Validation of the Portuguese Version of the Minnesota Living with Heart Failure Questionnaire

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Summary

Background: The Minnesota Living with Heart Failure Questionnaire (MLHFQ) is an important measurement instrument for assessing the quality of life of heart failure patients. Despite being largely used within our context, the questionnaire had not yet been translated and validated into the Portuguese language.

Objective: Of this study was to translate and validate the Portuguese version of the MLHFQ for use in heart failure patients.

Methods: Forty patients with heart failure (30 men, LVEF 30±6%, 55% ischemic etiology, classified as NYHA I to III), clinically stable and on optimized drug therapy underwent maximal cardiopulmonary stress testing to assess their physical capacity. Right after the test, the MLHFQ duly translated into Portuguese was administered by the same investigator. The NYHA functional classification was provided by the medical team.

Results: The Portuguese version of the MLHFQ had the same structure and metrics of the original version. There was no difficulty in the administration of the questionnaire or in the patient's understanding of the questions. The Portuguese version of the MLHFQ was consistent with peak VO_2, duration of the cardiopulmonary test, and NYHA functional classification. There was no difference in the score mean for the questionnaire between the group of patients with ischemic etiology and the group with non-ischemic etiology.

Conclusion: The Portuguese version of the MLHFQ proposed in this study proved to be valid for heart failure patients, and constitutes a new and important instrument for assessing quality of life. (Arq Bras Cardiol 2009;93(1):36-41)

Key words: Failure; validation; questionnaires; quality of life.

Introduction

Heart failure, the final common pathway of every heart disease, is characterized by exacerbated neurohormonal activity, low tolerance to exercise, short survival time, and poor quality of life[1-3].

Quality of life is a discrepancy between the satisfaction or discontent of an individual regarding certain areas of his/her own life according to his/her own perception, and is considered the best indicator of quality of life[4]. In conventional terms, satisfaction with life refers to the fulfillment of needs, expectations, longings, and desires[5].

In dealing with quality of life, we evaluate the aspects of a patient's intimacy, interactions, and social and physical dimensions, i.e., how that person behaves before himself/herself and the world around him/her, taking into consideration interpersonal relationships and how the world interferes in his/her intimate, physical, and social status[6].

The scientific community has attempted to quantify the impact of heart failure on patients' lives. Despite the existence of the New York Heart Association (NYHA) functional classification and the Six-minute Walk Test[7,8], the Minnesota Living with Heart Failure Questionnaire (MLHFQ), was created and is today largely used within our context and worldwide. Nevertheless, the questionnaire had not yet been translated and validated in Brazil.

This study sought to translate and validate the Portuguese version of the MLHFQ for use in patients with heart failure.

Methods

Population

Forty patients with heart failure (30 men, left ventricular ejection fraction 30±6%) were recruited from an outpatient clinic specialized in heart failure of a high-complexity cardiology hospital, between March 2007 and March 2008 (Table 1).

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Table 1 - Patient characterization

Characteristics	Number of patients (%)
Total (male/female)	40 (75%/25%)
Etiology	
Ischemic	22 (55%)
Non-ischemic	18 (45%)
Left ventricular ejection fraction (echo); %	30±6
NYHA functional class	
I	16 (40%)
II	15 (37.5%)
III	9 (22.5%)
Peak VO_2 (mL.Kg.min^{-1})	19±4
Duration of cardiopulmonary stress test (minutes)	12±3
Minnesota Quality of Life (score)	46±18
Drugs	
Digoxin	14 (35%)
Diuretics	10 (25%)
ACE inhibitor	38 (95%)
AT1 Blockers	4 (10%)
Spironolactone	10 (25%)
β-Blocker	40 (100%)
Nitrates	5 (12,5%)

ACE - angiotensin-converting enzyme.

All patients were clinically stable, with no changes in their drug regimen, and had not been hospitalized in the previous three months. Patients with additional functional limitations other than heart failure, such as important osteoarthrosis, cerebrovascular accident, and chronic obstructive pulmonary disease, were excluded from the study.

All patients were previously informed about the aims of the study and were asked to give their informed consent by signing the appropriate form, approved by the institution's Research in Ethics Committee.

Dynamics of the study

In this cross-sectional study, all patients came to our laboratory to undergo a maximal cardiopulmonary stress test in order to evaluate their physical capacity. Right after the test, the Portuguese version of the MLHFQ, duly translated, was applied twice with a one-week interval by the same investigator so as to preserve homogeneity of standards and interpretation of the responses, thus allowing higher accuracy of the data obtained. NYHA functional classifications were provided by the medical team of the outpatient clinic responsible for the patient's care[9].

Cardiopulmonary stress testing

Patients were instructed not to perform any tiring physical activity and not to have coffee or alcohol during the 24 hours preceding the test. The last meal had to be made at least two hours before the test. All patients underwent maximal cardiopulmonary stress testing (Naughton protocol) on a treadmill (Series 2000, Marquette Electronics, Milwaukee, WI, USA) in a room with controlled temperature (21°C to 23°C) between 10:00 a.m. and 3:00 p.m., with a 12-lead electrocardiographic recording (Max 1, Marquette Electronics, Milwaukee, WI, USA) and arterial blood pressure measured by the auscultatory method. Ventilation (LV, BTPS), oxygen consumption (VO_2, STPD), carbon dioxide (VCO_2, STPD), and the other cardiopulmonary variables were obtained by breath-by-breath analysis using a computerized system (Vmax 229 model, SensorMedics, Yorba Linda, CA, USA). Peak VO_2 was considered as the mean of the last 30-second values before exhaustion. A test was considered satisfactory when a respiratory quotient (R/Q) >1.05 was associated with symptoms of maximal effort.

Translation into Portuguese of the Minnesota Living with Heart Failure Questionnaire

Translation was performed according to a few stages proposed by coordinators of the IQOLA - International Quality of Life Assessment Project,[20] and also based on literature addressing the methodology used for the translation of quality of life evaluation questionnaires into other languages. [20]

The first translation

The items in the original version of the MLHFQ were initially translated into Portuguese by two independent Brazilian English teachers who were familiar with the goals of the study. At that time, the main focus was on the concepts underlying the document and not on the strictly literary translation. The two translations were then compared by the translators and the investigator; in case of any disagreement, changes were made in order to reach a consensus as to the initial translation (Portuguese Version Number 1).

Evaluation of the first translation

The Portuguese Version Number 1 was back-translated into English by two English teachers, one from England and the other one from the United States, who had not participated in the previous phase. Later on, these two versions were compared to the original questionnaire in English, and the existing discrepancies were documented and analyzed by a group consisting of two cardiologists, a nurse, a psychologist, and one of the English teachers. When necessary, the sentences in Portuguese were rewritten until a consensus was reached, thus generating Version Number 2 in Portuguese.

Statistical analysis

Data were analyzed using the 11.5 version of the SPSS statistical software (SPSS Inc., Chicago, IL, USA). The Intraclass Correlation Coefficient (r_i) with 95% confidence interval was used to test the concordance between the MQLQ utilization and re-utilization. Additionally, a visual analysis was carried out through the Bland & Altman plot with a 95% limit of

concordance. The internal consistency of the scale was evaluated through Cronbach's alpha coefficient. The validity of the MQLQ in comparison to peak VO_2, time of exercise at the cardiopulmonary test and the NYHA functional classification was assessed by Spearman's coefficient of correlation. The non-paired Student's *t* test was used to compare the means of the MQLQ score between the groups with ischemic and non-ischemic etiology.

Results

Patients included in this study displayed a deteriorated physical capacity (peak VO_2 less than 20 mL/Kg/min), significant functional impairment as measured by the NYHA, and a high score for the Portuguese version of the MLHFQ (i.e., *Questionário de Qualidade de Vida Minnesota - QQVM*) (Table 1). No difference was found for the QQVM score between the ischemic group and the non-ischemic group (53±15 and 42±19, respectively; $p=0.57$; CI = -4.5212 to 27.1640).

The Portuguese version of the MLHFQ had the same structure and metrics of the original version (Appendix 1). The MQLQ demonstrated concordance between its utilization and re-utilization ($r_i=0.97$; $p<0.0001$) (Figure 1). Cronbach's alpha coefficient was 0.97. Significant correlations were observed between the total MQLQ score and peak VO_2, time of exercise at the cardiopulmonary test and the NYHA functional classification (Table 2).

Table 2 - Results

	Minnesota Questionnaire		
	r	p	CI
Peak VO_2	-0.58	<0.0001	13.9 to 33.2
Duration of exercise	-0.60	<0.0001	27.2 to 40.6
NYHA functional class	0.82	<0.0001	38.5 to 50

r - correlation coefficient; CI - confidence interval.

Discussion

This study did the translation of the MLHFQ into the Portuguese language. Moreover, this version was consistent with the NYHA functional classification, peak VO_2 and duration of physical exercise during the cardiopulmonary stress test in heart failure patients. The investigator had no difficulty in applying the Portuguese version, and the patients had no difficulty understanding it.

Patients should answer the questions considering the preceding month. The scale of answers to each question ranges from 0 (None) to 5 (Very much), where 0 represents no limitation and 5 represents maximal limitation. These questions involve a physical dimension (from 1 to 7, 12, and 13) which is highly interrelated with dyspnea and fatigue, an emotional dimension (from 17 to 21), and other questions (8, 9, 10, 11, 14, 15, and 16) which added to the previous

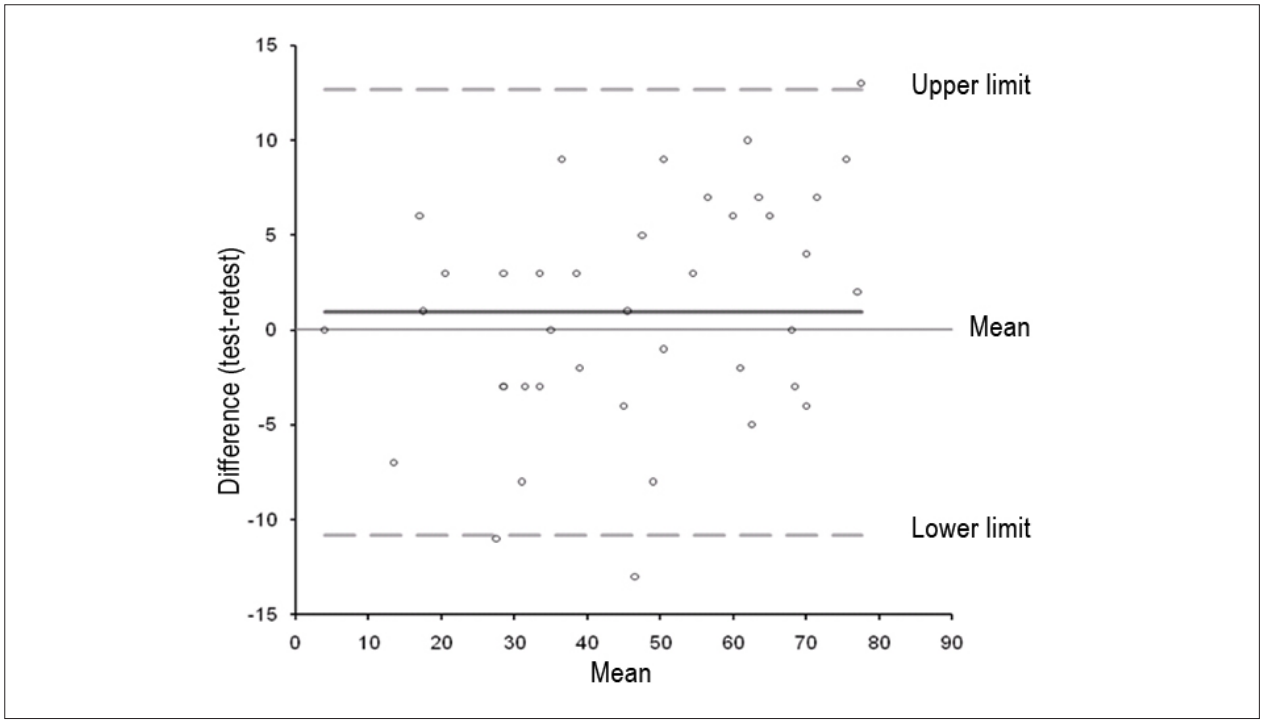

Figure 1 - Bland & Altman plot for evaluation of reproducibility between test and retest.

dimensions, make up the total score. Because this subset of questions does not have a pattern of answers, it was not grouped as a separate dimension in the questionnaire[10].

MLHFQ was developed specifically for heart failure, which makes it an instrument much more suited to the reality of this type of patient. For this reason, this questionnaire may differ in some questions when compared to other generic questionnaires such as the 36-item Short-Form Health Survey (SF-36) which was developed for chronic diseases[11,12]. In spite of this, in a prior study good consistency was found between the QQVM and the SF-36, although no one datum for physical capacity was investigated[12].

It is known that the NYHA functional classification is characterized by the severity of the heart failure symptoms and, for this reason, MLHFQ was expected to be useful for patients with different degrees of severity. Nevertheless, this hypothesis was not confirmed[12]. In our study, the NYHA classification provided by the medical team, as well as the value of peak VO_2 and the duration of the cardiopulmonary stress test, were consistent with the QQVM score. In a Spanish study, a strong correlation was reported between the NYHA functional classification and the score for the Spanish version of MLHFQ, a fact which led the authors to conclude that MLHFQ may reflect the severity of heart failure[13]. In our study, the result was the same. This finding leads us to think that the Portuguese version of the MLHFQ may also reflect the severity of heart failure. Despite the prognostic nature of the etiology in heart failure[14], we found no difference in the QQVM between the ischemic and non-ischemic groups.

MLHFQ can be used in a unique way to assess the quality of life of heart failure patients or to evaluate the outcome of an intervention. Due to its great importance, several studies conducted in Brazil used MLHFQ even before it had been translated, validated, and published. Bocchi et al[15] studied the quality of life of heart failure patients under treatment with Levosimendan using the Minnesota score. Issa et al[16] studied the effect of Bisoprolol on the quality of life, and Vilas-Boas et al[17] analyzed the transplantation of spinal cord cells to the myocardium of patients with chagasic heart failure.

Limitations of the study

This study was limited by the non application of a quality of life questionnaire validated in Brazil, such as the SF-36. Nevertheless, this comparison had been made before[12].

Conclusion

The Portuguese version of the MLHFQ proposed in this study proved to be a new valid and important instrument for assessing quality of life and limitations in the capacity of heart failure patients to perform daily activities.

Potential Conflict of Interest

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

Sources of Funding

This study was partially funded by CAPES.

Study Association

This study is not associated with any post-graduation program.

Appendix 1 - Minnesota Living with Heart Failure Questionnaire - (Translation into Portuguese)

During the past month, has your heart problem prevented you from living as you wanted? Why?

	Pre	6m	12m	18m	24m	36m	48m
1. It caused swelling in your ankles and legs	( )	( )	( )	( )	( )	( )	( )
2. It made you sit or lie down to rest during the day	( )	( )	( )	( )	( )	( )	( )
3. It made walking and climbing stairs difficult	( )	( )	( )	( )	( )	( )	( )
4. It made your work around the house difficult	( )	( )	( )	( )	( )	( )	( )
5. It made going places away from home difficult	( )	( )	( )	( )	( )	( )	( )
6. It made it difficult to sleep well at night	( )	( )	( )	( )	( )	( )	( )
7. It made your relationships or activities with family and friends difficult	( )	( )	( )	( )	( )	( )	( )
8. It made your work to earn a living difficult	( )	( )	( )	( )	( )	( )	( )
9. It made your recreational pastimes, sports or entertainment/hobbies difficult	( )	( )	( )	( )	( )	( )	( )
10. It made your sexual activities difficult	( )	( )	( )	( )	( )	( )	( )
11. It made you eat less of the foods you like	( )	( )	( )	( )	( )	( )	( )
12. It caused shortness of breath	( )	( )	( )	( )	( )	( )	( )
13. It made you tired, fatigued, or low on energy	( )	( )	( )	( )	( )	( )	( )
14. It made you stay in a hospital	( )	( )	( )	( )	( )	( )	( )
15. It caused you to spend money for medical care	( )	( )	( )	( )	( )	( )	( )
16. It caused side effects from the medications	( )	( )	( )	( )	( )	( )	( )
17. It made you feel you are a burden to your family or friends	( )	( )	( )	( )	( )	( )	( )
18. It made you feel a loss of self-control in your life	( )	( )	( )	( )	( )	( )	( )
19. It made you worry	( )	( )	( )	( )	( )	( )	( )
20. It made it difficult for you to concentrate or remember things	( )	( )	( )	( )	( )	( )	( )
21. It made you feel depressed	( )	( )	( )	( )	( )	( )	( )

NO VERY LITTLE VERY MUCH
0 1 2 3 4 5

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