QUALITY OF LIFE IN PATIENTS HOSPITALIZED WITH HEART FAILURE: A NOVEL TWO QUESTIONNAIRE STUDY

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Abstract- Heart failure (HF) is a common disease with high health care costs and high mortality rate Knowledge of the health-related quality of life (QOL) outcomes of HF may guide decision making and be useful in assessing new therapies for population. Yet little is known about QOL of HF patients in Iran. Objectives: To assess health related QOL of patients with HF with two different instrument and to correlate these two measures and to assess the role of relevant factors. Analytic cross sectional study was conducted involving 230 adult patients hospitalized with HF, demographic data and health –related quality of life were determined by interview; for assessing of quality of life was used SF-36 and Minnesota questionnaires. Simple random sampling from ward patients list choose patients. Patients had no other man diseases that affected their quality of life. Results: 118 female (53.3%) and 112 male (48.7%) with mean age of 51.4 +/-13.18 were collected. 61 patients (26.5%) were smoker and 100 patients (43.5%) had positive familial hearth disease history. Quality of life in some subscale: Physical functioning, Role physical and vitality, and Minnesota scare affected from patients age. Male patients had better quality of life than female in Minnesota scale and physical functioning, body pain, general health, vitality and emotional well-being. Duration of diagnosis affected Minnesota scale and role physical. Positive familial heart disease history affected physical functioning. Iranian patients have worse quality of life than other patients. This shows patients age, sex, duration of diagnosis, smoking and positive familial hearth disease history affected quality of life in heart failure patients.

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Key words: Quality of life, heart failure, risk factor ,cross sectional

INTRODUCTION

Relatively new scientific measure to evaluate efficacy of management strategies in heart failure is QOL, besides traditional control measures.

Evaluating and increasing quality of life in patients with failure conditions always have been a Evaluating and increasing quality of life in patients with failure conditions always have been a golden aim for healthcare system. One of the major chronic disease in the world is heart failure. Heart failure occurs when the heart ability to supply blood and oxygen doesn't keep up with the body's demands. QOL was shown to be decreased in patients with HF. The quality of life in people with hearth failure is poor relative to that found in people with chronic conditions. SF-36 scores of people with heart failure are significantly lower than those found in the general population, with all eight areas of quality of life affected. Heart failure causes impairment of physical functioning, social functioning and energy levels (1, 2). In this study we planned to find out the quality of life in adult patients with heart failure in 2 sample hospitals and investigate it in related to Gender, Familial heart disease history, disease duration and smoking. In previous studies Charles

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Emery (Aug 2002) and Reidinger (2002) investigated the lower quality of life in women with heart disease than do men.

Results showed that women had lower psychological and physical functioning at each time point during the study. The biggest difference between men and women was the influence of social support on quality of life. Only among women was the absence of social support associated with poor quality of life (3).

In another investigation Olds and colleagues seek out the quality of life differences in heart failure patients in both genders. They exercised 3 questionnaires of SF-36, Minnesota (LIHFE) and Miller One Item Hope Scale (MOSAH) to assess the quality of life. They concluded no significant diversity between 2 genders in SF-36 and LIHFE questionnaires; Although women had higher median level in most of questions in SF-36 like social activity and general health. And they also had less hopelessness levels than do men (4, 5). In study on the relationship between functional capacity, cardiac function and quality of life in heart failure patients by ACREE, Luke *et al.* in 2004, the VO2 peak, anaerobic threshold, EF% and gender are all unrelated to quality of life in NYHA class II and III heart failure subjects (6). In ACC/AHA key data elements and definitions for measuring the clinical management and out comes of patients with chronic heart failure, they mentioned cardiac risk factors like positive familial history of heart disease and history of smoking have both prognostic and management implications (7).

Quality of Life is considered the broadest conception, encompassing all factors related directly and indirectly to health status. The primary modern proponent of the broader view of health within the concept of quality of life has been the World Health Organization (WHO).

In its Constitution of 1948, WHO defined health as "a state of complete physical, mental and social well-being, and not merely the absence of disease and infirmity" (8, 9).

In this study we utilized two different methods for monitoring the quality of life in patients with heart failure. Comparison made with general quality of life instruments.

MATERIALS AND METHODS

We conducted a cross sectional study to assess and compare the quality of life in heart failure patients with two different measures (SF36 and Minnesota) considering gender, positive familial heart disease history, disease duration and smoking history.

Population and data collection

In a small survey among the heart failure patients in two hospitals in Tehran, Iran in 2005 We applied simple random sampling and calculated 230 for the sample population. We collected the name list of all patients over 18years old at the end of every week in the whole year of 2005 and excluded the ones could not answer our questions or had any other failure in body organs except heart failure. At the end of every week 6 randomly patients were selected. All subjects were asked to complete 3 questionnaires upon entry into the study.

Instruments

Demographic data and health-related quality of life were determined by interview. Since treatments of congestive heart failure influence the quality of life of a patient, CHF specific questionnaires have been used in clinical trials. At least 10-20 general health factors are associated with CHF but the commonly used CHF specific questionnaires have usually focused on a few key clinical points in order to gather uniform and useful information (10). We obtained 3 questionnaires on the patients; Outcome data on quality of patients' life were collected for each patient and compared between the different subgroups.

SF-36

The SF-36 is one of the most widely used measures of health-related QOL and consists of 36 items covering eight dimensions: physical functioning (PF), role limitations caused by physical health problems (RF), bodily pain (BP), general health perception (GH), vitality (VT), social functioning (SF), role limitations caused by emotional health problems (RE), and mental health (MH) (11). Scores on all the subscales are transformed linearly to a possible range of 0–100; higher scores indicate more favorable physical functioning/psychological well-being (21).

Minnesota

The Minnesota Living with Heart Failure questionnaire (MLHF) was designed in 1984 to measure the effects of heart failure and treatments for heart failure on an individual's quality of life(1, 12, 13). The content of the questionnaire was selected to be representative of the ways heart failure and treatments can affect the key physical, emotional, social and mental dimensions of quality of life without being too long to administer during clinical trials or practice**.** Responsiveness of the MLHF refers to its ability to detect changes in quality of life that clinicians and patients discern and believe to be important. An instrument's ability to detect change depends, in part, on the amount of noise or measurement error inherent in repeated assessments. Changes in an individual's score need to be 2.77 times the standard error of the measurement to be 95% confident that the observed change was not due to measurement error (14-17).

Statistical analysis

We processed the outcomes in tables and graphs and analyzed them with chi square test, independent sample *t* test and Pearson correlation. Additionally, we applied multivariate linear regression analyses to determine the association of gender, positive familial heart disease story and smoking history and disease duration with quality of life scores in patients with heart failure. The association between Minnesota questionnaire with 8 subgroup SF-36 questionnaire analyzed by Pearson correlation. For scores, differences of 5 points were considered clinically significant. *P* values of < 0.05 were considered statistically significant.

RESULTS

Table 1 is a description of number, minimum and maximum, median and standard deviation of quantitative variables in the study. Table 2, 3 and 4 demonstrate the prevalence of qualitative variables under study including patient's gender, positive familial heart disease history and smoking history.

The analyze of outcomes showed that the age of heart failure patients is related to their ROLEIPHYH $P = 0.007$, ENERFATI 0.005 significantly. But this patient's gender is not related to their

Table 1. Quantitative variables in this study

	N	Min.	Max.	Mean	Std. Deviation
AGE	230	23.000	93.000	51.4391	13.1894
Disease Duration(day)	230	1.000	480.000	47.8957	76.9072
Systolic blood pressure(mmHg)	230	90.000	190.000	130.2609	25.4723
Diastolic blood pressure(mmHg)	230	50.000	110.000	80.2174	13.9774
FBS(Mg/dl)	230	70.000	323.000	113.0766	44.6379
Total cholesterol(Mg/dl)	230	80.000	470.000	192.9558	59.4343
TG(triglyceride)	230	27.000	508.000	192.5140	87.1298
LDL-c(Mg/dl)	230	28.000	180.000	109.7234	29.4498
HDL-c(Mg/dl)	230	22.000	204.000	41.8889	28.1152
PHYSFUNC	230	0.000	95.000	39.5870	23.0706
ROLIPHYH	229	0.000	100.000	21.9432	25.7868
ROLIEMOP	229	0.000	100.000	21.5429	27.6032
ENERFATI	230	5.000	90.000	50.5000	17.4671
EMOWELL	230	0.000	100.000	56.6261	16.1053
SOCFUNCT	229	0.000	100.000	43.1223	21.2137
PAIN	230	0.000	100.000	42.8370	25.9644
GENEHEAL	230	10.000	95.000	42.3261	16.6823
MINESOTA	230	12.000	80.000	46.3870	16.8581

Table 2. Patient gender's distribution under study

	Frequency	Percent
Female	118.000	51.3
Male	112.000	48.7
Total	230.000	100

ROLIMOP, ENERFATI, EMOWELL, SOCFUNCT, PAIN, GENEHEAL, PHHEALSU and MEHEALSU. Age of heart failure patients is related to the score concluded from Minnesota questionnaire significantly (P = 0.001). The evaluations showed that the diagnosis period in heart failure patients is related to their ROLIPHYH significantly but it is not related to their ROLIEMOP, ENERFATI, EMOWELL, SOCFUNCT, PAIN, GENEHEAL, PHHEALSU and MEHEALSU. Diagnosis period in heart failure patients is not related to the score calculated from Minnesota questionnaire.

To evaluate the relation between qualitative variables like gender, positive familial heart disease history and smoking history we applied chi2 test. The result showed: Patient's gender is related to their PHYSFUNC p=0.01, energy fatigue p=0.01, emotional well being p=0.001, pain p=0.02, general health p=0.001, physical health status p=0.001, mental health p=0.01. But gender is not related to patient's ROLIEMOP, SOCFUNCT.

Patient's gender is related to the outcome score resulted from Minnesota questionnaire significantly (P=0.001)(table 5).

Patient's positive familial heart disease history is related to their PHYSFUNC significantly. But it is not related to their ROLIPHYH, ROLIEMOP, ENERFATI, EMOWELL, SOCFUNCT, PAIN, GENEHEAL, PHHEALSU and MEHEALSU. Patient's positive familial heart disease history is not related to the outcome score resulted from Minnesota questionnaire significantly (table 6). Positive smoking history is related to the patient's GENEHEAL p=0.001 and PHHEALSU P=0.01. But it is not related to their PHYSFUNC, ROLIPHYH,

Table 3. Patients familial heart disease history distribution

	Frequency	Percent
Positive family history	100	43.5
Negative family history	130	56.5
Total	230	100

Table 4. Patients smoking history distribution

	Frequency	Valid Percent
Smoker	61	26.5
Non Smoker	169	73.5
Total	230	100

ROLIEMOP, ENERFATI, EMOWELL, SOCFUNCT, PAIN, and MEHEALSU. Positive smoking history is related to the outcome score resulted from Minnesota questionnaire significantly (p=0.01) (Table 5, 6 7). The relationship between Minnesota and 8 subgroups of SF-36 analyzed By Pearson correlation which resulted in significant relationship between Minnesota score and SF-36 score in PHYSFUNC r=0.32 p=0.001, ROLIPHYH r=0.38 p=0.001, ROLIEMOP r= 0.27 p= 0.001, ENERFATI r=0.42 p=0.001, EMOWELL r=0.34 p= 0.001, SOCFUNC r=0.35 p=0.001, PAIN r=0.52 p=0.001 and GENEHEAL r=0.38 p=0.001 subgroups.

Table 5. Patient' life quality according to gender

	Sex	Mean	Ste. Deviation
PHYSFUNC	F	35.93	22.98
	M	43.43	22.63
ROLIPHYH	F	19.06	25.25
	M	25	26.11
ROLIEMOP	F	21.75	29.03
	M	21.32	26.12
ENERFATI	F	47.88	18.37
	M	53.25	16.07
EMOWELL	F	52.23	16.01
	M	61.25	14.91
SOCFUNCT	F	40.7	23.33
	M	45.64	18.18
PAIN	F	37.79	25.64
	M	48.14	25.34
GENEHEAL	F	38.05	16.82
	M	46.83	15.36
PHHEALSU	F	36.68	14.97
	M	43.67	14.41
MEHEALSU	F	36.99	17.71
	M	41.36	15.59
MINESOTA	F	51.16	17.76
	M	42.4	14.91

Table 6. Patient' life quality according to familial heart disease history

	FH	Mean	Ste. Deviation
PHYSFUNC	Yes	33.08	19.7
	No	44.73	24.21
ROLIPHYH	Yes	21.21	27.04
	No	22.67	24.89
ROLIEMOP	Yes	21.76	27.53
	No	21.53	27.79
ENERFATI	Yes	48.13	17.03
	No	52.42	17.64
EMOWELL	Yes	56.16	16.28
	No	57.07	16.04
SOCFUNCT	Yes	42.17	21.54
	No	43.89	21.08
PAIN	Yes	42.14	27.13
	No	43.44	25.21
GENEHEAL	Yes	42.67	17.29
	No	42.11	16.31
PHHEALSU	Yes	38.23	14.85
	No	41.62	15.15
MEHEALSU	Yes	39.02	17.8
	No	39.3	16.11
MINESOTA	Yes	47.64	16.43
	No	45.7	17.19

Abbreviations:

Table 7. Quality of life according to smoking status

	Cigarette smoking	Mean	Ste. Deviation
PHYSFUNC	Yes	38.06	22.28
	No	44.01	24.88
ROLIPHYH	Yes	20.35	25.68
	No	25.81	25.8
ROLIEMOP	Yes	21.55	27.39
	No	21.85	28.47
ENERFATI	Yes	49.73	16.49
	No	52.62	20.03
EMOWELL	Yes	56.21	15.42
	No	57.31	17.71
SOCFUNCT	Yes	41.69	21.8
	No	46.92	19.31
PAIN	Yes	41.33	25.97
	No	46.72	25.88
GENEHEAL	Yes	40.5	17.36
	No	46.88	13.42
PHHEALSU	Yes	38.64	14.8
	No	43.83	15.37
MEHEALSU	Yes	38.92	16.56
	No	38.58	17.25
MINESOTA	Yes	48.07	16.98
	No	41.67	15.84

DISCUSSION

Heart failure is a condition that produces fatigue, dyspnea and limitation in exercise capacity, all of which severely affect the QOL. Patients with HF report high anxiety and score low for general health and functioning. The morbidity that accompanied heart failure results in increase in the number of hospital readmissions, early retirement ,loss of income and the inability to perform physical activities –all of which can lead to depression (3). In NYHA class 2 and 3 all aspects of QOL were dramatically reduced, reflecting the sever impact of HF on daily life, even though the patients were in a compensated stage and in an ambulatory setting (22).

All chronic disease conditions have a similar impact on QOL. Patients with chronic hepatitis C were characterized by quite a different pattern.

As patients with major depression were in a better physical condition than patients with HF. Interestingly, the patients with HF in NYHA class 3 had a similar impairment of QOL in the mental health domain as patients with major depression, in addition to their already dramatically reduced physical health. In some recent studies showing that a large proportion of patients with HF suffer from depression. Thus the QOL in patients in NYHA class 3 is reduced not only physically but also mentally (22). One could speculate that these results reflect the effects of HF the central nervous system. In central neuron hormonal regulation system or diminished central perfusion

might impair cognitive capacity and trigger a latent vulnerability to depressive disorder (22).

Comparison of the present study with TODERO in 2002 (18) revealed a different pattern of impairment, so our HF patients have much more lower level in QOL in most domains like social, body pain, role emotional, role physical functioning, and well being. But in vitality and general health they almost have similar pattern (18). This huge difference might be addressed in the psychosocial aspects of QOL arguments (3).

Multivariate association show that HF patients age has indirect relation with physical functioning, role physical and vitality that the older the patients the lower is these three QOL subgroup score. Patients age has direct relationship with the score calculated by Minnesota questionnaire that the older the patients the lower the QOL. Thus we need to make new decisions to improve the QOL in older HF patients.

Our results indicate that patients gender is significantly related to their physical functioning, energy fatigue, emotional well being, body pain, general health, physical and mental health status, and HF place a tremendous burden on QOL in women. Finding are consistent with those of RIEDINGER (3, 19) and in contrast with results of Olds, Nara b (13) that concluded women have a greater score in physical functioning ,body pain ,general health, vitality, social functioning and emotional well being than did men. Gender is related to the outcome score from Minnesota inventory, too.

Patients positive familial heart disease history is related to their physical functioning significantly, but a study on dilated cardiomyopathy patients (11) concluded that this history tend to a better score in SF-36 questionnaire. This variable is not related to the outcome score resulted from Minnesota questionnaire. As expected, presence of smoking history is to general health and physical health, and to the score of Minnesota, too.

Diagnosis period of HF is not associated with calculated score from Minnesota and SF-36. The influence of other variables on QOL such as neuron hormonal factors and cytokines, which are known to be increased in HF presently is unclear (22). Is also possible that the daily hassles cause chronic stress. Depending on the degree of underlying vulnerability, this could lead to a feeling of hopelessness followed by depression and reduced quality of life (22). Pearson correlation R between Minnesota overall score and eight subgroup of SF-36 resulted in significant but weak association in most subgroups and moderate correlation in Pain and Energy Fatigue domain.

Correlation matrix shows that there is accepted level of the results of two instrument in hospitalized HF patients. Disadvantage of the Minnesota measure is that, it is difficult to compare across disease and with controls in the general population (22). Heart failure impose a great burden on QOL (20) disease management program should be able to include interventions that improve overall health related QOL. This program have been developed to reduce variation in care and goals include, decreasing heart failure symptoms, decreasing hospital length of stay and hospital readmission and increasing physical functioning (3). Other dimensions of QOL are equally important with physical functioning and need attention but not limit emotional and social function (3). Also it may be cost effective to include interventions that improve QOL in patients with HF. Authority and those who design disease management program need to focus not only on reducing the number of hospital readmissions and increasing physical functioning and survival but also on improving the psychosocial aspects of QOL in these patients (3).

Limitations of our study: 1- Type of the study that is weak to clear a cause and effect relation. The main thrust of our study is the QOL scores and correlations between two measures, and somatic and demographic indices assessed at a particular point in time. 2- study was performed at two referral centre. Thus the sample of patients dose not represent the typical HF patients.

Conflict of interests

The authors declare that they have no competing interests.

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