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Evaluation of the Effect of Designated Educational Intervention on the Improvement of Quality of Life in Caregivers of Patients with Chronic Heart Failure

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ABSTRACT

BACKGROUND AND OBJECTIVE: Chronic diseases, such as heart failure, have an adverse impact on the life of the patients and their families. Responsibilities of patient care may give rise to tension and anxiety, affecting the mental and physical health of caregivers. Educational interventions have been shown to enhance the quality of care, as well as the mental and physical health of patient caregivers. This study aimed to evaluate the effects of a designated educational intervention on the improvement of quality of life in caregivers of patients with chronic heart failure (CHF).

METHODS: This randomized clinical trial was conducted on 120 family caregivers of CHF patients admitted to the Cardiac Care Unit of Ghaem Hospital of Mashhad, Iran in 2014. Participants were selected via available sampling and randomly allocated to two groups of intervention and control. Designated educational program consisted of face-to-face interviews with the participants in the intervention group, while control subjects only received routine care and training. Data were collected using the Short-Form Health Survey (SF-36) to assess the quality of life in both groups before and one month after the intervention (IRCT: 2014072118552N1).

FINDINGS: In this study, no statistically significant difference was observed between the groups in terms of demographic characteristics and eight domains of SF-36 at the beginning of the study. One month after the designated educational intervention, total mean score of quality of life was 81.82±2.75 in the intervention group and 75.97±4.36 in the control group, which had a statistically significant increase compared to before the intervention ($p<0.001$).

CONCLUSION: According to the results of this study, implementation of designated educational programs could improve the quality of life of the caregivers of CHF patients.

KEY WORDS: *Chronic heart failure, Caregiver, Quality of life, Education.*

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Introduction

Chronic heart failure (CHF) is defined as the occurrence of structural or functional heart disorders at rest. Advanced age is associated with the higher prevalence of CHF. In addition, CHF gives rise to numerous symptoms, the most common of which are fatigue and dyspnea, adversely affecting the normal life and activities of the patients (1). In general, chronic diseases, such as CHF, have a substantial impact on the families of the patients. As the most fundamental element of the society, family is responsible for the financial and emotional support of individuals. As such, family plays a pivotal role in the care, management, and recovery of the members suffering from chronic medical conditions (2, 3).

With this background in mind, it could be presumed that family support is a major contributing factor to the adaptability and stability of patients with chronic diseases (4). On the other hand, the responsibility of patient care could lead to the fatigue and depression of family caregivers (5). Furthermore, recurrence or deterioration of the disease, which might lead to the hospitalization of the patient, is likely to increase the tension of family caregivers (6). Therefore, preservation and enhancement of the mental and physical health of the family caregivers of patients with chronic diseases is of paramount importance (4). In chronic patients, problems such as the fear of being alone and restricted range of motion could bring about significant changes in the daily lives of other family members (1). Moreover, disease-related issues may diminish the social interactions of the patient and family members, which has been mentioned as one of the most challenging aspects of patient care by the spouses of CHF patients (7). According to a study by Pressler et al., the quality of life of the family members of CHF patients significantly reduced in all the associated domains, and symptoms of depression were reported to amplify gradually (6).

High pressure imposed on the caregivers of patients with chronic diseases has been associated with various complications, including family isolation, disappointment in emotional and social support, disruption of family relations, ineffective patient care, and abandonment of the patient. As such, provision of educational programs regarding proper patient management at home seems necessary for the family caregivers of chronic patients (8). Despite the need for the improvement of knowledge in family caregivers, evidence suggests that these individuals have limited access to reliable sources of information in this regard (9). Family members of CHF patients require adequate training and support with respect to patient-related issues such as drug regimen, mode of medication intake, dietary plan, daily activities, recognition of the signs and symptoms of relapse, and effective proceedings upon the occurrence of these symptoms. Therefore, implementation of educational support programs proportionate to the needs of chronic patients and their caregivers could remarkably relieve the symptoms and complaints of these individuals enhancing their quality of life (10). Essential learning needs and educational content regarding the self-care of chronic patients should be taken into account in effective patient care. In this regard, nurses need to be adequately informed on the proper training of patients with CHF in order to designate effective educational interventions proportionate to the needs of patients and family caregivers (11). According to one study by Dunbar et al., patients who received training on effective self-care in the presence of their families developed higher self-care abilities, which reduced the tension of family caregivers (5). Therefore, it could be concluded that the improvement of self-care abilities in chronic patients could positively influence various domains of quality of life in family caregivers. Furthermore, implementation of such educational interventions not only enhances the quality of patient care, but it also alleviates the stress and improves the mental and physical health of the family caregivers as “hidden patients” (12). Nurses hold a special position in interacting with patients and their families, which enables these healthcare professionals to maintain and enhance the quality of care at home through increasing the knowledge, skills, and support for chronic patients and their family caregivers (13). This study aimed to evaluate the effects of a designated educational intervention on the improvement of quality of life in the family caregivers of CHF patients.

Methods

This randomized clinical trial was conducted on the caregivers of patients with CHF admitted at the Cardiac Care Unit of Ghaem Hospital of Mashhad, Iran affiliated to Mashhad University of Medical Sciences in 2014 (IRCT: 2014072118552N1). Sample size of the study was determined using the comparison of two means formula for the quality of life index. Considering the possible sample loss, 120 caregivers were selected at the second stage of data collection. Study protocol was approved by the Ethics Committee of the university, and informed consent was obtained from all the caregivers prior to participation. Participants were selected via continuous available sampling, and using random number tables, they were randomly allocated to two groups of intervention (n=60) and control (n=60).

Inclusion criteria of the study were as follows: 1) basic literacy; 2) age range of 30-70 years; 3) definite

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diagnosis of CHF by a specialist or echocardiography; 4) CHF classification of ≥2; 5) lack of participation in formal self-care education programs and 6) lack of sudden stressful events within the past six months. Caregivers with mental disorders, chronic diseases, and physical disabilities were excluded from the study. After collecting the demographic data, the Short-Form Health Survey (SF-36) for the quality of life was completed by all the participants. SF-36 consists of eight domains (36 items) to evaluate the quality of life, including general health perceptions, social functioning, emotional health, energy and fatigue, physical functioning, bodily pain, physical role functioning, and emotional role functioning. Each of the domains in SF-36 is graded within a score range of 0-100. Score zero is indicative of the lowest level of quality of life, while score 100 is interpreted as the highest level of quality of life. SF-36 was first designed by Ware & Sherbourne in 1992 (14), and its reliability and validity have been confirmed in the Iranian population (15). Moreover, the internal consistency of this survey has been determined at the Cronbach's alpha coefficient of 0.86. Data collection was performed at two stages before and after the designated educational intervention. Before the intervention, the questionnaire was completed via interviews with the participants of both study groups. Afterwards, training need analysis of the participants in the intervention group was performed during another interview. Following that, in addition to the routine care of the ward, subjects in the intervention group received the designated educational program based on the determined training needs. Designated educational program was implemented in 1-4 sessions (30 minutes-one hour each) in the presence of CHF patients and family caregivers. Designated educational intervention consisted of face-to-face training, relevant lectures, and question and answer. General content of the training program focused on different issues, such as the nature of the chronic disease, type and intensity of allowed exercises and physical activities for patients, proper dietary plan, identification and management of the risk factors of CHF, required medications (name, time of consumption, side effects, and mode of intake), treatment follow-up, control of stress and anxiety, and appropriate time for returning to daily tasks. At the time of discharge, patients and family caregivers were provided with educational booklets including all the training content and were asked to apply the educational strategies at home. In this study, patients and caregivers of the control group only received routine care. One month after the implementation of the designated education program, the quality of life of both study groups was evaluated via interviews with the participants. Data analysis was performed in SPSS V.16 using the Kolmogorov-Smirnov test to assess the distribution of quantitative variables. In addition, independent T-test and Chi-square test were used to evaluate the study groups in terms of homogeneity, and descriptive statistics were used to depict the characteristics of the studied samples. In this study, comparison of the mean scores of quality of life in both groups before and after the intervention was performed using paired T-test and Wilcoxon test. Moreover, independent T-test and Mann-Whitney U test were used to compare the mean scores of quality of life in both groups in each stage of the study. Correlations between the changes in quality of life after the designated educational intervention were determined based on the demographic characteristics of the caregivers using two-way analysis of variance (ANOVA). In all statistical analyses, P value of less than 0.05 was considered significant.

Results

In this study, the majority of the participants were female (30.58%) and married (95.74%). In addition, none of the research units were divorced. Mean age of the participants in the control and intervention groups was 42.15±10.89 and 44.75±12.12 years, respectively ($p<0.21$). In the control group, the majority of the caregivers (7.51%) were the children of CHF patients, while in the intervention group, the majority of the caregivers (50%) were the spouses of CHF patients (table 1). In this study, patients in both groups of intervention and control were homogenous in terms of demographic characteristics, including age, gender, ejection fraction, disease duration, frequency and length of hospital stay, and classification of heart failure.

At the beginning of the study, mean scores of the eight domains of quality of life in SF-36 had no significant difference between the groups. However, one month after the implementation of the designated educational program, significant differences were observed between the study groups regarding the mean scores of the SF-36 domains of general health perceptions, social functioning, emotional health, energy and fatigue, physical functioning, bodily pain, and total score of quality of life ($p<0.001$). These differences were indicative of increased mean score of quality of life in subjects of the intervention group. According to the results of this study, mean score of mental role functioning had a slight increase in patient caregivers of the intervention group; however, this difference was not statistically significant. In addition, our findings were indicative of no significant difference in the mean score of physical role functioning in patient caregivers of the intervention and control groups after the implementation of

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the designated educational program (table 2). In the control group, total mean score of the quality of life was 75.54±8.51 before the intervention, which increased to 75.97±4.36 after the intervention; however, the difference was not considered significant. Meanwhile, a significant increase was observed in the total mean score of quality of life in the intervention group (73.35±6.96 to 81.82±2.75) after the implementation of the designated educational program (p<0.001). On the other hand, no significant difference was observed between the intervention and control groups regarding the total score of quality of life before the educational program, while a statistically significant difference was observed between the groups after the intervention (p<0.001). In this study, two-way analysis of variance (ANOVA) was used to evaluate the correlations between some of the demographic characteristics and changes in the quality of life of the family caregivers after the implementation of the designated educational program. According to the results, none of the demographic features of the subjects influenced the dependent variable, with the exception of the effect of the educational program on the self-care needs of CHF patients.

Table 1. Relative frequency distribution based on demographic characteristics of patient caregivers in intervention and control groups

Group Variable	Intervention N(%)	Control N(%)	Pvalue
Age (year) Mean±SD	44.75±12.12	42.15±10.89	*0.21
Gender			
Female	38(63.3)	32(53.3)	0.26
Male	22(36.7)	28(46.7)	
Marital Status			
Single	13(21.7)	16(26.7)	0.47
Married	47(78.3)	43(71.6)	
Widowed	-	1(1.7)	
Education Level			
Primary	29(48.3)	24(40)	0.83
Secondary	1(1.7)	1(1.7)	
High School	15(25)	17(28.3)	
Diploma			
Academic	15(25)	18(30)	
Employment Status			
Housewife	25(41.7)	25(41.7)	0.63
Employee	4(6.7)	6(10)	
Retired/Unemployed	14(23.3)	9(15)	
Self-employed	17(28.3)	20(33.3)	
Relationship of Caregiver and Patient			
Father/Mother	-	1 (1.7)	0.55
Brother/Sister	3(5)	4(6.7)	
Spouse	30(50)	24(40)	
Child	27(45)	31(51.7)	

P: Chi-square test; *P: Independent T-test

Table 2. Comparison of eight domains of quality of life in caregivers of chronic heart failure patients before and one month after implementation of designated educational program in intervention and control groups

Intervention Variable	Before (Mean±SD)	One Month after (Mean±SD)	Pvalue
General Health			
Intervention	58.24±10.29	62.38±6.51	0.02
Control	58.79±11.49	55.60±7.28	0.057
P-value	0.78	<0.001	
Social Functioning			
Intervention	73.16±12.41	81.09±9.55	<0.001
Control	76.66±14.69	73.27±12.48	0.61
P-value	0.16	<0.001	
Emotional Health			
Intervention	65.55±11.15	72.94±8.35	<0.001
Control	68.33±12.04	64.39±10.46	0.053
P-value	0.19	<0.001	
Energy and Fatigue			
Intervention	64.72±12.47	71.68±8.91	<0.001
Control	66.59±13.20	64.04±8.05	0.21
P-value	0.42	<0.001	
Physical Functioning			
Intervention	84.50±13.93	90.95±4.78	<0.001
Control	87.16±12.63	86.01±5.97	0.33
P-value	0.27	<0.001	
Bodily Pain			
Intervention	87.16±14.85	86.90±7.48	0.44
Control	86.0±17.09	76.00±12.56	0.00
P-value	0.91	<0.001	
Physical Role Functioning			
Intervention	78.75±18.88	83.48±6.85	0.27
Control	82.50±18	83.55±8.27	0.47
P-value	0.25		
Emotional Role Functioning			
Intervention	74.72±19.76	80.95±5.9	0.81
Control	78.33±18.23	77.41±10.14	0.20
P-value	0.32	0.09	

Discussion

According to the results of the present study, implementation of designated educational intervention based on training needs enhanced the quality of life of the family caregivers of patients with CHF. Through the improvement of knowledge and motivation of CHF patients and their caregivers, this program could alleviate the adverse psychological consequences of the disease, promoting the health and capabilities of these individuals. In one study, Molazem et al. claimed that educational sessions could remarkably enhance all the domains of quality of life in patient caregivers, and this effect was considered statistically significant (16). Furthermore, the findings of Jalili et al. indicated that training of caregivers in terms of special care programs significantly influenced the stress level and quality of life of the mothers of children with cerebral palsy aged 4-12 years. In the study by Jalili et al., educational intervention was performed during a three-hour workshop focusing on the general principles of child care, and the quality of life of the trained parents was evaluated after three months. According to the obtained results, the educational intervention could promote the quality of life of the parents through enhancing their knowledge, which resulted in the change of their perspective toward proper child care. In addition, the

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studied parents were reported to have higher compatibility in the management of children after the educational intervention (17). On the other hand, the results of another study by Lofvenmark et al. were indicative of no statistically significant difference in the anxiety, depression, and quality of life of patient caregivers before, 6 months, and 12 months after an educational intervention. As stated by the researchers, implementation of a multi-professional educational program had no significant effect on the quality of life, anxiety, and depression of caregivers (1). In the research by Lofvenmark et al., educational sessions were carried out at a one-month interval. Since these sessions involved the group training of patient caregivers, analysis of the educational needs of the participants was not possible. In the current study, the designated educational program was implemented individually based on the training needs of CHF patients and family caregivers. Considering the progressive nature of CHF and changes in the training needs of the patients and caregivers, as well as the impact of several factors on quality of life, we evaluated the quality of life of the participants one month after the intervention in order to control the possible effect of confounding variables. However, in the study by Lofvenmark et al., quality of life of caregivers was assessed 6 and 12 months after the implementation of the educational program, which denotes the possible effect of confounding variables on the final results.

In another research, Agren et al. conducted a supportive educational program on patients with heart failure and their spouses (caregivers). The intervention consisted of three supportive educational sessions (60 minutes each via face-to-face training) at home or in a heart failure clinic at 6 and 12 weeks after the discharge of patients. At the end of the training intervention, the couples were provided with educational software related to the content of the training sessions, and questionnaires were completed again 3 and 12 months after the intervention. According to the obtained results, the supportive educational program had no significant effect on the quality of life of heart failure patients and their spouses (18). It is noteworthy that in the study by Agren et al., despite the long-term assessment of the quality of life index during the second stage of the intervention, the researchers were not able to confirm whether the couples used the educational software after the intervention. According to the results of the present study, the designated educational intervention had the most significant effect on the social functioning of family caregivers. Therefore, it could be concluded that the improvement of the self-care abilities of CHF patients resulted in the higher independence of the patients in performing daily activities, which enabled caregivers to attend to their own personal tasks. Similarly, the findings of Dunbar et al. demonstrated that training of patients on self-care requirements in the presence of family caregivers could significantly increase their ability to handle personal tasks and reduce the pressure of caregivers (5). Findings of the current study were inconsistent with the results of a study by Rodgers et al. entitled "The Effects of Educational Program on the Knowledge, Satisfaction with Medical Services, and Quality of Life of Stroke Patients and their Caregivers". In this study, educational program consisted of six sessions (one hour each) for the patients and caregivers focusing on different aspects of stroke management. The obtained results were indicative of the adverse effect of the educational intervention on the social functioning of caregivers. Moreover, the researchers inferred that increased knowledge of caregivers compelled them to spend more time with the patients, which suspended their own personal tasks (19). The results of the study by Rodgers et al. are inconsistent with the findings of Mir et al. in a research entitled "Assessment of the Relationship between the Quality of Life and Stress Management Techniques in the Families of Multiple Sclerosis Patients". According to the results obtained by Mir et al., increased knowledge of the patients and caregivers regarding the nature of the disease and related care procedures could significantly improve their quality of life (20). According to the findings of the current study, implementation of designated educational program based on the self-care requirements of CHF patients improved all the domains of quality of life index in general, with the exception of physical and emotional role functioning domains. This could be due to the different items associated with these domains (e.g., lack of time and attention).

Nevertheless, the majority of the studied patient caregivers had no noteworthy issues with regard to the domains of physical and emotional role functioning, and no significant changes were observed in this regard. One of the limitations of the present study was the differences in the physical and emotional states of the participants at the time of completing the questionnaire, which might have affected the results. This factor could not be controlled by the researcher. In conclusion, the findings of this study indicated that implementation of a designated educational program based on the training needs of CHF patients could significantly enhance the quality of life of these individuals and their family caregivers. Therefore, it is recommended that such interventions be performed as a cost-effective, simple, and safe healthcare strategy without the need for special equipment so as to improve the quality of care in patients with other chronic diseases.

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