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Self-efficacy for weight loss: questionnaire and criteria validation to guide the care of individuals with obesity in the SUS

Autoeficácia para redução do peso corporal: validação de questionário e de critérios para apoiar o cuidado da pessoa com obesidade no SUS

Thanise Sabrina Souza Santos¹ , Patrícia Constante Jaime² , Natácha Toral³ ,
Aline Cristine Souza Lopes⁴ 

¹ Universidade de São Paulo, Núcleo de Pesquisas Epidemiológicas em Nutrição e Saúde, Faculdade de Saúde Pública. São Paulo, SP, Brasil.

² Universidade de São Paulo, Faculdade de Saúde Pública, Departamento de Nutrição. São Paulo, SP, Brasil.

³ Universidade de Brasília, Departamento de Nutrição, Campus Universitário Darcy Ribeiro. Brasília, DF, Brasil.

⁴ Universidade Federal de Minas Gerais, Grupo de Pesquisa de Intervenções em Nutrição, Departamento de Nutrição. Belo Horizonte, MG, Brasil. Correspondence to: ACS LOPES. E-mail: <alinelopesenf@gmail.com>.

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ABSTRACT

Objective

To translate, cross-culturally adapt, and validate a questionnaire measuring self-efficacy for weight loss and to validate criteria to guide the care flow of individuals with obesity.

Methods

A questionnaire, originally in English, was translated into Portuguese and cross-culturally adapted for use in the *Sistema Único de Saúde* using a sequential approach. Experts and health professionals assessed the content and comprehensibility of items, respectively. Individuals with obesity answered the translated and adapted questionnaire as well as questions about stages of change, sociodemographic characteristics, and nutritional status. The criteria validity was performed using sensitivity analysis.

Results

One item was excluded, and three were changed for better clarity and adequacy with a reduction in response options. The questionnaire had high specificity (85%) to identify individuals in 'pre-action' who were not confident about weight loss.

Conclusion

The questionnaire was valid for use in the SUS with the potential to improve the care offered to individuals with obesity.

Keywords: Self-efficacy. Surveys and questionnaires. Unified Health System. Validation study. Weight loss.

RESUMO

Objetivo

Traduzir, adaptar transculturalmente e validar questionário de avaliação da autoeficácia para redução de peso, e validar critérios de fluxo do cuidado da pessoa com obesidade.

Métodos

Realizou-se tradução e adaptação transcultural de questionário, originalmente em inglês, para o português e para aplicação no Sistema Único de Saúde, mediante abordagem sequencial. Especialistas e profissionais de saúde avaliaram o conteúdo e a compreensibilidade dos itens, respectivamente. Pessoas com obesidade responderam ao questionário traduzido e adaptado e questões sobre estágios de mudança, informações sociodemográficas e estado nutricional. A validação dos critérios foi realizada por análise de sensibilidade.

Resultados

Um item foi excluído e outros três alterados para uma escrita clara e adequada, com redução das opções de respostas. Verificou-se alta especificidade (85%) do questionário para identificar pessoas em pré-ação não confiantes para reduzir peso.

Conclusão

O questionário apresentou validade para uso no SUS com potencial para aprimorar o cuidado ofertado para pessoas com obesidade.

Palavras-chave: Autoeficácia. Inquéritos e questionários. Sistema Único de Saúde. Estudo de validação. Redução de peso.

INTRODUCTION

Obesity is a public health problem, as pointed out by the Risk and Protective Factors for Chronic Diseases Surveillance Telephone Survey, which found that its prevalence almost doubled from 2006 to 2023 (from 11.8% to 24.3%) in the Brazilian adult population [1]. Among users monitored in Primary Health Care (PHC) units between 2008 and 2019, the prevalence of obesity had an annual variation of 6.4% (from 14.5% to 28.5%) [2]. This growth trend suggests that the traditional care approaches based strictly on caloric restriction and energy expenditure have not worked. On the other hand, a broader approach, including behavior change, has been shown to be important to manage obesity effectively [3,4].

In Brazil, technical materials aimed at increasing the results of obesity management have been produced by the Brazilian Ministry of Health to qualify health professionals from the *Sistema Único de Saúde* (SUS, Unified Public Health System) [5]. The “Instructions for Collective Approach to Manage Obesity in the SUS” presents a “Strategy for the Care of Person with Obesity in SUS” focused on PHC and Specialized Care (here, this study will henceforth be called the “Strategy”). This “Strategy” combines the stage of change and the user’s self-efficacy to organize the care actions offered by the SUS [6]. It proposes that users ready to make behavioral changes aimed at weight loss, i.e., those in the most advanced stages, regardless of self-efficacy, and those in the decision stage and with high self-efficacy, should be directed to therapeutic groups [6].

A recent scoping study identified that the stages of change and self-efficacy are constructs of the Transtheoretical Model that should be used as predictive characteristics for interventions aimed at weight loss [7]. In Brazil, a randomized controlled clinical trial conducted with overweight women, which evaluated the effects of an intervention based on the Transtheoretical Model, obtained positive results for weight loss, diet, and biochemical profile [8].

Stages of change relate to a person’s readiness to change a particular behavior [9,10], such as weight loss. People can be classified into five stages: precontemplation, when someone has no

intention to change behavior – lose weight – in the next six months, requiring awareness to change; contemplation, when the person recognizes that they need to lose weight but does not have a concrete plan to do so in the near future, as in the next month; decision or preparation, when the person is determined to lose weight and plans to begin the change in the next thirty days; action, when behavior changes for healthy weight have begun and continued for less than six months, which requires support for the continuity of this change; and maintenance, when this behavior change has been maintained for six months or more, being necessary to consolidate the gains made and avoid relapses [6,9]. On the other hand, self-efficacy is the confidence the person has in themselves to change and maintain a certain behavior over time [10]. Thus, the greater the self-efficacy, the more confident the person feels to set goals and achieve them, even in the face of obstacles; and the more advanced the stage of change may reach [11].

Considering self-efficacy in planning obesity management actions can lead to a greater resolution of the care offered, inducing changes and preventing relapses. Furthermore, it can provide a better alignment between motivation and confidence for change and the adoption of intervention strategies proposed by the health team. For this, questionnaires are needed that have proven validity and are easy to apply; however, no validated questionnaire is available for Brazil, especially applicable in the SUS. Therefore, the objective of this study was to translate, cross-culturally adapt, and validate a questionnaire that assesses self-efficacy to lose body weight for use in the SUS, as well as validate self-efficacy classification criteria proposed in the “Strategy” [6] to support the care of people with obesity in the SUS.

METHODS

A psychometric study was conducted to translate, cross-culturally adapt, and validate a set of items to assess self-efficacy for weight loss and validate the criteria proposed by the “Strategy” [6].

Translation and cross-cultural adaptation

Initially, the rapid scale was selected for translation and cross-cultural adaptation to assess self-efficacy in weight loss programs, proposed by Wilson et al. [12], with evidence of validity and compatible for use in the SUS, because it is simple and objective. This scale includes three dimensions of self-efficacy: healthy eating, active living, and weight loss [12]. The present study focused on the last dimension, which has four items to assess how confident the person is to confront potential challenges for behavioral change aimed at reducing body weight: (1) time to effect changes; (2) number of attempts; plus the need to (3) reflect on strategies; and (4) develop an action plan. Each item presents as response options an eleven-point scale ranging from ‘0%: not confident’ to ‘100%: completely confident’ [12].

The translation and cross-cultural adaptation process occurred between September and October 2019, applying a sequential approach in nine steps [13] (Figure 1). The original questionnaire (including instruction, items, and response options) in English was translated and adapted to Brazilian Portuguese, considering the context of application in the SUS. The primary author of the original questionnaire [12] authorized its translation and cross-cultural adaptation.

Online forms were used for data collection. In steps 1 and 3, translators helped put the text into Portuguese and with its back-translation into English (BT3), respectively. In Step 4, a reviewer compared the original text with the BT3 to indicate the equivalency of meanings and suggested changes to make it closer to the original text. In case of discrepancies, the respective step was repeated. Steps 5 and 7 included translation review, consolidation, and cross-cultural adaptation.

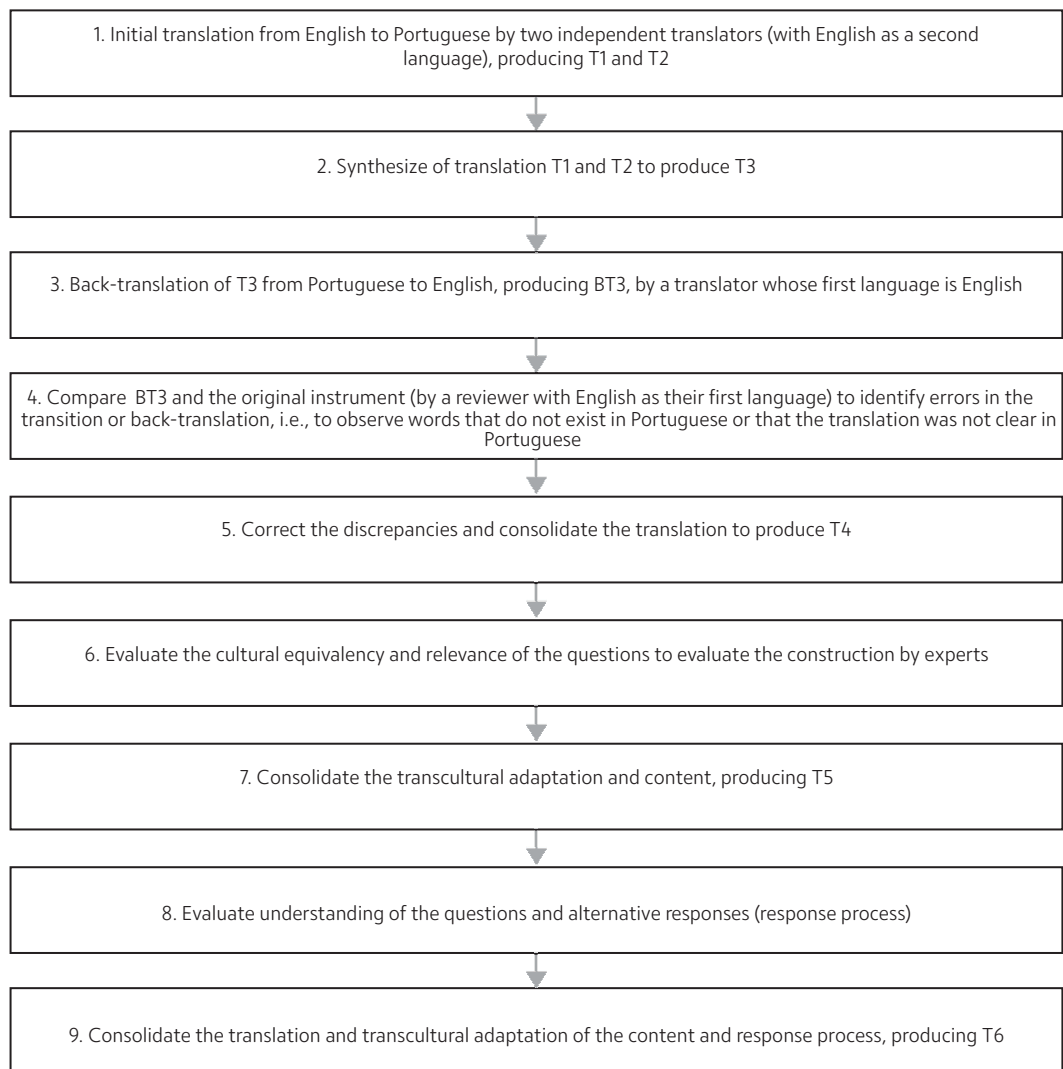


Figure 1– Description of the stages in the translation and cross-cultural adaptation of the questionnaire on self-efficacy for weight loss.

Note: T1: translation number 1. T2: translation number 2. T3: translation number 3. T4: translation number 4. T5: translation number 5. T6: translation number 6. BT3: Back-translation of translation number 3.

In Step 6, twenty experts with experience in PHC (care, management, or research), obesity, and instrument validation from the authors' list of contacts were invited by email to obtain five to ten participants [14]. The experts were asked to evaluate the relevance and pertinence of the items and make suggestions that could improve the clarity of the text when necessary. The data were analyzed by calculating the Content Validity Ratio (CVR) to evaluate the content of the items and the Content Validity Index of an Item (I-CVI) and modified kappa (k^*) to evaluate the agreement between experts [14]. The content of each item was considered essential when $CVR > 0.64$ [15]. The agreement among experts on the relevance of the item was accepted when $I-CVI > 0.78$ and $k^* > 0.60$ [16].

In addition, the experts were asked about the consistency of the 11 response options with the wording of the items. To evaluate this coherence, they compared the original options with an alternative set of five response options proposed by the authors: 'not confident,' 'somewhat confident,' 'moderately confident,' 'very confident,' and 'completely confident.'

In Step 8, 68 health professionals working in PHC from the authors' list of contacts were invited by email or messaging app to evaluate how much they understood the instructions, the items, and the response options, which may indicate 'I did not understand anything'; 'I understood only a little'; 'I understood more or less'; 'I understood almost everything, but I had some uncertainties'; 'I understood almost everything'; 'I understood perfectly and have no uncertainties.' The form also contained space for suggestions to improve the clarity of the items. Data were analyzed by calculating frequencies (relative and absolute) using Stata software version 14. Low comprehension was considered when a high percentage of responses was identified as 'I didn't understand anything,' 'I understood only a little,' and 'I understood more or less' [17]. These items were changed considering the suggestions of the professionals and discussions between the authors. At this stage, the saturation criterion was adopted to finalize data collection [13].

Validation for use in the SUS

To validate the translated and adapted questionnaire for use in Brazil, an online survey was published on a platform of a company specialized in market research with national coverage. Between August and September 2021, the form was shared to reach adults with obesity (excluding pregnant women) from all macroregions of the country. A minimum of ten responses per questionnaire item was considered for the sample size [18].

In addition to the questionnaire on self-efficacy for weight loss, the form included questions to identify the stages of change, as proposed by the Ministry of Health [19], sociodemographic information (age, in age groups; sex; education in categories; and macro-region of residence), and nutritional status, calculated from self-reported measures and classified as obesity grades 1, 2, and 3 [20].

The evaluation of the stages of change was included on the form to validate the self-efficacy classification criterion proposed by the "Strategy" [6]. For this analysis, the stages of change were grouped into: 'pre-action' (precontemplation and contemplation stages), 'decision,' and 'action' (action and maintenance stages). This proposed grouping has been used to optimize actions in routine health services and group people with similar readiness levels [10]. Self-efficacy was organized into three levels: low (two or more responses 'not at all confident' or 'not very confident'); high (two or more responses 'very confident' or 'completely confident'); and moderate (does fall into either of these categories).

To validate the criterion proposed in the "Strategy" [6], bivariate correspondence analysis was performed in February 2022 to identify the similarity between low, moderate, and high self-efficacy and stages of change groupings. The results were presented in a multidimensional plane, in which the positioning in the plane suggests the similarity between the levels of self-efficacy and the stages of change [21]. Analyses were performed in R Studio using 'ca' package.

Next, two classification criteria were tested to identify self-efficacy among people in 'decision': 1. Moderate or less self-efficacy and 2. High self-efficacy (proposed in the "Strategy" [6]), calculating sensitivity and specificity. This analysis, performed in Excel for Windows, included people in 'pre-action' and 'decision' and evaluated according to Lange and Lippa [22]. It was assumed that people with low or moderate self-efficacy were in 'pre-action' and those with high self-efficacy were in 'decision.' Subsequently, the positive (PPVs) and negative (NPVs) predictive values were calculated for different prevalences of people in 'decision' [22], considering the two criteria tested to identify the scenarios that the questionnaire achieves the best performance in identifying people in 'decision' and confident for the change.

Ethical aspects

All subjects agreed to participate in the study by signing an online consent form. This study was approved by the Research Ethics Committees of the University of São Paulo and of the Federal University of Minas Gerais (no. 3,340,420 and no. 4,576,527).

RESULTS

Translation and cross-cultural adaptation

When comparing BT3 with the original instrument, the reviewer identified a semantic difference in item 3 on confidence to lose weight in case of the need to rethink strategies, requiring a new evaluation by the translators. The changes in items and response options are presented in Chart 1.

Chart 1 – Description of the changes made during the translation and cross-cultural adaptation process (a). and final version of the questionnaire on self-efficacy for body weight reduction (b).

(a)					
Item	1	2	3	4	Response options
Original wording	How confident are you that you can lose weight even if you need a long time to develop the necessary routines?	How confident are you that you can lose weight even if you have to try several times until it works?	How confident are you that you can lose weight even if you have to rethink your entire way of losing weight?	How confident are you that you can lose weight even if you have to make a detailed plan?	Please answer the following questions using this scale. 0%: Not confident. 100%: Completely confident.
Review and reconciliation of the translation (after considering steps 1 to 4) that was sent to experts (step 6)	<i>Quanto confiante você está para perder peso mesmo que precise de muito tempo para desenvolver comportamentos necessários?</i>	<i>Quanto confiante você está para perder peso mesmo que tenha que tentar diversas vezes até que funcione?</i>	<i>Quanto confiante você está para perder peso mesmo que tenha que repensar todas as suas estratégias para perda de peso?</i>	<i>Quanto confiante você está para perder peso mesmo que tenha que elaborar um plano detalhado para isso?</i>	<i>Por favor, responda as próximas questões usando a escala de 0% a 100%. 0% significa nenhuma confiança ('Nada confiante') e 100% significa completa confiança.</i>
Proposal by the experts	<i>Quão confiante você está para perder peso mesmo que precise de muito tempo para melhorar suas práticas?</i>	<i>Quão confiante você está para perder peso mesmo que precise de muitas tentativas até que consiga?</i>	<i>Quão confiante você está para perder peso mesmo que precise repensar suas estratégias para perder peso?</i>	Item excluded	<i>Nada confiante. Pouco confiante. Moderadamente confiante. Muito confiante. Completamente confiante.</i>
Final proposal with adjustments for better understanding	<i>Quão confiante você está para perder peso mesmo que precise de muito tempo para melhorar suas práticas?</i>	<i>Quão confiante você está para perder peso mesmo que precise de muitas tentativas até que consiga?</i>	<i>Quão confiante você está para perder peso mesmo que precise repensar suas estratégias?</i>	Item excluded	<i>Nada confiante. Pouco confiante. Moderadamente confiante. Muito confiante. Completamente confiante.</i>
(b)					
<i>Quão confiante você está para perder peso mesmo que... (How confident are you in losing weight even if...)</i>	<i>Nada confiante (Not confident)</i>	<i>Pouco confiante (Somewhat confident)</i>	<i>Moderadamente confiante (Moderately confident)</i>	<i>Muito confiante (Very confident)</i>	<i>Completamente confiante (Completely confident)</i>
<i>...precise de muito tempo para melhorar suas práticas? (...need a lot of time to improve your practices?)</i>					
<i>...precise de muitas tentativas até que consiga? (...require a lot of trying before you achieve it?)</i>					
<i>...precise repensar suas estratégias? (...need to rethink your strategies?)</i>					

Nota: Considere a classificação de: autoeficácia baixa, se DOIS ou mais itens forem avaliados como "nada confiante" ou "pouco confiante"; autoeficácia elevada, se DOIS ou mais itens forem avaliados como "muito confiante" ou "completamente confiante"; autoeficácia moderada, se situações anteriores não forem atendidas.

(Note: Please consider rating: low self-efficacy if TWO or more items are rated as "not confident" or "somewhat confident;" high self-efficacy if TWO or more items are rated as "very confident" or "completely confident;" moderate self-efficacy if neither of the previous categories are met.).

After combining the translations, 11 experts evaluated the items. More than half of them identified the presence of difficult-to-understand terms, such as: 'necessary behaviors', 'function,' 'diverse,' and 'detailed plan' (respectively in Portuguese: '*comportamentos necessários*,' '*funcione*,' '*diversas*,' and '*plano detalhado*'). In addition, they agreed to present response options on a five-point scale.

All items had low CVRs (<0.64), ranging from 0.09 to 0.45. However, more than half of the experts understood that these items were essential to assess self-efficacy. The experts agreed on the relevance of the items on the confidence level considering (1) time to effect the changes (I-CVI=0.82; $k^*=0.81$) and (2) number of attempts (I-CVI=0.91; $k^*=0.91$). The item on confidence, depending on the need to reflect on the strategies (3), presented adequate agreement (I-CVI=0.73; $k^*=0.70$). On the other hand, the item on the level of confidence about the need to develop a plan (4) presented inadequate values for the two assessment parameters agreed upon (I-CVI=0.64; $k^*=0.57$), suggesting its irrelevance in identifying the user's self-efficacy for referral to therapeutic groups in the SUS. Thus, the item was excluded from subsequent analyses.

The health professionals who assessed their understanding of instruction, items, and response options were nutritionists (n=2), physicians (n=2), nurses (n=1), and psychologists (n=1). Most of them understood the items and the response options on the questionnaire, confirming that the writing suggested by the experts was clearer than the combined translation. The professionals suggested more direct wording of item 3, without repeating the term 'weight loss.' The final versions of the items and response options, as well as the final questionnaire, are described in Chart 1.

Validation for use in the SUS

Most people with obesity who participated in the validation were 30 to 49 years old (62.4%); had completed higher education (53.1%); were female (53.1%), resided in the southeastern macro-region (50.0%); suffered from grade 1 obesity (61.2%); were in 'action' (50.6%); and had moderate self-efficacy for weight loss (39.4%) (Table 1).

Table 1 – Description of the sociodemographic characteristics, nutritional status, and stage of change to reduce body weight of adults with obesity who participated in the validation of the self-efficacy questionnaire for weight loss.

Characteristics	Values	
	n	%
Age group (years)		
30 to 39	54	33.7
40 to 49	46	28.7
50 to 59	33	20.7
20 to 29	27	16.9
Sex		
Female	85	53.1
Male	75	46.9
Education		
Complete higher education	85	53.1
Complete high school/incomplete higher education	64	40.0
Complete middle school/incomplete high school	9	5.6
Complete elementary school/incomplete middle school	2	1.3
Macro-region		
Southeast	80	50.0
Northeast	37	23.1
South	20	12.5
Center-West	16	10.0
North	7	4.4

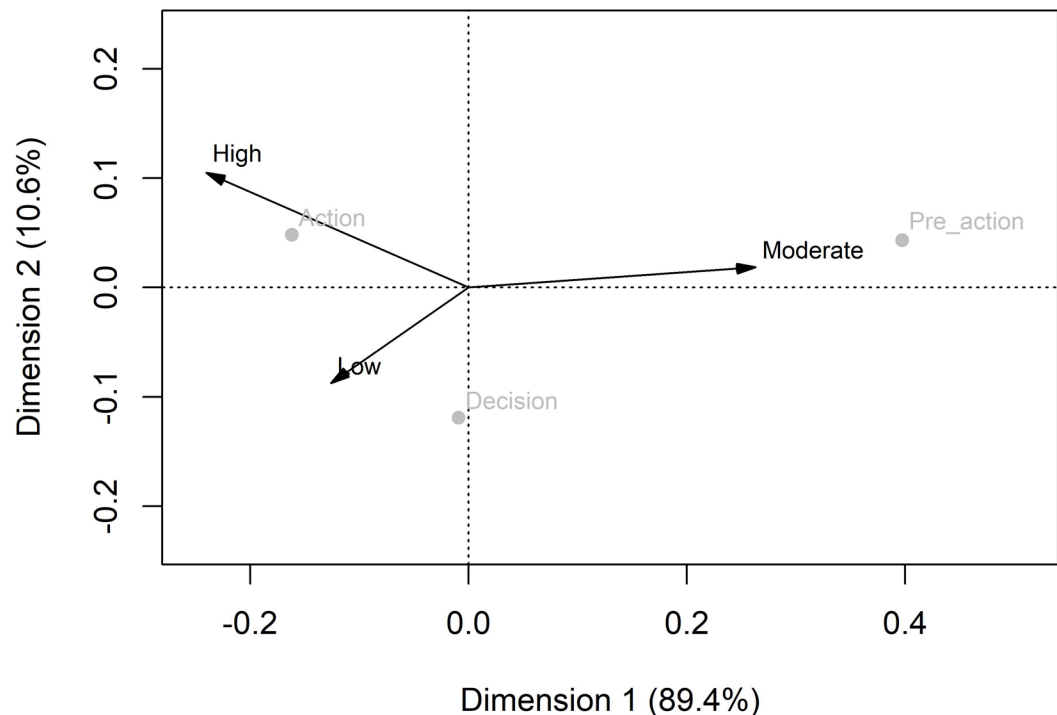
Table 1 – Description of the sociodemographic characteristics, nutritional status, and stage of change to reduce body weight of adults with obesity who participated in the validation of the self-efficacy questionnaire for weight loss.

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Characteristics	Values	
	n	%
Obesity		
Grade 1	98	61.2
Grade 2	46	28.8
Grade 3	16	10.0
Stages of change grouping		
Action	81	50.6
Decision	45	28.1
Pre-action	34	21.3
Self-efficacy		
Moderate	63	39.4
Low	59	36.9
High	38	23.7

Note: Grade 1: BMI ≥ 30.0 to ≤ 34.9 kg/m². Grade 2: BMI ≥ 35.0 to ≤ 39.9 kg/m². Grade 3: BMI ≥ 40.0 kg/m².

Analysis of the correspondence between self-efficacy and the stages of change found that people with high self-efficacy tended to be in 'action' and those with low self-efficacy in 'decision' ($p < 0.05$) (Figure 2).

**Figure 2** – Correspondence analysis of self-efficacy and stages of change for weight loss.

Note: ● Self-efficacy. ▲ Stages of change.

Validating the criterion proposed by the "Strategy" [6], criterion 2 (high self-efficacy) presented high specificity (85%) and low sensitivity (20%), i.e., the self-efficacy questionnaire can identify 85% of people in 'pre-action' and with low/moderate self-efficacy and only 20% of cases in 'decision' with high self-efficacy. On the other hand, criterion 1 presented 21% specificity and 60% sensitivity.

The PPVs and NPVs are in Table 2. The best NPVs (low to moderate) were observed when the prevalences of people in 'decision' were between 20 and 60%. For example, when the prevalence of people in 'decision' is equal to 40%, the questionnaire identifies with 34% certainty people who are not ready to change behaviors to reduce their body weight ('pre-action' and low/moderate self-efficacy). Criterion 2 presented very low to low PPVs for all prevalences.

Table 2 – Predictive values according to different prevalences of the 'decision' change stage from the application of two criteria¹ to identify self-efficacy to reduce body weight in users of the Sistema Único de Saúde (SUS, Unified Public Health System).

Predictive values	Prevalence (%)								
	10	20	30	40	50	60	70	80	90
Criterion 1 ¹									
Positive predictive value	0.07	0.13	0.17	0.21	0.25	0.28	0.31	0.33	0.35
Negative predictive value	0.12	0.19	0.23	0.24	0.22	0.19	0.15	0.10	0.04
Criterion 2 ¹									
Positive predictive value	0.08	0.11	0.13	0.14	0.15	0.15	0.16	0.16	0.16
Negative predictive value	0.15	0.26	0.31	0.34	0.32	0.29	0.23	0.16	0.08

Note: ¹Criterion 1: Up to moderate self-efficacy; Criterion 2: High self-efficacy.

DISCUSSION

The translation and cross-cultural adaptation of the self-efficacy assessment questionnaire for weight loss led to the exclusion of one item from the original questionnaire and the alteration of the text of some items and response options. Thus, three items on the questionnaire were proposed for use in the context of the SUS. After applying the questionnaire to people with obesity, a similarity was identified between those with high self-efficacy and those who had already made behavioral changes to lose weight, i.e., those who were in the final stages of change. In addition, the questionnaire presented high specificity, i.e., identifying users in 'pre-action' and those who were not confident about changing their behaviors to lose body weight.

The questionnaire includes situations that challenge the process of losing body weight and influence self-efficacy, such as having to rethink strategies and try to change several times, in line with the scientific literature. DeJesus et al. [23] identified lower confidence among those with severe obesity (BMI ≥ 40.0 kg/m²) despite the recognition and desire to lose weight. In addition, health conditions that impact the practice of physical activity, food cravings, and lack of knowledge about adequate and healthy food for weight loss were associated with lower confidence, impacting the effort spent, as well as the persistence to tackle obstacles and unsuccessful experiences [23]. In this sense, care that does not blame and stigmatize, with co-responsibility between professionals and users [24] and motivational support [23], is strategic to achieve better results [23,24], especially in the Brazilian epidemiological scenario of growing obesity [1]. By enabling the recognition of self-efficacy, the questionnaire can contribute to a greater assertiveness in defining the care plan with agreement between the health team and the user aimed at changing behaviors to lose weight.

Previous unsuccessful attempts to lose weight can also reduce self-efficacy and motivation [23,25]. In this scenario, a perspective that considers more than just body weight and is more sensitive to identify other beneficial changes achieved could restore self-efficacy. Brazilian regulations even recommend recognizing improvements in quality of life and sleep as indicators of obesity treatment resolution [24]. In addition, setting short-term goals and valuing the results achieved can enhance self-efficacy during the weight loss process [26].

Strengthening self-efficacy in obesity treatment is also fundamental for maintaining results over time, as greater self-efficacy can promote treatment effectiveness and help maintain the results achieved [26,27]. In a conceptual mapping study, low self-efficacy was identified as one of the main predictors for relapses of behaviors that negatively impact maintaining results [27]. A review of qualitative studies identified that individuals with greater self-efficacy adopt strategies that promote the maintenance of results, such as changing the food environment and seeking support [28]. This evidence strengthens the importance of assessing and monitoring self-efficacy in the treatment of obesity.

However, to measure self-efficacy in people with obesity, valid instruments applicable to the reality of health services are necessary. This study presented results that evidence the quality of the measure using a short questionnaire containing only three items with potential practical implications. Criterion 2 tested presented high specificity and very low to low PPVs, confirming the lack of readiness to change behaviors aimed at losing weight among people with high self-efficacy and in 'pre-action' (false positives). These results corroborate the applicability of the "Strategy" [6] by including, among other criteria, the concomitant assessment of the readiness to change and self-efficacy to direct users toward obesity treatment [6]. Thus, the evaluation of these two pillars of the Transtheoretical Model is complementary [6], allowing users ready for behavioral changes (in decision and with high self-efficacy, and in action or maintenance) to be referred to the appropriate treatment.

The questionnaire was also useful for identifying cases of ambivalence, with low sensitivity and NPVs ranging from low to moderate, producing false negatives, i.e., people determined to change but with low/moderate self-efficacy. In these cases of ambivalence, motivational groups, as proposed in the "Strategy" [6], are useful tools to promote readiness to change behaviors for weight loss as well as increase self-efficacy [10]. Individuals with severe obesity reported being determined to change, despite their low self-efficacy [23], and the development of groups with supportive motivational approaches enhances the confidence [25]. Therefore, use of the questionnaire by health teams enables a more assertive referral, in which users who need greater motivation to change receive the acceptance of their anxieties and understand the obstacles hampering treatment to strengthen trust and build readiness for change. In addition, the person making the decision may be focusing on potential barriers to weight loss to justify their low confidence and postpone starting changes. The joint use of other pillars of the Transtheoretical Model, such as balancing decisions and processes of change [6], can qualify the therapeutic approach, including the discussion of strategies to face obstacles and establish confidence.

Another important aspect of the questionnaire was its applicability to health services because the high demand for curative and individual assistance is one of the barriers to qualify the management of obesity in the SUS [29]. The sequential approach used for its translation and cross-cultural adaptation provided a quick, easy-to-understand questionnaire with possible direct answers, facilitating its application in everyday work. The availability of the questionnaire and the investigation of its evident validity are further efforts to increase obesity management within the SUS. However, professionals still must be encouraged to incorporate technical materials into their routine [30], recognize obesity as a problem, and plan healthcare actions [30,31].

Despite the satisfactory results, some limitations of this study should be considered. The use of online forms may have limited the contributions of the experts and healthcare professionals. However, this method provided diverse participation from different Brazilian macroregions. In

addition, the forms used in the translation and cross-cultural adaptation included spaces for writing comments and suggestions. In the validation stage, the use of online forms may also have influenced the profile of respondents, even though sociodemographic characteristics were monitored. The greater participation of individuals with higher education could be a non-predominant characteristic among the population that uses the SUS. Studies including populations with less education and from macroregions less represented in this analysis may gather more evidence on the validity of the questionnaire in different scenarios.

On the other hand, the potential of the results is encouraging. The translation and cross-cultural adaptation and validation of a questionnaire to assess self-efficacy for weight loss meet the need to provide scientific evidence to qualify the treatment offered in the SUS [5]. In addition, the comparison between the original questionnaire and the back-translation made it possible to evaluate the quality of the translation; furthermore, the participation of health professionals in the comprehensibility study and the caution in providing a short questionnaire may lead to greater applicability of the scale. Finally, the validation study for using the questionnaire to care for people with obesity in the SUS gathered evidence about its ability to identify users who need to work on self-efficacy and be ready to change before starting obesity treatment.

CONCLUSION

The self-efficacy questionnaire for weight loss was successfully translated, cross-cultural adapted, and validated. Application of this questionnaire in adults with obesity validated the recommendation of the “Strategy” to evaluate self-efficacy levels in association with the classification in the stages of change to refer users to the treatment for obesity, contributing to the professional performance in the SUS based on scientific evidence. The results support the use of the questionnaire to achieve greater assertiveness in the care offered to people with obesity in the SUS, which is urgent given the epidemiological scenario of rising obesity in the country. Therefore, its application in daily care activities is recommended both to help identify readiness to change behaviors aimed at losing body weight, as proposed by the “Instructive of Collective Approach to Obesity Management in the SUS”, and to guide the construction of care plans and coping actions.

REFERENCES

1. Ministério da Saúde (Brasil). Vigitel Brasil 2006-2023: vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico: estimativas sobre frequência e distribuição sociodemográfica do estado nutricional e consumo alimentar nas capitais dos 26 estados brasileiros e no Distrito Federal entre 2006 e 2023: estado nutricional e consumo alimentar. Brasília: Ministério da Saúde; 2024.
2. Silva LES, Oliveira MM, Stopa SR, Gouvea ECDP, Ferreira KRD, Santos RO, et al. Tendência temporal da prevalência do excesso de peso e obesidade na população adulta brasileira, segundo características sociodemográficas, 2006-2019. *Epidemiol Serv Saúde*. 2021;30(1):e2020294. doi: <https://doi.org/10.1590/S1679-49742021000100008>
3. Menezes MC, Duarte CK, Costa DVP, Lopes MS, Freitas PP, Campos SF, et al. A systematic review of effects, potentialities, and limitations of nutritional interventions aimed at managing obesity in primary and secondary health care. *Nutrition*. 2020;75-6:110784. doi: <https://doi.org/10.1016/j.nut.2020.110784>
4. LeBlanc ES, Patnode CD, Webber EM, Redmond N, Rushkin M, O'Connor EA. Behavioral and pharmacotherapy weight loss interventions to prevent obesity-related morbidity and mortality in adults: updated evidence report and systematic review for the US Preventive Services Task Force. *JAMA*. 2018;320(11):1172-91. doi: <https://doi.org/10.1001/jama.2018.7777>

5. Bortolini GA, Pereira TN, Nilson EAF, Pires ACL, Moratori MF, Ramos MKP, et al. Evolution of nutrition actions in primary health care along the 20-year history of the Brazilian National Food and Nutrition Policy. *Cad Saúde Pública*. 2021;37 Sup 1:e00152620. doi: <https://doi.org/10.1590/0102-311X00152620>
6. Ministério da Saúde (Brasil). Instrutivo de abordagem coletiva para manejo da obesidade no SUS. Brasília: Ministério da Saúde; 2021.
7. Maisano MS, Shonkoff ET, Foltz SC. Multiple Health Behavior Change for Weight Loss: A Scoping Review. *Am J Health Behav*. 2020;44(5):559-71. doi: <https://doi.org/10.5993/AJHB.44.5.2>
8. Freitas PP, Menezes MC, Santos LC, Pimenta AM, Ferreira AVM, Lopes ACS. The transtheoretical model is an effective weight management intervention: a randomized controlled trial. *BMC Public Health*. 2020;20(1):652. doi: <https://doi.org/10.1186/s12889-020-08796-1>
9. Prochaska JO, Diclemente CC, Norcross JC. In search of how people change. Applications to addictive behaviors. *Am Psychol*. 1992;47(9):1102. doi: <https://doi.org/10.1037/0003-066X.47.9.1102>
10. Ministério da Saúde (Brasil). Material teórico para suporte ao manejo da obesidade no SUS. Brasília: Ministério da Saúde; 2021.
11. Centis E, Petroni ML, Ghirelli V, Cioni M, Navacchia P, Guberti E, et al. Motivational interviewing adapted to group setting for the treatment of relapse in the behavioral therapy of obesity: a clinical audit. *Nutrients*. 2020;12(12):3881. doi: <https://doi.org/10.3390/nu12123881>
12. Wilson KE, Harden SM, Almeida FA, You W, Hill JL, Goessl C, et al. Brief self-efficacy scales for use in weight-loss trials: preliminary evidence of validity. *Psychol Assess*. 2016;28(10):1255-64. doi: <https://doi.org/10.1037/pas0000249>
13. Ohrbach R, Bjorner J, Jezewski M, John M, Lobbezoo F. Guidelines for establishing cultural equivalency of instruments. Committee for Translations and Protocols International RDC/TMD Consortium Network. New York: University of Buffalo; 2013.
14. Almasreh E. Evaluation of methods used for estimating content validity. *Res Social Adm Pharm*. 2019;15(2):214-21. doi: <https://doi.org/10.1016/j.sapharm.2018.03.066>
15. Ayre C, Scally AJ. Critical values for lawshe's content validity ratio: revisiting the original methods of calculation. *Meas Eval Couns Dev*. 2014;47(1):79-86. doi: <https://doi.org/10.1177/0748175613513808>
16. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res Nurs Health*. 2007;30(4):459-67. doi: <https://doi.org/10.1002/nur.20199>
17. Conti MA, Scagliusi F. Cross-cultural adaptation: translation and Portuguese language content validation of the Tripartite Influence Scale for body dissatisfaction. *Cad Saúde Pública*. 2010;26(3):503-13. doi: <https://doi.org/10.1590/S0102-311X2010000300008>
18. Costello AB, Osborne J. Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. *Pract Assess Res Eval*. 2005;10(1):7. doi: <https://doi.org/10.7275/jyj1-4868>
19. Ministério da Saúde (Brasil). Estratégias para o cuidado da pessoa com doença crônica: obesidade. Brasília: Ministério da Saúde; 2014.
20. World Health Organization. Obesity: preventing and managing the global epidemic. Report of a WHO consultation on obesity. Geneva: World Health Organization; 2000.
21. Hair JF, Babin BJ, Black WC, Anderson RE. Multivariate data analysis. United Kingdom: Cengage; 2019.
22. Lange RT, Lippa SM. Sensitivity and specificity should never be interpreted in isolation without consideration of other clinical utility metrics. *Clin Neuropsychol*. 2017;31(6-7):1015-28. doi: <https://doi.org/10.1080/13854046.2017.1335438>
23. DeJesus RS, Bauer KW, Bradley DP, Haller I, Bradley SM, Schroeder DR, et al. Experience and expectations of patients on weight loss: the learning health system network experience. *Obes Sci Pract*. 2019;5(5):479-86. doi: <https://doi.org/10.1002/osp4.364>
24. Burlandy L, Teixeira MRM, Castro LMC, Cruz MCC, Santos CRB, Souza SR, et al. Modelos de assistência ao indivíduo com obesidade na atenção básica em saúde no Estado do Rio de Janeiro, Brasil. *Cad Saúde Pública*. 2020;36(3):e00093419. doi: <https://doi.org/10.1590/0102-311X00093419>
25. Skea ZC, Aceves-Martins M, Robertson C, De Bruin M, Avenell A. Acceptability and feasibility of weight management programmes for adults with severe obesity: a qualitative systematic review. *BMJ Open*. 2019;9(9):e029473. doi: <https://doi.org/10.1136/bmjopen-2019-029473>

26. Annesi JJ. Sequential changes advancing from exercise-induced psychological improvements to controlled eating and sustained weight loss: a treatment-focused causal Chain Model. *Perm J*. 2020;24(4):19.235. doi: <https://doi.org/10.7812/tpp/19.235>
27. Roordink EM, Steenhuis IHM, Kroeze W, Chinapaw MJM, Van Stralen MM. Perspectives of health practitioners and adults who regained weight on predictors of relapse in weight loss maintenance behaviors: a concept mapping study. *Health Psychol Behav Med*. 2021;10(1):22-40. doi: <https://doi.org/10.1080/21642850.2021.2014332>
28. Tay A, Hoeksema H, Murphy R. Uncovering barriers and facilitators of weight loss and weight loss maintenance: insights from qualitative research. *Nutrients*. 2023;15(5):1297. doi: <https://doi.org/10.3390/nu15051297>
29. Lopes MS, Freitas PP, Carvalho MCR, Ferreira NL, Campos SF, Menezes MC, et al. Challenges for obesity management in a unified health system: the view of health professionals. *Fam Prac*. 4;38(1):4-10. doi: <https://doi.org/10.1093/fampra/cmaa117>
30. Bortolini GA, De Oliveira TFV, Da Silva SA, Santin RDC, De Medeiros OL, Spaniol AM, et al. Ações de alimentação e nutrição na atenção primária à saúde no Brasil. *Rev Panam Salud Pública*. 2020;44:e39. doi: <https://doi.org/10.26633/RPSP.2020.39>
31. Oliveira TFVD, Bortolini GA, Carmo ASD, Reis ECD, Neves FS, Lima AMCD, et al. Fortalecimento das ações de cuidado às pessoas com obesidade no contexto da pandemia de COVID-19: o caso do Brasil. *Ciênc Saúde Coletiva*. 2023;28(12):3673-85. doi: <https://doi.org/10.1590/1413-812320232812.19522022>

CONTRIBUTORS

Conceptualization: TSS SANTOS, PC JAIME, and ACS LOPES. Formal analysis: TSS SANTOS, PC JAIME, N. TORAL and ACS LOPES. Funding acquisition: PC JAIME and ACS LOPES. Writing–original draft: TSS SANTOS. Writing–review and editing: TSS SANTOS, PC JAIME, N TORAL, and ACS LOPES.