

Depression and Quality of Life in Patients with Chronic Heart Failure

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ABSTRACT

Background: Chronic heart failure is labelled as an epidemic of the 21st century with serious consequences dramatically reducing life expectancy with a negative impact on quality of life. Impaired quality of life in patients with chronic heart failure is linked to depression which is diagnosed in as many as 36.5% of the patients.

Aim: The aim of the research was to determine the level of quality of life and depression and their relatedness in patients with chronic heart failure and to compare the observed variables with a control group.

Methods: The research was carried out at cardiologic departments of three hospitals in the Czech Republic between October 2015 and April 2016. The research sample included patients admitted to hospital for chronic cardiac failure. The research survey used two standardized questionnaires: quality of life questionnaire WHOQOL-BREF questionnaire depression and BDI-II.

Results: The results of the survey show that there is a significant difference in quality of life between the examined population and the control group. The results also suggest that there is a statistically significant difference in the rate of depression among the examined population and the control group. It can be concluded that there is a significantly negative relationship between overall quality of life and depression in patients with a chronic heart failure.

Conclusions: Early diagnosis and depression management could lead to overall better quality of life of these patients as well as to decrease in the number of hospitalizations.

KEY WORDS

chronic heart failure, quality of life, depression, WHOQOL-BREF, BDI-II

INTRODUCTION

Chronic heart failure (CHF) is a complex clinical syndrome which impacts patients with various cardiovascular diseases (1). CHF is a terminal phase of some diseases (i.e. coronary heart disease, uncontrolled or poorly controlled hypertension, valvular heart disease, cardiomyopathy etc.). CHF is being labelled as an epidemic of the 21st century with serious consequences dramatically reducing life expectancy with negative impact on quality of life (2). Improvement of acute conditions treatment (especially acute myocardial infarction) enables more patients to reach the stage of chronic heart failure (3). CHF prevalence in population ranges between 1–2%, an annual incidence is about 0.4% (4, 5). CHF is diagnosed in approximately 6.5 mil individuals in Europe (6). Despite highly specialised high-quality treatment, the prognosis is shortened life expectancy

and approximately a half of the patients die within four years from diagnosis and a half of patients with severe form of disease die within a year (2, 7). Both diagnosis and treatment of disease are medically and economically demanding (3).

Chronic disease impacts every aspect of life (8). Patients with CHF have to monitor the symptoms of disease, modify their diet, body weight and comply with routine measures. Hospital admission, treatment costs and further economical factors can lead to financial distress. Physical symptoms, side effects of treatment, illness or above mentioned financial distress can reduce quality of life up to 40% (9, 10, 11, 12, 13, 8, 14, 15). There is a link between reduced quality of life in patients with chronic heart failure and depression (15). So, the depression is frequent in patients with chronic heart failure, namely in 13, 9% up to 36.5% of them (16, 17, 18). Symptoms of

depression cause deterioration of physical symptoms and functional status (17, 18) in these patients. Depression in patients with CHF also affects mortality adversely, repeated hospitalization and overall quality of life (13, 18, 19, 9, 16, 15). Significant mental stress, contributing to depression in many patients, pose the fact that they are not able to participate in their favourite entertainment or activity and many of their goals, previously concerned as realistic, are now impossible. At the same time, impossibility to take part in family activities and entertainment results in disturbed family relationships and role disruptions (especially role of husband/wife, grandmother/grandfather) (11).

Psychosocial factors impact quality of life more than those biomedical. Social support is at forefront within other psychosocial factors because it improves ability of self-care and compliance (8). A social isolation, work-life changes and disturbed family relationships result from disease in many patients with CHF.

Effective management of nursing care tends to improve well-being (21). Routine measures concerning CHF and life style of patients play a very significant role. Education on CHF, its symptoms, management and complications are also important elements (3, 21). Physical activity demonstrably increases quality of life, which is important in patients with CHF, as well (21, 12, 22). A regular activity, such as cycling or walking, is for patients with stabilized heart failure safe; it improves exercise capacity (23, 12) and decreases number of hospitalizations (24). The activity is possible in patients within the NYHA I-III class who do not have malignant ventricular arrhythmia and other contraindications (3). If a patient is compensated in NYHA I-II class, he also can take part in a sexual life (20, 24) and travel without any obstructions, in case he complies with all the necessary measures (20).

Cardio rehabilitation (12) is very effective element for increasing quality of life in patients with CHF. It can slow or reduce progression of CHF, relieve symptoms, increase exercise capacity toleration and ultimately lead to reduced mortality. Necessity to comply with other routine measures is a part of complete rehabilitation programme (mental well-being, blood pressure monitoring, lipids and blood glucose monitoring, giving-up smoking etc.) (21, 22).

The quality of life in patients with CHF is significantly disrupted by depression. The cognitive behavioural therapy is mainly used for therapy of depression in patients with CHF (25, 26). Another option is group or individual therapy (26, 27).

OBJECTIVE OF THE STUDY

The aim of the research was to determine the level of quality of life and depression and their relatedness in patients with chronic heart failure and to compare the observed variables with a control group of healthy population.

METHODS

For the purpose of this work, we used a quantitative research with use of quality of life standardized questionnaires – WHOQOL-BREF questionnaire (The World Health Organization Quality of Life) and BDI-II (Beck Adults' Self-report Depression Inventory). WHOQOL-BREF questionnaire was standardised for the Czech Republic. The questionnaire includes overall 26 questions. First two questions Q1 and Q2 measure overall quality of life and health outcomes. Remaining 24 questions are divided into four domains: physical health, experience, social relations and environment (DOM 1–4), which are assessed separately (28). Beck Self-report Depression Inventory for Adults (BDI-II) was created by Aaron T. Beck. BDI-II is innovated version of BDI Inventory. It has been one of the most widely used psychometric tests for measuring the severity of depression. The questionnaire consists of 21 questions, overall score 0–13 implies no depression, 14–19 mild depression, 20–28 moderate depression, 29 and more severe depression (29). The translation of questionnaire to Czech and its manual was done by Preiss and Vacíř in 1999. Reliability and validity of the questionnaire was verified by Ptáček (30).

The survey inventory was approved by the Ethics committee of Faculty of Health Sciences at Palacky University in Olomouc. The research was carried out at cardiologic departments of three hospitals in the Czech Republic between October 2015 and April 2016. The research sample included patients admitted to hospital for chronic cardiac failure. Selection criteria for choosing the respondents were age 18 and over, treatment of chronic cardiac failure according to diagnostic criteria NYHA III and NYHA IV with significant restriction, patients admitted to the cardiology department. The control group consisted of men and women older 18 years who were never treated for chronic disease. The quotes were subjective feeling of perfect health, gender, region of residence and age. There were 52 respondents included into the survey in total, 26 women and 26 men. Average age of respondents was 62,67 (54–88 years old). The control group was made of 58 respondents, 27 of which were women and 31 men. Average age of respondents in control group was 57,22 (38–74 years old).

Programme Microsoft Excel 2013 and statistical programme IBM-SPSS 19 Base were used for statistical data processing. The Kolmogorov-Smirnov test has shown normal distribution of data for overall quality of life and domain of environment. Domains of physical health, environment, social relations and depression differ statistically significantly from normal distribution of data. Parametric T-test was used for overall quality of life and environment recording. Non-parametric Mann-Whitney test was used for domains of physical health, environment, social relations and depression. With regard to ordinal data (Likert scale) was used Spearman's rank correlation coefficient for recording relation among variables under consideration.

RESULTS

Cronbach's α of WHOQOL-BREF questionnaire was for physical health domain $\alpha = 0,68$, experiencing $\alpha = 0,74$, social relations $\alpha = 0,82$ and environment $\alpha = 0,69$. Cronbach's α of BDI-II questionnaire for depression was $\alpha = 0,80$. Average raw scores of particular domains of WHOQOL-BREF quality of life questionnaire were used for interpretations of the measurement results in patients with CHF and healthy population. Comparison of individual quality of life domains was carried out in patients with CHF and control group of healthy population with the aid of Mann-Whitney test and T-test (Table 1).

Table 1 revealed that the patients with CHF report lower quality of life in all the domains than the control group of respondents. Student's T-test ($t = 9,65$, $p < 0,01$) was used for statistical comparison of overall quality of life (Q1) between examined population and the control group. It is possible to say that there is a significant difference among the samples averages. Patients with CHF have significantly lower overall quality of life score than the control group. Mann-Whitney U-test was used for Q2 and domains 1 to 3 because of derogations from normal distribution of data (Kolmogorov-Smirnov test revealed the data differ from normal distribution ($p = 0,000$)). A significant difference in all the quality of life domains ($p = 0,000$) was revealed between the group of examined population and the control group (Table 1). Patients with CHF have significantly lower level of quality of life in all the domains in comparison to the control group.

It has resulted from BDI-II questionnaire that from total number 26 women with CHF who took part in survey there were 11 of them demonstrating minimal depression symptoms, mild depression was monitored in 5 women, moderate depression in 6 women and severe depression in 4 women. From total number of 26 men, 12 of them demonstrated minimal depression symptoms, mild depression was monitored in 7 men, moderate depression in 2 men and severe depression in 5 men (Table 2).

Table 1 Average value of each WHOQOL-BREF questionnaire domain in examined population and the control group

Group	n	Q1	Q2	DOM 1 (PH)	DOM 2 (EX)	DOM 3 (SR)	DOM 4 (EN)	OQL
EP	52	2.63	2.10	17.56	16.73	8.77	27.73	75.52
CG	58	4.18	3.94	22.71	22.08	11.78	32.18	96.86
Mann-Whitney T-test		$t = 9.65$	$p = 0.000$	$p = 0.000$	$p = 0.000$	$p = 0.000$	$p = 0.000$	

Legend: n – number of respondents, Q1 – overall quality of life, Q2 – health outcomes, DOM 1 (PH) – physical health, DOM 2 (EX) – experiencing, DOM 3 (SR) – social relations, DOM 4 (EN) – environment, OQL – overall quality of life score EP – examined population, CG – control group

Table 2 Depression incidence in individuals with CHF

EP	n (%)	Minimum value	Maximum value	Average	No depression	Mild depression	Moderate depression	Severe depression
Women	26 (50)	4	47	17.65	11	5	6	4
Men	26 (50)	3	49	17.12	12	7	2	5
Total	52 (100)	3	49	17.38	23	12	8	9

Legend: EP – examined population, n – number of respondents

Furthermore, depression symptoms were compared in the examined population and the control group. See comparison of measured values of depression between examined population and the control group in Table 3.

Table 3 Comparison of depression in examined population and the control group

Group	n	r	r women	r men	Min. women	Min. men	Max. women	Max. men
ZS	52	17.38	17.65	17.12	4	3	47	49
KS	58	5.00	5.40	4.74	0	0	18	11

Legend: r – average, n – number of respondents, EP – examined population, CG – control group

Kolmogorov-Smirnov test revealed BMI-II questionnaire data differ from normal distribution of data ($p = 0,000$). Therefore, non-parametric Mann-Whitney test was used there. To conclude, there is statistically significant difference in depression level between examined population and the control group ($p = 0,000$). Level of depression is significantly higher in individuals with CHF than in control group.

We used Spearman's rank correlation coefficient for determination of interrelation among variables under consideration, which revealed existence of a significant correlation among all the quality of life domains and level

of depression in patients with CHF. To conclude, there is a significant negative relation between overall level of quality of life and depression ($r = -0,880$, $p < 0,01$). Overall quality of life decreases with increasing level of depression. There is also a significant negative relation between level of quality of life in physical health domain and the level of depression ($r = -0,844$, $p < 0,01$), in the environment domain and the level of depression ($r = -0,798$, $p < 0,01$), in the social relations domain and the level of depression $r = -0,805$ ($p < 0,01$), and in experiencing domain and level of depression $r = -0,739$ ($p < 0,01$) (Table 4).

Table 4 Correlation among quality of life domains and depression

	DOM1 (PH)	DOM2 (EX)	DOM3 (SR)	DOM4 (EN)	OQL	Depression
DOM1 (PH)	1.000	.851**	.795**	.726**	.937**	-.844**
DOM2 (EX)	-	1.000	.783**	.704**	.932**	-.798**
DOM3 (SR)	-	-	1.000	.694**	.872**	-.805**
DOM4 (EN)	-	-	-	1.000	.855**	-.739**
OQL	-	-	-	-	1.000	-.880**
Depression	-	-	-	-	-	1.000

Legend: DOM 1 (PH) – Domain 1 (physical health), DOM 2 (EX) – Domain 2 (experiencing), DOM 3 (SR) – Domain 3 (social relations), DOM 4 (EN) – Domain 4 (environment), OQL – overall quality of life score, ** $p < 0.01$

DISCUSSION

This work focuses on one of the most discussed issues nowadays – chronic heart failure and associated disruption of psychosocial aspects of life. Chronic heart failure leads to deterioration of quality of life (9, 10, 11, 12, 13, 8, 14, 15). This fact was proven by results of our survey. It was revealed that there is a significant difference in overall quality of life level between examined population with CHF and control group of healthy population.

Among problematic areas in patients with CHF may belong symptoms of CHF themselves, uncertainty of future prognosis and other symptoms (11). This assumption was confirmed by results of our survey from which is apparent a significant difference in physical health domain between group of patients with CHF

and healthy population. Chronic heart failure deteriorates quality of life in physical health domain.

Beside disruption of physical function or overall quality of life, disease can adversely affect emotional and mental well-being, social relations or overall satisfaction with life (19,8). Chronic heart failure affects all the quality of life domains and therefore it also affects physical health and health outcomes, environment of the patient, social relations, experiencing and overall quality of life which was approved by the outcome of research. There were found significantly lower values in patients with CHF than in the control group in all the quality of life domains.

Previously published researches reported a frequent presence of depression in patients with chronic heart failure (31, 16, 25), which complies with our findings.

World Health Organisation includes depression into the most frequent reasons for disability. Its prevalence showed an increasing tendency (30). The depression occurs in 5–16% individuals in population (32). Life-time risk of depression is 5–12% in men and 10–25% in women (30). But in patients with CHF it is up to 36,5% (16, 17, 18). This fact was approved by outcome of our research. Depression was diagnosed in 29 (55,77%) patients with CHF. High incidence of depression in Patients with CHF highlights necessity of a therapy which is unfortunately very often overlooked. The fact that depression was diagnosed in more than a half of respondents may have explanation in hospitalization of those patients. Hospital admission can be one of the factors influencing incidence of depression. Symptoms of depression are also connected to deterioration of physical symptoms and functional state in these patients (18); the symptoms decrease quality of patients' lives and adversely affect mortality and repeated hospitalizations (15, 13, 18, 19, 9, 16). Not only could depression therapy improve quality of life but also overall well-being of patients. Outcome of our research approve relation between level of depression and quality of life in all the domains.

STUDY LIMITS

A limit of this study was its regional extend and therefore it is not possible to generalise the results. There were no other variables indentified, which can affect level of depression in respondents. Among these factors belong for example actual living circumstances of respondent, mood or personality traits. We cannot say with certainty the chronic heart failure leads to deteriorated quality of life and depression because this would demand another studies, ideally of longitudinal aspect. One of the factors affecting quality of life can also be a hospital admission (9). Survey of examined population was carried out in inpatients with CHF which could of itself result in decreased quality of their lives and frequent depression. A lower average age of control group respondents (who were 5 years younger) can be understood as another limit of the survey. The entry criterion into control group was a subjective feeling of perfect health. But this criterion was not fulfilled in older respondents.

CONCLUSIONS

Outcome of the survey approve existence of a significant negative relation between quality of life level and level of depression in patients with chronic heart failure. Improvement of depression in these patients can lead to improved quality of their lives. Unfor-

tunately, only treatment of the physical symptoms is constantly emphasised and the mental state of patients is frequently overlooked. At the same time, early diagnosis and therapy could improve quality of life in these patients in all the domains and also it could result in decreased number of hospital admissions, improvement of physical symptoms and functional state.

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