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ORIGINAL ARTICLE

Cross-Cultural Adaptation and Validation of the ICIQ-BD for Brazilian Women With Lower Urinary Tract Symptoms

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Abstract

Introduction and hypotheses The International Continence Society recommends the International Consultation on Incontinence Questionnaire-Bladder Diary (ICIQ-BD) for the assessment, management, and monitoring of lower urinary tract symptoms (LUTS). Translation, cross-cultural adaptation and validation will establish a valid and reliable tool for Brazilian women with LUTS.

Methods A cross-sectional study involving 101 women was carried out at the Urogynecology Outpatient Clinic in Belo Horizonte, Brazil, between August 2020 and April 2022. The process of cross-cultural adaptation and validation was executed following the ICIQ Group's protocol. Reviewed by an expert committee, the first pre-test was followed by subsequent adaptations, resulting in a second adapted version that underwent expert revisions. A second pretest was conducted, followed by cross-cultural adaptation and construct validation. Finally, the International Consultation on Incontinence Questionnaire-Bladder Diary-Brazilian Portuguese Version (ICIQ-BD-Br) underwent a validation process.

Results Construct validity (IVC >0.78) and internal consistency were satisfactory (α-Cronbach coefficient 0.87–0.94). The following adjustments were made: a specific field was created to document sleep and wake times, and a printed score ranging from 0 to 4 was included in the bladder sensation column. Test–retest reliability ranged from fair to excellent for all analyzed items (Spearman correlation: 0.64–0.95). Criterion validity analysis indicated slight agreement for one of the four symptoms analyzed (nocturia k=0.32). The final version was approved by the ICIQ Group.

Conclusions The ICIQ-BD-Br has been adapted for use in Brazilian Portuguese and has exhibited robust construct validity and reliability for Brazilian women with LUTS.

Keywords Bladder diary · Cross-cultural adaptation · ICIQ · LUTS · Urinary incontinence

Abbreviations

AV1	First adapted version of the ICIQ-BD
AV2	Second adapted version of the ICIQ-BD
AV3	Third adapted version of the ICIQ-BD
BD	Bladder diary
CVI	Content validity index
FAV	Final adapted version of the ICIQ-BD or ICIQ-BD-Br
FTV	Final translated version of the ICIQ-BD
ICIQ	International Consultation on Incontinence Questionnaire
ICIQ-BD	International Consultation on Incontinence Questionnaire-Bladder Diary
ICIQ-BD-Br	International Consultation on Incontinence Questionnaire-Bladder Diary-Brazilian Portuguese Version
ICIQ-OAB	International Consultation on Incontinence Questionnaire Overactive Bladder
ICIQ-OABqol	International Consultation on Incontinence Questionnaire Overactive Bladder Quality of Life Module
ICIQ-SF	International Consultation on Incontinence Questionnaire-Short Form

This research was carried out at the Urogynecology Outpatient Clinic of the Clinical Hospital at the Federal University of Minas Gerais (UFMG) located in Belo Horizonte, Minas Gerais, Brazil. The ICIQ-BD-Br was accepted by the Group and is available at http://ICIQ.net. platform (https://iciq.net/iciq-bladder-diary)

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ICS	International Continence Society
LUTS	Lower urinary tract symptoms
OAB	Overactive bladder
SUI	Stress urinary incontinence
TV1	First translated version of the ICIQ-BD
TV2	Second translated version of the ICIQ-BD
UI	Urinary incontinence
UUI	Urgency urinary incontinence

Introduction

The bladder diary (BD) is a non-invasive tool for evaluating lower urinary tract symptoms (LUTS). It is widely used in clinical practice and endorsed by major international guidelines for LUTS assessment, treatment, and monitoring [1–3]. The International Continence Society (ICS) recommends the use of three types of voiding diaries in clinical practice: the micturition time diary, the frequency volume diary, and the BD [4]. Regardless of the type, when filled out accurately, these diaries provide valid data on urinary function [1, 5] that can be used in both clinical practice and scientific studies.

Different types and formats of bladder diaries, including both printed [6] and digital [7, 8] versions, are employed in clinical practice in Brazil. Nevertheless, none of these has been validated scientifically. Bright et al. [1] developed and validated a 3-day BD for the English-speaking population of the UK [9], which was subsequently accepted by the International Consultation on Incontinence Questionnaire (ICIQ) and named the ICIQ-Bladder Diary (ICIQ-BD) [10, 11].

The ICIQ-BD has shown sufficient validity, reliability, and responsiveness to changes [9]. It records information on urinary frequency, voiding volume, fluid intake (including amount, time, and type), as well as episodes of urinary incontinence (UI) and bladder sensation, which is evaluated on a 0- to 4-point scale.

We hypothesized that translation, cross-cultural adaptation, and validation might establish a valid and reliable tool for Brazilian Women with LUTS. This will fill the gap in available resources.

The aim of this research was to translate, adapt, and validate the Brazilian version of the ICIQ-BD, specifically known as the ICIQ-BD-Br. This will offer a reliable way of evaluating the bladder symptoms of Brazilian females experiencing LUTS, which is currently not available in Brazil.

Materials and Methods

A cross-sectional prospective study was conducted at the Urogynecology Outpatient Clinic of the Clinical Hospital at the Federal University of Minas Gerais (UFMG) located in Belo Horizonte, Minas Gerais, Brazil, between July 2020 and April 2022.

The study received approval from the UFMG Research Ethics Committee (CAAE no. 28843120.3.0000.5149), and all participants provided consent. The ICIQ Group also granted formal approval to conduct the study [11].

Women aged 18 with LUTS, confirmed by using the ICIQ-OAB, were eligible to participate. Symptoms of overactive bladder, such as urgency, frequency, nocturia, and urgency urinary incontinence (UUI), were confirmed using the ICIQ-OAB tool. The study confirmed stress urinary incontinence (SUI) using the ICIQ-SF assessment tool [12, 13]. Pregnancy, inability to understand how to fill out the BD without help from the caregiver, failure to fill out or send in the diaries, treatment for LUTS during the study period were the exclusion criteria.

Sampling was not conducted because there was no standard measure available to perform a psychometric validation study [14, 15]. Additionally, this study did not reveal any discernible differences or known effect sizes/strengths of association [9].

Translation, Cross-cultural Adaptation, and Validation Process of the ICIQ-BD Questionnaire

The ICIQ-BD underwent a process of translation, synthesis, and retro-translation, according to the validation protocol recommended by the ICIQ Group [9, 11] and others [15] (personal correspondence).

Cross-cultural Adaptation and Content Validity of the ICIQ-BD-Br

At this stage, the ICIQ-BD underwent translation into Brazilian Portuguese by two independent, bilingual Brazilian translators who were informed of the research objectives. This version, designated TV1, was subsequently back-translated into English by two additional independent translators who were native English speakers and fluent in Portuguese. The combination of these two back-translations resulted in the retro-translated version. This revised translated version (TV2) was created after comparing it with the original version and by incorporating minor adjustments suggested by the ICIQ Group. The final translated version was then assessed by a bilingual expert committee consisting of one urologist, four urogynecologists, one clinician, and four physiotherapists, all with experience in LUTS.

The experts assessed the degree of consensus for each item of the ICIQ-BD-Br by employing the content validity index per item (CVI). The mean of the individual item values (S-CVI) was used to evaluate the overall consensus across all items. The CVI uses a Likert scale scoring from 1 to 4, where 1 indicates equivalence, 2 denotes significant

revisions needed for equivalence, 3 implies that minor adjustments are necessary for equivalence, and 4 confirms unequivocal equivalence. A minimum score of 0.78 was considered satisfactory [8, 16].

Following expert recommendations, we created the initial adapted version (AV1) in Brazilian Portuguese. Pre-testing was then conducted to identify potential comprehension issues among the target population. Forty women (n=40) were given the printed AV1, which included a filling out sheet and complete instructions. After the orientation, the interviewer asked several questions orally to identify potential misunderstandings:

1. Did any words, phrases, or terms seem unfamiliar, ambiguous, or difficult to understand? If yes, which ones and why?
2. Were the instructions clear? If not, which ones and why?
3. Were the items clear? If not, which ones and why?

Following this phase, modifications were made, resulting in the creation of the second adapted version, AV2. This manuscript underwent another revision by the expert committee, leading to the third adapted version (AV3). The committee approved AV3 as the final adapted version, which is named the International Consultation on Incontinence Questionnaire-Bladder Diary-Brazilian Portuguese Version (ICIQ-BD-Br). The ICIQ Group was consulted at the end of this phase and provided consent for the validation stage [11].

Criterion Validity and Reliability of the ICIQ-BD-Br

Sixty more women were recruited at this point, adhering to the study's inclusion and exclusion criteria. They filled out the ICIQ-BD-Br over a 3-day period and were then asked to repeat the process after a 15-day interval for reliability testing. Reliability refers to the ability of a tool to produce consistent and reproducible results. As such, a test–retest was performed, with a 15-day interval between the initial and final administration of the sample [17].

Criterion validity indicates the level of agreement between the concepts measured in the ICIQ-BD-Br and a reference measure for the same concept. We compared data from the ICIQ-BD-Br with the ICIQ-OAB tool, validated for Brazilian Portuguese by Pereira et al. and widely used to assess LUTS [12]. The Content validity was evaluated using the CVI for each tool item. To assess the overall content validity of the tool, the mean values of the ICIQ-BD items were calculated separately (S-CVI).

The internal consistency was analyzed using Cronbach's alpha coefficient statistical test. Cronbach's alpha coefficient for investigating the degree of interrelationship between the ICIQ-BD-Br items and the value considered satisfactory was >0.7 ($p \leq 0.05$) [17, 18].

Statistical analyses were performed with SPSS 26.0 software at a significance level of 0.05. Criterion validity analysis was conducted using the kappa (κ) index, with κ>0.4 considered ideal [2]. Test–retest reliability analysis was carried out using Spearman's correlation test; an index of >0.6 was considered satisfactory [9].

Results

The ICIQ-BD was successfully translated, cross-cultural adapted, and validated for use in Brazilian Portuguese, now referred to as the ICIQ-BD-Br. The selection process consisted of 60 women diagnosed with LUTS, who were confirmed through the use of ICIQ-OAB and ICIQ-SF tools. Excluding 9 participants who did not return the filled out ICIQ-BD, data from 51 participants were analyzed. The participants' average age was 57.7 (±13.2) years. The majority of the study population declared themselves to have a skin color other than white or black (58.8%), while some declared themselves to be white (25.5%) and others black (15.7%).

The participants in this study were women with a low level of education, which greatly differed from the three studies previously mentioned. This variable could have potentially contributed to the high prevalence of filling out the ICIQ-BD-Br, thus prompting the modifications made to the tool during the adaptation process. The sample reported encountering difficulties with filling out the tool, and these issues were duly noted and addressed before passing the adapted version on to the ICIQ Group. Detailed sociodemographic and clinical characteristics of the participants are provided in Table 1.

The ICIQ-OAB and ICIQ-SF tools revealed that participants experienced various urinary symptoms. These included urinary urgency (90.20%), nocturia (84.31%), UUI (82.35%), SUI (70.6%), and frequency (70.6%).

The variables were described using the results obtained from completion of the ICIQ-BD-Br (Table 2).

Cross-Cultural Adaptation and Construct Validity Testing

The cross-cultural adaptation process consisted of two stages: translation/retro-translation and adaptation of the ICIQ-BD-Br (Fig. 1). After translation, the following adaptations were made to ensure the tool's semantic, idiomatic, experiential, and conceptual equivalence in relation to the original version and suitability for the target population: alterations to specific word meanings, inclusion of a designated field for sleep and wake times, and the addition of a printed scale ranging from 0 to 4 in the bladder sensation column.

Table 1 Sociodemographic and clinical characteristics of participants

Variables	*n* (%)
Marital status	
Single/or widowed/divorced	20 (39.2)
Married	31 (60.8)
Educational Level	
12 years or more	5 (9.8)
Up to 12 years	46 (90.2)
Skin color	
White	13 (25.5)
Black	8 (15.7)
Other	30 (58.8)
Occupation status	
Unemployed	4 (7.9)
Employee	12 (23.5)
Pensioner	18 (35.3)
Other	17 (33.3)
Family income	
1–2 minimum salaries	38 (74.5)
3–4 minimum salaries	12 (23.5)
Up to 4 minimum salaries	1 (2)
Previous treatment for pelvic floor dysfunction	
Yes	16 (31.4)
No	35 (68.6)
Parity status	
0	5 (10)
1 or more	44 (86)
Not informed	2 (4)
Menopause	
Yes	35 (69)
No	16 (31)
Comorbidities	
None	11 (22)
1 comorbidity	15 (29)
2 comorbidities	20 (39)
3 or more comorbidities	5 (10)
Types of comorbidities	
Hypertension	30 (59)
Diabetes mellitus	16 (31)
Fibromyalgia	7 (14)
Others	10 (20)
Daytime urinary frequency (ICIQ-OAB)	
1–6 times	15 (29.4)
7–8 times	12 (23.5)
Up to 9 times	24 (47.1)
Nocturia (ICIQ-OAB)	
None	8 (15.7)
1 time	9 (17.6)
2 times	13 (25.5)
3 times	10 (19.6)
4 times or more	11 (21.6)
Urgency (ICIQ-OAB)	
Never	5 (9.8)
Almost never	1 (2)
Sometimes	14 (27.4)
Almost all the time	16 (31.4)
All the time	15 (29.4)
Urgency urinary incontinence (ICIQ-OAB)	
Never	4 (7.8)
Almost never	16 (31.4)
Sometimes	16 (31.4)
Almost all the time	1 (2)
All the time	9 (17.6)
Stress urinary incontinence (ICIQ-SF)	
Yes	36 (70.6)
No	15 (29.4)

ICIQ-OAB International Consultation on Incontinence Questionnaire-Overactive Bladder, *ICIQ-SF* International Consultation on Incontinence Questionnaire-Short Form

Table 2 Bladder function of the sample according to the International Consultation on Incontinence Questionnaire (Bladder Diary) Brazilian Portuguese Version (*ICIQ-BD-Br*)

ICIQ-BD-Br	Median (Q1–Q3)
Drinks per 24 h, ml	1,750 ml (1,250–2,250)
24-h frequency, number of episodes	8 (7.0–9.0)
Daytime frequency, number of episodes	7 (6.0–8.0)
Nocturia, number of episodes	1 (0.0–1.0)
Average daytime voided volume, ml	1,850 ml (1,310–2,150)
Maximum volume voided	400 ml (300–500)
Minimum volume voided	100 ml (50–140)
Bladder Sensation Score 0	0 (0.0–0.0)
Bladder Sensation Score 1	2 (0.0–5.0)
Bladder Sensation Score 2	0 (0.0–0.0)
Bladder Sensation Score 3	2 (0.0–5.0)
Bladder Sensation Score 4	1 (0.0–2.0)

Q1 lower quartile is the median of the lower half of the data, *Q3* upper quartile is the median of the upper half of the data

The construct validity was satisfactory, CVI >0.78. Two adjustments were made (hours of sleep/wakefulness, bladder sensation) and the test–retest reliability ranged from reasonable to excellent for all the items analyzed. The analysis of criterion validity indicated a slight agreement for one of the four symptoms analyzed (nocturia; Fig. 2).

The final adapted version of the ICIQ-BD, renamed ICIQ-BD-Br, was subjected to two alterations:

1. A designated section was added for sleep and wake time recording
2. A printed scoring system ranging from 0 to 4 was included in the bladder sensations column

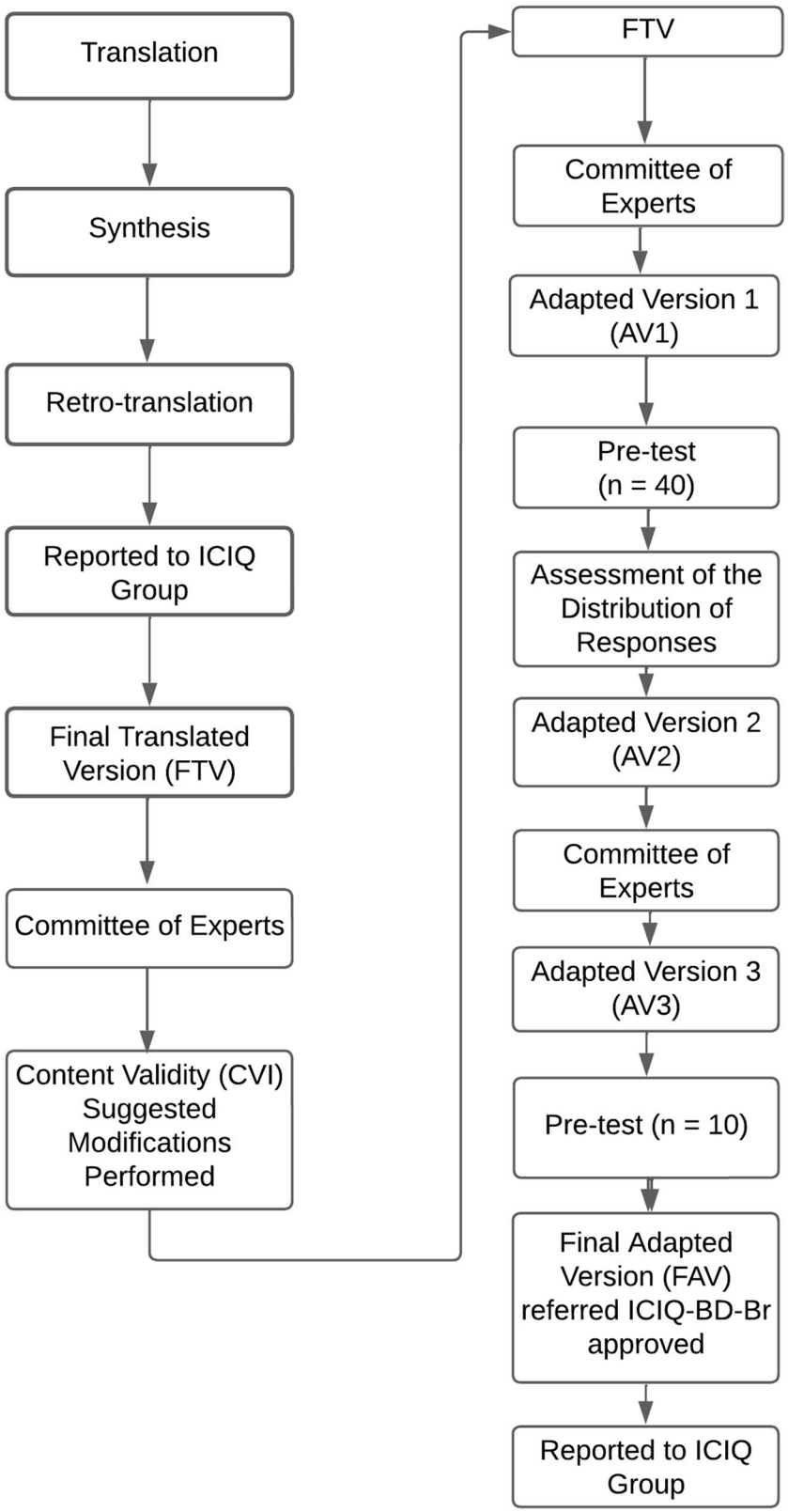

Fig. 1 Cross-cultural adaptation flowchart. *AV1* first adapted version, *AV2* second adapted version, *AV3* third adapted version, *CVI* construct validity index, *FAV* final adapted version, *FTV* final translated version, *ICIQ* International Consultation on Incontinence Questionnaire

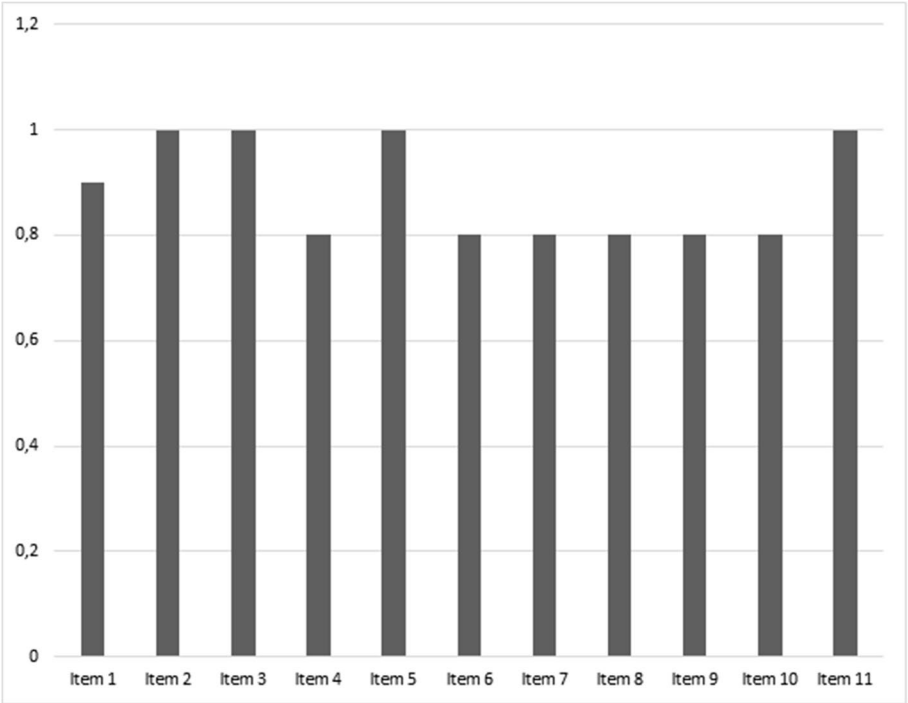

Fig. 2 Construct validity index per item. Each item was evaluated by ten experts. Item 1: presentation; item 2: time column and instructions; item 3: fluid column and instructions; item 4: voiding column and instructions; item 5: bladder sensation of score sensation 0; item 6: bladder sensation of score sensation 1; item 7: bladder sensation of score sensation 2; item 8: bladder sensation of score sensation 3; item 9: bladder sensation of score sensation 4; item 10: pads column; item 11: filling example

Internal Consistency

The ICIQ-BD-Br presented satisfactory internal consistency, with a Cronbach's alpha coefficient of 0.87, calculated with data from the first interview and the second interview (0.94), as shown in Table 3.

Test-Retest Reliability

The ICIQ-BD-Br was filled out again by 48 participants after a 15-day interval without initiating any treatment for LUTS. The tool showed significant consistency in recognizing LUTS, with a Spearman coefficient ranging from 0.64 to 0.95. The initial and subsequent completion of the survey showed no significant differences, as shown in Table 3.

Criterion Validity

Hypotheses were developed to investigate the expected associations between the ICIQ-BD-Br parameters and ICIQ-OAB questions. The four symptoms identified by the ICIQ-BD-Br were compared with the equivalent symptoms presented by the ICIQ-OAB, through agreement between the two instruments. It is noteworthy that significant agreement was observed for the symptom of nocturia (κ=0.32; p=0.002), but no significant agreements were detected between the other symptoms, as illustrated in Table 4.

Discussion

The present study translated, cross-culturally adapted, and validated the ICIQ-BD for Brazilian women experiencing LUTS. The ICIQ-BD-Br is the initial validated tool developed for this intention in the Brazilian population.

The cross-cultural adaptation process underwent three stages before the ultimate version was attained; the content validity was confirmed and endorsed by the ICIQ Group, which allowed the validation process to proceed [11]. The validation process for the ICIQ-BD-Br in this study required more steps than in previous studies conducted in other linguistic populations, such as China [10] and Iran [19], where a single adaptation phase was sufficient. The sample population of this study was made up of women with lower levels of education, of people who declared themselves to be of a color other than white or black, which differs significantly from the Chinese and Iranian studies. Some studies report similar urinary symptoms and characteristics to the Brazilian population, which corroborates the findings of this study [12, 13, 20, 21]. This factor may have been critical to the high prevalence of filling out or missing records in the ICIQ-BD-Br, which prompted the adjustments made in this study. As a result, these modifications ensure the validity of the ICIQ-BD-Br for women of this cultural profile in the Brazilian female population.

The test–retest reliability for all analyzed parameters was determined to be of high quality. These results exceed those

Table 3 Test–retest reliability and internal consistency results of the International Consultation on Incontinence Questionnaire (Bladder Diary) Brazilian Portuguese Version (*ICIQ-BD-Br*) parameters over a 15-day period subsequent to its initial filling out

ICIQ-BD-Br parameters	First ICIQ-BD-Br	Second ICIQ-BD-Br	Spearman correlation	*p* value	Cronbach's alpha		
					First ICIQ-BD-Br	Second ICIQ-BD-Br	Total
Drinks volume per 24 h	1,750 ml (1,250–2,250)	1,700 ml (1,200–2,500)	0.92 (0.84; 0.96)	<0.001	0.87	0.94	0.94
Urinary frequency per 24 h	8 (7.0–9.0)	8 (7.0–10.8)	0.70 (0.44; 0.89)	<0.001			
Daytime frequency	7 (6.0–8.0)	8 (6.0–10.0)	0.71 (0.51; 0.86)	<0.001			
Nocturia	1 (0.0–1.0)	1 (0.0–1.0)	0.76 (0.56; 0.89)	<0.001			
Urinary volume per 24 h	1,850 ml (1,310–2,150)	1,650 ml (1,350–2,350)	0.70 (0.44; 0.89)	<0.001			
Maximum urinated volume	400 ml (300–500)	400 ml (300–500)	0.82 (0.62; 0.94)	<0.001			
Minimum urinated volume	100 ml (50–140)	100 ml (50–150)	0.73 (0.53; 0.87)	<0.001			
Bladder sensation score							
0	0 (0.0–0.0)	0 (0.0–0.0)	0.64 (0.20; 0.93)	<0.001			
1	2 (0.0–5.0)	3 (0.0–5.0)	0.65 (0.44; 0.82)	<0.001			
2	0 (0.0–0.0)	0 (0.0–1.0)	0.95 (0.47; 0.91)	<0.001			
3	2 (0.0–5.0)	2 (0.0–4.0)	0.70 (0.44; 0.89)	<0.001			
4	1 (0.0–2.0)	1 (0.0–2.0)	0.76 (0.61; 0.88)	<0.001			

The analyses were performed using a *p* value of 0.05

Q1 lower quartile is the median of the lower half of the data, *Q3* upper quartile is the median of the upper half of the data

First ICIQ-BD-Br (diary) and second ICIQ-BD-Br (diary)—Median (Q1–Q3)

Table 4 Agreement analysis was conducted between the responses to the International Consultation on Incontinence Questionnaire (Bladder Diary) Brazilian Portuguese Version (*ICIQ-BD-Br*) and the International Consultation on Incontinence Questionnaire Overactive Bladder (*ICIQ-OAB*)

ICIQ-BD-Br parameters	ICIQ-OAB	Agreement (%)	Kappa (95% CI kappa)	*p* value
Nocturia	Nocturia	66.70	0.32 (0.13 to 0.52)	0.002
Urgency	Urgency	72.50	0.09 (−0.17 to 0.36)	0.433
Urgency incontinence	Urgency incontinence	58.80	0.06 (−0.17 to 0.29)	0.581
Daytime urinary frequency	Daytime urinary frequency	66.70	0.15 (−0.13 to 0.43)	0.287

reported by Bright et al., who found good to excellent reliability for almost all parameters, except for items 2 and 4 in the bladder sensation column, which were rated as regular in their study [9]. The present findings indicate that the ICIQ-BD-Br is reliable, exhibiting a uniform outcome when applied to identical subjects within varied timeframes.

The current research exhibited satisfactory criterion validity, with an agreement rate of over 50.0% for all parameters analyzed and a minor agreement index for nocturia. As the ICIQ-BD-Br and self-reported symptom questionnaires gauge comparable concepts from different viewpoints, remarkable correlations are not expected [22]. Nocturia displayed satisfactory criterion validity, consistent with the results of Bright et al. [9], where only nocturia showed an adequate agreement percentage and moderate agreement index. Additionally, Monteiro et al. observed that nocturia was the most prevalent symptom and demonstrated superior criterion validity compared with other LUTS when validating the ICIQ-OABqol_portuguese in Brazilian Portuguese [20]. In this study, the additional symptoms examined to assess criterion validity demonstrated an acceptable percentage of agreement, but a low agreement index.

Patients may underestimate or overestimate their urinary frequency, which may contribute to the low agreement on this item [23, 24]. Poor agreement on this item was also observed by Bright et al. [9]. Unlike the ICIQ-BD-Br, which

gives a score for bladder sensations, the ICIQ-OAB includes only one question about urinary urgency. This discrepancy may explain the low level of concordance. The severity of this symptom was not factored into the analyses, indicating that the ICIQ-BD-Br may not be effective in identifying patients with infrequent episodes of urinary urgency.

The reliability assessment for urinary urgency-related and UUI items in the ICIQ-BD-Br was satisfactory; however, these items did not exhibit strong criterion validity and showed low correlation with patient self-reports in the ICIQ-OAB and the ICIQ-BD-Br. This finding is consistent with the results presented in Bright et al.'s [1] original study. Therefore, careful interpretation is necessary while considering these symptoms in the ICIQ-BD-Br.

The October 2019 protocol from the ICIQ Group mandates that content validity and reliability tests are necessary to validate the tool, whereas criterion validity tests are deemed non-essential [11]. Furthermore, negative findings do not invalidate the possibility of other positive outcomes [9]. Therefore, the ICIQ-BD-Br fulfills the psychometric prerequisites for implementation in Brazilian women with LUTS and was duly authorized by the ICIQ Group [11].

Future research into certain aspects of the ICIQ-BD are necessary owing to consistent reported inadequacies in the form's filling. Primary errors, identified by Pe Leve et al. [25], were found predominantly in the columns regarding schedules, bladder sensations, and UI. These findings correspond with our own, indicating that patients experience significant comprehension challenges with these items and require tailored adaptation. Another problem encountered while adapting the ICIQ-BD was its inability to clearly differentiate between the type and cause of UI during filling out.

Potential modifications to future BD should be considered, as the ICIQ Group has expressed concern that implementing changes not included in the original could lead to distortion. These adaptations may include expanding the data entry area by altering the ICIQ-BD-Br layout, removing pre-set times from the time column, and introducing a field exclusively for recording SUI. Distinguishing between the types of urinary loss was a source of significant confusion among participants in the study, who were uncertain about where to document each type. It is noteworthy that UUI has the lowest prevalence compared with the other two types of urinary incontinence, with SUI being the most prevalent, followed by mixed urinary incontinence [2]. Therefore, it is clinically significant and necessary to differentiate between the types of urinary loss in a BD, which assesses UI among other symptoms [4, 11, 21].

Lower urinary tract symptoms have a negative impact on individuals' quality of life, leading to significant consequences for the social, physical, economic, and interpersonal aspects of those experiencing these symptoms [4, 11–13, 21]. To ensure clinical relevance and robust psychometric value in both research and clinical practice, international societies, key guidelines, and the International Consultation on Incontinence Questionnaire (ICIQ) Group advocate for low costs [4, 11–13, 26].

The meticulous cross-cultural adaptation process is the strength of this study. It was conducted by a team of experienced specialists and underwent pre-testing with a significant number of female participants, ensuring strong consistency and reliability in all adaptations performed. Furthermore, this study marks the initial validation of the ICIQ-BD-Br tool, which is highly recommended by urogynecology guidelines, for the Brazilian Portuguese language (ICIQ-BD-Br).

Limitations of this study include the educational level of the sample and the small number of participants who filled out the BD. The low education level and small sample size may have affected the accurate completion of the study period. Furthermore, data collection was conducted solely in a single treatment center for women with LUTS, which may limit the generalizability of the study's findings.

The ICIQ-BD has been successfully translated, cross-culturally adapted, and is a validated tool for Brazilian women with LUTS. The ICIQ-BD-Br exhibited robust construct validity and reliability, making it reliable for use among Brazilian women with LUTS.

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Author contributions EBM Castro: Responsible for project development, data collection, data analysis, and manuscript writing

EM Figueiredo: Data analysis, participation in the discussion of the results, and editing of the manuscript

AK Rocha: Writing and editing the manuscript

MVC Monteiro: Responsible for project development, data collection and analysis, discussion of results, and editing the manuscript

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Declarations

Conflicts of interest None.

Informed consent Not applicable.

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