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Original Article

Effect of Educational Intervention on Adherence of Treatment in Hemodialysis Patients

Fazal Dehvan[1], Reza Ghanei Gheshlagh[1], Shiva Salavati[2], Syede Mona Nemati[1,3*]

[1]Clinical Care Research Center, Research Institute for Health Development, Kurdistan of Medical Sciences, Sanandaj, Iran
[2]Tohid Hospital, Kurdistan University of Medical Sciences, Sanandaj, Iran
[3]Student Research Committee, Kurdistan University of Medical Sciences, Sanandaj, Iran

***Corresponding Author:** Syede Mona Nemati, Email: M.O.Nemati2016@gmail.com

Abstract

Background: Adherence to treatment plans and prescribed drugs is considered an important challenge in chronic patients, and non-adherence to the treatment plan in these patients causes worsening of the condition of the disease and a decrease in their quality of life. Therefore, this study was conducted with the aim of determining the effect of self-care program training on treatment compliance in hemodialysis patients.

Methods: The present study was a Quasi-experiment study in which all eligible patients of the hemodialysis department of Sanandaj were selected by census method in two intervention and control groups. In two groups, before and one month after the intervention, a demographic questionnaire and a questionnaire of adherence to the treatment of kidney patients were completed. The intervention included three training sessions as well as a training booklet for the ward. But in the control group, the patients received the necessary care according to routine. Data were analyzed using spss-16 software and descriptive tests and Wilcoxon and Mann-Whitney non-parametric tests.

Results: The results of the study showed that the average age and standard deviation of the participants was 51.71 ± 15.85 years and the participants were homogenous in both groups. The average total score of treatment adherence in the intervention group increased from 93.03 ± 12.77 before the intervention to 105.23 ± 24.39 after the intervention ($P<0.05$); However, in the control group before and after the intervention, the results of the Wilcoxon test did not show a significant difference.

Conclusion: The program training and training for patients has led to an increase in patients' awareness, improved patient care, and comprehensively and accurately points out all the information related to the patient's condition, and provides them with the opportunity to ask and answer questions with nurses.

Keywords: Self-care, Adherence of treatment, Hemodialysis

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Introduction

Self-care is a process that is concerned with the individual's adherence to healthcare issues, which may develop time and context in terms of the human functional system. Chronic illnesses are disorders that may shorten an individual's life expectancy or negatively affect their self-care behaviors and quality of life (1). Sometimes, chronic illnesses cause dependence on others, and changing their attitude toward the disease, as a result, reduces the quality of life of patients and causes patients to abandon their future goals and objectives and disappointment (2). Therefore, the care and treatment plans offered to chronic patients are designed in such a way that they can adapt to their chronic illnesses and the relevant treatment plan, and participate in their care plans; so that their dependency decreases and their quality of life increases (3).

End-stage renal disease (ESRD) is a chronic, common, irreversible, and progressive disease. Patients need to change their plans and lifestyle to manage this disease. These changes can affect the incidence of mental disorders in patients and decrease their quality of life (4). Renal replacement therapy plays a significant role in the treatment of patients with chronic kidney disease (CKD). The available modalities of renal replacement therapy include hemodialysis, peritoneal dialysis, and kidney transplantation which are applied at home or in healthcare organizations (5).

The ESRD prevalence rate in the world is 241 cases per one million people and annually increases by 8% (6,7). The prevalence of ESRD in other countries such as African countries, India, Japan, and Australia and the prevalence of chronic failure respectively are 8.66%, 13.10%, 13.74%, and 14.71% (8). In Iran, the prevalence of CKD is approximately 14% to 15%, and its rate is higher in women (18.8%) than in men (10.8%), accordingly is a

higher rate in comparison to the global prevalence (9).

Managing the illness and minimizing its adverse consequences requires adherence to the prescribed medical treatment. Adherence to the treatment covers a range of behaviors that are performed in accordance with the prescribed treatments by healthcare providers (10). Adherence to the treatment frequently includes optimal protein intake, fluid intake in proportion to urine output, sodium intake in proportion to sodium excretion, restriction in potassium intake, as well as sufficient calorie intake, supplements, and various vitamins (11). Adherence to treatment is an important challenge in patients with chronic diseases. The consequence of non-adherence to the prescribed treatments among these patients leads to disease progression and the aggravation and development of disability, and as a result, it will lead to the need for urgent treatment and hospital readmissions (12).

Patients who have effective self-care behaviors and follow proper treatment can better fulfill their care needs and take responsibility for their health and become less dependent in comparison to others with low self-care and treatment adherence (13,14). Bektaş Akpınar and Aşkın Ceran study concluded that there is a significant difference and positive correlation between the self-care behavior factors of people and their quality of life, therefore by an increase in self-care level, the quality of life also increases (2).

Hemodialysis is a treatment to increase the life expectancy of patients. In addition to that, today, the focus is on the concept of improving self-care behaviors and improving the quality of life of these patients as much as increasing their life expectancy (15). Nurses allocate a great amount of time with patients, they may spend more time with patients than anybody else in the hospital context; Therefore, they can play an important role in self-care behavior education and improving the quality of life of patients with CKD and those who undergo hemodialysis (16).

Literature review has shown that there is a significant relationship between treatment adherence and patients' knowledge. Therefore, in this research, it was decided to use an intervention study to test the effect of education as a way to increase patients' knowledge and, as a result, increase patients' adherence to treatment.

Methods

Setting and participants

The present study was a quasi-experimental study conducted from January to March 2023. The statistical population of the study included all eligible hemodialysis patients in Towhid hospital in Sanandaj, Iran, who were selected by census sampling method. Among these 66 patients, five patients were excluded from the study, two due to kidney transplantation, one patient died, and two patients were reluctant to participate in the intervention. Finally, 61 patients were selected and by randomization method they were divided into two groups namely; intervention (30 participants) and control (31 participants) groups. The participants of the two groups were the same in terms of gender and age range. The inclusion criteria were: willingness to participate in the study, having at least two hemodialysis sessions per week, and being over 18 years old, and the exclusion criteria were the presence of obvious cognitive impairment such as Alzheimer's, transfer or death of the patient during the study, non-participation in educational workshops due to the urgent medical conditions and incomplete answers to questionnaire items.

Data collection

The data collection procedure was done by using a two-part questionnaire, namely demographic characteristics and the Renal Disease Adherence Questionnaire (RD-AQ). The questionnaire consisted of 46 questions rated on six points Likert scale from never (score 0) to always (score 5). This questionnaire had five dimensions: general information (5 items), hemodialysis treatment (14 items), adherence to prescribed treatment (9 items), fluid restriction adherence (10 items), and dietary adherence (8 items). Obtaining a higher score in this questionnaire indicated better adherence to treatment. The Persian version of this questionnaire is available, which has acceptable psychometric properties.

Intervention

The intervention process consisted of three 30-minute sessions (17) in the form of individual and face-to-face education during the hemodialysis procedure, the patients were given discussions about hemodialysis (taking care of vascular access or fistula and graft, the importance of dry weight and familiarity with the hemodialysis procedure), medical treatment (how to take prescribed medicine, how to store and transport them to the hemodialysis center and their side effects), intake of daily fluids (assessment of the amount of 24-hour urine volume, amount of daily fluids intake, type of intake fluids) and diet (consumption of essential nutrients, warning the intakes that are prohibited or should be taken with care, the type of food consumed and the daily needed amount and the main nutritional deficiencies) which were taught to the patients during three sessions. A month after the intervention, the patients were retested and the data were collected. Patients in the control group received no training and experienced usual care. In order to ensure ethical principles, after the implementation procedure of the study, all educational content was given to both intervention and control groups in the form of pamphlets.

Data analysis

The data analysis procedure was done using SPSS

software version 16. Then collected data were analyzed by descriptive statistics tests such as frequency, percentage, mean and standard deviation. The average score of adherence did not have a normal distribution. Therefore, non-parametric tests were used for analysis. For this purpose, the Mann-Whitney U test was used to compare the mean score of treatment adherence in the intervention and control groups. Also, the Wilcoxon test was used to compare the mean score of treatment adherence before and after the intervention in each of the groups. *P* less than 0.05 was considered significant.

Results

Thirty-one patients in the control group and 30 patients in the experimental group participated in this study. The average age of intervention and control group patients was respectively 51.12 ± 15.51 and 50.91 ± 89.85. In both groups, the male participants were slightly more than half of the statistical population.

There was a non-significant difference observed among patients in intervention and control in terms of variables such as age ($P=0.261$), gender ($P=0.432$), marital status ($P=0.211$), having insurance ($P=0.852$), residency ($P=0.463$), academic degree ($P=0.221$), occupation ($P=0.179$), chronic medical conditions ($P=0.431$), history of present illness ($P=0.0483$) (Table 1).

The average total score of adherence to the prescribed medical treatment in the intervention group was 93.03 ± 12.77, which increased to 105.23 ± 24.39 after the educational intervention ($P<0.05$). There was no significant difference in the adherence to prescribed medical treatment scores in the control group in the previous two phases pre (101.76 ± 15.54) and after (102.77 ± 16.78) ($P=0.36$). In the separate examination of adherence to prescribed medical treatment dimensions (general information, hemodialysis treatment, medicine treatment, fluids intake, and diet), in both groups, the results of the Mann-Whitney test showed a significant difference in pre and after-intervention ($P<0.05$). Also, there was a statistically significant difference was observed between the two groups in all areas of adherence to the prescribed medical treatment ($P<0.05$) (Table 2).

Table 1. Demographic characteristics of the participants

Variable		Control group	Intervention group	*P* value
Insurance	Yes	23 (74.2)	22 (73.3)	0.852
	No	8 (25.8)	8 (26.7)	
Gender	Female	15 (48.4)	14 (46.7)	0.432
	Male	16 (51.6)	16 (53.3)	
Marital Status	Single	2 (6.5)	3 (10.0)	0.211
	Married	28 (90.3)	23 (76.7)	
	Divorced	1 (3.2)	4 (13.3)	
Underlying disease	HTN	18 (58.1)	11 (36.7)	0.431
	DM	2 (6.5)	1 (3.3)	
	PKD	0	4 (13.3)	
	Nothing	9 (29.0)	10 (33.3)	
	HTN & DM	2 (6.5)	4 (13.3)	
Residency	City	18 (58.1)	22 (73.3)	0.463
	Village	13 (41.9)	8 (26.7)	
Academic degree	Illiterate	15 (51.6)	13 (43.3)	0.221
	High school	15 (51.6)	10 (33.3)	
	Bachelor and higher	0	7 (23.3)	
Occupation	Housewife	14 (45.2)	14 (46.7)	0.179
	Laborer	3 (9.7)	2 (6.7)	
	Employee	2 (6.5)	3 (10.0)	
	Free job	4 (12.9)	2 (6.7)	
	Retired	3 (9.7)	6 (20.0)	
	Unemployed	5 (16.1)	3 (10.0)	

Discussion

In the present study, the researcher investigated the effect of educational intervention on adherence of treatment in hemodialysis patients. The results of the study showed that self-care education effectively could promote adherence to the prescribed medical treatment among these patients. Considering the problems and challenges these patients are faced with and whether these educational interventions should guarantee the patients' participation in self-care programs or not, it seems that the application of the self-care educational package could be effective in creating this belief among these patients (18). The findings of the present study were consistent with the results of Lii et al (19) and Chen et al (20). It could be claimed that educating patients in the field of self-care has improved their adherence to the prescribed medical treatment and sharing experiences among patients with appropriate self-care conditions and the nurses' motivation and inspiration has made the education effective.

After the intervention, adherence to the prescribed medical treatment increased in the intervention group. This increase could be attributed to the above-mentioned self-care training package. Previous literature on self-care studies revealed that patients normally and frequently follow self-care behaviors related to medication and fistula management (21,22). However, activities in the field of general information such as weight control are uncommon among them (23,24). It seems that hospital hemodialysis for two to three times a week may decrease participation in friendly gatherings, on the other hand, blood pressure and body weight control are frequently done before and after hemodialysis, therefore, patients do not feel the need for daily health measurements such blood pressure and weight control at home.

Sgnaolin and Figueiredo pointed out that more than

Table 2. Comparison adherence of treatment intra and between groups before and after the intervention

Variable	Group	Before	After	*P*
General Information	Intervention	14.9 ± 6.8	21.3 ± 3.3	0.000
	Control	16.7 ± 5.2	17.3 ± 8.6	0.929
	P	0.055	0.001	
Hemodialysis	Intervention	10.9 ± 3.8	16.3 ± 3.3	0.000
	Control	9.7 ± 3.2	9.3 ± 3.6	0.921
	P	0.055	0.001	
Drug treatment	Intervention	13.9 ± 6.0	19.1 ± 3.1	0.000
	Control	12.5 ± 5.3	13.1 ± 7.5	0.323
	P	0.060	0.000	
Liquids	Intervention	11.2 ± 2.9	16.7 ± 2.9	0.000
	Control	9.6 ± 3.4	10.1 ± 3.8	0.099
	P	0.073	0.000	
Diet	Intervention	15.5 ± 2.7	17.9 ± 1.9	0.000
	Control	16.1 ± 3.1	15.1 ± 3.9	0.125
	P	0.398	0.000	
Total score	Intervention	93.1 ± 12.8	105.2 ± 24.4	0.000
	Control	101.7 ± 15.5	102.2 ± 77.8	0.914
	P	0.066	0.000	

half of the patients do not take their medications correctly as prescribed (25). Also, in the study by Rafiee Vardanjani et al, they concluded that control and intervention groups had significant differences in adherence to the prescribed treatment dimension, and the intervention group had more appropriate adherence to the prescribed treatment than the control group (26). Zolfaghari et al study entitled "*Effect of cognitive-behavioral intervention on adherence to dietary and fluid-intake restrictions in hemodialysis patients*" showed a significant difference between both groups in terms of adherence to dietary and fluid-intake restrictions (27).

Also, adherence to prescribed treatment in terms of dietary and fluid-intake restrictions was significantly increased in the intervention group which was in accordance with Kim and Park study (23). The results of the study by Pazirofteh et al indicated that the patients were incompetent in this field and the ability to adapt to adherence to dietary and fluid-intake restrictions was difficult for many patients and deviation from it will have dangerous consequences (28). The conducted studies have attributed various factors such as the patient's level of information about the diet, economic and social status, health-related behaviors, patient's attitude towards the prescribed treatment, and cultural differences on the level of adherence to the prescribed treatment of hemodialysis patients (23,26). These findings indicate that, although hemodialysis is used as a medical treatment method for a long time, however, patients prefer treatments and medications provided by healthcare organizations during their hospitalization, rather than adapting themselves to self-directed lifestyle therapies. In addition to the above-mentioned points, patients find it challenging to adhere to dietary restrictions. This is because it requires them to change their eating styles and eating habits that were developed through years of training and traditional meals (29). Therefore, self-care education packages that minimize changes in current eating habits should be developed.

Generally, adherence to treatment increased among patients in the intervention group after the intervention process, and a statistically significant difference was observed between the two groups. Although hemodialysis is an essential treatment for patients with kidney disease, studies have proved that changes in lifestyle-related domains are a challenging and difficult task (30). But according to the results of the questionnaire fields, it is possible to change their lifestyle and improve their quality of life by teaching self-care to these patients. But according to the questionnaires and survey data, it is possible to change their lifestyle and improve their quality of life through self-care behaviors education in these patients.

Limitations of the study and delimitations

The present study confronted three limitations. First, the small sample size led to the low power of the study. Second, due to the lack of a hospital policy that facilitated the assessment of clinical evaluations, the researchers were unable to evaluate the effect of self-efficacy theory-based education on changing some clinical outcomes. It is suggested that future studies should be based on a research method that could measure clinical variables after the intervention. The mediating role of self-efficacy behaviors on self-care behaviors was not statistically confirmed because the researchers did not conduct path analysis.

Conclusion

Considering the results of the present study, it seems that the self-care education package is effective in improving adherence to the treatment of patients undergoing hemodialysis. Therefore, by preparing educational packages and patient education by the healthcare providers, it is possible to improve the patient's perception of the disease and dealing with it, and to avoid dehydration, non-adherence to dietary and medical regimens, or missing dialysis treatments.

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were assured of confidentiality.

Authors' Contribution

Conceptualization: Fazal Dehvan, Reza Ghanei Gheshlagh, Shiva Salavati, Syede Mona Nemati.
Data curation: Syede Mona Nemati.
Formal analysis: Fazal Dehvan, Reza Ghanei Gheshlagh, Shiva Salavati, Syede Mona Nemati.
Funding acquisition: Syede Mona Nemati.
Investigation: Fazal Dehvan, Reza Ghanei Gheshlagh, Shiva Salavati, Syede Mona Nemati.
Methodology: Fazal Dehvan, Reza Ghanei Gheshlagh, Shiva Salavati, Syede Mona Nemati.
Project administration: Syede Mona Nemati.
Resources: Fazal Dehvan, Reza Ghanei Gheshlagh .
Supervision: Mona Nemati.
Validation: Ghanei Gheshlagh .
Writing–original draft: Fazal Dehvan, Syede Mona Nemati.
Writing–review & editing: Fazal Dehvan, Reza Ghanei Gheshlagh, Shiva Salavati, Syede Mona Nemati.

Competing Interests

The authors declared no conflict of interest.

Ethical Approval

In this study, the guiding principles of the Declaration of Helsinki have been followed. This research proposal was approved by the Ethics Committee of Kurdistan University of Medical Sciences (IR.MUK.REC.1399.103). Before the start of the study, the participants were informed about the confidential and anonymous treatment of their data, as well as the voluntary nature of their participation in the study, and their informed consent was obtained.

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