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The Effect of Continuous Care Model on Blood Pressure and Quality of Life in Patients on Hemodialysis

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ABSTRACT

Hemodialysis causes fundamental changes in blood pressure and quality of life in patients on hemodialysis. This study aimed to investigate the effect of continuous care model (CMM) on blood pressure and quality of life in patients on hemodialysis in the city of ilam. A randomized clinical trial study with control group was performed on 56 patients undergoing hemodialysis in the Shahid Mostafa hospital in Ilam during 2015-16. The samples were selected by census method and randomly assigned to two experimental and control groups, respectively. The intervention was done based on CMM as training sessions during three weeks and then follow-up care, monitoring and evaluation during 9 weeks for experimental group. Data were collected by using a blood pressure checklist and a quality of life questionnaire, and then were analyzed by descriptive and inferential statistical tests. Findings showed no statistically significant difference between mean scores of blood pressure and quality of life in patients on hemodialysis in experimental and control groups before intervention. After applying the model, there was a significant statistically difference between two groups in mean score of quality of life ($P<0.05$) but not in mean score of blood pressure. Due to the effectiveness of this model of care on quality of life in the patients on hemodialysis, it is suggested to be applied in the clinical cares. It is also necessary to do the various studies for assessing the effect of this model on blood pressure.

Key words: Continuous Care Model, Blood Pressure, Hemodialysis, Quality of Life, Randomized Clinical Trial.

INTRODUCTION

Chronic disease is considered as one of the major problem of general health in all over the world. In chronic renal failure (CRF), the kidneys are not able to establish metabolic functions and maintain fluids and electrolytes balance in the body and leads to life-threatening condition called uremia. The first, these patients undergo Protective treatment and finally need to dialysis[1]. Hemodialysis is the most common method of treatment is used in chronic kidney disease so that in the United States of America, 80 percent of patients with acute renal failure undergo hemodialysis[2]. In Iran, there are more than 13 thousand dialysis patients and about 150 thousand dialysis sessions were taken every month[3]. The number of patients on hemodialysis increase annually approximately 15% [4]. Hemodialysis has many complications such as changes in blood pressure that is one of the most common complications[5]. In fact, hypertension is considered as one of the most influential and important causes of CRF[6]. Hypertension is a major risk factor for heart diseases that leads to mortality in patients on hemodialysis as a major cause of death[7].

Although hemodialysis can increase the patient's lifelong, but it doesn't control the disease and its complications completely so that they

consider as global problems. These patients have lower quality of life and survival rate and fundamental changes accrue in their life style[8, 9]. Quality of life is an extensive concept that includes various dimensions of life such as love, religion, work, finances, as well as physical, psychological and social health[10].Recently, attention to assess and improve the quality of life in patients with CRF has increased considerable and improving the quality of life of these patients has become as a target[11]. Assessing the quality of Life helps patients to be attended their problems substantially[12].

One of the tools using by the competent nurses is care models. In Iran, continuous care model (CCM) is designed and evaluated for managing patients with chronic coronary artery disease by Ahmadi in 2001. This model introduces the client as an effective factor in the continuous care and his health process[13]. CCM is a regular process for effective, interactive and continuous communication between client and nurse for recognizing needs and problems of the clients and sensitizing them to accept the continuous health behaviors and helping them to maintain health promotion and improvement[14]. Applying this model causes well recognizing the patients' problems, motivating and involving the patients and their family for problem solving[15]. The main purpose of CCM is designing and providing a plan for facilitating acceptance, high insight, appropriate performance as well as control of disease and its possible complications[16].

The results of this research will develop knowledge based on evidences concerning of caring hemodialysis patients, facilitate more specialized care and encourage the nurses, physicians, care givers and family members to apply CCM for improving sleep quality of hemodialysis patients. Therefore, this research aimed to investigate the effect of CCM on blood pressure and quality of life in the patients undergoing hemodialysis in the city of Ilam during 2015-16.

MATERIALS AND METHODS

This randomized clinical trial with before and after experimental and control groups, was taken on patients undergoing hemodialysis in Shahid Mostafa hospital in Ilam during 2015-16. 59 ESRD patients on hemodialysis were selected by census sampling and divided to two experimental and control groups randomly. The number of samples reduced to 56 due to attrition that 28 patients were in each groups. Matching experimental and control groups regarding demographic characteristics were performed. Including criteria were agee"18, be literate and conscious. Excluding criteria were undesired to participation in the study and low consciousness. Patients and their family were oriented with CCM and purposes of the research and the informed written consent were provided for them. The intervention was conducted based on CCM through the educational sessions during three weeks. Then the consultations for continuous care, monitoring, and evaluation were performed for experimental group during the next nine weeks. The tools for data gathering included three parts. The first part consisted of demographic characteristics form (age, gender, marital status, education, monthly income, the numbers of dialysis per week, and duration of dialysis) and some features related to the disease (being aware of the disease, interest in getting information, tolerance for limits of the disease, family support, and cause of disease). The second and third parts contained a check list for blood pressure and a standard questionnaire of the quality of life.

The questionnaire of SF-36 has 36 questions and 8 subscales related to health and dimensions of the quality of life including physical function (10 items), role limitations related to physical health (4 items), role limitations related to emotional health (3 items), energy/ fatigue (9 items), mental health (4 items), social functioning (2 items), bodily pain (2 items), general health (2 items). Each question has at least 2 and utmost 6 options. Minimum and maximum scores for each section or subscale are from zero to 100 which the higher score indicates better quality of life. The levels of quality of life were considered as desired (71-100), relatively desired (31-70) and undesired (0-30) quality of life. This questionnaire has been adapted for the Iranian population. The reliability and validity of SF-36 have confirmed by using internal consistency, comparing known-groups and

convergence validity. Analysis of internal consistency showed that Persian scales of SF-36 had the standard coefficients of reliability in the range of 0.77 to 0.90 [13]. The questionnaire of Quality of life was completed by the participants before, 1 month and 2 months after intervention.

The CCM consisted of four stages familiarization, sensitization, control, and evaluation[17]. It implemented respectively for participants in experiment group in four 7-8 persons groups:

Familiarization stage

This stage was aimed to create the necessary sensitivities regarding disease, accurate recognition of the problem, creating motivation and feeling of need and necessity of follow-up process in patients. A 10-15 minutes meeting was taken in attendance of researcher, patient, and his/her family in expectancy room of the hemodialysis ward. The participants and the researcher both expressed their expectations and requests as well as emphasized on not to disrupt care- treatment connection.

Sensitization

It was taken during 4-6 meetings lasting 30-45 minutes based on tolerance and acceptance of the patients and their families with the purpose of participation of them in implementation of cares. In this stage it was discussed with the patients and their family based on their understandings as follows: features of kidney disease, control of complications of the disease, the importance of paying attention to diet, physical activity, regular visit by physician and following the given commands, training the ways of creating good habits before bedtime and trying to increase useful quality of life and related factors affecting it. The discussions Summarized and concluded by the researcher. Individual sessions held during or at the end of hemodialysis for completing the discussions and helping patients who did not attend the meetings. The first and second stages lasted three weeks.

Control

The consulting were continued in order to evaluate and consider new care problems (hospitalization and the way of learned behaviors' continuity) and to maintain the interactive, reciprocal communication (face to face or via telephone) as well as decision makings were taken concerning problem solving. This stage lasted a week.

Evaluation

This stage consisted of investigation of

Table 1: Frequency distribution of some features related to the disease

Variable	Amount	Number (%)
Being aware of the disease	17 (30.4)	High
	26 (46.4)	Average
	13 (23.2)	Low
Interest in getting information	48 (85.7)	Yes
	8 (14.3)	No
Tolerance for limits of the disease	6 (10.7)	Completely
	2 (39.3)	Partly
	28 (50.0)	Never
Family support	17 (30.4)	High
	10 (17.9)	Never
	19 (33.9)	Low
	10 (17.9)	Never
Cause of disease	34 (60.7)	Polycystic Kidney
	3 (5.4)	Diabetes
	17 (30.4)	Acute Glmerolonephritis
	2 (3.6)	Hypertension

blood pressure and quality of life in the patients during two phases, 1 month and 2 month after intervention.

Data Introduced in SPSS 21 and analyzed by descriptive and inferential statistics including frequency distribution tables, central and dispersion measures, t-paired, ANOVA with repeated measures, follow up tests such as S-N-K, Duncan, Sheffe and Tukey.

Findings

There were 56 hemodialysis patients in two 28- person groups. The majority of them were female (54%), married (91%), illiterate (87.5%), with monthly income less than 4 million Rials (68%), with three times dialysis per week (85.7%), and with duration of dialysis ranged 24-36 months (42.8%). Mean age of them were 64.34±11.09, with minimum age of 50 and maximum age of 88 years. Other features related to the disease were summarized in table 1.

The results of paired t-test for comparison of the scores of quality of life in experimental and control groups before and after intervention showed a significant difference between the scores after the intervention (P=0.001), but there wasn't affect on blood pressure of patients on hemodialysis. In general, the results of this study showed that the use of CCM has been effective on quality of life in hemodialysis patients in Ilam (P=0.001).

Table 2: Comparisons mean scores of the QoL before, 1 month and 2 months after intervention

Dimensions of QoL	Time	Mean± SD		Results of independent t
		Experimental Group	Control Group	
Physical Function	Before	49.78±16.82	47.28±16.80	P>0.05
	1 month later	48.21±12.30	40.67±12.64	P<0.007
	2 months later	55.21±12.30	37.14±16.71	
Physical Role	Before	47.10±11.58	48.85±15.26	P>0.05
	1 month later	46.00±13.35	40.67±14.64	P<0.005
	2 months later	60.67±20.45	47.67±13.38	
Bodily Pain	Before	64.89±12.87	62.82±15.01	P<0.01
	1 month later	65.03±12.89	61.78±11.91	P<0.03
	2 months later	69.78±10.45	63.89±9.23	
General Health	Before	54.57±16.65	44.10±14.97	P<0.007
	1 month later	61.75±22.31	43.71±13.52	P<0.02
	2 months later	64.03±18.66	42.21±12.15	
Energy and Exhilaration	Before	43.85±9.48	42.67±9.30	P<0.001
	1 month later	67.65±10.38	42.92±10.85	P<0.007
	2 months later	74.46±15.75	41.82±7.45	
Social Function	Before	60.39±14.21	59.82±14.11	P<0.04
	1 month later	64.21±14.91	60.10±15.80	P<0.006
	2 months later	70.17±18.51	60.64±15.02	
Emotional Role	Before	67.21±23.38	61.85±23.76	P<0.45
	1 month later	66.82±23.01	58.53±18.81	P<0.005
	2 months later	71.07±19.68	60.75±21.12	
Mental Role	Before	50.21±9.50	50.14±10.81	P<0.37
	1 month later	51.10±15.26	42.78±9.26	P<0.001
	2 months later	58.96±22.17	44.75±13.30	
Global QoL	Before	54.75±14.31	52.19±16.97	P<0.03
	1 month later	58.84±15.55	48.89±13.42	P<0.006
	2 months later	65.54±17.24	49.85±12.29	

Table 3: Comparisons mean scores of the blood pressure before, 1 month and 2 months after intervention

Blood Pressure	Time	Mean± SD		P- Value
		Experimental Group	Control Group	
Systolic Blood Pressure	Before	158.14±2.12	149.9±1.11	0.35
	1 month later	157.27±1.34	150.54±1.23	
	2 months later	158.12±1.22	150.12±1.10	0.28
Diastolic Blood Pressure	Before	88.92±0.25	78.23±0.76	0.37
	1 month later	88.24±0.81	74.25±0.52	
	2 months later	85.127±0.74	75.25±0.83	0.45

DISCUSSION

In this study, applying CCM improved the quality of life in the patients undergoing hemodialysis, but didn't affect on their blood pressure. Results showed mean score of the quality of life in these patients was low. This finding is congruent with the results of various studies indicating low quality of life in patients on hemodialysis[4, 12, 18, 19]. The reasons for the low quality of life can be to have multiple and complex medical treatments, the radical changes in the pattern of life in these patients causing various problems and affecting social functioning[20].

In this study, applying CCM enhances the quality of life in the patients on hemodialysis. Rahimi et al in their study aimed to determine the effect of continuous care model on the quality of life in patients on hemodialysis found increasing the quality of life in general and specific domains except for the ability to work, while in our study all domains of the quality of life had a significant increasing[21]. In the study of Salari et al, applying this model have leaded to increase the quality of life in chemical injured with obstructive bronchitis. In the study of Raymond et al, the model improves stress, anxiety and depression in patients on hemodialysis[22]. In the study of Raeesifar et al, CCM has had a significant effect on the quality of life of the patients[21]. In the study of Hashemi et al, applying CCM has been increased adherence to the diet[23]. In the study of Saei et al, CCM has improved the adequacy of dialysis patients[24] while in the study of Hojat et al, applying this model has not been affected on adequacy of dialysis but has been increased sleep quality[25].

Khankeh et al in their study for assessing the effect of CCM on quality of life in the patients with schizophrenia revealed that the quality of life in these patients has not a significant increasing after three months follow-up, while it has shown a significant increasing in the dimension of interpersonal relationships that is one of the dimensions of the quality of life in Haynrych questionnaire. One of the reasons for the lack of effectiveness of this model on chronic mental illness, especially schizophrenia is mental patients respond to physical diseases later and should be longer execution time to achieve desired results[27]. In the study of Daei et al applying this model increased the quality of life of patients after coronary angioplasty[28]. In the study of Sadeghi et al the implementation of this model improved sleep quality[15]. The study of Ahmadi et al demonstrated that the use of this model of care within three months affected on several indicators such as physical activity, hospitalizations, visit the doctor and patients' quality of life[13]. The results of the study of Rahimi et al showed the implementation of this model increased the quality of life in patients on hemodialysis. It seems applying CCM is effective on the patients' interactions and their quality of life by providing individual, group and family training to the patients and correcting their interpersonal relationships[21].

In this study, CCM has no effect on blood pressure in the patients on hemodialysis that is not congruent with the results of various studies. In the study of Rahimi et al, the mean of systolic blood pressure was decreased in the experimental group after the applying CCM. Also, the mean of systolic blood pressure decreased after dialysis. The study

of Ghavami et al demonstrated using CCM can avoid partly the rise in systolic and diastolic blood pressure and inhibit partially the complications of the disease in the patients with diabetes. So that the systolic and diastolic blood pressure in both experimental and control groups decreased slightly during four consecutive months and were not in a control or inhibition process in the control group[16].

CONCLUSION

The results of this research will develop knowledge based on evidences concerning of caring hemodialysis patients, facilitate more specialized care and encourage the nurses, physicians, care givers and family members to apply CCM for improving quality of life and blood pressure in patients on hemodialysis. This research reconfirmed the effectiveness of CCM and indicated its desirable effect on quality of life in patients on hemodialysis. For assessing the effect of CCM on blood pressure it is recommended to be performed different researches with larger sample. It is necessary to profit this valuable care model in different domains of nursing education, practice and management by the nurses.

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