

## Quality of life and lifestyle interventions in heart failure patients

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### Abstract

Despite significant scientific advances heart failure remains an escalating health problem, globally. Heart failure (CHF) is a clinical syndrome with a high mortality and morbidity. Community-dwelling patients with CHF experience significant symptoms that exert a negative influence on quality of life.

**Aim:** The aim of the present study was to review the literature about factors affecting quality of life in patients with heart failure.

**Method and material :** The method of this study included bibliography research from both the review and the research literature, mainly in the pubmed data base which referred to the factors affecting quality of life in patients with heart failure.

**Results:** Despite the recent therapeutic advances, heart failure remains a complex health problem with various personal, social, and financial aspects, and deterioration of the quality of life. According to the literature, the main factors affecting the quality of life of patients with heart failure are the difficulties occurring as the result of functional, cognitive, and emotional impairment, loss of independence depending on the stage of the disease, the level of support from both the family and the social environment, as well as the spirituality, religion and personal beliefs. All the above factors have negative consequences both for the patients and their environment. It is also widely accepted that the economic impact of the disease is considerable, worldwide.

**Conclusions:** As it is supported by published evidence, understanding quality of life in patients with heart failure requires further exploration about their needs. Targeting interventions and supporting measures to promote functional mobility, to ameliorate symptoms and psychological distress, may lead to an improvement in the overall quality of life. The beneficial effect of a supervised nutritional and lifestyle intervention was proved as part of a non-pharmacologic treatment of patients with heart failure, with improvements in clinical status and quality of life.

**Key-words** : heart failure, quality of life, stress, nutritional and lifestyle interventions.

### Introduction

Heart failure (HF) is a major and growing public health problem, mainly in the western countries and it is estimated that at least 23 million people are affected worldwide. Specifically, in the USA, heart failure is the main cause of mortality and morbidity. Approximately 5.8 million patients in this country have HF, and over 550 000 patients

are diagnosed with HF for the first time each year<sup>1</sup>. The disorder is the primary reason for 12 to 15 million office visits and 6.5 million hospital days each year. From 1990 to 1999, the annual number of hospitalizations has increased from approximately 810 000 to over 1 million for HF as a primary diagnosis and from 2.4 to 3.6 million for HF as a primary or secondary diagnosis<sup>2-3</sup>. In 2001, nearly 53 000 patients died of HF as a primary cause. The number of HF deaths has increased steadily despite advances in treatment, in part because of increasing numbers of patients with HF due to better treatment and “salvage” of patients with acute myocardial infarctions (MIs) earlier in life<sup>4</sup>. In Greece, there are 200.000 patients with heart failure and about 30.000 new cases per year.

Also, heart failure is the main cause of hospitalization of the patients for stabilization of clinical symptoms, which is known as acute deregulation of heart failure. More specifically, it accounts for approximately 5% of all hospital admissions, and implies high cost to each National System of Health due to the long duration of hospitalization<sup>1-4</sup>.

The prevalence increases with age and it is estimated that 30 -130 out of 1000 individuals over the age of 65 years and 80 -160 out of 1000 over the age of 75 years suffer from heart failure. More in detail, in the USA approximately 80% of patients discharged from hospital with newly diagnosed heart failure are over 65 years of age, whereas 50% are over 75. The average 5-year mortality rate is about 50% in individuals with systolic dysfunction and similar in those with preserved left ventricular systolic function<sup>1-4</sup>.

Apart from demographic factors such as sex and age, the incidence of the disease is also related to the factors that contribute to its cause like coronary heart disease. Thus, patients with coronary heart disease are four times more likely to develop heart failure, while 14 - 20% of those who survive an acute myocardial infarction will develop heart failure within the next 5 - 6 years. Patients with a medical history of acute myocardial infarction are five times more likely to develop heart failure within five years after the incident. In addition, progressive left ventricular dilatation within 4 weeks after acute myocardial infarction increases the likelihood of heart failure<sup>1-6</sup>.

It is widely accepted that general improvement in health care including effective treatment of chronic cardiovascular disorders, such as ischemic heart disease and hypertension, and other relevant diseases, has lead to the increase of life expectancy of patents with heart failure. Taking into account this fact in conjunction with progressive ageing of population mainly in Western countries, it is understandable why the incidence of the disease is expected to grow during the next decades.<sup>1,2</sup>

The aim of the present study was to explore factors affecting quality of life of patients with heart failure.

## **Method and material**

The method of this study included bibliography research from both the review and the research literature which carried out mainly internationally over the last 8 years and referred to factors affecting the quality of life of patients with heart failure using “heart related quality of life, heart failure, factors” as key-words.

## Health-related quality of life

Quality of life is undoubtedly a multidimensional, volatile, and subjective concept, which can hardly be defined and measured. Although the first reports on the quality of life were made by Platon - who describes that Socrates used to talk about quality of life and compare it with quantity - quality of life still remains the focus of many investigations<sup>7,8,9</sup>.

The term "quality of life" first appeared in the USA in the 50's, and while it was at first associated with the standards of living, the term has been expanded to include education, health and welfare, economy, development, and emotional and psychosocial balance.

Shortly afterwards, in 1983, the quality of life was defined by Young as 'the degree of satisfaction under the current conditions of living, as perceived by the individual'. Today, a high quality of life is considered essential because it is related to the structures of the consuming societies, universal because it concerns all individuals and is related to the social actions, and constant because it should always follow the changes in the consumer societies<sup>7,8,9</sup>.

The main approaches for interpreting the concept of quality of life have been the philosophical, the economic, the sociological, the psychological, and the medical approach. Although the concept of quality of life that is related to health (HRQOL) includes all the above, it is more related to the impact of a disease on the quality of life<sup>7,8,9,10</sup>.

Standardized health-related quality of life (HRQOL) measures are critical for a number of purposes, including evaluating the nation's progress in achieving population health goals, assessing health disparities across different segments of the population, and measuring the effectiveness of health care interventions for age-related diseases.

Health-related quality of life is defined as 'the response on the impact that the disease has on the physical, the psychological, and the social aspects of the individual's life, and affects the extent to which the person feels satisfaction with the conditions of their life'. The health professionals started being interested in the quality of life of patients when the biomedical model of working was revoked, and when the patients' demands increased. Furthermore, in contrast to the bio-medical measurements, which focus on the change of the objective signs and symptoms, measurement of health-related quality of life is an indicator for evaluating the therapeutic effect.

More specifically, the health-related quality of life is a multidimensional concept with at least three different main dimensions<sup>7,8,9,10</sup>:

- The physical dimension that includes the perception of the individual as healthy or not, the personal rating of the difficulty in daily activities, the satisfaction from the health status, and the duration of hospitalization.
- The emotional dimension that includes self-esteem, happiness, and satisfaction level of life status
- The social dimension that includes marital, social, and professional adaptation<sup>7, 11-16</sup>.

## Factors affecting the quality of life of patients with heart failure

During the past years, important steps in understanding the pathophysiology of heart failure have been made, however, a single comprehensive definition of this clinical syndrome is still lacking<sup>1,2</sup>.

Heart failure is defined either as a complex clinical syndrome characterized by impaired left ventricular function and neuro-hormonal stimulation, followed by poor tolerance to fatigue, fluid retention, and reduced life expectancy or as a syndrome caused by heart disease and is clinically characterized by the model of hemodynamic, renal and neuro-hormonal response. Given that there is no borderline between cardiac function and pressure or size of the heart cavities, the diagnosis of the disease should be based on medical history, and the physical and clinical examination<sup>1,2</sup>. Due to the unfavorable prognosis, the high morbidity and mortality, and the dramatic deterioration of the quality of life, about 50% of the patients die during the first five years of the disease. Moreover, the mortality rate among the patients with severe heart failure is about 40% per year<sup>1,2</sup>.

Considering all the above, it becomes clear that heart failure is a complex health problem with various personal, social, and financial aspects, and deterioration of the quality of life. The incidence of the disease is expected to increase and will take alarming dimensions if it will not be addressed immediately and appropriately by the physicians.

According to the New York Heart Association (NYHA classification), in the majority of the research studies, the classification of heart failure is considered the predominant indicator for the level of the patients' quality of life, as well as for the outcome of the disease, the mortality rate, and the frequency of hospitalization. The reason for this is the fact that the NYIA classification evaluates the patients' clinical condition according to the severity of the symptoms and the degree to which they affect the ability to accomplish the requirements of daily life. The NYIA classification is as follows:

Class I: Heart disease that does not limit physical activity. The usual daily physical activity does not cause shortness of breath, fatigue, palpitations or angina.

Class II: Heart disease, which causes very small limitations in the physical activity. No symptoms at rest. The usual daily physical activity causes shortness of breath, fatigue, palpitations or angina.

Class III: Heart disease, which causes very small limitations in the physical activity with no symptoms at rest. Less than usual daily physical activity causes shortness of breath, fatigue, palpitations or angina.

Class IIII: Patients with cardiac disease who are unable to perform any physical activity without discomfort. The symptoms of heart failure or angina occur at rest. Any physical activity aggravates the discomfort<sup>1, 2, 7</sup>.

In clinical practice, many different tests are performed for the evaluation of the patients' functional capacity. The predominant of these tests is the cardiopulmonary assessment test, which provides information regarding fatigue tolerance, functional stage, prognosis of the disease, and effectiveness of the treatment<sup>7, 11-16</sup>.

According to the literature, the main factors affecting the quality of life of patients with heart failure are the difficulties occurring as the result of functional, cognitive, and emotional impairment, loss of independence depending on the stage of

the disease, the degree of support from the family and the social environment, as well as the spirituality, religion and personal beliefs. All the above factors have negative consequences both for the patients and their environment<sup>7</sup>.

More specifically, the nature and duration of the disease, including the progressive impairment of cardiac function cause functional impairment, which results in significant limitations in daily activities, in accomplishment of personal interests, in the ability to work, and in the degree of independence. The majority of the literature supports that the lower the degree of independence and the control of the clinical symptoms, the lower the level of the quality of life that is perceived by the patients<sup>17-20</sup>. The limitations that the disease implies and especially the loss of independence, compels the patients to adapt and accept the new conditions, which very often have important psychological side-effects.

According to the literature, such intense emotional disturbances experienced by patients with heart failure, not only affect their quality of life negatively, but are also the reason for hospitalization in 49% of the cases. This situation seems to be a vicious circle as emotional disturbances such as anxiety and depression can cause functional impairment in the daily life<sup>21-24</sup>.

Although the relation between anxiety-depression and quality of life of patients with coronary disease has been widely studied over the last 30 years, it was not until recently that the effect of these factors on the quality of life of patients with heart failure received more attention from the specialists.

In particular, depression significantly affects the patients' quality of life because it is often the reason for not complying with medical instructions, and fail to participate in rehabilitation programs. Moreover, depression is also a strong indicator of frequent hospitalization and high mortality rates, regardless the severity of the disease<sup>21, 25</sup>.

It is worth mentioning that the depression of patients with heart failure varies depending on the hospital site. For example, the recorded incidence of depression is 35 - 70% of hospitalized patients with heart failure, which may be due to both the severity of the disease and the regulations imposed by their admission to hospital. In contrast, other studies have shown that patients admitted to the departments of short hospitalization evaluate the overall quality of life more positively, and express lower levels of depression, which may be due to either their improved medical condition or to the less tribulation of the patient's family<sup>21, 28</sup>.

Also, another factor that significantly affects quality of life of patients with heart failure is stress. The main causes that trigger stress and undermine the emotional balance of the patients is the uncertainty of prognosis and the insecurity regarding the patient's future life, in conjunction with the change of self image, low self-esteem and their belief that they are unable to maintain to same degree as before the disease, and the family and social contacts and activities<sup>29, 30, 31</sup>.

The incidence of stress varies from study to study and may reflect other underlying causes such as the degree of acceptance and adjustment to the disease. These factors affect the quality of life of patients with heart failure in a negative way, regardless the severity of the disease, as they are strongly associated with denial of compliance to the treatment guidelines. For example, several studies have shown that when patients do not control their stress or do not regulate it with medication, catecholamines in the circulation are increased, which further affects the heart and the immune system<sup>29, 30, 31</sup>.

According to the literature, apart from the physical dysfunction and the psychological factors, other factors that should not be underestimated in assessing the quality of life of patients with heart failure are gender, age, marital status, educational level, how informed the patients are, and even their own personality<sup>7</sup>.

Active participation in their treatment and the optimism of the patients are factors that influence positively their quality of life. In contrast, the social isolation that the patients often experience increases the mortality rate, regardless of age, physical status and treatment of depression<sup>24,25</sup>.

Regarding gender, the literature supports that women have a better prognosis and assess the quality of life more positively compared to men, however, the results are controversial, depending on the stage of the disease and if the severity of the disease is the same in both genders.

A variety of nutritional and lifestyle interventions can help patients with congestive heart failure (CHF) to better control symptoms of the condition and improve their quality of life. Some recommendations include:

- Restriction of sodium (salt) intake to about 2.0 grams per day.
- Restriction of fluid intake to no more than 1.5 to 2.0 liters per day.
- Following a "heart-healthy diet" with restricted intake of dietary fats to prevent coronary artery disease which is a recognized risk factor for congestive heart failure.
- The benefit of exercise rehabilitation in the treatment of heart failure continues to be evaluated. There is evidence that exercise therapy may reduce heart failure-related hospitalizations, minimize symptoms, increase activity tolerance, and improve patient-reported quality of life.
- Patients with diabetes, hypertension, and hyperlipidemia should aggressively monitor and manage their blood sugar, blood pressure, and lipid and triglyceride levels respectively, since these factors have a direct impact on heart failure

In regard to the relationship between age and quality of life, the results from the different studies are also controversial. Heart failure is a disease that mainly affects older people compared to younger. The elderly, assess their quality of life poorly, but it is not clear whether this reflects the disease course, is the result of other coexisting diseases, or is due to the different treatment methods applied to the elderly people. Furthermore, the elderly are the more vulnerable heart failure patients because due to physiological ageing occur many disorders of the cardiovascular system such as increased left ventricular mass, myocardial rigidity. The controversial issue is that patients of older age evaluate their quality of life more positively, maybe due to the fact that they have accomplished their goals and dreams and feel satisfied with their life<sup>2,19</sup>.

Usually, patients who are less informed about their disease or their educational level is low, evaluate their quality of life as poor because they are not able to fully understand the medical guidelines, the nature of the disease, and comply to the treatment. In contrast, when the given information is clear and understandable, it might be beneficial for the assessment of the quality of life<sup>18,36</sup>.

It is worth mentioning that there have been significant differences in the perception of quality of life both among patients and among the health professionals. It is widely accepted that patients with chronic diseases are facing long-term treatments, diagnostic uncertainty and changes in lifestyle, and unconsciously activate different mechanisms to reduce their emotional reactions and to address the problems. Therefore, the way each patient understands the disease and assesses the quality of life varies a lot<sup>37</sup>.

Through the review of the literature, the question whether the high level of quality of life results in a lower cost for the national health system due to the reduced frequency and duration of re-hospitalization, remains elusive.

More specifically, heart failure has been a major problem in most countries in the world because of the high cost of treatment, which is divided to direct and indirect. The direct cost refers to the hospitalization, the clinical tests, the type of treatment, the duration and frequency of hospitalization. The indirect cost refers to the home-based treatment, the loss of employment, and the participation in rehabilitation programs. Taking into account that 68% of the health cost covers treatment of chronic diseases and disability, it can be concluded that the factors contributing to a higher quality of life of the patients with heart failure may also contribute to a reduced cost for the health system<sup>20-26</sup>.

## Conclusions

The assessment of the factors that affect quality of life should be an integral part of the treatment of heart failure because it is a reliable indicator of the outcome of the disease and predictor of mortality rates, and is also necessary for the assessment of the effectiveness of the treatment.

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