

Quality of life in patients with chronic congestive heart failure

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Abstract. Objective: Quality of life (QOL) is severely decreased in patients with chronic heart failure (CHF). Our study aims to identify the factors affecting the evaluation of QOL. Material and Methods: Clinical, demographic, social and economic data was collected from patients with CHF in NYHA class III and IV as part of a complex workup. The Minnesota Living with Heart Failure Questionnaire (MLHFQ) was used to evaluate QOL. Results: QOL decreases as the NYHA class increases. Women evaluate their QOL as more severely affected than men. Age, social and economic factors modulate the perception of QOL. Conclusion: Combining demographic, social and economic data and evaluation of QOL can provide valuable and useful information for the medical management of patients with CHF.

Key Words: heart failure, quality of life, social and economic factors, demographic factors.

Rezumat. Obiectiv: Numeroase studii au demonstrat că insuficiența cardiacă cronică (ICC) afectează sever calitatea vieții pacienților (CaV). Prezentul studiu dorește să analizeze care sunt factorii care influențează evaluarea calității vieții. Material și metodă: Pacienților cu ICC NYHA III și IV studiați li s-au înregistrat date clinice, demografice, socioeconomice în cadrul unei examinări complexe. Cu ajutorul chestionarului Minnesota s-a cuantificat calitatea vieții. Rezultate: CaV scade odată cu creșterea clasei NYHA, iar femeile își evaluează CaV ca fiind mai sever modificată decât bărbații. Vârsta și factorii socioeconomi au de asemenea un rol modulator în percepție CaV. Concluzii: Folosirea unor date demografice sau socioeconomice, în asociere cu evaluarea CaV poate oferi informații importante și utile pentru managementul medical al pacienților cu ICC.

Cuvinte cheie: insuficiență cardiacă, calitatea vieții, factori socioeconomi, factori demografici.

Introduction. Chronic heart failure (CHF) severely decreases quality of life (QOL) by frequent hospital admissions, decreasing their social role and inflicting stress to the patients (Buetow et al 2001).

Several studies about the effect of various therapies (medication, interventional and/or surgical methods) on the outcome of patients with CHF showed that QOL also improves once the symptoms improve (Dusseldorp et al 1999; Morgan et al 2007).

The QOL is similar in patients with asymptomatic left ventricular dysfunction and asymptomatic treated when compared to general population but, once the symptoms appear and the NYHA class increases the QOL is more affected than in patients with chronic pulmonary diseases or arthritis (Juenger et al 2002).

The term QOL refers to a number of physiological and psychological factors that characterize the ability to function and be rewarded out of it. In its simplest definition, the QOL is one's perception of one's life.

Based on a theory proposed by Diener et al (2003), „quality of life depends upon the personal evaluation of the relevant information from the environment” our study aims to identify the clinical, demographic, social and economic factors that affect the assesment of QOL by the patients with CHF (Middel et al 2001; Lewis et al 2007).

Material and Methods. We studied 150 patients (74 women and 76 men) with CHF in NYHA class III and IV admitted to the Cardiology Department of the Cluj Emergency County Clinical Hospital with an episode of worsening heart failure. Average age of the patients was 62 ± 11 years and there was no difference regarding age in women and men. All patients underwent clinical evaluation and diagnostic tests to identify clinical data (symptoms and signs of CHF, etiology of heart failure and of the worsening, ventricular performance and associated diseases). A questionnaire was used to gather demographic (gender, age, marital status, background), social and economic data (monthly income, professional activity, level of education) for each patient. Patients were administered the Minnesota Living with Heart Failure (MLHF) questionnaire at hospital admission and discharge to evaluate QOL (Rector & Cohn 1992). The MLHF questionnaire consists of 21 questions that evaluate the impact of cardiac disease on patient's life. The answers range from 1 („No influence”) to 5 („Very much”). Results range from 21 to 105, with high scores indicative of QOL decrease. MLHF is frequently used in studies regarding CHF, it evaluates the current level of QOL and can be used to monitor the evolution of QOL.

Data obtained was analyzed using SPSS for Windows (version 17.0, SPSS Inc., Chicago, Illinois). Central tendency and frequency measurement were employed to describe demographic (age, sex, marital status, background), socioeconomic (level of education, professional status, monthly income) and pathophysiologic data (NYHA class, left ventricular ejection fraction, cause of heart failure and comorbidities). The non-parametric chi-square test was used to compare frequency-type variables without a Gaussian distribution. The Pearson correlation for ordinal scalar parametric data and Spearman or Kendall for non-parametric data (categorical or ordinal) were used for correlation analysis. A *p* value of less than 0.05 was used as cutoff for statistical significance.

Results. Life of patients with CHF is severely affected by recurrences, repeated hospital admissions and limitations imposed by the disease therefore MLHF scores at hospital admission are high in all patients (Table 1).

Tabel 1.

Effect of clinical factors on QOL in CHF patients at hospital admission

<i>NYHA class</i>	<i>MLHF score</i>	<i>P</i>
IV (at admission)	65 ± 13	0.001
IV (at discharge)	46 ± 5	
III (at admission)	44 ± 11	0.01
III (at discharge)	32 ± 6	
One disease	48 ± 11	0.0002
At least two diseases	62 ± 10	
First worsening	56 ± 12	0.001
At least two episodes of worsening	63 ± 13	

When we studied the effect of the physical status (assessed by NYHA functional class) on the perception of QOL we found out that QOL is more severely affected in patients in NYHA class IV compared to NYHA class III (Figure 1).

QOL at hospital discharge significantly improved in these patients after a complex treatment that lasted 12 ± 4 days. As shown in Figure 1, QOL at discharge compared to hospital admission improved with 37% ($p < 0.001$) for patients in NYHA class IV and with 25% for patients in NYHA class III ($p < 0.01$).

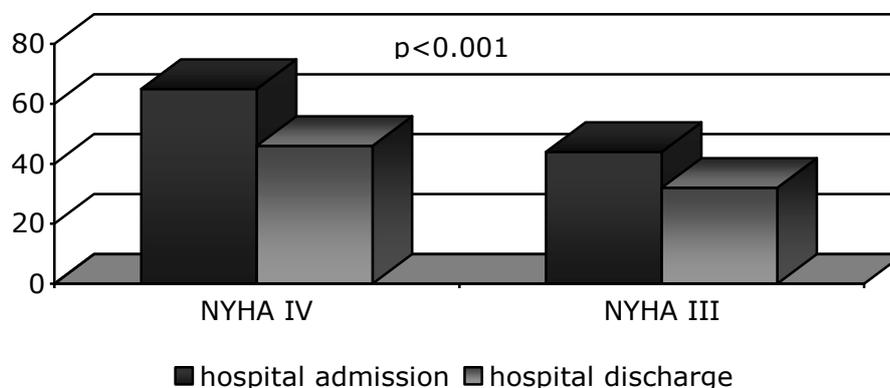


Figure 1. QOL at discharge improves but is more altered in NYHA class III compared to NYHA class IV.

Despite of significant improvements during hospitalization, QOL at discharge remains altered in all patients. QOL for patients in NYHA class IV is more severely altered than in NYHA class III ($p < 0.001$).

The more severe depreciation of QOL in NYHA class IV patients compare to class III cannot be explained by differences in cardiac performance assessed by ejection fraction because there are no significant differences.

There is a positive correlation between the depreciation of QOL and the number of comorbidities because of increased number of symptoms and hindrances as well as therapeutical resources needed.

QOL also decreases with every episode of worsening.

Table 2.
Effect of demographic factors on QOL in CHF patients at hospital admission

		<i>MLHF score</i>	<i>P</i>
Gender	Women	61 ± 18	< 0.01
	Men	54 ± 22	
Age	50-59	66 ± 12	
	60-69	51 ± 19	< 0.001
	70-79	48 ± 16	< 0.01
Background	Urban	48.4 ± 12.3	< 0.01
	Rural	56.3 ± 11.8	
Marital status	Married	53.6 ± 10.3	< 0.001
	Not married (divorced, widowed, singles)	63.8 ± 15.2	

Data in Table 2 shows the gender differences in perception and evaluation of QOL. Women perceive the depreciation of QOL as more severe than men, as shown by the higher scores in MHLF questionnaire.

The impact of disease on the QOL is differently evaluated by different age groups. Patients ages 50-60 have the highest scores in MLHF questionnaire which shows a severe alteration of QOL. The scores decrease with statistical significance as patient's age, as shown in Table 2.

We found that patient's background has a modulating effect – patients from rural areas consider their QOL is more severely decreased as compared to patients from urban areas.

Marital status also plays a role – not married patients perceive a greater impact on QOL than married patients, as shown in Table 2.

Data in Table 3 shows that QOL evaluation in patients with CHF is influenced by social and economic factors.

Patients with elementary education consider that CHF severely affects their QOL. We found that the higher the level of education the lower the impact on QOL is. Patients with college education have the lowest scores in MLHF.

Table 3.
Effect of social and economic factors on QOL in patients with CHF

Education			p
	Elementary	66.8 ± 12.2	
	Secondary	55.4 ± 11.6	< 0.001
	College/university	48.5 ± 11.5	< 0.01
Monthly income	< 500 RON	68.3 ± 10.5	
	500- 1000 RON	59.4 ± 13.2	< 0.001
	1000-1500 RON	49.1 ± 12.3	< 0.01
	1500-2000 RON	47.5 ± 3.6	< 0.05
Occupational status	Employed	44.2 ± 10.9	
	Retired	59 ± 18	< 0.001

Another factor we analyzed, sometimes strongly related to the level of education, is the monthly income. Patients with very low income (< 500 RON) describe the most severe decrease in QOL. The effect on QOL seems to decrease as the income increases.

Occupational status might include the effect of the monthly income but also has intrinsic effects such as lack of activity, limiting social connections, feelings of uselessness etc.

Patients who are still professionally active evaluate their QOL as being significantly better in comparison to the retired and unemployed.

Discussion. QOL in patients with CHF is defined as the subjective perception of the effect of CHF and treatment on the patient's life. We measured QOL using the MLHF questionnaire that was also used in 87% of the studies reviewed in a meta-analysis by Morgan et al (2007).

All patients in our study group had high scores, which confirm the severe depreciation of QOL in patients in NYHA classes III and IV, which was also found in a study by Holland et al (2010).

The hypothesis that a severe depreciation of QOL in NYHA class IV is due to a significant decrease of ventricular function is contradicted by data showing that

ventricular ejection fraction does not correlate with global scores for QOL in CHF patients (Juenger et al 2002; Lewis et al 2007).

Under these circumstances, severe symptoms that hinder the daily routines, the need for pausing the professional activity during hospitalization and also the increasing cost of treatment might account as causes of this finding. Remanence of some of these factors even after cardiac compensation might explain the persistently high scores on MLHF questionnaire in patients with NYHA class IV compared to class III at hospital admission.

In our study group QOL is more severely affected in women with CHF than in men. This was also found by other researchers (Chin et al 1998; Riedinger et al 2001). We should give special attention to the impact that age has on the perception of QOL.

The apparent paradoxical finding of a lower effect on QOL in patients over 60 years might be explained by changing life expectations as patients age (Moser et al 2008).

In patients ages 50-60 our findings about QOL are similar to those of Moser et al (2008) but contradict the findings of Haworth et al (2003). Patients ages 50-59 are still professionally and socially active and therefore the presence of a disease with all its symptoms, signs and limitations has a much greater impact.

Being professionally active ensures the social and professional insertion of the patient and also a monthly income – these are very important aspects that influence the perception of the impact of the disease on the patient's life. Studies show that a low monthly income is a negative predictor factor in patients with heart failure (Gallo et al 2003) and is associated with repeated and frequent worsenings and increased mortality (Philbin et al 2001).

The effect that education has on QOL is a controversial topic. The study of Lee et al (2005) found a correlation between the level of education and QOL. Their study also showed that 52% of the variation in QOL evaluation by CHF patients was attributed to the level of education, level of anxiety, NYHA class and health perception.

Our results show a correlation between QOL and the level of education. Education gives the patient adaptive resources in the battle with disease and its consequences (Barbareschi et al 2008).

Blair et al (2002) further refine this idea and claim these resources are socioeconomic and cognitive. Lower levels of education bring about a low socioeconomic status and predispose the patient to chronic stress because stressing circumstances demand finding new adaptive resources, which in time decrease the existing resources and leave the patient more exposed to new stressors (Blair et al 2002).

The major role the resources play in the daily coping with disease is shown by the correlation of marital status and QOL in patients with CHF. Having a partner provides physical, social, economic and, maybe the most important, emotional support, which makes the disease impact easier to bear.

Patient background plays also a role in QOL because of the living conditions, e.g. patients from rural areas need physical strength to make their living (carrying water from the fountain, cutting wood and carrying it in the house etc.).

Evaluation of QOL in patients with CHF is inherently subjective and influenced by a host of clinical, demographic, social and economic factors. Therefore, patients with CHF still experience physical and psychological aspects that significantly influence their QOL, in spite of the significant leaps of therapeutic methods to improve the physical symptoms.

Our study points out the importance and the need to use the MLHF questionnaire by all physicians involved in the management of patients with CHF just as natural as taking the medical history, performing the physical examination, ECG or echocardiogram because the MLHF can provide valuable and useful data in the management of these patients.

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