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Original Article

The Effects of Group Discussion Based Education on the Promotion of Self-Management Behaviors in Hemodialysis Patients

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ABSTRACT

Introduction: Improving self-management of the patients undergoing hemodialysis is an effective way to reduce complications and to improve the quality of life of them. The current study aims to assess the effects of group discussion on the promotion of self-management behaviors in hemodialysis patients.

Methods: In this quasi–experimental study (with experimental and control groups) 60 patients were arranged in two experimental and control groups through using convenience sampling with random allocation. Self-management interventions were conducted on the experimental group during 3 to 4 sessions of group discussion. The control group received routine interventions. The data were collected through Li and colleagues' self-management standard questionnaire before and 3 months after the intervention. The data were analyzed via SPSS software version 13 and chi-square, t-test, Mann-Whitney, and Wilcoxon test.

Results: The results showed that the mean scores of four dimension of self-management including participation with the medical team, problem solving, self-care and emotional management after the implementation of group were significantly different between the experimental and control groups.

Conclusion: Based on the findings, group discussion was an effective educational method to promote self-management of chronic hemodialysis patients. Therefore, holding group discussion to reinforce the self- management behaviors in patients undergoing hemodialysis is recommended.

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Introduction

End-stage renal disease (ESRD) is associated with irreversible loss of renal function. The patients with ESRD need renal replacement therapy (RRT), including dialysis or kidney transplantation to continue living.[1] The prevalence of the ESRD is currently increasing worldwide[2-4] so that 8% is being added to the population of the disease annually.[5] According to the US annual report, the incidence of the chronic kidney disease (CKD) has risen from 12% (1988-1994) to 13.6 % 2007-2012.[6]

According to published statistics until the end of 2015 in Iran, the population of ESRD patients treated with renal replacement therapy has reached more than 55,000 people.[7] According to the available data, 1200 to 1600 people annually suffer from the ESRD disease in Iran.[8,9]

This disease is one of the major health problems and imposes heavy economical costs on the community.[10]

Hemodialysis is considered as the most commonly used renal replacement therapy in the treatment of ESRD and has a major role in increasing the life span of patients.[5] However, health-related quality of life in patients under hemodialysis is lower than that for normal people.[11]

The complications and psycho-social stress caused by hemodialysis and ESRD decrease the survival rate and quality of life of the patients. Therefore, the mortality is pretty high in patients receiving renal replacement therapy. Risk factors for the mortality of these patients include factors such as high age, physical disability, nutritional problems, heart failure and depression.[6,11-13]

Hemodialysis requires making changes in the lifestyle, including the frequent attendance at the dialysis ward for treatment, limitations in fluid intake, dietary restrictions, and taking medicine. Non-adherence to diet having fluid restrictions is associated with cardiovascular diseases and is responsible for 50% of deaths.[14]

These changes in lifestyle are significantly influenced by the involvement of the patients in the treatment plan or by increasing their self-management.[15] Improving self-management level in patients undergoing hemodialysis is an effective way to reduce the incidence of mortality and complications and it improves the quality of life.[16]

Self-management education is not only intended to help patients to live better but also it reduces the cost of the disease by increasing the skills of the patients in dealing with a serious illness.[17]

Curtin and Mapes have defined self-management as "patients' positive efforts to oversee and participate in their health care to optimize health, prevent complications, control symptoms, marshal medical

resources, and minimize the intrusion of the disease into their preferred lifestyles".[18]

According to Curtin et al., self-management in patients undergoing hemodialysis includes eight dimensions as follows: Suggestions to health care providers, self-care during hemodialysis, information seeking, use of alternate therapies, selective symptom management, assertive self-advocacy, management of shared role and responsibility.[19]

According to Li et al., whose view of self-monument constitutes the context of this study, self-management in hemodialysis patients includes four dimensions of participation with the medical team, problem solving, self-care and emotional management.[20] Improving self-management in patients requires increasing awareness of patients. Studies show that low health literacy associated with chronic renal failure is correlated with poor self-management of dialysis patient.[21,22]

Improving self-management of hemodialysis patients requires empowering the patients through education.[23] Promoting the level of knowledge of clients through education is one of the effective factors in increasing the patient responsibility in eliminating or changing inappropriate healthy behaviors.[24,25] The low health literacy among patients with renal failure and their reluctance to learn have always been considered main challenges to meet. The innovative educational approaches such as the support of self-management and shared decision making have been gaining importance in recent years. Evidence suggests that self-management can be effective in controlling chronic diseases, including diabetes, which requires the patients' participation.[26] There is recent evidence suggesting that self-management effectiveness is growing in controlling chronic kidney disease.[27]

Despite the emphasis on the advantages and success of self-management intervention in chronic diseases, there is yet no consensus as to what training method could be used to improve self-management.

It is believed that educating in the group is an effective strategy to increase the effectiveness of education in patients with renal failure.[27] In hemodialysis patients, the use of group discussion method through involving patients and using the past successful experiences of members of the group can be the best choice in controlling self-management behaviors and consequently controlling the disease.[28] As there are few educating models to empower patients in self-management, this study seeks to investigate the effect of group-based educational model on self-management in patients undergoing hemodialysis.

Materials and methods

The present study is a quasi-experimental, pretest-posttest (with two experimental and control groups) that was conducted from May to April 2016. The population of the study consisted of all patients referring to hemodialysis ward. In this study, 60 patients referring to the hemodialysis department of Vali-asr Zanjan Hospital who met the criteria to participate in the study were selected through convenience sampling and divided into the experimental and control group (n=30). The method of sample allocation in the experimental and control groups was such that the patients who referred to the dialysis ward on odd days were classified in the experimental group and those who referred to the ward on even days were put in the control group. The selection of even days for the control group and the odd days for the intervention group was through tossing coins.

The inclusion criteria included the confirmation of the end stage of chronic renal failure by a specialist physician, hemodialysis performance for two or more dislyaia sessions and time of each session was 3-4 hours, having no mental illness based on the patient's records, being 18-65 years of age, consent of the patients to participate in the study, conducting a minimum of 3 consecutive dialysis sessions, a history of non-participation in educational and research sessions during the past 3 months, auditory health, fluency in Turkish or Persian language.

The exclusion criteria included the occurrence of serious physical and mental illnesses during the intervention, participation in similar educational and research projects during the study, transplantation, the patient's death or any changes in the patient's condition which caused changes in the hemodialysis program of the patient.

To determining the sample size, considering the lack of a similar study in this field, with 95% confidence and 80% reliability, assuming the proper self-management percentage in the control group to be 30% and the effectiveness of the intervention to be about 40% (30 samples for each group, 60 people, in total) were selected from the study population, through Stata software, version 8.

The data were collected by using a two-part questionnaire. The first part of the questionnaire included demographic and background information such as age, sex, marital status, occupation, education, place of residence, duration of hemodialysis treatment, and history of education acquired in relation to the disease. The second part of the questionnaire included a self-management scale based on Li et al., self-management questionnaire.[20] This questionnaire has 4 dimensions such as collaboration with the medical team, problem solving, self-care and emotional management and consists of 20 items. The Questionnaire scoring was based on answers to questions according to 5 point Likert scal from never (1) to always (5) and the degree of patients' self-management was evaluated by the total score. Based on this tool, self-management scores vary from 20 to 100, and higher scores represent better self-management.

After obtaining a permission from Lie et al.,[20] the questionnaire was translated into Persian by the researcher and it was back-translated from Persian into English by a person familiar with English. Again both Persian and English versions were matched by a third person who was competent in both languages.

Content validity method was utilized to validate the questionnaires. After the completion of the questionnaire

translation, the final version was taken into consideration by the nursing faculty members, nephrologists and hemodialysis nurses and their comments were incorporated. To evaluate the internal reliability of the tool during the study, the questionnaire was completed by 30 hemodialysis patients in Abhar city and Cronbach's alpha coefficient of this questionnaire for all dimensions of self-management was 0.771 and for each dimension such as collaboration with medical team, problem solving, self-care and emotional management, Cronbach's alpha coefficient was 0.67, 0.670, 0.673 and 0.81, respectively.

The study was performed in three stages. At the first stage or before the intervention, the self-management of the participants was assessed through a researcher's personal visit to the hemodialysis ward by using a questionnaire. Before completing the questionnaire, the participants were provided with the necessary information about the study objectives and the confidentiality of the information. The questionnaire was completed by the literate participants themselves; but in the case of a few participants who were not literate enough, they were interviewed and the interviews were transcribed by a researcher.

Then, based on the results of the questionnaire and talking with the patients, the group discussion topics were determined and in order to prepare the participants for active participation in the group discussions, a booklet was prepared and given to the patients in the experimental group. At this stage, the time of group discussions was planned based on the time of referral of patients and coordination with patients and family members (experimental group).

During the second phase or intervention stage, the group discussion sessions were held with 7-9 people in each group. The place of group discussion was in a room in the hemodialysis ward of Valiasr Hospital, and the patients were seated in a circle during the discussion to create more interaction and make eye contact possible. Group discussion sessions were held 3 times a week, 2 times a day.

It should be noted that in order to conduct a group discussion, we divided the patients into 4 groups and tried to make the participants as homogeneous as possible in terms of the level of education before performing the educational program (so that poorly literate patients with low education in one group and patients with high school diploma or higher would be in another group). For each group, group discussions were held in 4 sessions, based on the patients' needs. The discussion session lasted 60-90 minutes, but sometimes thanks to the knowledge and willingness of the participants to carry on, the discussion lasted for up to two hours. At the end of each group discussion, a conclusion was drawn by the researcher and the control group simultaneously received the routine interventions.

Participating in the discussions and presenting his views during the group discussions, the researcher also played the leading role of the group, and tried to keep the discussion directional and relevant to the subject. At the end, the content was summed up with the help of the participants. The participants were already reading the booklet in order to be ready to discuss the topic and to express their opinions. During the four educational sessions for each group, the structure and function of the kidney, the dimensions of self-management, including collaboration with medical team, self-care, emotional management and problem solving were discussed. It should be noted that the control group received the routine care during the intervention.

The third stage, or the stage after the intervention, was related to data collection performed in the experimental and control groups 3 months after the intervention through the same questionnaire which had been used before the intervention.

The present study was approved by the Research Deputy of Zanjan University of Medical Sciences and was registered with the ZUMS.REC.1395.01 code in the Ethics Committee. Before starting the study, the researcher briefed the participants on the goals of the study and ensured them that the obtained information would be confidential before taking their informed consents. Additionally, the participants were given the right to choose to complete the questionnaire, participate in group discussions, continue or discontinue the participation at any point. After collecting data for the post-test, a self-management booklet was given to the control group.

After the data were collected, they were analyzed by SPSS software ver. 13 by descriptive and inferential statistical methods. Before the analysis, the data were first examined by Kolmogorov-Smirnov test for a normal distribution of data. Non-parametric tests were used due to non-normalization of the data. To determine the relationship between demographic variables (mean and standard deviation of quantitative demographic variables including age, independent t-test, in both experimental and control groups, and to determine the relationship between qualitative demographic variables such as gender, marital status, occupation, education, place of residence, duration of treatment with hemodialysis, history of participation in educational programs regarding dialysis) Chi-square tests were used in both experimental and control groups.

The present study was a single-blind format. So that the participants did not know they were included in the experimental or control group.

To test the hypotheses of the study and to assess the effect of group discussion on self-management and its dimensions (before and after the intervention in the experimental and control groups), Mann-Whitney test was used and to compare the difference between the mean total score of self-management and its dimensions before and after the intervention, between experimental and control groups, Wilcoxon test was used. In all statistical tests the significant level of α was considered less than 0.05.

Results

A total of 60 chronic hemodialysis patients participated in this study. The demographic characteristics of both

experimental and control groups are presented in Table 1.

Table 1. Comparison of demographic and contextual variables in the experimental and control group

Variable	Control N (%)	Experimental N (%)	P
Age*	54.03(10.86)	47.07(14)	0.036
Sex			
Male	16(53.3)	15(50)	0.796
Female	14(46.7)	15(50)	
Marital status			
Single	1(3)	5(16)	0.191
Married	26(86)	24(80)	
Divorced	3(6)	1(3)	
Employment status			
Jobless	5(16)	10(33)	0.399
Homemaker	12(40)	10(33)	
Employee	2(6)	0(0)	
Self-employment	3(10)	2(6)	
Retired	8(26)	8(26)	
Educational level			
Illiterate	17(56)	9(30)	0.07
Under diploma	9(30)	11(36)	
Diploma	4(13)	6(20)	
Higher diploma	0(0)	4(13)	
Habitat			
Urban	23(76)	27(90)	0.166
Rural	7(23)	3(10)	
Length of hemodialysis treatment			
Under 12 months	9(30)	7(23)	0.502
12-24 months	6(20)	7(23)	
25-36 months	3(10)	7(23)	
Over 36 months	12(40)	9(30)	
History of education acquired in relation to the disease			
Dialysis diet	8(26)	9(30)	0.393
Taking medication	12(40)	7(23)	
Care of hemo-dialysis vascular access	4(13)	3(10)	
All items	6(20)	11(36)	

*Mean (SD)

According to the results, there was no significant difference between the two groups in terms of demographic characteristics, except for the age variable. Multiple regression analysis tests were used to control the confounding effects of this variable. The results of the analysis showed that there was no significant relationship between the age and self-management. (P< 0.05)

The mean of self-management in the control group before the intervention was 56.50 (16.61) and in the experimental group was 63.26 (15.48) which is more than the mean cut-off point of the used tool which is 50 and it indicates that both groups were only moderate in terms of self-management. Three months after the intervention, the mean score of self-management was 54.70 (6.41) in the control group and 79.63 (4.54) in the experimental group, which indicates a significant improvement in self-management in the experimental group compared to the control group (P<0.001). The results of the findings showed that after intervention, self-management improvement occurred in almost every dimension of it.

Data analysis indicated that there was no significant difference between the two groups in relation to the participation with medical team dimension (P= 0.761) and the mean score of both groups before the intervention was moderate. But after the intervention in the experimental group, the status of collaboration with medical team increased in comparison with the control group and reached a relatively more favorable level and this increase was statistically significant (P= 0.003).

Concerning the problem solving dimension, the results showed that there was no significant difference between the two groups before the intervention (P= 0.820). According to the mean score before intervention, both groups were moderate in term of using the problem solving techniques, but after the intervention, the problem solving dimension score of the experimental group increased in comparison to that of the control group and reached a fairly favorable level, and this increase was statistically significant (P<0.001).

The participants' self-management status, regarding self-care dimension, before the intervention in both control and experimental groups was 24.26 and 22.40, respectively, which was high with respect to the tool cut -off point (score 17.5), which was quite good but not desirable. After the intervention, this dimension of self-management was significantly different in the experimental group compared to the control group (P<0.001) and reached a relatively more favorable level.

The participants' self-management status in the emotional management dimension before the intervention was moderate with regard to the mean tool cut -off point (score 10); however, the participants had a lower score in this dimension compared to other dimensions of self-management. The educational intervention, using group discussions, increased the mean scores of this dimension in the experimental group and this mean increase was significant in the experimental group compared with that of the control group (P<0.001). Although the intervention improved emotional management in the experimental group compared to the control group, it did not achieve a more favorable level of self-management compared to other dimensions (Table 2).

Discussion

The results of the study showed that group discussions improved self-management in all four dimensions of partnership with medical team, problem solving, self-care and emotional management in the experimental group compared to the control group. Participation with medical team is related to checking the parameters of the dialysis machine, talking with the doctors and nurses about the amount of body fluids removal, giving opinion to the nurses about setting up the device and talking to the nurses about choosing the injection site for dialysis needles. Kammrer et al., have introduced active participation of patients in designing a goal to attain

Table 2. Distribution of mean scores, standard deviation and median, and interquartile range self-management dimensions before and after intervention in experimental and control groups

Variable	Intervention group		Control group		P[b]	P[c]	
	Mean (SD)	Median (Q3 – Q1)	Mean (SD)	Median (Q3 – Q1)		Intervention group	Control group
Before Intervention							
Partnership with Medical team	12.43(4.79)	12.50(34.05)	10.50 (4.71)	10.00(26.95)	114	0.003	0.761
Problem-solving	16.03(4.70)	15.50(33.65)	13.96(5.27)	14.50(27.35)	161	<0.001	0.82
Self-care	24.26 (6.93)	25.00(32.73)	22.40(6.20)	22.00(28.27)	321	<0.001	0.554
Emotional management	10.53(3.64)	9.50(32.33)	9.63(3.99)	10.00(28.67)	0.414	<0.001	0.563
Self –management (All dimension)	63.26(15.48)	62.00(33.72)	56.50(16.61)	57.50(28.28)	0.154	<0.001	0.339
After Intervention							
Partnership with Medical team	16.00(1.84)	16.00(45.17)	10.17(1.46)	10(15.83)	<0.001		
Problem-solving	20.13(2.34)	20.00(44.63)	13.53(2.43)	13.56(16.37)	<0.001		
Self-care	29.73(2.13)	30(42.38)	21.76(3.39)	21.50(18.17)	<0.001		
Emotional management	13.76 (3.09)	14.00(42.48)	9.23(1.56)	9.00(18.52)	<0.001		
Self –management (All dimension)	79.63(4.54)	80.00(25.48)	54.70(6.41)	55.00(15.52)	<0.001		

[a]. Values are expressed as mean (standard deviation), Median and interquartile range (IQR), [b]. Mann-Whitney, [c]. Wilcoxon

treatment through negotiation and continuous collaboration of patients and health care providers as successful strategies to achieve therapeutic goals in hemodialysis patients.[29] Patients' active participation is a fundamental principle which requires considering their views and opinions in the decision-making process.[30] According to the American Society for Nephrology's view, supporting self-management of patients is an essential element in involving the patients in decisions making about treating chronic kidney diseases.[31,32]

The results of this study showed that educational intervention with a group discussion approach has been effective in improving the problem-solving dimension of self-management. The problem -solving is the cognitive-behavioral process which is guided by the patient and the patient tries to find effective or adaptive solutions to his or her daily life problems with its help.[33] This dimension includes items such as understanding and correcting the potential causes of abnormal blood tests, asking for others' help while having questions about the kidney disease, understanding the factors leading to uncomfortable symptoms, and using phosphorous-decreasing drugs when eating a high-phosphorous diet.[20]

The problem -solving behaviors mentioned above are more consistent with the problem-oriented approach. The existing studies show that patients undergoing hemodialysis treatment used emotion-oriented adaptive methods to cope with the stressors and this coping strategy can affect their quality of life and physical health.[34] The use of problem-oriented adaptation methods that can effectively deal with physical and psychological problems caused by hemodialysis requires empowering the patients. Similarly, a meta-analysis study conducted by Lee et al., showed that the educational interventions based on self-management led to improvements in depression and quality of life in patients undergoing hemodialysis.[35]

In the self-care dimension, the results of the study also showed that the educational intervention with a group discussion approach has been effective in promoting self-care. Self-care dimension is an informed, learned, and purposeful activity that has been carried out by a patient for life and health promotion[36] and is related to the ability of patients undergoing hemodialysis in how to care for vascular access, choosing and using appropriate diet, controlling fluid intake and weighing between two sessions of dialysis.[20] Brennan and Safran state that self-care is something derived from the patient empower-ment. Empowerment is defined as a health care philosophy based on the view that the maximum health care outcomes are achieved when the patient becomes an active participant in health care. Therefore, patients with higher abilities have better self-care.[37] In line with the results of this study, a study conducted by Baraz et al., to investigate the effect of self -care education based on Orem theory on physical problems of patients undergoing hemodialysis showed that educational intervention was effective in reducing blood urea, uric acid, creatinine, phosphorus, potassium, overweight between two dialyses, controlling skin itching and reducing the local vascular access problems.[38]

The results of the findings showed that educational intervention also resulted in a significant increase in the mean score of the emotional management dimension in experimental group and it indicates that the educational intervention with the group discussion approach was effective in improving emotion management of the participants. Emotional capability can lead to improved health avoiding stress.[39] Emotion management is related to items such as relieving emotional discomfort by taking exercise, searching for information while having questions about the kidney disease, talking and asking for help while experiencing emotional discomfort. Evidence suggests that patients undergoing hemodialysis require more intervention in the emotional management

dimension compared to other dimensions[20] In this regard, Zamanian et al., showed that there was a significant relationship between emotion-focused coping strategies and adaptation with the disease and most participants used emotion-focused coping strategies to adapt to the disease compared to problem-focused coping strategy.[40]

In line with results of the current study, the study of Tsay et al., showed that educational intervention with the aim of training to adapt to stressors by using group discussion method (for 8 sessions) improves adaptation to stressors and signs of depression in patients undergoing treatment. Moreover, this study showed that factors such as limitations on time and place related to employment, fluid intake limitation, transport problems, loss of body function, duration of hemodialysis treatment, and physical activity limitation are among the main stressors in hemodialysis patients and effective adaptation to these stressors requires training.[41] A study by Moattari et al., also showed that the implementation of empowerment intervention through four individual and two group counselling sessions caused to reduce stress, improve decision- making and quality of life in patients.[42]

According to the results of this study, the educational intervention with a group discussion approach was effective in improving self-management. The results of this study confirm the idea suggested by the Department of Health that self-management can improve knowledge, performance of self-management behaviors, self-efficacy, quality of life and aspects of health status compared with the standard care[35,43] is defined. Self-management support as a systematic presentation of education and supportive interventions to increase the skills and self-confidence of the patients in their health management, including regular assessment of progression of disease problems, goal setting and problem-solving support.[31] Self-management support in patients with chronic renal failure is growing. In line with the present study, the results of a study to improve self-management with the individual education approach by Lingerfelt and Thornton showed that this educational approach was also effective in improving self-management of patients.[36]

Conclusion

In conclusion, the present study which is an educational method focusing on group discussions based on patient participation can be used to promote self-management level in patients undergoing hemodialysis. This study was a semi experimental with two groups of experimental and control. Although the control group improved the validity of the study, the non-random allocation of the samples in the experimental and control groups and the use of self-reporting measurement tool to collect the data of the study in the two groups were the main limitations of the study. In addition, due to the time limitation, the evaluation of the data was done three months after the intervention. Therefore, the evaluation of the long-term effects of intervention through the development of future studies is recommended.

Considering the importance of a team approach to improve the health of people affected with chronic disorders, it is suggested that other research be done with the collaboration of doctors, psychologists and nutritionists to improve self-management in patients undergoing hemodialysis.

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Ethical issues

None to be declared.

Conflict of interest

The authors declare no conflict of interest in this study.

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