DOI: 10.1590/0100-6991e-2026002825-en

Translation, Cross-Cultural Adaptation, and Validation of the HerQLes Questionnaire into Portuguese

Tradução, adaptação transcultural e validação do questionário HerQLes em língua portuguesa

Jessica Zilberman Macret[1]; Pedro Henrique Amaral TCBC-SP[1]; Eduardo Rullo Maranhão Dias TCBC-SP[1]; João Paulo Venâncio TCBC-SP[1]; Giovanna Zucchini Rondini[1]; Sergio Roll TCBC-SP[1].

ABSTRACT

Introduction: Ventral hernia repair is one of the most commonly performed procedures in general surgery and has traditionally been evaluated using objective outcomes, such as postoperative complications and recurrence rates. However, these parameters do not fully reflect the patient's perspective. The Hernia-Related Quality-of-Life Survey (HerQLes), a disease-specific questionnaire for ventral hernias, was developed to assess the functional, emotional, and aesthetic impact of the condition, but no validated Portuguese version was previously available. This study aimed to translate, cross-culturally adapt, and validate the HerQLes questionnaire for use in Brazil. **Methods:** This prospective, observational, single-cohort study included patients aged ≥18 years who underwent elective ventral hernia repair using the posterior component separation technique with Transversus Abdominis Release (TAR). The HerQLes questionnaire was administered at five time points: preoperatively and at 14 days, 30 days, 3 months, and 6 months postoperatively. Translation followed the guidelines proposed by Beaton and the International Society for Pharmacoeconomics and Outcomes Research (ISPOR), including forward translation, back-translation, expert committee review, and pretesting. Psychometric properties were assessed through internal consistency, floor and ceiling effects, Item Response Theory, construct validity, and responsiveness. **Results:** Thirty-two patients were included (median age, 58.5 years. Body Mass Index (BMI), 27.2 kg/m². mean hernia size, 9.1 cm). The HerQLes demonstrated high internal consistency at all assessment time points ($\alpha > 0.80$). Rasch model analysis showed adequate fit parameters for most questionnaire items, with positive correlations between individual items and the overall score. Progressive improvement in questionnaire scores was observed throughout follow-up: marked impairment in pain and functional domains preoperatively, modest improvement at 14 days, substantial improvement by 30 days, and normalization of scores in 96% of patients at six months. **Conclusion:** The Brazilian Portuguese version of the HerQLes proved to be valid, reliable, and responsive for assessing quality of life in patients with ventral hernia, supporting its use in both clinical practice and research while enabling comparisons with international studies.

Keywords: Ventral hernia. Quality of life. Questionnaire. HerQLes.

INTRODUCTION

Ventral hernia repair is one of the most commonly performed procedures in general surgery[1,2]. Traditionally, surgical outcomes have been assessed using objective measures, such as postoperative complications and recurrence rates. Although these indicators are essential for evaluating technical success and surgical safety, they do not fully capture the patient's experience. The incorporation of patient-centered outcomes, such as functional status and quality of life, is essential, as patients' perceptions of surgical success may differ from the criteria adopted by surgeons[3].

In recent years, quality-of-life assessment has become increasingly important in evaluating treatment outcomes and postoperative recovery. Generic instruments, such as the Short Form-36 (SF-36)[4], although useful for comparisons across different clinical conditions, may not adequately capture disease- or procedure-specific aspects. To address this limitation, disease-specific instruments have been developed, offering greater sensitivity for detecting clinically meaningful changes and addressing patients' unique concerns[1,2]. In the field of hernia surgery, advances in abdominal wall reconstruction techniques have highlighted the need for validated instruments capable

1- Faculdade de Ciências Médicas da Santa Casa de São Paulo - São Paulo – SP – Brasil.

of accurately assessing the impact of these procedures on patients' quality of life and functional status.

The Hernia-Related Quality-of-Life Survey (HerQLes) is a disease-specific questionnaire for patients with ventral hernias, developed to measure the impact of both the disease and its treatment on patients' quality of life[1]. However, no validated Brazilian Portuguese version is currently available. Therefore, this study aimed to translate, cross-culturally adapt, and validate the HerQLes questionnaire into Brazilian Portuguese, as well as to evaluate changes in quality of life among patients undergoing ventral hernia repair throughout the postoperative follow-up period.

METHODS

Study Design

This was a prospective, observational, single-cohort study. Patients aged 18 years or older who underwent elective ventral hernia repair using the posterior component separation technique with Transversus Abdominis Release (TAR) and who provided written informed consent were eligible for inclusion. Patients with cognitive impairment or language barriers that prevented adequate comprehension of the questionnaire were excluded, as were those who declined to provide written informed consent or were lost to follow-up.

The questionnaire was administered at five predefined time points: preoperatively and at 14 days, 30 days, 3 months, and 6 months after surgery, according to the original longitudinal assessment protocol of the instrument.

Demographic and clinical variables were collected, including age, sex, BMI, comorbidities (e.g., diabetes mellitus [DM]), hernia size, and postoperative complications. Follow-up assessments were conducted during routine outpatient visits, with data collection coordinated by the principal investigator.

Translation and Cross-Cultural Adaptation

The translation and cross-cultural adaptation of the HerQLes questionnaire into Brazilian Portuguese followed the methodological guidelines proposed by Beaton et al.[5], complemented by the recommendations of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) Task Force for the translation and cultural adaptation of patient-reported outcome (PRO) measures.

The process consisted of the following steps:

1. Forward translation: Two independent translations of the original English questionnaire into Portuguese were performed by native Portuguese-speaking translators. One translator had expertise in the medical field, whereas the other had no medical background and was unfamiliar with the instrument.
2. Translation synthesis: The two translated versions were compared and reconciled into a single consensus version (T-12), incorporating semantic and conceptual refinements.
3. Back-translation: The T-12 version was independently translated back into English by two native English-speaking translators who were blinded to the original questionnaire.

This step was performed to verify conceptual equivalence between the translated version and the original instrument.

4. Expert committee review: An expert committee specializing in abdominal wall surgery reviewed all versions (original, translated, and back-translated), evaluating semantic, idiomatic, experiential, and conceptual equivalence. This process resulted in the pre-final version of the questionnaire.
5. Pretesting in the target population: The pre-final version was administered to a sample of ten patients with ventral hernia to assess the clarity, comprehensibility, and acceptability of the questionnaire items. All participants demonstrated adequate understanding of the questionnaire, and no additional modifications were required.
6. Last version and documentation: Following pretesting, the final Brazilian

Portuguese version of the questionnaire was established. The entire adaptation process was thoroughly documented to ensure methodological transparency and reproducibility.

Study Setting and Population

The study was conducted at the Department of Surgery of the Irmandade da Santa Casa de Misericórdia de São Paulo, Brazil. A convenience sample was used, consisting of all consecutive patients who underwent elective ventral hernia repair using the TAR technique between December 2023 and December 2024. No formal sample size calculation was performed because this was an initial instrument validation study, and all eligible consecutive patients were enrolled during the recruitment period. This approach was intended to balance operational feasibility with the robustness of the psychometric analyses while ensuring complete follow-up across all five questionnaire administration time points. Although the sample size was relatively small (n = 32), it is considered acceptable for an initial validation study. however, this may limit the generalizability of the findings. Patients were followed at the Abdominal Wall Surgery outpatient clinic.

The study was approved by the Research Ethics Committee of the Irmandade da Santa Casa de Misericórdia de São Paulo (Approval No. 6,810,642. CAAE No. 79456024.4.0000.5479).

Instrument and Variables

The Brazilian Portuguese version of the HerQLes questionnaire was administered at all five follow-up assessments. The questionnaire consists of twelve items rated on a 6-point Likert scale, covering domains related to pain, functional limitations, emotional impact, and body image. Domain-specific scores and the overall questionnaire score were calculated.

Psychometric Analysis

The psychometric properties of the Brazilian Portuguese version of the HerQLes questionnaire were evaluated as follows:

- Response distribution: Item- and domain-level analyses were performed, with results presented as absolute and relative frequencies, accompanied by graphical representations.
- Floor and ceiling effects: Floor and ceiling effects were assessed for the total HerQLes score at each assessment time point. A floor effect was considered present when more than 15% of participants achieved the lowest possible questionnaire score (12 points), whereas a ceiling effect was considered present when more than 15% achieved the highest possible score (72 points), in accordance with established recommendations for evaluating the psychometric properties of measurement instruments. The analysis was performed at all five assessment time points (preoperatively and at 14 days, 30 days, 3 months, and 6 months postoperatively).
- Internal consistency: Internal consistency was assessed using Cronbach's alpha coefficient. Values ≥ 0.70 were considered acceptable, whereas values > 0.90 indicated excellent internal consistency.
- Item Response Theory (IRT): A Rasch Rating Scale Model was fitted to the data to estimate questionnaire scores according to Item Response Theory, using the TAM package in R[6]. In this model, each questionnaire item is assigned a difficulty parameter, whereas each respondent is assigned an ability parameter.

More difficult items are those for which only individuals with higher ability tend to endorse higher response categories on the Likert scale, whereas easier items receive higher responses regardless of respondent ability. In the present study, the ability parameter reflects the extent to which a patient's responses are higher relative to those of the study sample, whereas the difficulty parameter reflects the item's ability to discriminate between patients with better or worse quality of life.

The questionnaire score corresponds to the ability estimate generated by the model and is interpreted

inversely: higher scores indicate poorer quality of life. Parameter estimation was performed using data from all follow-up assessments, allowing direct comparison across time points.

Item fit was evaluated using the infit and outfit statistics, with values close to one considered indicative of optimal model fit. Lower values indicate highly predictable responses based on respondent ability, whereas higher values indicate less predictable response patterns.

The relationship between each questionnaire item and the overall score was examined using Pearson's correlation coefficient, which ranges from -1 to 1. Values closer to either extreme indicate stronger correlations. Positive coefficients indicate that higher item scores are associated with poorer quality-of-life scores, whereas negative coefficients indicate an inverse relationship.

- Construct validity: Construct validity was assessed by examining the association between questionnaire scores and patients' baseline characteristics in the preoperative period.

For categorical variables, descriptive statistics for questionnaire scores were calculated within each category, and box plots were generated to illustrate score distributions. Differences between categories were assessed using Student's t-test, adopting a significance level of 5%.

For continuous variables, associations with questionnaire scores were evaluated using scatter plots, Pearson's correlation coefficient, and the corresponding p-value. Interpretation considered both the direction (positive or negative) and magnitude of the correlation coefficient, as well as its statistical significance.

- Responsiveness: evaluated through paired comparisons of questionnaire scores across the different follow-up time points. Changes in questionnaire scores over time were examined using profile plots and box plots. Differences between assessment time points were analyzed using the paired t-test, with Holm correction applied for multiple comparisons.
- Intraclass Correlation Coefficient (ICC): Test-retest reliability was not assessed because the study protocol was specifically designed to evaluate the responsiveness of the HerQLes questionnaire following surgical intervention, with repeated assessments conducted at time points when clinical changes were expected. Consequently, no clinically stable interval between consecutive questionnaire administrations would have allowed the assessment of temporal reproducibility using the ICC.

Statistical analysis

Continuous variables were summarized as median and Interquartile Range (IQR), whereas categorical variables were presented as absolute and relative frequencies. Comparisons between assessment time points were performed using either the paired t test or the Wilcoxon signed-rank test[7], as appropriate, with Holm correction[8] applied for multiple comparisons. Cronbach's alpha coefficients were reported together with their corresponding 95% Confidence Intervals (CI).

All statistical analyses were performed using R software (version X.X)[7], with statistical significance set at $p < 0.05$.

RESULTS

The final Brazilian Portuguese version of the HerQLes questionnaire (Figure 1) was successfully administered in its entirety to thirty-two consecutive patients who underwent elective ventral hernia repair using the transversus abdominis release (TAR) technique, following the recommendations of Beaton et al. and the ISPOR guidelines (Figure 2). The demographic and clinical characteristics of the study participants are presented in Table 1.

	Does not happen	Rarely happens	Occasionally happens	Often happens	Almost always happens	Always happens
1. My abdominal wall affects my health	1	2	3	4	5	6
2. My abdominal wall causes pain	1	2	3	4	5	6
3. My abdominal wall interferes with strenuous physical activity, for example, lifting weights	1	2	3	4	5	6
4. My abdominal wall interferes with strenuous physical activity, for example, bending over	1	2	3	4	5	6
5. My abdominal wall interferes when I walk or climb stairs	1	2	3	4	5	6
6. My abdominal wall interferes when I get dressed, take a shower, or cook	1	2	3	4	5	6
7. My abdominal wall interferes with my sexual activity	1	2	3	4	5	6
8. I stay at home because of my abdominal wall	1	2	3	4	5	6
9. My performance in household activities is reduced because of my abdominal wall	1	2	3	4	5	6
10. My work performanceis reduced because of my abdominal wall	1	2	3	4	5	6
11. My abdominal wall affects how I feel everyday	1	2	3	4	5	6
12. I feel sad because of my abdominal wall	1	2	3	4	5	6

Figure 1. *Last version of the HerQLes questionnaire.*

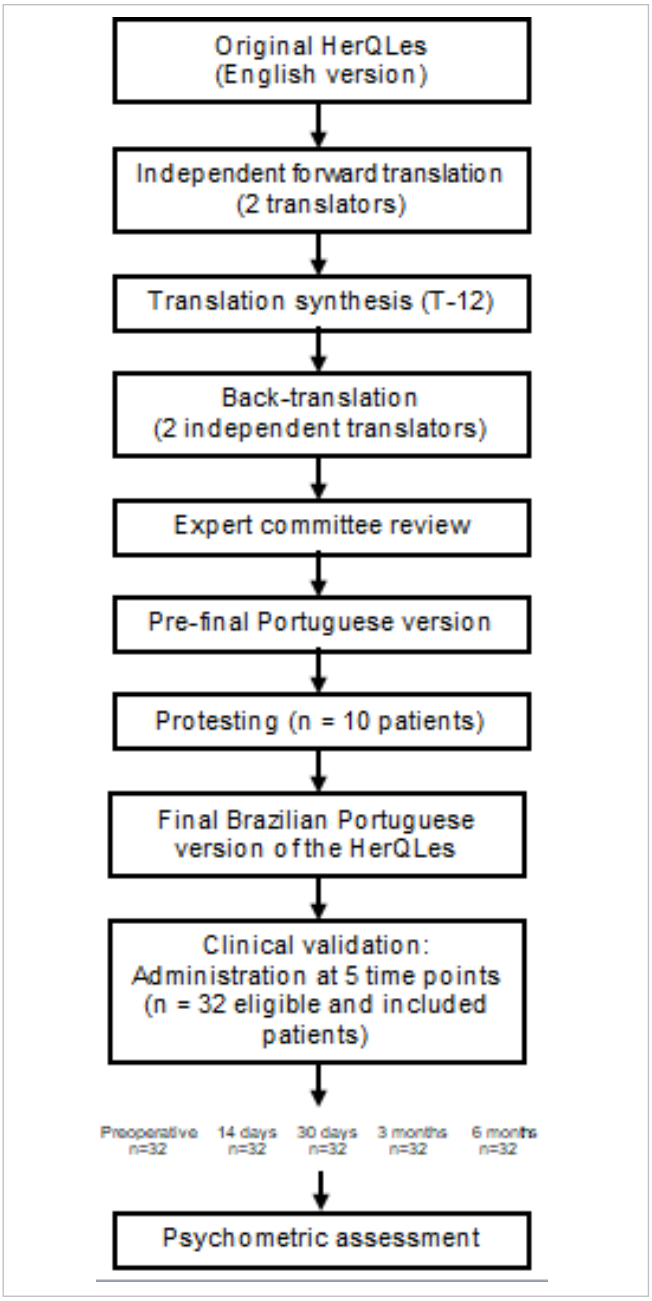


Figure 2. *Flowchart of the translation, cross-cultural adaptation, and validation process of the Brazilian Portuguese version of the HerQLes questionnaire.*

Table 1 - *Characteristics of the study participants.*

Variable	Median (IQR) or n (%)
Age, years	58.5 (51-67.8)
Sex, male	18 (56.2%)
BMI. kg/m²	27.2 (24.8-30)
Diabetes mellitus (DM)	5 (15.6%)
Current smoker	10 (31.2%)
Hernia defect size, cm	9.1 (6.9-11.3)
Postoperative complications	2 (6.2%)

Response Distribution

At the preoperative assessment, responses were concentrated on the categories representing greater symptom burden, particularly for items related to pain, functional limitations, and emotional impact. Most patients reported frequent or constant pain, as well as substantial interference of the abdominal wall condition with both moderate and strenuous physical activities and psychosocial aspects, including sadness and social withdrawal.

At 14 days postoperatively, responses still reflected considerable functional impairment, particularly regarding strenuous physical activity and sexual function, although modest improvement compared with the preoperative assessment was already evident. Starting at 30 days after surgery, a marked reduction in responses corresponding to the most severe categories was observed, accompanied by a progressive shift toward categories representing lower symptom burden.

At the three and six-month follow-up assessments, most patients reported minimal or no interference of the abdominal wall condition with their daily activities. By six months, more than 96% of responses were concentrated in the "Does not happen" category for all questionnaire items, indicating complete functional and psychosocial recovery.

Floor and Ceiling Effects

The analysis of floor and ceiling effects for the total HerQLes score is presented in Table 2. No clinically relevant floor or ceiling effects were observed at the preoperative, 14-day, or 30-day assessments, as fewer than 15% of participants achieved either the minimum or maximum possible questionnaire score. At three months, a floor effect was observed in 21.9% of patients and became more pronounced at six months, when 78.1% achieved the lowest possible HerQLes score. No ceiling effect was identified at any assessment time point, as the proportion of patients achieving the maximum possible score remained below the predefined 15% threshold throughout the study.

Table 2 - *Floor and ceiling effects of the total HerQLes score at each assessment time point.*

Assessment time point	n	Floor effect (%)	Ceiling effect (%)
Preoperative	32	0.0	6.3
14 days	32	0.0	6.3
30 days	32	0.0	0.0
3 months	32	21.9	0.0
6 months	32	78.1	0.0

Internal Consistency

The HerQLes questionnaire demonstrated high internal consistency, with Cronbach's alpha coefficients exceeding 0.80 at all assessment time points (Table 3). These findings indicate strong internal consistency among questionnaire items and support the adequacy of the Brazilian Portuguese version of the instrument.

Table 3 - *Cronbach's alpha coefficients at each assessment time point.*

	α	Lower 95% CI	Upper 95% CI
Preoperative	0,96	0,93	0,98
14 days postoperatively	0,88	0,81	0,93
30 days postoperatively	0,94	0,90	0,97
3 months postoperatively	0,96	0,94	0,98
6 months postoperatively	0,99	0,99	1

Item Response Theory Analysis

The Rasch Rating Scale Model fitted to the HerQLes data demonstrated appropriate item difficulty and fit parameters for most questionnaire items (Table 4). The items "I feel sad because of my abdominal wall" and "I stay at home because of my abdominal wall" exhibited the highest difficulty parameters, indicating an association with poorer quality-of-life scores. In contrast, the items "My abdominal wall interferes with moderate physical activity" and "My abdominal wall interferes with strenuous physical activity" showed the lowest difficulty parameters and lower discriminative ability.

The item fit statistics (infit and outfit) remained close to the expected values for most items. Furthermore, the model demonstrated excellent item separation reliability (Item Separation Reliability = 0.98), indicating appropriate ordering of item difficulty along the latent trait.

Table 4 - *Rasch model parameters.*
A) Item parameters

Item	Difficulty	SE	Infit	Outfit	Correlation with overall score
I feel sad because of my abdominal wall	0.22	0.11	2.46	1.45	0.74
I stay at home because of my abdominal wall	0.15	0.11	1.89	1.18	0.77
My abdominal wall affects how I feel every day	-0.48	0.10	1.28	0.75	0.87
My abdominal wall interferes when I get dressed, bathe, or cook	-0.69	0.10	0.72	0.52	0.93
My performance in household activities is reduced because of my abdominal wall	-0.90	0.10	0.82	0.60	0.93
My abdominal wall interferes when I walk or climb stairs	-1.28	0.10	0.80	0.56	0.94
My abdominal wall causes pain	-1.53	0.10	0.55	1.22	0.96
My work performance is reduced because of my abdominal wall	-1.56	0.10	0.98	0.70	0.93
My abdominal wall affects my health	1.65	0.10	0.61	0.59	0.95
My abdominal wall interferes with my sexual activity	1.87	0.10	0.68	0.49	0.94
My abdominal wall interferes with moderate physical activity, such as bending over	-1.99	0.10	0.71	0.50	0.93
My abdominal wall interferes with strenuous physical activity, such as lifting weights	-2.36	0.11	0.70	0.54	0.92

B) Overall model parameters.

Parameter	Value
Item Separation Reliability	0.98
Item Separation Index	8.02

Association Between Preoperative HerQLes Scores and Baseline Characteristics

No statistically significant associations were observed between preoperative HerQLes scores and the demographic or clinical variables evaluated. Specifically, no significant differences were found according to sex, presence of diabetes mellitus, smoking status, or the occurrence of postoperative complications. Likewise, no significant correlations were identified between questionnaire scores and continuous variables, including age, body mass index, and hernia defect size (all $p > 0.05$).

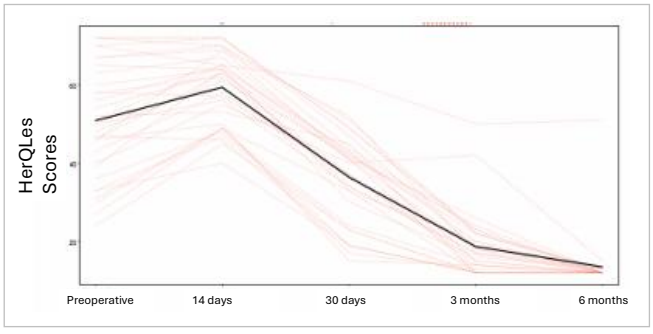


Figure 3. *Profile plot of HerQLes scores over time. Individual patient trajectories are shown as dashed lines, and the group mean is represented by the solid line.*

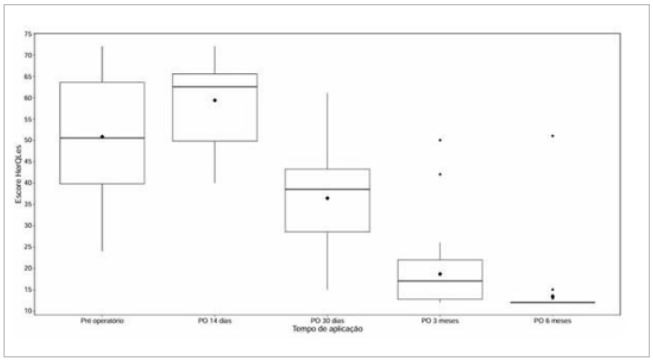


Figure 4. *Box plot of total HerQLes scores according to assessment time point.*

Longitudinal Changes in HerQLes Scores

Longitudinal analysis of the total HerQLes score demonstrated a progressive and statistically significant reduction throughout postoperative follow-up. A modest improvement was observed over 14 days, followed by a marked decrease in questionnaire scores in 30 days, with sustained improvement at the three and six-month assessments. Pairwise comparisons confirmed statistically significant

differences between the preoperative assessment and all subsequent postoperative time points ($p < 0.05$), as shown in Table 5.

Table 5 - *P values from paired t tests comparing HerQLes scores across assessment time points.*

	Preoperative	14 days postoperatively	30 days postoperatively	3 months postoperatively
14 days postoperatively	0.000006			
30 days postoperatively	0.000000	0.000000		
3 months postoperatively	0.000000	0.000000	0.000000	
6 months postoperatively	0.000000	0.000000	0.000000	0.000020

DISCUSSION

In this study, we translated, cross-culturally adapted, and validated the Brazilian Portuguese version of the Hernia-Related Quality-of-Life Survey (HerQLes), a disease-specific instrument designed to assess quality of life in patients with ventral hernias.

The HerQLes was originally developed to evaluate functional and psychosocial aspects related to abdominal wall hernias, dimensions that are not fully captured by generic quality-of-life instruments1. Since its introduction, the HerQLes has been widely used in clinical studies, contributing to the systematic incorporation of patient-centered outcomes into ventral hernia surgery.

The availability of a validated Brazilian Portuguese version enables, for the first time, the standardized use of this instrument in Portuguese-speaking populations, thereby facilitating international comparisons of patient-reported outcomes.

Our study included 32 consecutive patients who underwent elective ventral hernia repair using the posterior component separation technique with Transversus Abdominis Release (TAR). Although the original HerQLes development study included 88 participants, the sample size of the present study is consistent with those of initial validation studies of patient-reported outcome measures. Furthermore, all participants completed assessments at five predefined time points, substantially increasing the number of observations available for psychometric analyses, including internal consistency, construct validity, Rasch model analysis, and responsiveness.

Substantial preoperative impairment was observed across multiple HerQLes domains. More than 40% of patients reported constant pain and frequent limitations during strenuous physical activity, in addition to considerable psychosocial impact, including daily feelings of sadness and social withdrawal. These findings are consistent with the original HerQLes publication, in which pain, functional limitations, and emotional well-being were identified as the principal dimensions of preoperative impairment[1].

Following surgery, questionnaire scores demonstrated progressive and sustained improvement. At postoperative day 14, a high frequency of responses indicating persistent functional limitations remained, particularly regarding strenuous physical activity and sexual function. However, by 30 days after surgery, a marked reduction in both functional and psychosocial impairment was observed. During the 3-month follow-up, most patients reported no pain and minimal interference with daily activities, and by six months, limitations across all questionnaire domains had become virtually absent. This temporal pattern of recovery is consistent with previous international studies demonstrating that most improvements occur during the first postoperative months and are maintained over the long term[1,9].

Similarly to previous international reports, patients with larger hernia defects experienced particularly pronounced improvements in our cohort. This finding further supports the sensitivity of the HerQLes to detect clinically meaningful changes in patients with more severe disease, as previously demonstrated in cohorts of patients with large ventral hernias9. Moreover, prospective multicenter studies have shown that patients undergoing repair of recurrent hernias, despite presenting poorer baseline quality-of-life scores, also achieve substantial postoperative improvements, highlighting the usefulness of the HerQLes even in more complex clinical settings[10].

Item Response Theory analysis using the Rasch model demonstrated adequate fit for most questionnaire items, with difficulty parameters consistent with their expected clinical relevance. Items addressing emotional distress and social restriction exhibited higher difficulty parameters, suggesting a stronger association with poorer overall quality of life. These findings reinforce the clinical importance of these domains in the experience of patients with ventral hernias. Nevertheless, given the sample size and the exploratory nature of this initial validation study, the Rasch model findings should be interpreted cautiously and considered preliminary, providing a foundation for future studies involving larger patient populations.

No statistically significant associations were observed between preoperative HerQLes scores and objective clinical variables, including age, body mass index, hernia defect size, or the presence of comorbidities. This lack of association may reflect the inherently subjective nature of quality-of-life outcomes, which do not necessarily correlate linearly with isolated anatomical or clinical measures. These findings further emphasize that patient-reported outcomes capture dimensions distinct from those assessed through conventional clinical evaluation, encompassing psychosocial factors, individual perceptions, and functional adaptation. In addition, the relative homogeneity of the study population and the limited sample size may have reduced the statistical power to detect more subtle associations.

The findings of the present validation study should be interpreted within the context of currently available instruments for assessing quality of life in patients with abdominal wall hernias. Although generic questionnaires, such as the SF-36 and the EQ-5D, have been validated for use in the Brazilian population and

enable comparisons across different clinical conditions, they are less sensitive to disease-specific symptoms and the functional impact of ventral hernias. Conversely, hernia-specific instruments, such as the EuraHS-QoL[11] and the HerQLes, were specifically developed to assess disease- and treatment-related outcomes and have demonstrated greater sensitivity in detecting clinically meaningful changes following abdominal wall reconstruction. In this context, the availability of a validated Brazilian Portuguese version of the HerQLes represents an important advance for clinical research in abdominal wall surgery in Brazil, expanding access to a disease-specific patient-reported outcome measure and promoting greater standardization of patient-reported outcome assessment while facilitating comparisons across national and international studies. Although convergent validity with other quality-of-life instruments was not evaluated in the present study, this psychometric property should be investigated in future studies through the concurrent administration of both generic and disease-specific questionnaires.

The responsiveness of the instrument was clearly demonstrated throughout follow-up, with a progressive shift toward response categories representing lower symptom burden after surgery. By six months, more than 96% of responses were concentrated in the "Does not happen" category across all questionnaire items, demonstrating the high sensitivity of the HerQLes to detect clinically meaningful changes. Although the formal estimation of the Minimal Clinically Important Difference (MCID) was not a primary objective of this study, the magnitude of the observed improvement not only demonstrated statistical significance but also suggests that patients achieved clinically meaningful benefits, potentially exceeding the threshold for minimal clinically important change reported in the literature[12].

The evaluation of floor and ceiling effects further supported the psychometric performance of the Brazilian Portuguese version of the HerQLes. No clinically relevant floor or ceiling effects were observed during the preoperative period or the early postoperative assessments, indicating that the instrument adequately discriminates between different levels of ventral hernia-related impairment. The floor effect observed at three months, and particularly at six months, reflected the high proportion of patients who achieved the lowest possible questionnaire score following abdominal wall reconstruction. Considering that the study population consisted exclusively of patients undergoing complex abdominal wall reconstruction using the TAR technique (procedure associated with substantial functional recovery and marked improvements in quality of life), this finding most likely reflects the excellent clinical outcomes achieved by the cohort rather than an intrinsic limitation of the instrument. Nevertheless, in populations experiencing near-complete recovery, the presence of a floor effect may reduce the instrument's ability to discriminate among individuals with excellent functional status, a phenomenon that is expected for disease-specific quality-of-life instruments following highly effective surgical interventions.

Several limitations should be acknowledged. This was a single-center convenience cohort conducted at a quaternary referral center, involving a highly selected patient population treated exclusively with a specific surgical technique (TAR). Consequently, the generalizability of the findings may be limited, and the observed outcomes may overestimate those expected in patients treated at lower-complexity institutions or with alternative abdominal wall reconstruction techniques. In addition, although the sample size was adequate for an initial validation study, it limits the precision of some psychometric estimates. Furthermore, the temporal stability of the Brazilian Portuguese version of the HerQLes could not be assessed through test-retest reliability and the Intraclass Correlation Coefficient (ICC), because the study protocol was specifically designed to evaluate responsiveness following surgical intervention. Repeated questionnaire administrations were intentionally scheduled at time points during which clinical improvement was expected as part of postoperative recovery. Consequently, no clinically stable interval was available between consecutive assessments to evaluate temporal reproducibility. Accordingly, the present findings should be interpreted as an initial validation of the Brazilian Portuguese version of the HerQLes.

Future multicenter studies involving larger, more heterogeneous populations, as well as different abdominal wall reconstruction techniques, are warranted

to confirm the stability of the psychometric parameters, evaluate specific clinical subgroups, and further establish the instrument's external validity. Nevertheless, the findings of the present study demonstrate that the Brazilian Portuguese version of the HerQLes provides a reliable, valid, and responsive measure of the impact of ventral hernias and their surgical repair on patients' quality of life.

CONCLUSION

The Brazilian Portuguese version of the HerQLes proved to be a valid, reliable, and responsive instrument for assessing abdominal wall–related quality of life in patients with ventral hernias. Its high internal consistency and sensitivity to detect clinically meaningful changes over time support its applicability in both clinical practice and research settings. Future multicenter studies involving larger and more heterogeneous patient populations are warranted to confirm these findings and further establish the generalizability of the Brazilian Portuguese version of the HerQLes.

ACKNOWLEDGMENTS

The authors thank the Abdominal Wall Surgery Group and the Department of Surgery of the Irmandade da Santa Casa de Misericórdia de São Paulo for their scientific and institutional support. The authors also thank all the patients who placed their trust in the research team and agreed to participate in this study, making this work possible.

R E S U M O

Introdução: A correção de hérnias ventrais é procedimento frequente em cirurgia geral, tradicionalmente avaliado por desfechos objetivos como complicações e recidivas. Entretanto, esses parâmetros não refletem plenamente a percepção do paciente. O HerQLes, questionário específico para hérnias ventrais, foi desenvolvido para mensurar impacto funcional, emocional e estético, mas não havia versão validada em português. Este estudo teve como objetivo traduzir, adaptar culturalmente e validar o HerQLes para o Brasil. **Métodos:** Trata-se de estudo prospectivo, observacional, de coorte única, incluindo pacientes ≥18 anos submetidos à correção eletiva de hérnia ventral pela técnica de separação posterior de componentes (TAR). O HerQLes foi aplicado em cinco momentos: pré-operatório e 14 dias, 30 dias, 3 meses e 6 meses no pós-operatório. A tradução seguiu as diretrizes de Beaton e da ISPOR, com etapas de tradução, retrotradução, revisão por especialistas e pré-teste. As propriedades psicométricas foram avaliadas por consistência interna, efeito piso e teto, Teoria de Resposta ao Item, validade de constructo e responsividade. **Resultados:** Foram incluídos 32 pacientes (idade mediana 58,5 anos, IMC 27,2 kg/m², tamanho médio da hérnia 9,1 cm). O HerQLes apresentou alta consistência interna em todos os momentos (α>0,80). O modelo Rasch demonstrou parâmetros adequados para a maioria dos itens, com correlação positiva entre itens e escore total. Observou-se melhora progressiva dos escores ao longo do seguimento: pré-operatório com grande impacto em dor e função; 14 dias com melhora discreta; redução acentuada aos 30 dias; e normalização em 96% dos pacientes aos 6 meses. **Conclusão:** A versão brasileira do HerQLes mostrou-se válida, confiável e responsiva para avaliar qualidade de vida em pacientes com hérnia ventral, permitindo aplicação clínica e científica e comparabilidade internacional.

Palavras-chave: Hérnia ventral. Qualidade de vida. Questionário. HerQLes.

REFERENCES

1. Krpata DM, Schmotzer BJ, Flocke S, Jin J, Blatnik JA, Ermlich B, et al. Design and initial implementation of HerQLes: a hernia-related quality-of-life survey to assess abdominal wall function. J Am Coll Surg. 2012;215(5):635–42. doi:10.1016/j.jamcollsurg.2012.06.412.
2. Heniford TB, Walters AL, Lincourt AE, Novitsky YW, Hope WW, Kercher KW. Comparison of generic versus specific quality-of-life scales for mesh hernia repairs. J Am Coll Surg. 2008;206(4):638–44. doi:10.1016/j.jamcollsurg.2007.11.025.
3. Kim JE, Mourad M, Phillips SE, et al. Association of changes in HerQLes scores with objective hernia outcomes: an analysis of the ACHQC database. Surg Endosc. 2024;38:6812–26. doi:10.1007/s00464-024-11140-y.
4. Brazier JE, Harper R, Jones NM, O'Cathain A, Thomas KJ, Usherwood T, et al. Validating the SF-36 health survey questionnaire: new outcome measure for primary care. BMJ. 1992;305(6846):160–4. doi:10.1136/bmj.305.6846.160.
5. Beaton DE, Bombardier C, Guillemin F, Ferraz

MB. Guidelines for the process of cross-cultural adaptation of self-report measures. Spine. 2000;25(24):3186–91. doi:10.1097/00007632-200012150-00014.
6. R Core Team. R: A language and environment for statistical computing. Vienna: R Foundation for Statistical Computing; 2018.
7. Morettin PA, Bussab WO. Estatística básica. 8th ed. São Paulo: Saraiva; 2013.
8. Neter J, Kutner MH, Nachtsheim CJ, Wasserman W. Applied linear statistical models. 3rd ed. Chicago: Irwin; 1990.
9. Haisley KR, Vadlamudi C, Gupta A, Collins CE, Renshaw SM, Poulose BK. Greatest quality of life improvement in patients with large ventral hernias: an individual assessment of items in the HerQLes survey. J Surg Res. 2021;268:337–46. doi:10.1016/j.jss.2021.06.075.
10. Wilson HH, Rose M, Ku D, Scarola GT, Augenstein VA, Colavita PD, et al. Prospective, international analysis of quality-of-life outcomes in recurrent versus primary ventral hernia repairs. Am J Surg. 2023;226(6):803–7. doi:10.1016/j.amjsurg.2023.06.022.
11. Muysoms FE, Vanlander A, Ceulemans R, Kyle-Leinhase I, Michiels M, Jacobs I, et al. A prospective, multicenter, observational study on quality of life after laparoscopic inguinal hernia repair with ProGrip laparoscopic, self-fixating mesh according to the European Registry for Abdominal Wall Hernias Quality of Life Instrument. Surgery. 2016;160(5):1344-57. doi: 10.1016/j.surg.2016.04.026.
12. Renshaw SM, Gupta A, Poulose BK. Establishing the minimal clinically important difference for the Hernia-Related Quality of Life Survey (HerQLes). Am J Surg. 2022;223(2):245–9. doi:10.1016/j.amjsurg.2021.06.018.

Data availability
Datasets related to this article will be available upon request to the corresponding author.

Received in: 17/09/2025
Accepted for publication: 10/07/2026
Conflict of interest: no.
Funding source: none.

Editor
Daniel Cacione
Associated Editor
Álvaro Antônio Bandeira Ferraz

Mailing address:
Jessica Zilberman Macret
E-mail: jemacret@uol.com.br

CC BY