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Cultural adaptation of the 5-D itch scale and its reliability for Brazilian burn survivors

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ABSTRACT

This was a methodological study whose objective was to culturally adapt the 5-D itch scale for Brazilian Portuguese and verify its practicability, acceptability and reliability for burn survivors. This study followed the five internationally recommended steps for the adaptation process: translation, synthesis, back translation, assessment by an expert committee and pretesting process; besides, an evaluation of its practicability, acceptability and reliability was conducted. The pretest was carried out with thirty burn survivors – hospitalized or on outpatient follow-up – from two public hospitals in the state of São Paulo. Most burn survivors were male (18; 60%), aged at mean of 39.2 (SD=11.1), with deep partial burn injuries (16; 59.3%), percentage of total burn surface area of 12.3 (SD=9.8); and most accidents occurred at domestic environment (18; 60%). The Brazilian version had semantic and idiomatic, conceptual and cultural equivalences, with a satisfactory content validity index for each item (CVI-I). Mean application time was 3.5 minutes, acceptability was good, and there was evidence of reliability for the total score (0.793). The Brazilian version of the 5-D itch scale showed equivalence and evidence of reliability for assessing pruritus and its impact in burn survivors.

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1. Introduction

Burn-related injuries represent a severe trauma and its consequences affects the physical, psychological and social life of the survivors and their family. Caring for the skin and scars is essential for burn survivors, since this influences the healing process, scar quality, and functionality of the affected limbs.

Considering the consequences of burn trauma, itchiness is a frequent result, occurring in 90% of burn cases [1] and consists of an important symptom and condition in the wound healing process for both minor and major burns.

Pruritus in burn survivors can occur in the inflammatory and proliferative stages of the healing of the skin [2], caused mainly by histamines released by mast cells [1], among other reasons [2,3]. These inflammatory mediators that lead to pruritus have

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been studied and evaluated in humans, mainly by measuring the intensity of the symptoms and by quantifying the mediators in animals [4]. Regardless of the extent and depth of the burn, pruritus assessment is clinically relevant, as it assists in directing individualized and more effective interventions.

A study conducted in Holland, in 2015, showed that patients who had received grafts reported more pruritus than those treated conventionally (second-degree without grafts, but just bandages) [5]. Apart from its high incidence, the literature has described how pruritus has a negative effect on the quality of life of burn patients [6].

Different scales have been used to assess pruritus in adult and child burn survivors, such as the Itch Man Scale [7], the 5-D itch scale [8], the visual analog scale [7,9–11], and the Questionnaire to Assess Pruritus [12]. The visual analog scale has been used the most to assess pruritus in different medical conditions, but does not address the impact of pruritus on quality of life and may fail to detect the severity of pruritus [8]. However, to the knowledge of the authors, there are no specific instruments in the Brazilian context for assessing pruritus that can be used with burn survivors.

In 2010, Elman et al. validated the 5-D itch scale for burn survivors [8]. Although it has been validated with this population, it is not a specific scale for assessing pruritus in burn patients, and can be used to assess pruritus from different causes. The differential of this scale lies in the fact that it can assess the impact of itching on different aspects of the person's life; moreover, results of previous study showed that it is a sensitive tool for detecting pruritus over the course of time [8]. A study in the United States, from 2017, tested the measurement properties, using just four items from this scale, on burn survivors, and the results indicated good reliability of the measurements (Cronbach's $\alpha=0.82$) [13].

Since the 5-D itch scale was originally designed in English, its use with the Brazilian population would require its cultural adaptation and assessment of its measurement properties.

The objectives of the present study were to culturally adapt the 5-D itch scale to Brazilian Portuguese and verify its practicability, acceptability and reliability in terms of the internal consistency of the measurements for burn survivors.

The availability of a specific instrument to assess this symptom could provide more in-depth knowledge about pruritus and its impact on healing of wounds, rehabilitation, and quality of life of burn survivors. The contributions of the validation of this instrument are also related to better clinical evaluation of wounds by nurses and health professionals and the provision of input for determining and assessing interventions for the rehabilitation of burn patients.

2. Method

This was a methodological study which involved the following stages: translation; synthesis of the translations, back-translation, expert committee; and pretesting [14,15] for cultural adaptation process and the evaluation of the reliability of the instrument. The study was conducted in two burn treatment centers in the state of São Paulo.

Consent to adapt the 5-D itch scale to Brazilian Portuguese and validate it for use with burn patients was obtained from

the author of the instrument – Marlyn Mayo, Department of Internal Medicine, University of Texas Southwestern Medical Center in Dallas, Texas, USA.

2.1. 5-D itch scale

This is a scale designed to assess pruritus, which was derived from the Total Neuropathy Scale [16], whose construction was based on the clinical experience of the authors and a literature review on pruritus. The 5-D itch scale is composed of eight items, distributed in five domains: Duration, Degree, Direction, Disability and Distribution. Disability consists of four items, and the others have just one item per domain. The four items that make up the Disability domain assess the impact of pruritus in the following situations: sleep, social activities/leisure, housework and work/school. The Distribution domain has 15 response options for identifying the parts/segments of the body affected by pruritus (head/scalp, face, chest, abdomen, back, buttocks, thighs, legs, tops of feet/toes, soles, palms, tops of hands/fingers, forearms and upper arms) and a response option for the occurrence of pruritus at points of contact with clothing (for example, undergarments and groin). If the part of the body with pruritus is not on the list, the option should be chosen that corresponds to the part of the body that is anatomically closest to the location affected by pruritus [8]. The items from the first four domains are assessed by a 5-point Likert-type scale. The score for each domain is calculated separately and then totaled to obtain the total score on the scale, which may vary from five (no pruritus) to 25 (severe pruritus). For the Disability domain, which includes four items – sleep, social activities/leisure, housework and work/school – the score is obtained by considering the highest score from among the four items. For the Distribution domain, the score can range from 0 to 16. It is obtained by tallying the number of body parts affected by pruritus, based on the following score breakdown: total of 0–2 regions = score of 1; total of 3–5 regions = score of 2; total of 6–10 regions = score of 3; total of 11–13 regions = score of 4; and total of 14–16 regions = score of 5. The original instrument in English was easy to use in terms of application and calculation of the scores; comprehensive, given the multidimensional nature of pruritus; reliable (Cronbach's $\alpha=0.73$); and able to detect differences over time [8].

2.2. Stages of cultural adaptation of the 5-D itch scale

2.2.1. Translation and back translation

In the translation stage, performed between August 2016 and February 2017, the instrument in English was independently translated by two bilingual professionals, knowledgeable in English, and whose mother tongue was Brazilian Portuguese. These translators were not authors of this study. One of the translators was informed about the conceptual structure and objectives of the scale to be translated, and the other did the translation without any knowledge of its objective, as recommended in the literature [14,17,18]. Both translators wrote a report about the translation. The versions issued by the professionals were named Portuguese version 1 (PV1) and Portuguese version 2 (PV2), and they maintained the original meaning of each item of the scale in English [14,15].

Then, the two versions (PV1 and PV2) were compared and analyzed by an outside professional translator (mediator) and by two of the authors, Gonçalves and Rodrigues, and synthesized into just one version, called the consensual Portuguese version (CPV). A detailed report on this process was prepared [14,15].

The back translation was performed by other two bilingual translators, completely blind in relation to the original version of the scale. This made it possible to verify whether the back-translation version corresponded to the English version. The mother tongue of the translators was English, and they had no knowledge in the field of health [14]. At the end of this stage, two English back translations were obtained: BT-V1 and BT-V2.

2.2.2. Expert committee

After the translations, an expert committee was formed, composed of four bilingual professionals with PhDs in the area of health who were experts on the topic or method, plus one linguist, in order to consolidate the versions and generate a preliminary version. In reference to the health professionals, two were PhD nurses and one was PhD physiotherapist, with experience in burn care and research in this area; and one was a PhD nurse with experience in adaptation and validation process. The linguist had had a 15-year experience in translations in the area of health. The authors did not participate as expert committee. The experts were sent invitations to participate by email and agreed by responding to that email. The experts were sent the following versions: original, PV1 and 2, CPV, BT-V1 and 2, and an assessment instrument that considered semantic and idiomatic, conceptual and cultural equivalences among the versions [14,15]. The committee's assessment instrument was prepared in accordance with a previous study [19] and included the following equivalences: 1) *semantic and linguistic*: whether the translation of the items to Brazilian Portuguese retained the same meaning as the terms in the original version; 2) *cultural*: whether the situations addressed in the items corresponded to situations experienced in the cultural context of the adaptation; and 3) *conceptual*: whether the situations evoked or addressed in the items actually assessed pruritus. For each item assessed, the experts assigned a score ranging from 1 to 4: 1=not equivalent; 2=impossible to assess equivalence unless the item is reviewed; 3=equivalent, but needs small changes; and 4=absolutely equivalent.

2.2.3. Pretest

After obtaining a consensual version in Brazilian Portuguese through the expert committee's analysis, a pretest was carried out.

The pretest sample was composed of male and female burn survivors, over 18 years of age, who had been burned for the first time regardless of the extension or depth of the burned area, were inpatients or on outpatient follow-up in the aforementioned fields of research, and had the cognitive ability to participate in the study (be able to state their address, month and day of the week, and age or date of birth). The non-inclusion criteria referred to: those with previous psychiatric diagnoses described in medical records; those with impairments (deaf, blind or mute) that would not allow the person to answer the items from the instrument; those whose burns

were due to attempted suicide; and those with sequela or neuronal dysfunction in the limb affected by the burn, resulting in impaired sensitivity also described in medical records. The exclusion criterion considered referred to individuals serving prison sentences since they could not have participated in every stage of the large study, which has led to this one.

The Brazilian version of the 5-D itch scale (5-D Itch scale-Br) and a questionnaire for semantic analysis created by DIS-ABKIDS Group Europe (2004) [20], adapted for use in Brazilian culture [21] and used with burn survivors [22], were applied to the pretest participants. The participants were also questioned as to their understanding of the questions, i.e., what they understood each item to mean and what changes to the instrument they would suggest in order to make it easier to understand [14,15].

Ten participants were initially interviewed and, after the analysis of the preliminary data and reassessment by the committee of judges, the pretest stage was expanded and the Brazilian version of the 5-D itch scale-Br, with a new layout, was applied to 30 patients from March to May 2017.

The 30 patients were characterized by male gender (18; 60%), a mean age of 39.2 (SD=11.1) years and a mean length of education of 9.3 (SD=3.8) years. Most accidents occurred at domestic environment (18; 60%), followed by work (10; 33.3%). The mean length of time since suffering the burn was 80 (SD=61.1) days and eighteen (82%) patients received skin graft (Table 1).

2.3. Data collection procedure

The 5-D itch scale-Br was applied in a face-to-face interview, in accordance with the following procedures: the participant was given a copy of the 5-D itch scale-Br to answer; the interviewer read each item from the instrument; if the patient had any difficulty, due to hand burns, amputation, or any other limitation of the limb, the researcher assisted the participant

Table 1 – Sociodemographic and clinical characterization of the burn victims in the pretest of the 5-D itch scale-Br. Campinas and Limeira, SP, 2017. (n=30).

Variable	n (%)	Mean (SD)	Min-max
Sex			
Male	18 (60.0)		
Age (years)		39.2 (11.1)	21.4-63.3
Years of education		9.3 (3.8)	0-15
Type of accident			
Domestic	18 (60.0)		
Work	10 (33.3)		
Homicide attempt	2 (6.7)		
Thickness of the burn (predominance)			
Deep partial	16 (59.3)		
Total	5 (18.5)		
Mixed (partial and total)	6 (22.2)		
Length of time since the burn (days)		80.2 (61.1)	4-264
% of body surface burned		12.3 (9.8)	0.5-40.0
Skin graft surgery	18 (81.8)		

to fill out the instrument; in the absence of any limitation, the participant marked the responses on the instrument. In order to assess the length of time it took to fill out the 5-D itch scale-Br, its application was timed.

Following this, the semantic instrument was applied and the participants were asked about the overall aspects of the instrument, any questions, difficulties, suggestions, and the importance of the instrument for burn survivors.

2.4. Data analysis

To analyze the data obtained in the expert committee stage, the content validity index (CVI) was used. This index was used to assess the judges' agreement regarding the semantic, cultural and conceptual equivalences of each item from the instrument (CVI-I). The experts assessed the equivalences of each item through scores ranging from 1 to 4: 1=not equivalent; 2=impossible to assess equivalence unless the item is reviewed; 3=equivalent, but needs small changes; and 4=absolutely equivalent. CVI-I was calculated based on the total number of experts who assigned scores of 3 and 4, divided by the total number of experts. The expert committee reviewed any items with CVI-I less than 0.8 until a consensus was reached.

To analyze the data obtained in the pretest, the Statistical Package for Social Sciences, Version 22.0 was used. Descriptive analyses (frequency distribution and position and dispersion measurements) of the sociodemographic variables and for the 5-D itch scale score were performed. The practicability and acceptability of the Brazilian version of the scale were assessed according to the length of time it took to do the interview, the percentage of items not answered, and the proportion of patients who answered all the items [19,23]. The internal consistency of the items was obtained through Cronbach's alpha coefficient, and evidence of reliability was considered when the coefficient was greater than 0.7 [24].

2.5. Ethical aspects

The study was approved by the Research Ethics Committee of a public university in the state of São Paulo (CAAE: 59899716.8.0000.5404). The study also complied with the guidelines contained in Resolution 466/12 of the National Health Council. The patients were invited to participate, received verbal and written information about the test, and signed a free and informed consent form. The experts who made up the committee were not considered subjects of the study, and consent for their participation was obtained via acceptance of an invitation letter.

3. Results

3.1. Analysis of the translation stages and assessment by the expert committee

The results obtained in the translation stages and from the experts' assessment are summarized in [Chart 1](#) (Appendix). The modifications made to the CPV to comply with the experts' recommendations are highlighted in italics in the final version of the 5-D itch scale in this chart.

Consensual Portuguese Version (CPV)	Instructions: Many people experience itching after a burn. This itching can improve or worsen over time. Below are some questions about how your itching has felt and how it has affected your life. Before answering each item, think carefully about the answer that most accurately reflects how your itching has felt in the last two weeks. Bear in mind that there are no right or wrong answers. We are only interested in your opinion on this matter.															
Final Version (after analysis by the experts)	Many people experience itching after a burn. This itching can improve or worsen as <i>time passes</i> . <i>Following</i> are some questions that assess <i>whether you are itchy and if it affects your life</i> . Before answering each item, think carefully about the answer that most accurately reflects how your itching has felt in the last two weeks. Bear in mind that there are no right or wrong answers. We are only interested in your opinion on this matter.															
Title of the CPV	5-D itch scale															
Title of the Final Version	5-D itch scale <i>Br</i>															
Question 3 CPV	3. Directions: In the last two weeks, has your itching improved or worsened compared to last month? <table style="width: 100%; text-align: center;"> <tr> <td>Fully resolved</td> <td>Much better, but still present</td> <td>Not much better, but still present</td> <td>Unchanged</td> <td>Worse</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>	Fully resolved	Much better, but still present	Not much better, but still present	Unchanged	Worse	<input type="checkbox"/>	1	2	3	4	5				
Fully resolved	Much better, but still present	Not much better, but still present	Unchanged	Worse												
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
1	2	3	4	5												
Question 3 - Final Version	3. Directions: In the last two weeks, has your itching improved or worsened compared to last month? <table style="width: 100%; text-align: center;"> <tr> <td>Fully resolved</td> <td>Much better, but still present</td> <td>Not much better, but still present</td> <td>Unchanged</td> <td><i>Getting worse</i></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>	Fully resolved	Much better, but still present	Not much better, but still present	Unchanged	<i>Getting worse</i>	<input type="checkbox"/>	1	2	3	4	5				
Fully resolved	Much better, but still present	Not much better, but still present	Unchanged	<i>Getting worse</i>												
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
1	2	3	4	5												
Question 4 CPV	4. Disability: Assess the impact of your itching on the following activities in the last two weeks. <table style="width: 100%; text-align: center;"> <tr> <td>Housekeeping/ Daily chores</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td></td> </tr> </table>	Housekeeping/ Daily chores	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		1	2	3	4	5		
Housekeeping/ Daily chores	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
	1	2	3	4	5											
Question 4 Final Version	4. Disability: <i>In the last two weeks</i> , assess the impact of your itching on the following activities. <table style="width: 100%; text-align: center;"> <tr> <td><i>Housework/</i> Daily chores</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td></td> </tr> </table>	<i>Housework/</i> Daily chores	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		1	2	3	4	5		
<i>Housework/</i> Daily chores	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>										
	1	2	3	4	5											
Question 5 CPV	5. Distribution: Mark whether the itching occurred in the following areas of your body in the last two weeks. If a certain part of the body is not listed, choose the one closest to the affected location.															
Question 5 Final Version	5. Distribution: <i>Mark whether the itching occurred, in the last two weeks, in the following areas of your body (if a certain part of the body is not listed, choose the one closest to the affected location).</i>															

*CPV: Consensual Portuguese Version

Chart 1 – Comparison between the consensual Portuguese version (CPV) and the final Brazilian version of the 5-D itch scale, taking into consideration the analysis of the expert committee, Campinas, 2017.

During the translation stages of the instrument, it was decided to prepare an introductory text, called *Instructions*, to give the respondents the objective of the pruritus assessment scale and to provide guidelines on how to answer it. This

introductory part was also submitted to the experts for their assessment and small changes were made, according to their recommendations, which are also highlighted in italics, in [Chart 1](#) (Appendix).

[Table 2](#) presents the scores assigned by the experts to each item of the consensual version in Portuguese of the 5-D itch scale and CVI-I, according to the semantic and idiomatic, cultural and conceptual equivalences analyzed.

The CVI-I for most of the items was 1.0, except for Question 4, whose cultural equivalence was 0.8, since the expert gave this question a score of 2 (impossible to assess equivalence unless the item is reviewed), in reference to the semantic and idiomatic assessment. It was suggested that the term “impact” be replaced with the terms “interfere” or “affect.” However, in view of the CVI-I of 0.8 for this item, it was decided by the authors of the study to maintain the term ‘impact’.

In the overall assessment of the Brazilian version of the scale, in relation to the comprehensiveness of the set of items, 60% (n=3) of the experts assigned a score of 4 (sufficiently comprehensive) and 30% (n=2) a score of 3, comprehensive, but needs small changes. One of the experts suggested the inclusion of additional items, one expert did not indicate the inclusion of additional items, and the other suggested a description of the period of the day with the highest intensity of pruritus and factors that could trigger it, such as position, activity, food or erythema. However, the researchers agreed that to keep the adapted version as close as possible to the original version, the items suggested by the experts would not be included in this stage of adaptation and validation of the instrument. As for the relevance of the set of items, all the experts (100%) assigned a score of 4, i.e., they considered all the items relevant to the purpose of the instrument.

3.2. Pretest analysis

The pretest results showed that of the first ten patients who responded to the pretest, eight had difficulty answering the fourth question, due to the way it was laid out on the scale. The four items that formed the question were distributed over two pages, which required the individuals to go back repeatedly to the previous page to read the question in order to respond to all its items on the following page. It was also found that two respondents had difficulties answering the fifth question, due to the arrangement of the response columns, which were very

close to each other. For this reason, they suggested a larger space between the columns to facilitate reading.

Therefore, it was decided to interrupt the pretest and send the following suggested changes to the committee of judges: Question 4 — put the items and answer scales on just one page; and Question 5 — insert a larger space between the columns. After the reformulation of the instrument, 30 burn survivors were interviewed, which constituted the final pretest sample.

3.3. Practicability and acceptability

In relation to practicability, the mean application time of the 5-D itch scale-Br was 3:49 (SD: 1:07) minutes, with a range of 1:41-6:39 min.

In terms of acceptability, all the participants answered all the questions and only 2 (6.7%) expressed difficulties answering Question 4.

3.4. Reliability

The reliability of the scale was estimated through Cronbach’s alpha coefficient ([Table 3](#)).

Immediately after the application of the 5-D itch scale-Br, the participants were invited to share their perceptions of and opinions about the scale, with respect to comprehension (easy/difficult to answer the questions), quality, and importance of the measurement. All the participants considered the instrument to be good; 25 (83.3%) said that the questions were easy, 3 (10%) classified them as average in complexity, and 2 (6.7%) as difficult.

In relation to the response scales, 28 (93.3%) said they were easy and 2 (6.7%) felt they were of average complexity. Most of the participants (96.7%) said that the instrument was “very important” for burn survivors and one (3.3%) felt the instrument had “some importance.”

Only 3 (10%) people said they would like to change something in the instrument; they proposed the following modifications: title *totally in Portuguese*; in Question 1: *Duration: In the last two weeks, how many times per day were you itchy?*, include a fifth response option, “*Nowhere,*” for respondents who did not have pruritus.

When asked if they would like to add anything, 8 (26.7%) participants noted that it would be interesting to have a response option *not itchy*. They also added that it would be important to have questions about the *area* (e.g., *donor or graft*)

Table 2 – Content validity index for each item (CVI-I) of the Brazilian version of the 5-D itch scale obtained from the analysis of the expert committee, according to semantic and idiomatic equivalence (SIE), conceptual equivalence (CE), and cultural equivalence (CULTE), Campinas, SP, 2017.

	E*-1			E-2			E-3			E-4			E-5			CVI		
	SIE	CE	CULTE	SIE	CE	CULTE	SIE	CE	CULTE	SIE	CE	CULTE	SIE	CE	CULTE	SIE	CE	CULTE
Name of the instrument	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	1.0	1.0	1.0
Question 1	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	1.0	1.0	1.0
Question 2	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	1.0	1.0	1.0
Question 3	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	1.0	1.0	1.0
Question 4	4	4	4	4	2	4	4	4	4	4	4	4	4	3	4	1.0	0.8	1.0
Question 5	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	1.0	1.0	1.0
Calculation of the score	4	4	4	3	4	4	4	4	4	3	4	4	4	4	4	1.0	1.0	1.0

Table 3 – Descriptive reliability analysis of the 5-D itch scale-Br in the pretest. Campinas, SP, 2017.

Items	Mean (SD)	Median (min-max)	Item-total correlation coefficient	Cronbach's alpha (if item excluded)
1. Duration: In the last two weeks, how many hours per day were you itchy?	1.6 (1.27)	1.0 (1-5)	0.5	0.8
2. Degree: Assess the intensity of your itchiness in the last two weeks.	2.6 (1.13)	3.0 (1-5)	0.7	0.7
3. Direction: In the last two weeks, has your itching improved or worsened compared to last month?	2.4 (1.25)	2.0 (1-5)	0.6	0.7
4. Disability: In the last two weeks, assess the impact of your itching on the following activities.				
Sleep	2.1 (1.53)	1.0 (1-5)		
Leisure/social life	1.3 (1.36)	1.0 (0-4)		
Housework/daily chores	1.4 (1.54)	1.0 (0-5)		
Work/school	0.7 (1.45)	0.0 (0-5)		
Maximum response from Question 4 ^a	2.3 (1.60)	1.0 (1-5)	0.6	0.7
5. Distribution: In the last two weeks, mark whether the itching occurred in the following areas of your body (if a certain part of the body is not listed, choose the one closest to the affected location).	1.5 (0.73)	1.0 (1-3)	0.5	0.8
Total score	10.0 (4.23)	9.5 (5-21)		0.8

^a As recommended by the creators of the scale, the highest score for the sub-item of Question 4 was considered for calculating the final score.

that has pruritus; devices that help improve pruritus; and information about the duration of pruritus, pain and treatment.

Regarding the importance of each of the questions from the scale for their health situation, 28 (93.3%) patients indicated that questions 4 and 5 were important for their health situation, whereas 27 patients (90%) highlighted the importance of questions 1-3.

4. Discussion

The findings of this methodological study showed that the Brazilian version had semantic and idiomatic, conceptual and cultural equivalences, a mean application time of 3.5 min, good acceptability, and evidence of internal reliability.

The cultural adaptation stage involved the participation of an expert committee with methodological expertise in adaptation studies, in addition to clinical knowledge of burn treatment. The modifications suggested by the experts helped achieve the equivalences between the original instrument and the version adapted to Brazilian culture.

A literature review from 2015 on the method used in the cultural adaptation process showed that the expert committee assessment stage makes an important contribution to improving the accuracy of the content to be adapted [23]. It is also important to include a linguistics expert as a moderator in the first stages and on the committee, in order to better adapt the terms to Brazilian Portuguese. Multidisciplinary on the committee is considered important [25], since the different perspectives of the experts enhance the interpretation and understanding of the items and the response scale. Most of the suggestions of the experts were considered by the researchers. However, all the items from the original scale were left intact, without the addition of others suggested by the committee, since the structure of factors of the scale will later be explored in an expanded burn patient sample.

The adapted scale was considered comprehensive and relevant by the expert committee, and good and important by the patients interviewed. As mentioned earlier, there are few

instruments that assess pruritus in burn survivors and, in Brazil, no tool such as the 5-D itch scale-Br is known to exist that addresses the various aspects of pruritus, i.e., that extrapolates the assessment of the intensity of the symptom.

In relation to acceptability, the scale was considered acceptable by the participants, since most of the interviewees found the questions easy to answer and considered the response scale easy to understand. It should be noted, however, that some patients had difficulties answering item 4, since the response scale of this question is different from the other questions in the instrument. Although the interviewees had a mean length of education of nine years, five patients had less than four years of education. One even reported being illiterate, which could have contributed to the difficulty in understanding the item in question.

Similarly, with our results, others Brazilian authors described the low literacy of Brazilian burn population in methodological studies [22,26]. These results might be associated with the population attended in these reference centers for the treatment of burns, which are included in Public Health System in Brazil, where most of people attended present low literacy or even illiteracy.

In reference to practicability, the 5-D itch scale-Br can be used in all stages of healing process- inflammatory to remodeling, as the burn time in the tested sample ranged from 4 to 264 days (mean=80.2; SD=61.1). Although the sample is small and it is not possible to generalize, this fact contributes to the planning of future studies in which interventions can be evaluated in all phases of rehabilitation of the burn victim.

The cultural adaptation of instruments is an important stage in methodological studies and assessment of the psychometric properties of scales. In the present study, the internal consistency of the instrument, which is defined as the extent to which the items are related to each other for measuring a specific attribute, was tested [24].

According to the criteria from the literature [24], the reliability of the 5-D itch scale-Br was satisfactory (Cronbach's alpha=0.8), despite the fact that high values of reliability is

influenced by the number of participants and could indicate redundancy of items [24]. In this study, the analysis of the item-total correlations and Cronbach's alpha coefficients, if an item was excluded, showed there was no need to remove any item. A similar result was found in a study on the creation of the instrument which estimated a Cronbach's alpha of 0.7 and a lower score for item 5 by burn patients, since they had itching only in the affected regions [8]. This scale was also validated for people with chronic kidney problems, and an adaptation and validation study in Pakistan, in 2017, in which 50 patients were examined obtained results similar to the present study, with a Cronbach's alpha of 0.914 [27].

In summary, the findings of the present study indicated equivalence of the 5-D itch scale-Br in relation to the original instrument, and evidence of practicability, acceptability and reliability. The main limitation of the study was the small number of cases used to test reliability. Future studies with larger samples are necessary to confirm the evidence of reliability and to test the validity of the measurements. The contribution of the present study is the provision of a tool for use in Brazilian culture to assess an important symptom; the psychometric enhancement of the instrument will enable its use with burn survivors.

5. Conclusion

The findings lead to the conclusion that the 5-D itch scale-Br has semantic and idiomatic, conceptual and cultural equivalence for Brazilian culture, in addition to good practicability, acceptability and evidence of reliability.

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Declaration of conflicts of interest

There were no conflicts of interest.

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