



Use of the “Minnesota Living with Heart Failure Questionnaire” Quality of Life Questionnaire in Kosovo’s Heart Failure Patients

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Highlights

Background

Quality of life (QoL) is one of the most important end-points in heart failure (HF) patients. The Minnesota Living with Heart Failure Questionnaire (MLHFQ) is the most widely used measurement for assessing the QoL in HF patients. This questionnaire had been translated and validated into the Albanian language. We used this questionnaire to evaluate the QoL in HF patients in Kosovo.

Methods

The study subjects were 103 consecutive HF patients (63±10 years, 56 female, 48% hypertensive and 26% ischaemic etiology, classified as NYHA I-III) admitted in outpatient or in-patient clinics at University Clinical Centre of Kosova. At the moment of evaluation the patients were clinically stable and on optimized drug therapy. Relationships were tested between questionnaire score and different clinical and demographic factors.

Results

There was no difficulty in the administration of the Albanian version of MLHFQ or in the patient’s understanding of the questions. The overall median score of MLHFQ was 51 (mean 50±18). Female patients had higher total ($p=0.015$), emotional ($p=0.022$) and physical ($p=0.019$) MLWH compared to male patients. The total MQLQ score had good correlation with 6MWT distance ($p<0.001$), but not with the level of NTproBNP level ($p=0.364$). Significant relationship was found also between MLWH and NYHA functional class in HF patients ($p=0.002$ for total, $p=0.026$ for emotional, and $p<0.001$ for physical MLHF score). NYHA functional class also significantly correlated with 6MWT distance ($p<0.001$ for both).

Conclusions

The Albanian version of the MLHFQ proposed in this study proved to be valid for HF patients and served as a new and important instrument for assessing QoL in Kosovo’s patients. The MLHFQ was mildly higher in our patients compared with previous studies and was higher in female patients. The questionnaire score correlates with functional NYHA class, reflecting the severity of the disease, and with 6 minute walk test, reflecting exercise capacity.

Keywords: Heart Failure, Quality of Life, Minnesota.

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Introduction

Heart failure (HF) is the late stage of all heart disease and is characterized by low exercise tolerance [1], short survival and poor quality of life [2,3,4,5]. The prevalence of HF remains very high despite the advanced medical and device therapy. In elderly population (>70 years old) the prevalence of HF is up to 17% [6,7]. The QoL in HF patients is severely compromised as compared with the general population of the same gender and age due to the

deteriorated physical, mental, and social domains [8, 9, 10]. The compromised QoL correlate with poor outcomes in HF patients emphasizing the importance of its assessment [11, 12,13].

The Minnesota Living With Heart Failure Questionnaire (MLWHFQ), which is today largely used worldwide, is a specific questionnaire for the assessment of QoL in HF patients that was introduced

by Rector et al, in 1987 [14]. However, this questionnaire has not been translated and validated in Albanian language. This study sought to translate and validate the Albanian version of the MLHFQ for use in HF patients. We also evaluated the QoL in HF patients in Kosovo, using this questionnaire.

Methods

Study population

We studied 103 consecutive HF patients (63±10 years, 56 female), with clinical diagnosis of congestive HF secondary to ischemic heart disease or non-ischemic aetiology, who were in New York Heart Association (NYHA) functional class I-III. Patients were referred to the Clinic of Cardiology, University Clinical Centre of Kosova, between December 2010 and April 2016. At the time of the study all patients were on full cardiac medications, optimized at least 2 weeks prior to enrollment. Patients with NYHA IV, limited physical activity due to factors other than cardiac symptoms (e.g. arthritis), more than mild renal or hepatic failure, chronic obstructive pulmonary disease or those with recent acute coronary syndrome, stroke, psychical disorders or those with severe anemia were excluded. Patients gave a written informed consent to participate in the study, which was approved by the local Ethics Committee. This study was supported and monitored by Kosovo Society of Cardiology [15], which is trying to implement European Society of Cardiology guidelines and other current diagnostic and therapeutic modalities worldwide.

Data collection

Detailed history and clinical assessment were obtained in all patients, in whom routine biochemical tests were also performed including hemoglobin, lipid profile, blood glucose level, and kidney function. Estimated body mass index (BMI) was calculated from weight and height measurements. Waist and hip measurements were also made and waist/hip ratio was calculated.

Quality of life assessment

The MLWHFQ contains 21 questions whose aim is to determine how heart failure affects the physical, psychological and socioeconomic condition of patients. The questions refer to the signs and symptoms of heart failure, social relationships, physical and sexual activity, work and emotions [14]. The 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 dimensions, make up the total score. 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 (the greater the score, the worse the quality of life).

The Kosovo version of the MLHFQ had the same structure and metrics of the original version (Appendix 1).

The validation of the questionnaire in Albanian language was done through below steps:

- Initial translation of the questionnaire was undertaken by a bilingual native speaker of the language in question.
- Back translation into English was done by a bilingual native English speaker, who was not involved in the translation stage.

Statistical analysis

All statistical analysis was performed using SPSS version 20.0 software for Windows. Data are presented as mean ± SD or

proportions (% of patients). Continuous data was compared with two-tailed unpaired Student's t test and discrete data with Chi-square test. Correlations were tested with Pearson coefficients. Patients were divided according to their ability to walk >300m into good and limited exercise performance groups (16), and were compared using unpaired Student t-test.

Results

The clinical, demographic and quality of life data of the study patients are presented in Table 1. Of study patients, 78% were receiving ACE inhibitors or ARB, 74% beta-blockers, 77% aspirin

Table 1. Clinical and biochemical data of the study patients

Variable	HF patients (n = 103)
Age (years)	62.5 ± 9.5
Sex (female, %)	54
Smoking (%)	24
Diabetes mellitus (%)	26
Arterial hypertension (%)	66
LBBB (%)	14
Sinus rhythm (%)	79
BMI (kg/m ²)	29 ± 3.9
B-blockers (%)	74
ACEi (%)	78
Diuretic (%)	73
Aspirin (%)	77
Oral anticoagulants (%)	23
NYHA class I (%)	30
NYHA class II (%)	44
NYHA class III (%)	26
Waist/hip ratio	0.96 ± 0.1
BSA (m ²)	1.1 ± 0.2
SBP (mmHg)	126 ± 19
DBP (mmHg)	81 ± 11
HR (beats/min)	84 ± 18
6MWT distance < 300 (%)	34
6MWT (m)	325 ± 114
Glucose (mmol/L)	6.9 ± 2.8
Urea (mmol/L)	8.0 ± 5.9
Creatinine (umol/L)	93 ± 43
Cholesterol (mmol/L)	4.9 ± 1.2
Triglyceride (mmol/L)	1.6 ± 0.8
RBC (10 ⁶ /mm ³)	4.3 ± 0.5
WBC (10 ³ /mm ³)	7.6 ± 2.6
Hematocrit (%)	38 ± 6.3
Hemoglobin (g/dL)	12.4 ± 1.8
NT-ProBNP (pg/mL)	1629 ± 4946

HF: heart failure; BMI: body mass index; BSA: body surface area; SBP: systolic blood pressure; DBP: diastolic blood pressure; HR: heart rate; NYHA: New York Heart Association; 6MWT: six-minute walk test; RBC: red blood cell; WBC: white blood cell; LVEF: Left ventricle ejection fraction.



and 23% oral anticoagulants, and 79 % of them were in sinus rhythm. The data of the patients' quality of life are presented in Table 2. Female patients walked less during 6-MWT ($p=0.034$) had higher blood cholesterol level ($p=0.031$, Table 3) had higher total ($p=0.015$), emotional ($p=0.022$) and physical ($p=0.019$, Table 4) MLHFQ compared to male patients. The MLHFQ score had good correlation with 6MWT distance ($p<0.001$, Table 5, Figure 1) and significant but weak correlation with heart rate ($p=0.036$), whereas not significant correlation was found between MLHFQ score and NTproBNP level ($p=0.364$). Significant relationship was found also between MLWHQ and NYHA functional class in HF patients ($p=0.002$ for total, $p=0.026$ for emotional, and $p<0.001$ for physical MLHFQ score, Table 6). NYHA functional class also significantly correlated with 6MWT distance ($p<0.001$ Table 6).

Discussion

Findings: We proved that the translated Albanian version of the MLHFQ proposed in this study was valid for HF patients and served as a new and important instrument for assessing QoL in Kosovo's patients. As the QoL, i.e., relief of symptoms, is as important as duration of life in patients with advanced disease in general, and in HF patients in particular [17,18]. We underwent this modest study to see the possible introduction of the translated in Albanian MLHFQ in Kosovo's patients. We did not found any difficulty in translation and/or interpretation of the questionnaire. However, we found that some elderly and some patients with low educational level had difficulties in its using and they required help of the professionals to fulfill it.

The other important finding of our study is that the MLHFQ was mildly higher in our patients compared with previous studies in different countries and in different languages [3,19]. We believe that this higher MLHFQ score in our population could be due to the luck of the specialized HF units in our health institution as well as the luck of physical activity trainings in our institution that could reflect higher physical QoL scoring, compared with the institutions in previously published studies in different countries [20, 21, 22]. On the other hand, our study patients are at age that almost all of them suffered the Kosovo war, and many of them loosed their relatives and friends in the last war. This could be the reason of the higher emotional score in these patients, who we

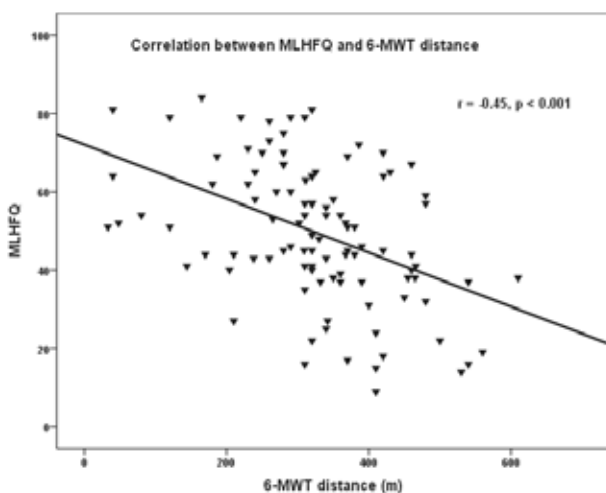


Figure 1 Correlation between quality of and 6-minute walk test in heart failure patients

Table 2. Characteristics of the quality of life of the study patients

Variable	HF patients (n = 103) Means \pm SD
Minnesota Living with Heart Failure (points)	
Global Score	49.6 \pm 17.7
Physical dimension	23.3 \pm 8.3
Emotional dimension	9.5 \pm 4.7

Table 3. Gender differences of clinical and biochemical indices of the study patients

Variable	Female (n=56)	Male (n=47)	P value
Age (years)	61 \pm 10	63 \pm 9	0.381
Sex (female, %)	54	46	0.242
Smoking (%)	11	40	<0.001
Hypertension (%)	71	60	0.206
Diabetes (%)	32	19	0.135
Waist/hip ratio	0.96 \pm 0.1	0.97 \pm 0.1	0.672
BMI (kg/m ²)	30 \pm 4.2	28 \pm 3.0	0.981
BSA (m ²)	1.1 \pm 0.1	1.0 \pm 0.2	0.112
SBP (mmHg)	126 \pm 20	124 \pm 17	0.763
DBP (mmHg)	82 \pm 11	80 \pm 10	0.352
HR (beats/min)	86 \pm 18	8 \pm 18	0.013
6MWT (m)	303 \pm 108	351 \pm 118	0.034
6MWT <300m (%)	43	23	0.038
Glucose (mmol/L)	7.0 \pm 2.8	6.8 \pm 2.9	0.311
Urea (mmol/L)	7.7 \pm 3.6	8.4 \pm 4.2	0.102
Creatinine (umol/L)	86 \pm 16.5	100 \pm 61	0.123
Cholesterol (mmol/L)	5.1 \pm 1.1	4.7 \pm 1.1	0.031
Triglyceride (mmol/L)	1.8 \pm 0.9	1.4 \pm 0.5	0.027
RBC (106/mm ³)	4.1 \pm 0.5	4.4 \pm 0.5	0.423
WBC (103/mm ³)	7.3 \pm 2.4	7.9 \pm 2.8	0.292
Hematocrit (%)	37 \pm 6.4	40 \pm 5.9	0.044
NT-ProBNP (pg/mL)	1209 \pm 2377	2131 \pm 5226	0.244

BMI: body mass index; BSA: body surface area; SBP: systolic blood pressure; DBP: diastolic blood pressure; HR: heart rate; NYHA: New York Heart Association; 6MWT: six-minute walk test; RBC: red blood cell; WBC: white blood cell.

Table 4. Gender differences of quality of life of the study patients indices in HF

Variable	Female (n = 56)	Male (n = 47)	P value
Global Score	53 \pm 14	45 \pm 20	0.015
Physical dimension (score)	25 \pm 7	21 \pm 9	0.019
Emotional dimension (score)	10 \pm 4	3.4 \pm 5	0.022

Table 5. Correlations of clinical variables with MLHFQ

Variable	R	P
Age	0.066	0.522
BMI	0.060	0.545
6MWT distance	-0.446	<0.001
Creatinine	-0.009	0.928
Glicemia	-0.041	0.682
Hemoglobin	-0.189	0.056
Heart rate	0.207	0.036
Waist/hips ratio	0.013	0.893

BMI: body mass index; MLHFQ: Minnesota Living With Heart Failure Questionnaire; 6 MWT: Six Minute Walk Test.

Table 6. Correlation of NYHA class and MLHF and other clinical indices

	NYHA I mean±sd	NYHA II mean±sd	NYHA III mean±sd	P
MLHF total	42±18	50±18	58±11	0.00
MLHF emotional	8.2±4.6	9.2±5	11±3.7	0.026
MLHF physical	19.0±8.9	23.6±8.3	28±4.7	<0.001
6MWT	376±90	334±106	251±11	<0.001

MLHF: Minnesota Living with Heart Failure; 6MWT: 6 minute walk test.

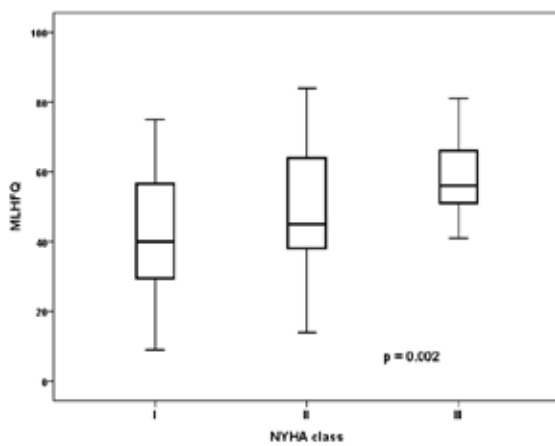


Figure 2 The correlation between quality of life and NYHA functional class in patients with heart failure.

believe that in addition to the HF symptoms and limited exercise capacity, they have higher rate of depression as compared with previous studies done in other countries.

We found also that female have poorer quality of life than male HF patients. This finding is in line with previous studies [7, 23]. The female subjects in our country, traditionally less exercise during their life, the fact that could find the female HF patients less physically trained and this could be the important factor for their higher MLHFQ score, reflecting their poorer physical capability that the man had. On the other hand, in our country the educational level of female was traditionally lower, which could affect their emotional intolerance with their chronic disease and then their poorer QoL. The other important finding of our study was that QoL had inverse

correlation with functional NYHA class and exercise capacity, assessed by 6MWT. This finding is in accordance with previous studies [24], and it was expecting result as the higher functional NYHA class should affect QoL in these patients. On the other hand the correlation of the QoL expressed by MLHFQ, found to have a good relationship with exercise capacity, expressed by 6 MWT distance. This finding is in line with previous studies [25, 26].

Limitations of the study: We did not compare this questionnaire to any other such as the SF-36. Although the questionnaire ought to be completed by the patient, but the characteristics of our population required that many receive help in this task from a nurse.

Conclusions

The Albanian version of the MLHFQ proposed in this study proved to be valid for HF patients and served as a new and important instrument for assessing QoL in Kosovo's patients. The MLHFQ was mildly higher in our patients compared with previous studies and was higher in female patients. The questionnaire score correlates with functional NYHA class, reflecting the severity of the disease, and with 6 minute walk test, reflecting exercise capacity.

Declarations of Interest

The authors declare no conflicts of interest.

Acknowledgements

The authors state that they abide by the "Requirements for Ethical Publishing in Biomedical Journals" [27].

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