0	0-4
Having your blood pressure checked several times a day	46	1.7	1.1	1.0	0-4
Having men and women in the same room	47	1.6	1.6	1.0	0-4
Being examined frequently by the medical and the nursing staff	48	1.5	0.9	1.0	0-4
Having the nursing staff constantly doing tasks around your bed	49	1.5	1.1	1.0	0-4
The nursing staff member does not introduce himself/herself by the name	50	1.4	1.1	1.0	0-4
Total score	--	3.2	1.3	2.5	0-4

Note: (n=106)

The descriptive analysis of the responses of subjects who took part in the test-retest (n=28) shows similar findings, with higher scores on the re-test than in the test (Table 3).

Table 3 - Descriptive data obtained with the application of the Environmental Stressor Questionnaire - ESQ to inpatients in Intensive Care Units in test and retest - Campinas, 2006

Items	Test			Retest		
	Mean	SD	Median	Mean	SD	Median
1. Being strapped to tubes and drains	**3.0**	1.9	3.0	**3.5**	1.0	4.0
2. The nursing staff member does not introduce himself/herself by the name	1.2	1.0	1.0	1.4	1.1	1.0
3. Feeling that the nursing staff is in a hurry	1.9	1.1	2.0	2.1	1.1	2.0
4. Being thirsty	2.7	1.4	3.0	3.1	1.2	4.0
5. Having your blood pressure checked several times a day	1.5	0.9	1.0	2.1	1.3	2.0
6. Having an uncomfortable bed and/or pillows	2.2	1.7	3.0	2.3	1.7	3.0
7. Listening to the telephone ringing	1.7	1.0	1.0	2.0	1.1	2.0
8. Being examined frequently by the medical and the nursing staff	1.4	0.8	1.0	1.7	1.1	1.0
9. Having strange devices around you	1.7	1.1	1.0	1.9	1.2	1.0
10. Feeling that the nursing staff pays more attention to the devices than to you	1.6	1.3	1.0	1.7	1.3	1.5
11. Listening to unknown sounds and noises	2.4	1.2	3.0	2.7	1.2	3.0
12. Nurses and doctors speaking too loudly	2.1	1.4	2.0	2.2	1.5	2.0
13. Having to use oxygen	1.9	1.2	2.0	2.3	1.3	2.5
14. Missing your spouse or partner	**3.0**	1.2	3.0	**3.2**	1.0	4.0
15. Not receiving explanations about your treatment	2.0	1.5	2.0	1.9	1.5	2.0
16. Listening to your heart monitor go off	2.3	1.1	2.5	2.9	1.2	3.0
17. Having the nursing staff constantly doing tasks around your bed	1.4	0.9	1.0	1.5	0.9	1.0
18. Having tubes inside your nose and/or mouth	2.6	1.4	3.0	2.8	1.5	3.5
19. Not knowing what time it is	2.3	1.4	2.5	2.6	1.4	3.0
20. Listening to other patients moaning	2.7	1.4	3.0	3.1	1.2	3.0
21. Having men and women in the same room	1.3	1.6	0.0	1.1	1.6	0.0
22. Seeing your family and friends only for a few minutes every day	2.6	1.3	3.0	2.6	1.3	3.0
23. Not knowing when the procedures will be performed on you	2.7	1.0	3.0	2.9	1.1	3.0
24. Being awakened by the nursing staff	2.0	1.3	2.0	2.2	1.2	2.0
25. Listening to strange sounds and noises	2.1	1.3	2.0	2.7	1.3	3.0
26. Observing treatments being administered to other patients	1.2	1.5	0.0	1.3	1.6	0.0
27. Having to look up at the details in the ceiling	1.8	1.4	1.0	1.7	1.3	1.0
28. Being unable to sleep	**3.2**	1.1	4.0	**3.5**	0.8	4.0
29. Being unable to move your hands or arms due to intravenous serum or medication	2.4	1.5	3.0	2.7	1.4	3.0
30. Smelling strange smells around you	2.1	1.3	2.0	2.2	1.3	2.0
31. Having the lights constantly on	2.8	1.2	3.0	2.9	1.3	3.0
32. Feeling pain	**3.1**	1.4	4.0	**3.4**	1.2	4.0
33. Seeing serum bags hanging over your head	1.9	1.1	1.0	2.2	1.1	2.5
34. Being pierced by needles	2.7	1.3	3.0	3.0	1.2	3.5
35. Not knowing exactly where you are	2.1	1.6	2.5	2.4	1.6	3.0
36. Hearing the nursing team speak with terms that you do not understand	2.1	1.2	2.0	2.4	1.1	2.5
37. Not having control over yourself	2.4	1.5	3.0	2.4	1.4	3.0
38. Not knowing what day it is	2.3	1.4	2.5	2.3	1.3	3.0
39. Feeling annoyed	2.2	1.4	2.5	2.2	1.4	2.0
40. Not having privacy	2.4	1.4	2.5	2.6	1.2	3.0
41. Receiving care from doctors that you do not know	2.0	1.2	2.0	2.3	1.4	2.0
42. Being in a very warm or very cold room	2.0	1.6	2.0	2.0	1.7	2.0
43. Listening to people talking about you	2.7	1.3	3.0	2.5	1.3	3.0
44. Being unable to communicate	2.9	1.4	3.0	2.8	1.5	3.0
45. Feeling afraid of dying	2.3	1.6	2.0	2.4	1.5	3.0
46. Not knowing the length of the ICU stay	3.0	1.2	4.0	2.9	1.2	3.0
47. Being unable to perform your role in the family	**3.1**	1.2	4.0	**3.2**	1.2	4.0
48. Having financial concerns	2.5	1.3	2.5	2.6	1.4	3.0
49. Being afraid of catching AIDS	2.6	1.4	3.0	2.5	1.4	3.0
50. Feeling pressured in agreeing to the treatment	2.2	1.4	2.0	2.3	1.4	2.5

Note: (n=28)

Data regarding the application of the generic question about stress in ICUs showed an average score of 2.8 (± 1.1) and median of 3.0. Considering that the values for the classification of answers varied from 1 (extremely stressful) to 4 (not stressful), the results show that, for the studied subjects, remaining at the ICU was an experience considered to be between *very stressful* and *moderately stressful*.

Reliability: In the evaluation of the internal consistency of the instrument, the Cronbach's alpha coefficient value observed was 0.94 in the test (n=106), which shows that the items are correlated among themselves and measure the same attributes. Since internal consistency was evident, no item was excluded from the instrument. Regarding the stability of the measurement, a high value was obtained in

the total ESQ score for test and retest, with an ICC = 0.8 (p<0.001; IC 95% 0,723; 0,933).

Convergent validity

The data show a convergent validity between the Brazilian version of the ESQ, with the observation of a strong magnitude correlation between the total score and the average score obtained in response to the open-ended question about stress in ICUs (r=0.70; p<0.001).

The patients chose six main stressors, which were alternated in the final order of classification as the most important stressor. Of the six chosen stressors, the stressors quoted most often were item #47, *Being unable to perform your role in the family*, followed by item #45, *Feeling afraid of dying* and item #46, *Not knowing the length of the ICU stay*. Items #49, *Being afraid of catching AIDS* and #12, *Nurses and doctors speaking too loudly* were mentioned less frequently. Looking at the answers in order of priority, it was verified that, for this group of subjects, the most important stressor was #45, *Feeling afraid of dying*, followed by tem #46, *Not knowing the length of the ICU stay* and item #47, *Being unable to perform your role in the family*. Regarding suggestions of items to be included into the ESQ, 86.8% of the patients did not respond this question. Those who did suggested the inclusion of the following items: *Having to wait on a stretcher in the hospital corridor for exams or procedures*; *Feeling afraid of hospital infection*; *Not being clarified by the doctor about the types of treatment*; *No answer when the nursing staff was requested*; *Feeling confined* and *Feeling dissatisfied with the diet*. Also, a high number of patients did not respond to the question *Would you like to make any comments?*, although all 10 patients who answered it said that they considered the ICU stressor assessment instrument to be good.

DISCUSSION

The result of the process of cultural adaptation of the Brazilian version of the ESQ shows that all the stages involved in the cultural adaptation were contemplated, according to recommendations of important studies about this theme[14-15]. A recent study[19] reviewing the translation and cultural adaptation of instruments notes the existence of different designations to name the process of adaptation, and also the lack of consensus about the recommended stages for cultural adaptation. The authors conclude, however, that it was not possible to observe evidence to favor a particular translation method, thus recommending a *multiple-stage approach* to guarantee the quality of the process. The authors also propose the use of a checklist that would summarize the main stages included in the translation of questionnaires for international use, which could be used to assess the strictness of the translation method used, in addition to the detailed documentation of each stage. This would allow for the tracking of all decisions made during the process.

The present study followed all the recommendations in the checklist of the strictness of the stages of translation (number of translations produced, steps taken to reach a consensus among the translated versions), back-translations (number and analysis of the back-translations, revisions of the translated version according to the back-translation) and pre-testing (pre-testing description). The methodological strictness used in the translation and back-translation stages made it possible to obtain a version that preserved the meaning and contents of the original version of the instrument. The Review by a Committee of Experts consolidated the versions and components of the instrument and made it possible to analyze qualitatively the semantic, idiomatic, cultural and conceptual equivalences, leading to a final version that was conceptually equivalent to the original instrument. It should be noted that the comparison by this committee followed the recommendations found in literature[14], with several professionals of the healthcare field with experience in the area, in research methods - particularly in cultural adaptation, in addition to having a professional in the field of Humanities that was proficient in English and Portuguese. At this stage, one of the changes in the ESQ was related to cultural equivalence, regarding the need of adaptation for the Brazilian culture and the terminology related to the nursing professional working at the ICU, as this is not restricted only to the nurse as suggested in the original instrument, covering another category - the nursing technician.

In the pre-test, 16.6% of the patients had difficulties in understanding item #39, *Feeling bored*. During the translation and back-translation stages, this item had already caused discussion, due to the difficulties involved in translating the expression *bothered*. As more than 15% of the subjects had difficulties understanding this item, it was changed to *Feeling annoyed*, with the patients showing better acceptance after the change. Regarding the reliability of the version of the ESQ, the results show evidence of internal consistency (Cronbach's alpha coefficient = 0.94), which maintained all the 50 items that compose the instrument. However, Cronbach's alpha coefficient > 0.90 may suggest redundancy of items, which leads to the necessity of furthering the psychometric analyses of the instrument, specially the determination of its structure of factors. The analysis of stability shows agreement of the measurements performed after 72 hours of ICU admission and five days after the first application, since lengthy periods increase the probability of the influence of random factors, reducing the precision coefficient. No studies assessing the reliability of the ESQ were found. The data showed a convergent validity of the Brazilian version of the ESQ, with a significant strong magnitude correlation between the total ESQ score and the average score obtained in response to the question about stress (r=0.7027; p<0.001). The absence of studies in literature about the psychometric properties of the ESQ makes it difficult to compare the findings of the present study, and point to an important gap to be filled in the study on the measurement of ICU stressors.

CONCLUSION

The analysis of internal consistency and stability shows that the Brazilian version of the ESQ is a reliable instrument, with homogeneity among the items and identity in the test and re-test. The convergent validity was confirmed by a strong magnitude correlation between the total score of the Brazilian version of the ESQ and the generic stress measurement score. Therefore, the Brazilian version of the ESQ is a reliable and valid instrument to assess stressors at the ICU.

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