Cross-cultural Adaptation into Brazilian Portuguese of the Dietary Sodium Restriction Questionnaire (DSRQ)

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Abstract

Background: Sodium restriction is a non-pharmacological measure often recommended to patients with heart failure (HF). However, adherence is low, being among the most common causes of HF decompensation. The Dietary Sodium Restriction Questionnaire (DSRQ) aims at identifying factors that affect adherence to dietary sodium restriction by patients with HF. In Brazil, there are no instruments to assess these factors.

Objective: Perform the cross-cultural adaptation of DSRQ.

Methods: Methodological study that involved the following steps: translation, synthesis, back-translation, review by an expert committee, pretest of the final version and analysis of interobserver agreement. In the pretest, items and their understanding were evaluated, as well as internal consistency by Cronbach's alpha. The instrument was simultaneously and independently applied by two researchers and the kappa test was used for agreement analysis.

Results: Only one question underwent major semantic and/or cultural alteration. At the pretest, Cronbach's alpha for the total obtained was 0.77; for the Attitude, Subjective Norm and Behavioral Control scales were obtained, respectively: 0.66, 0.50 and 0.85. At the agreement step, the Kappa was calculated for 12 of the 16 questions, with values ranging from 0.62 to 1.00. In items for which the calculation was not possible, the incidence of equal responses ranged from 95% to 97.5%.

Conclusion: Based on the cross-cultural adaptation of DSRQ, it was possible to propose a version of the questionnaire for further evaluation of psychometric properties. (Arq Bras Cardiol 2012;98(1):70-75)

Keywords: Heart failure/diet therapy, sodium chloride, dietary, questionnaires, translating.

Introduction

Dietary sodium restriction is a non-pharmacological measure often directed at patients with heart failure (HF)[1-3]. However, the available data in the literature indicate that adherence is low[4-6], being among the most frequent causes of decompensation and hospitalization[7-10].

In contradiction, little is known about the factors that lead to the failure of this approach. Lack of knowledge by patients, interference with their socialization due to the restriction and the limited variety of foods are often described as the main factors related to poor adherence[11-13]. In a cohort study carried out by our research group with patients admitted for decompensated HF, we demonstrate that knowledge of non-pharmacological measures, including salt restriction, was higher for patients who had more readmissions[14]. These aspects lead to the interpretation that having the knowledge about issues related to better control of the disease does not necessarily imply adopting these measures.

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Therefore, verification of knowledge by HF patients regarding sodium restriction does not seem sufficient to allow the assessment of adherence to this measure. In this context, researchers developed an instrument called the Dietary Sodium Restriction Questionnaire (DSRQ). The DSRQ aims to identify factors affecting adherence to the low-sodium diet recommendation for patients with HF based on the theory of planned behavior. This tool consists of three subscales that assess parameters related to: 1) behavior-related attitude, 2) subjective norm, and 3) perceived behavioral control[15].

The lack of tools available in Brazil to assess, in addition to knowledge, questions related to resources, attitudes and barriers to follow a low-sodium diet and the possibility to facilitate the development of education and counseling interventions encouraged us to perform a cross-cultural adaptation of DSRQ to be used in Brazilian Portuguese.

Methods

Methodological study carried out in a university hospital in Brazil. The study was carried out in the HF outpatient clinic of the institution from March 2010 to March 2011.

Eligible for this study were patients of both sexes, aged 18 years and older, with a diagnosis of HF with systolic dysfunction defined by ejection fraction ≤ 45%.

Prior to the start of the study the author of the DSRQ was asked, by e-mail, authorization to use the questionnaire in Brazil. Permission was granted and the author sent us the original tool (DSRQ).

DSRQ consists of statements related to barriers and attitudes/beliefs when following a low-sodium diet. It was created to reflect the theory of planned behavior and is divided into three previously mentioned subscales, namely: 1) behavior-related attitude, 2) subjective norm, and 3) perceived behavioral control.

The attitude subscale has six items that assess the patient's beliefs about the results of performing the behavior, with scores ranging from 6 to 30. The subjective norm scale, consisting of three items, assesses whether it is important to have others' approval or disapproval when performing the behavior, with scores ranging from 3 to 15. The behavioral control scale, consisting of seven items, assesses the patient's ability to identify facilitators and barriers related to the behavior; the score is reversed in this step and ranges from 7 to 35.

Methodological procedures were performed in the cross-cultural adaptation in accordance with literature recommendations, according to the following steps: translation, synthesis, back translation, review by a committee of experts, final version pre-test and inter-observer agreement analysis[16].

The initial translation of DSRQ into Brazilian Portuguese was performed by two independent translators, who were native speakers of Brazilian Portuguese, and who had different professional profiles compared to the researchers.

Subsequently, after the translations, a synthesis was developed by the researchers through the joint analysis of the original tool and the versions produced by the translators, resulting in a single consensual version. Possible differences between words or phrases were discussed and consensus was achieved about them. The resulting synthesis version was submitted to a new translation from Brazilian Portuguese into English (back translation). The translators who participated in this step, differently from the previous step, were native speakers of the language in which the original tool was written (English) and were not instructed regarding the objectives and concepts regarding the content of the tool.

This phase is part of the process of validation, to verify whether the version obtained reflects the item content of the original tool. The final version of the back-translation was submitted to the author of the original instrument for evaluation, and was approved.

The evaluation of the DSRQ by the Committee of Experts (three nutritionists, a nurse and a specialist in Linguistics) was carried out by face-to-face meeting, in which all items of the tool were evaluated taking into account the equivalences (semantic, idiomatic, cultural and conceptual) and items that had undergone alterations were justified. This material was submitted to the senior author for evaluation and contributions in order to consolidate the final version to be used in the pre-test.

The final version with pre-test intent was applied to a sample of 44 patients in outpatient clinics. Additionally, interobserver agreement was assessed in another sample of 40 patients. This phase was carried out by the researcher in the previous step and a second researcher, previously trained.

In the pre-test, all items and their comprehension were evaluated. The reliability of the three subscales was verified using Cronbach's alpha. Kappa test was used to assess the agreement between observers. The tool was called Questionário de Restrição de Sódio na Dieta – QRSD, in Portuguese (from Dietary Sodium Restriction Questionnaire – DSRQ).

The study was approved by the ethics committee of the institution. All patients were included in the study after signing the free and informed consent form.

Results

Among the items of the tool, only question 21, which belongs to the scale of perceived behavioral control, underwent semantic and/or cultural alterations.

The DSRQ has, in addition to the 16 items evaluated, 11 in which the answers provide information about the prescription or not of a low-sodium diet, how easy or difficult it is to follow that recommendation, and how much one believes the diet has helped in controlling the disease. Because these items are for descriptive purposes only and are not part of any subscale, they were not analyzed in this study.

The original scale items that were evaluated and those of the adapted version can be seen in Table 1.

Regarding the scores, a five-point Likert scale is used to score each question. In the original tool, the attitude and subjective norm scales evaluate how much the individual agrees or disagrees with each item, where 1 corresponds to "strongly disagree" and 5 to "strongly agree". In the behavioral control scale, the scoring indicates how much the items prevent you from adopting a low salt diet, in which 1 represents "not at all" and 5 "a lot". In the Brazilian version, they were adapted to "strongly disagree - strongly agree" and "not at all - a lot."

To perform the pretest, we selected 44 patients treated at the HF clinic of the institution where the study was conducted. When assessing the internal consistency of the adapted version of the DSRQ, Cronbach's alpha was calculated and the value for the total instrument was 0.77.

We also evaluated each scale of the questionnaire, resulting in a Cronbach's alpha of 0.66, 0.50 and 0.85 for Attitude, Subjective Norm and Behavioral Control, respectively. The values of Cronbach's coefficient for each item and item-total correlation coefficient are shown in Table 2.

To perform the interobserver agreement analysis, we selected another 40 patients, and the tool was applied

by two investigators, simultaneously and independently. It was possible to perform the calculation for 12 of the 16 questions of the questionnaire. Four questions were not calculated by Kappa, as there was no occurrence of all scores at least once. Table 3 shows the Kappa values found for the questionnaire.

In items for which the calculation was not possible, the incidence of equal responses obtained by the two researchers was 97.5% for item 12; 95.0% for item 13, 95% for item 14 and 97.5% for item 17.

Discussion

This is the first study that carried out the cultural adaptation of a tool to verify the facilitators and barriers related to following a low-sodium diet in HF patients to be used in Brazilian Portuguese, as well as the first cross-cultural adaptation of DSRQ to another language. The alterations carried out involved changes in terms or expressions, in which the goal was to facilitate the understanding of the tool items for professionals interested in using it, as well as to ensure cultural equivalence.

Considering the evaluation by the expert committee, only one item underwent major alteration (Question 21). In this question, further explanation was considered necessary, for the purpose of better understanding of the patient during tool application. These changes resulted in a clearer and more adequate tool to be used in the pre-test phase. Additionally, the information exchange carried out with the scale's author allowed modifications to be made without losing the original meaning of the tool.

Table 1 – Original version and translated and adapted version of the questions into Brazilian Portuguese of the Dietary Sodium Restriction Questionnaire (DSRQ)

Original version	Translated and Adapted Version
Attitude Subscale	**Subescala de Atitude**
For each of the statements below, indicate how much you agree with the statement by circling the appropriate number using the scale to the right:	Para cada afirmação abaixo, indicar o quanto você concorda ou não concorda, circulando o número apropriado na escala à direita:
12. It is important for me to follow my low-salt diet.	12. É importante eu seguir uma dieta com pouco sal.
13. Eating a low-salt diet will keep fluid from building up in my body.	13. Fazer uma dieta com pouco sal irá evitar que haja acúmulo de líquido no meu corpo.
14. Eating a low-salt diet will keep my swelling down	14. Seguir uma dieta com pouco sal evita que eu tenha inchaço.
15. Eating a low-salt diet will help me breathe easier.	15. Fazer uma dieta com pouco sal me ajudará a respirar com mais facilidade.
16. When I follow a low-salt diet, I feel better.	16. Quando sigo uma dieta com pouco sal, sinto-me melhor.
17. Eating a low-salt diet will keep my heart healthy.	17. Seguir uma dieta com pouco sal manterá meu coração saudável.
Subjective Norm Subscale	**Subescala de Norma Subjetiva**
18. My spouse and other family members think I should follow a low-salt diet	18. Meu cônjuge e outros membros da família acham que eu deveria seguir uma dieta com pouco sal.
19. Generally, I want to do what my doctor thinks I should do.	19. Geralmente quero fazer o que meu médico acha que devo fazer.
20. Generally, I want to do what my spouse or family members think I should do.	20. Geralmente quero fazer o que meu cônjuge ou membros da família acham que devo fazer.
Perceived Behavioral Control Subscale	**Subescala de Percepção de Controle Comportamental**
Indicate below how much the following items keep you from following a low-salt diet by circling the appropriate number using the scale to the right:	Indique o quanto as afirmações a seguir impedem que você siga uma dieta com pouco sal, circulando o número apropriado na escala à direita:
21. Don´t understand or know how.	21. Eu não entendo ou não sei como. (Eu não entendo: a importância do controle de sal. Não sei como: outra pessoa cozinha e não tenho como controlar a quantidade de sal).
22. Taste of low-salt foods.	22. O gosto dos alimentos com pouco sal.
23. Can´t pick out low-salt foods in restaurants.	23. Não consigo escolher comida com pouco sal em restaurantes.
24. The restaurants I like don´t serve low-salt foods.	24. Os restaurantes de que eu gosto não servem comida com pouco sal.
25. Can´t pick out low-salt foods at the grocery.	25. Não consigo escolher alimentos com pouco sal no supermercado.
26. The foods I like to eat are not low-salt.	26. O que eu gosto de comer não tem pouco sal.
27. I don´t have the willpower to change my diet.	27. Não tenho força de vontade para mudar minha dieta.

When assessing the internal consistency, a Cronbach's alpha of 0.66, 0.50 and 0.85 was observed for scales of Attitude, Subjective Norm and Behavioral Control, respectively, and the values obtained were lower than those in the original tool in the first two subscales (0.88 and 0.62) and higher in the third (0.76)[15]. Cronbach's alpha varies from 0 to 1; nonetheless, there is no lower limit for the coefficient. Some authors suggest a classification to assess the internal consistency of items in a certain scale; values equal to 0.9 are considered excellent; equal to 0.8 are good; equal to 0.7 are acceptable; equal to 0.6 are questionable; equal to 0.5 are poor; and lower than 0.5 are unacceptable[17]. The

Table 2 – Values of the item-total correlation coefficient and alphas when each of the items is excluded from the Dietary Sodium Restriction Questionnaire (DSRQ)

Item	Item-total correlation	Cronbach's alpha when item is excluded
12. It is important for me to follow my low-salt diet.	0.124	0.774
13. Eating a low-salt diet will keep fluid from building up in my body.	0.124	0.774
14. Eating a low-salt diet will keep my swelling down	0.124	0.774
15. Eating a low-salt diet will help me breathe easier.	0.388	0.764
16. When I follow a low-salt diet, I feel better.	0.345	0.764
17. Eating a low-salt diet will keep my heart healthy.	0.190	0.772
18. My spouse and other family members think I should follow a low-salt diet	-0.004	0.784
19. Generally, I want to do what my doctor thinks I should do.	0.428	0.762
20. Generally, I want to do what my spouse or family members think I should do.	0.145	0.784
21. Don´t understand or know how. (Don't understand: the importance of salt restriction. Don't know how: someone else cooks and I cannot control the amount of salt)	0.472	0.755
22. Taste of low-salt foods.	0.522	0.745
23. Can´t pick out low-salt foods in restaurants.	0.664	0.726
24. The restaurants I like don´t serve low-salt foods.	0.493	0.751
25. Can´t pick out low-salt foods at the grocery.	0.415	0.757
26. The foods I like to eat are not low-salt.	0.685	0.724
27. I don´t have the willpower to change my diet.	0.608	0.739

Table 3 – Interobserver agreement for each item of the Dietary Sodium Restriction Questionnaire (DSRQ)

Item	Kappa	p
15. Eating a low-salt diet will help me breathe easier.	1.000	<0.001
16. When I follow a low-salt diet, I feel better.	0.646	<0.001
18. My spouse and other family members think I should follow a low-salt diet	1.000	<0.001
19. Generally, I want to do what my doctor thinks I should do.	1.000	<0.001
20. Generally, I want to do what my spouse or family members think I should do.	0.814	<0.001
21. Don´t understand or know how. (Don't understand: the importance of salt restriction. Don't know how: someone else cooks and I cannot control the amount of salt)	1.000	<0.001
22. Taste of low-salt foods.	0.617	<0.001
23. Can´t pick out low-salt foods in restaurants.	0.786	<0.001
24. The restaurants I like don´t serve low-salt foods.	0.829	<0.001
25. Can´t pick out low-salt foods at the grocery.	0.622	<0.001
26. The foods I like to eat are not low-salt.	0.631	<0.001
27. I don't have the willpower to change my diet.	0.688	<0.001

alpha obtained for the tool total was 0.77 in the pretest (n = 44) and, based on this consistency, no item was excluded from the tool.

Moreover, we evaluated the item-total correlation to check the homogeneity of the tool. An item-total correlation coefficient > 0.30 is considered acceptable, meaning that the items contribute to the measure. In the Brazilian version, most of the items showed a coefficient > 0.3 (from 0.35 to 0.69), indicating that the items are correlated with each other and measure the same attribute.

At the interobserver agreement step, for Kappa calculation to be possible in a higher number of items, we chose to group the responses. The 5-point scale started to show three, whereas 1 and 2, and 4 and 5 were grouped. The calculation for 12 of the 16 questions was possible after this modification.

The Kappa test measures the degree of agreement beyond what would be expected only by chance. This measure of agreement has 1 as maximum value, in which values between 0.60 and 0.79 indicate substantial agreement, and between 0.80 and 1.00 indicate almost perfect agreement. In the Brazilian version, all items of the questionnaire had values > 0.6 (0.62 - 1.00), demonstrating that the instrument is reliable and that the results are reproducible.

Studies have focused on measuring or increasing knowledge as a means to evaluate or increase adherence[18,19]; however, in the scenario of HF, the verification of knowledge does not seem to be enough. The use of tools such as the DSRQ, that identify other factors related to adherence, will foster the work of health professionals included in patient care, assisting in the development of strategies for education and treatment.

Conclusion

The results of the present study suggest that the DSRQ is a reliable tool to assess facilitators and barriers related to adherence with the recommendation of a low-sodium diet, using Brazilian Portuguese.

Starting with the present translation and cultural adaptation of DSRQ, a Portuguese version was created. After this step, the tool is available for evaluation of psychometric properties such as validity and reliability in a larger sample of patients, which is being developed and will soon be presented.

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Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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Study Association

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