

Exercise and Quality of Life in Patients with Chronic Heart Failure

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Abstract

Background: Guidelines recommend that exercise training can be considered for medically stable outpatients with heart failure; thus, this study sought to determine the effect of exercise on quality of life in patients with heart failure. **Materials and Methods:** In this cross sectional study 160 patients were included and divided into 2 groups (n=80). Intervention group performed the exercise (poly striding), 30 minutes three times a week, for 8 weeks. After 8 weeks, the exercises have not been followed for six months; SF36 Questionnaire was filled to assess the quality of life for the individuals in both groups in three steps: before the intervention, and 3 and 6 months after. After completion of questionnaires, quality of life was compared between the two groups and all the data were analyzed using descriptive and inferential statistics. **Results:** The mean ages of the intervention and control groups were 61.65±17.5 and 64.116±17.4 years, respectively. Control group had significant decrease in quality of life at different stages of the study. Quality of life was significantly better in the intervention group comparing to the control group three months after the intervention despite the lack of significant difference before the intervention and after 6 months. **Conclusion:** Results showed a positive effect of exercise on quality of life in patients but the failures and lack of continuity did not improve the overall quality of life of patients as compared with their condition before the exercise. Overall, regular exercise is recommended for these patients. [GMJ. 2013;2(2):49-53]

Keywords: Exercise; Quality of life; Heart failure

Introduction

Heart failure is a common, costly, disabling, and potentially deadly condition, and is the end result of many cardiovascular disorders [1]. In this disease failure in pumping the amount of blood necessary to perfuse the tissues of the body, leads to appearance of

symptoms such as fatigue, weakness, shortness of breath, cough and swelling in the legs [2]. 15 million new cases of heart failure are estimated each year. Heart failure is the most common cause of hospitalization in adults over 65 years old [3]. In 18 provinces of Iran (in 2001), 3337 per 100000 people were affected by this disease [4].

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One of the characteristics of heart failure is exercise intolerance which can lead to a decrease in muscle mass and strength. Ultimately the patient fails to perform his/her usual daily functions and therefore quality of life including physical, psychological, and social activity are reduced as well as perception of each individual from wellness [5]. Quality of life includes a multidimensional concept which was defined in 1996 by World Health Organization as: individual's intake from his/her life status considering the culture and value systems in which he/she lives and the relationship between these intakes and goals, expectations, and standards [6]. During the past decade, qualities of life of chronic patients have significantly increased, and improving daily function and quality of life of individuals with chronic diseases have become an objective [7]. Poor physical condition, emotional stress, and repeated hospital admission, can decrease quality of life of patients with heart failure and this can lead to depression, psychological disorders and impaired social relationships. Studies suggest a better quality of life and a lower mortality rate for heart failure patients with stable condition that participate in moderate to regular sport programs. Nevertheless, exercise is not suitable for all cases of heart failure and the patient should be examined by the physician prior to initiation of any exercises [8, 9]. Regarding the importance of heart failure and its complications in patients, and also considering the importance of quality of life in patients with chronic diseases, this study was designed to define the effect of sport performance on the quality of life in heart failure patients.

Materials and Methods

The study population was patients with congestive heart failure who were referred to cardiovascular clinics of Tehran University of Medical Sciences, Tehran, Iran. A total of 240 patients who had the eligibility for entering the study were chosen using simple random sampling methods. Sample sizes for each group (control and exercise) were estimated to be 80 patients. The inclusion criterion in our study was diagnosed heart failure. The patients who

agreed to participate in the study after signing the consent form were placed randomly in either intervention or control groups.

Exclusion criteria were non-constant heart failure, unstable dysrhythmia, unstable angina, uncontrolled diabetes, hypertension, and anemia. Also Patients who stopped the exercise more than three sessions for any reason or discontinued the exercise for any reason were excluded from the study.

Questionnaires were filled using telephone or mail contact for the patients in intervention and control groups in three intervals: before the intervention, 3 months and 6 months after the intervention.

Patients were examined prior to the exercise program to ensure that there were no risks and to confirm the inclusion criteria.

Patients in the intervention group exercised three times a week and each session lasted 30 minutes. Each session of exercise included 5 to 10 minutes warm-up activity, 15 minutes exercise (walking) and 5 minutes cool-down activity. These exercises were conducted for 8 weeks. Type of exercise in this study was poly striding (a walking technique in which the body mechanics is just like skating). To perform proper exercise, the intervention group was trained and provided a self reporting form and the two-week follow-up was conducted by telephone in order to make sure that the patients do the exercise and to answer patients' questions. Data were collected for quality of life of cardiac patients using SF-36 questionnaire. It involved eight scaled scores, and scores were the weighted sums of the questions in their unit. Each scale was directly converted into a 0-30 scales on the assumption that each question carried equivalent weight. SF36 questionnaire was already translated in Iranian Institute for Health Sciences Research and its validity and reliability had been approved. Validity and reliability of Persian version of short form of questionnaire as a standard questionnaire had been tested by Iranian Institute for Health Sciences Research [10]. Total score of quality of life was classified in four groups of desirable, relatively desirable, undesirable and excellent so that the numbers between 0-9 were considered as undesirable quality of life, 10-19 as relatively

desirable quality of life, 20-25 as desirable quality of life and 25-30 as excellent.

The first section of questionnaire was filled out by the interviewer using both interview questions and patients' file after sample identification, and the second section of the questionnaire was completed by the patients. The exact address and telephone number of patients were registered and used to fill the follow up questionnaires in 3 and 6 months period after the intervention. Descriptive and inferential statistics were used for data analysis. Descriptive statistics were used to determine mean and standard deviation and to set absolute and relative frequency distribution tables. Inferential statistics was used for χ^2 and t test and Pearson correlation coefficient, Spearman correlation coefficient, Mann-Whitney U-test and variance analysis. In this study SPSS software version 16.0 was used for analysis.

Results

Results indicated that both groups had overall same characteristics before the intervention considering age, marital status, and educational status, and followed nearly the same distribution. The mean ages in the intervention and control group were 61.65 ± 17.5 and 64.116 ± 17.4 years, respectively. The variables of sex, job, duration of diagnosis, and admission, were significantly different. However, the qualities of life for most patients in both groups were in range of moderate before the intervention, which was shown statistically insignificant by Mann-Whitney test (Table-1). Although the majority of subjects had a desirable quality of life three months after the study in both groups (Table-2), Mann-Whitney test demonstrated a significant difference in the quality of life between intervention and control groups three months after the study and the mean score of quality of life was higher in the intervention group as compared with the control ($P < 0.001$). However, the majority of subjects in the intervention group developed moderate or undesirable quality of life six months after the study while the majority of subjects in control group had an undesirable level of quality of life (Table-3).

Six months after the intervention, Mann-Whitney test indicated that the quality of life was not significantly different between the intervention and control groups.

Table-1. Quality of life before the intervention in intervention and control groups.

Type of action quality of life	Intervention		Control		Test result
	N	%	N	%	
Undesirable	25	21.7	29	23	(Mann-Whitney U test) Z= - 0.318 P<0.75
Moderate	75	65.2	82	65.1	
Desirable	15	13	15	11.9	
Mean± SD	61.348±16.160		60.087±17.294		

Table-2. Distribution of quality of life 3 months after the intervention in intervention and control groups.

Type of action quality of life	Intervention		Control		Test result
	N	%	N	%	
Undesirable	10	13.9	10	12.8	Mann-Whitney Z= - 4.978 P<0.001
Moderate	23	31.9	18	23.1	
Desirable	39	54.2	50	46.1	
Mean± SD	57.679±23.209		64.478±20.659		

Table-3. Distribution of quality of life 6 months after the intervention in intervention and control groups

Type of action quality of life	Intervention		Control		Test result
	N	%	N	%	
Undesirable	40	48.2	36	40	Mann-Whitney Z= - 1.245 P<0.0213
Moderate	32	38.6	36	40	
Desirable	11	13.2	18	20	
Mean± SD	58.087±27.342		56.373±22.40		

Discussion

In this study we aimed to assess the quality of life in patients with chronic heart failure following performing a special exercise program. We observed that the quality of life declined in the control group. The decline was not statistically significant in the first 3 months of the study but it significantly decreased 6 months after the study. The mean score for quality of life in the control group was 60.087 before the study which reached to 56.373 in 6 months. The majority of the patients had a moderate quality of life before the study (65.1%) but both moderate and undesirable quality of life after 6 months was seen in the control group (64.4%). On the other hand, the mean quality of life in the intervention group rose from 61.348 (before the intervention) to 64.48 (three months after the intervention), which was a considerable improvement 3 months after the intervention.

American Heart Association believes that regular exercise leads to muscle strengthening and improvement of mental and physical disease [11]. Our results were in agreement with the findings of other researches. As it corresponds with those of Miche et al in the mentioned study after administrating a training session such as muscle strength training (3 times a week) and 6-minute walk test (2 times a week) for 4 weeks, increase in quality of life of patients with chronic heart failure which was assessed by German version of SF-36 and was demonstrated after the intervention period. Patients in their study underwent 6 minutes walk as a measurement for evaluating stress tolerance in those with chronic heart failure [5]. The present findings agreed with those of Willenheimer et al who also reported an improvement in the quality of life and exercise capacity of patients with chronic heart failure undertaken a training protocol for the duration of 16 weeks as compared with the patients in control group. After terminating the training schedule, a 6 months follow-up have checked the quality of life of patients which showed no persistent benefit between the intervention (undergone the training program) and the control groups although there was an insignificant improvement in quality of life of

patients after the intervention [12]. Jankowska et al also demonstrated a development in quality of life of patients with chronic heart failure following a training program consisting of 3 sessions a week for the duration of 12 weeks. The exercises included stretching and warm-up activity, resistance training, and a cooling-down and relaxing activity [13]. Our results agreed with their findings as they showed that the training sessions could improve the quality of life significantly, but this effect did not persist after terminating the exercise sessions which was in good agreements with our study results in a 6 months follow-up. Other researches done by Belardinelli et al suggested that all three domains of quality of life and personal wellness were affected positively after an exercise training program of 3 times a week for 8 weeks [14].

Conclusion

Our study showed an improvement in the quality of life of heart failure patients after exercise. Therefore, training sessions seem to be useful for improving the quality of life of patients with chronic heart failure. There is an increasing agreement that the continuity of training program can positively influence the quality of life of patients with chronic heart failure.

Conflicts of Interest

None

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authors' contribution

Fatemeh Bahramnezhad was occupied in the study conception design, data collection and analysis, drafting of the document, and supervision. Ahmad Ali Asadi Noughabi was occupied in data collection, conception design, and

drafting of document and supervision. Pouya Farokhnezhad Afshar was occupied in data collection and provided organizational objects support. Simin Marandi was occupied in data collection and provided organizational objects support.

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