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The effect of self-care program based on Orem model on the self-esteem of patients undergoing hemodialysis

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Background and objective: **hemodialysis patients are subject to various psychological problems including diminished self-esteem and personal independence, reducing their compliance to the treatment. Self-care is one of the solutions for reducing dependence and acquiring independence. Therefore, this study has been conducted with the aim of determining the effect of self-care program based on Orem model on the self-esteem of patients undergoing hemodialysis.** ***Materials and methods:*** **the present research is a clinical trial study, in which 59 patients undergoing hemodialysis visiting the center for special diseases in Zabol City were randomly assigned into intervention and control groups after available sampling and ensuring they had the inclusion criteria. The data collection instrument consisted of demographic information questionnaire, researcher-made questionnaire for self-care behaviors of hemodialysis patients according to Orem model, and Rosenberg self-esteem scale, which were completed before and after the intervention. After data collection, they were analyzed by SPSS 22.** ***Results:*** **according to independent t-test, before the intervention there was no significant difference between the intervention and control groups in terms of self-esteem score. However, after the intervention, the mean self-study score increased from 21.30 to 25.30 in the intervention group, which was statistically significant. This change according to Cohen coefficient was determined as 1.37 (p<0.001).** ***Conclusion:*** **self-care program based on Orem model can be effective to enhance the self-esteem of patients undergoing hemodialysis through promoting self-care power and reducing dependence. This program which has been designed based on educational needs and with a scientific model approach is recommended as a nursing intervention in these patients.**

INTRODUCTION

Chronic kidney disease (CKD) is a pathologic process developed due to different reasons and is associated with irreversible reduction of the function of kidney nephrons, whereby the function of kidneys is not adequate for survival (1). The prevalence of CKD is increasing worldwide (2), which has been estimated to be 242 cases per every million people, with around 8% added annually to this figure (3). In Iran, the extent of growth of this disease is larger than the global average and is about 12% (4). The prevalence of chronic kidney disease in Iran is 15.4% (5). Since the first use of hemodialysis in humans by Hess in 1924, it is still considered the most important preferred treatment for these patients (6). Only in 2009 in the US, 91.9% of patients underwent treatment by hemodialysis. In Iran also hemodialysis is the most common renal replacement therapy, and the number of patients undergoing this kind of treatment is 50% (7). The statistics of hemodialysis patients in Iran grows by 15% annually (8). During hemodialysis, wastes and excess liquids are discharged off the body, whereby the signs and symptoms of CKD are mitigated (1). However, hemodialysis patients are also subject to various physical and psychological problems (9), which by affecting the ability of functioning, they cause diminished self-esteem and personal independence (1). Extensive studies in different countries suggest that patients undergoing hemodialysis have a lower self-esteem as compared with healthy individuals (8). According to Rosenberg (1965), self-esteem can be defined as the person's appraisal towards themselves which represents the way the person treats him or herself in confirming or disapproving their self (10). Investigation of self-esteem in hemodialysis patients is essential. This is because these individuals experience a different life where low self-confidence as a problem decreases the compliance of these patients to the treatment (8). Following initiation of treatment with dialysis, the patient's life is transformed, as they should participate regularly in dialysis sessions, use the prescribed medications, and follow controlled regimen of foods and

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liquids (3). The complex therapeutic methods restrict the activities of these patients causing diminished sense of independence in them (1). These individuals struggle with their disease and have to experience some degree of dependence on others (10). Essentially, dependence is one of the major problems of these patients and WHO has defined dependence as a kind of inability in performing daily activities. Self-care is one of the solutions for reducing dependence, as advancing self-care activities causes accepting greater responsibility by people to reduce the sense of independence (1). One of the most complete theories of self-care is Orem self-care theory in which self-care has been stated as a regulatory function of the mankind (11), where Orem's defective self-care theory emphasizes the patient's role in taking care of themselves (9). Hemodialysis patients are not able to take care of themselves completely, and one of the major concerns of nurses for taking care of these patients is reducing their dependence, which occurs through involving them in self-care activities (1). Patients should strive to achieve a high level of independence through learning and understanding the responsibility of practicing self-care (9). Nurses can have a huge contribution in advancing the self-care capacities of patients (12). The self-care program enables patients to enhance their self-care activities through informed decision-making, thereby accepting more responsibility about their health. Overall, given the complications resulting from hemodialysis including diminished self-esteem and personal independence (1,9) which adversely affects the compliance of these patients to treatment (8) on the one hand, and the role of advancing self-care activities in reducing dependence and acquiring independence (1) on the other, this study has been conducted with the aim of determining the effect of self-care program based on Orem model on the self-esteem of patients undergoing hemodialysis.

METHOD

The present research is a clinical trial study, whose statistical population consisted of all patients undergoing hemodialysis visiting the center for special diseases in Zabol Town in 2017-2018. Based on the criteria chosen for sample selection, 60 patients who announced their willingness to participate in the study were chosen through available sampling and randomly assigned into intervention (30 subjects) and control (30 subjects) groups. The inclusion criteria were: age between 18 and 65 years; understanding Persian; undergoing hemodialysis for at least six months; performing dialysis three times a week (8), no dementia (11), no physical and mental disability; the ability of understanding and responding to questions (1), having awareness of time and space; no severely debilitating disease (10); not being a member of healthcare team; and having the possibility of making phone calls. On the other hand, the exclusion criteria included patients refusing to continue and unwillingness for continuing the corporation; transference to another center; not continuing the treatment due to medical reasons or kidney transplantation or becoming a candidate for it; and patient's death during the research (1,11). Unfortunately, in the course of the study, one of the patients in the intervention group died, and eventually the research was performed on 59 patients undergoing hemodialysis. The information collection instrument included: 1. The questionnaire of demographic information: this researcher-made questionnaire included 13 questions to collect personal information including age, gender, marital status, level of education, occupation, duration of having CKD, duration of receiving hemodialysis, familial history of kidney failure, the average cost of monthly treatment, level of monthly income, and body mass index (BMI) (1,8,10,11,13). 2. A researcher-made questionnaire to measure the self-care behaviors of hemodialysis patients according to Orem model which has been adapted from Orem self-care questionnaire in diabetic patients (14). This questionnaire includes 23 statements which measures the self-care activities of hemodialysis patients including daily weight control and blood pressure control, following a special diet and controlling the consumed liquids, activity, rest, and sleep, following up the treatment and paying attention to the complications (itching, infection, and hypotension), the disease symptoms and knowing the consumed drugs. To develop this questionnaire, new credible references, papers, and journals were used considering the research objectives. Then the prepared questionnaire was provided to some faculty members of Zabolnursing midwifery faculty and some other experts in this field. After confirmation and modification of the opinions, the questionnaire was finalized. The scoring of the questionnaire was based on 4-option Likert scale as never (1), sometimes (2), mostly (3), and always (4). The sum of the scores of this questionnaire was 23-92. For classification, the raw scores were converted to percentage and then assigned into three classes of poor (1-50), medium (51-75), and strong (76-100). To obtain the scientific validity of this questionnaire, content validity index was employed. For this purpose, the questionnaire was provided to 10 experts, where Waltz and Bausell content validity index method was employed. In this method, the areas of relevancy, clarity, and simplicity of the scale questions were investigated (15), where the value of this index was obtained as 0.94, 0.90, and 0.91, respectively. The final value of the content validity index of all of the three areas for this is scale was 90.3. To determine its reliability, internal consistency method was utilized, whereby the reliability of this questionnaire was determined as 0.79. 3. Rosenberg self-esteem scale which has 10 statements and measures the person's attitude to themselves as Likert scale against each statement. Five of its statements have been presented as positive (items 1-5), while five other statements have been presented as negative (items 6-10). The scoring for questions 1-5 is in the form of absolutely disagree=0, disagree=1, agree=2, and completely agree=3, while in questions 6-10, it is in the form of absolutely agree=0, agree=1, disagree=2, and absolutely disagree=3. The range of the scores of this questionnaire is 10-40, with 10 and 40 representing the minimum and maximum level of self-esteem, respectively. This instrument is a reliable and valid questionnaire to measure self-esteem (8,10). Measuring the reliability and validity of Rosenberg self-scale, Rajabi and Bohlul (2007) stated that this instrument can be used in clinical and research activities (16).

After presenting clear explanations about the research objectives and its methodology and ensuring the studied units about information confidentiality and receiving written consent letter from them, the questionnaires were completed by the patients and under precise supervision of the researcher in the form of face-to-face interview. After completion of the questionnaire of self-care behaviors and identification of their self-care needs, the level of self-esteem, and the score of their self-care behaviors were determined. Then, the intervention including self-care program based on Orem self-care model was composed and designed based on the needs of patients and nursing as well as medical sources. The self-care program involved supportive-educational nursing system. The education of the program was individual and face-to-face through discussion and opinion exchange as well as question and answer in 4-6 sessions (given the patients need) lasting 30-45 minutes for each patient. At the end of each session, educational pamphlets were given to the patients. The interval between the sessions was one week. On the other hand, the control group received no intervention, and they only received the routine trainings of the ward. Patient follow-up was

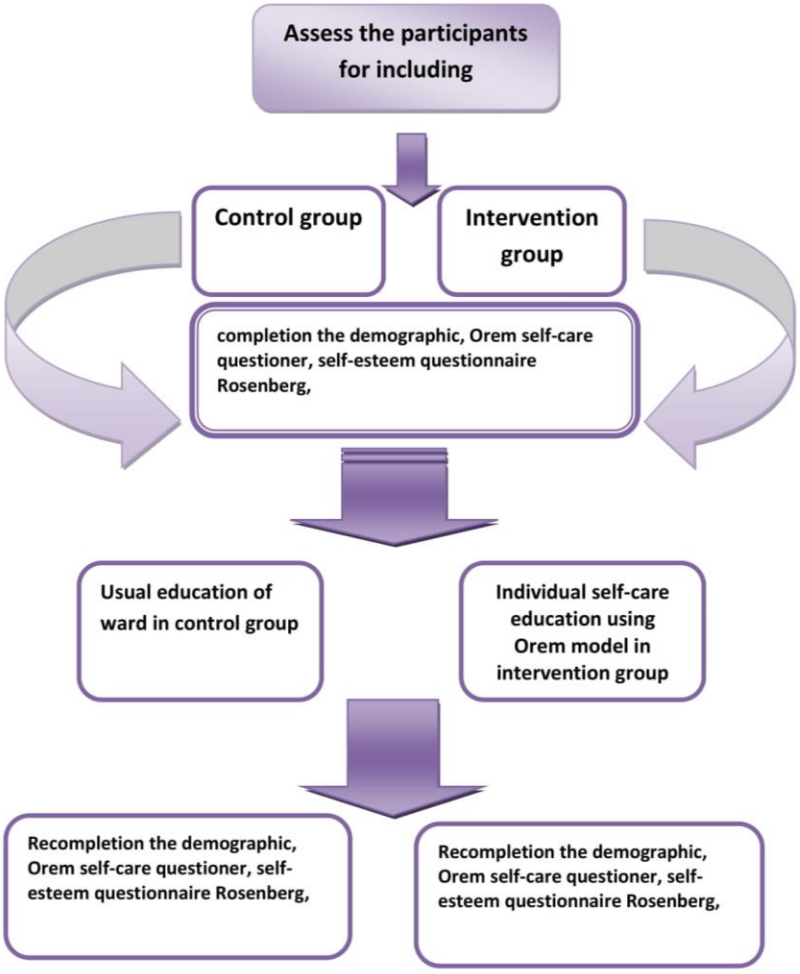

Figure 1. Flow chart of study process

performed through phone call for one month (1,17). After that, Rosenberg self-esteem questionnaire and the self-care behaviors questionnaire were recompleted again by the patients of both groups. At the end, data analysis was performed by SPSS 22.

RESULTS

Study chart of study process defined in figure 1. Overall, 59 patients undergoing hemodialysis in the center for special diseases in Zabol town participated in the research. The research findings suggested that the median age of the patients in the intervention and control groups was 51 (19.5) and 52 (20.25), respectively. In the intervention and control groups, 25 subjects (42.2%) were male, 34 (57.6%) were female, 8 (13/6%) were single, and 51 (86.4%) were married. The median of duration of receiving hemodialysis in the intervention and control groups was 4 (0). The statistical tests did not show any significant difference between the intervention and control groups in terms of qualitative and quantitative demographic variables (Table 1).

Furthermore, based on the probability value obtained by independent t-test, before the intervention, the intervention and control groups did not have any significant difference in terms of the mean scores of self-esteem ($p=0.921$) and self-care behaviors ($p=0.172$).

However, the results of this test indicated that after the self-care program based on Orem model, a significant difference is observed between the mean scores of self-esteem in the intervention and control groups ($p<0.001$). In this regard, the mean score of self-esteem in the intervention group increased from 21.03 to 25.03, which was statistically significant ($p<0.001$). This change based on Cohen coefficient was 1.37 (Table 2) and figure 2.

Further, the results of this test indicated that after the self-care program based on Orem model, a significant difference was observed between the mean scores of self-care behaviors in the intervention and control groups ($p<0.001$), where this mean in the intervention group increased from 56.24 to 79.96, which was statistically significant ($p<0.001$). This change based on Cohen coefficient was 3.09 (Table 3).

DISCUSSION

In the present study, the results of research suggested the effectiveness of the self-care program based on Orem model on the self-esteem in self-care of patients undergoing hemodialysis. In this section, the discussion on the results of this study will be presented.

In the present study, after the self-care program based on Orem model, the mean scores of self-care behaviors had increased significantly in the intervention group. This result can suggest the self-care needs of these patients, which have been developed following the disabilities resulting from the disease. Pashaei Sabet (2011) states that dialysis decreases the disease symptoms to some extent, causing improved quality of life for patients. However, the complications resulting from hemodialysis cause disability for many patients (18).

Table 1 Comparing the statistical indices of the patients undergoing hemodialysis based on demographic information of the two groups before the intervention

Variable		intervention Group	Control Group		Type of test
Quantitative variable		Mean (standard deviation) or median (interquartile range)	Mean (standard deviation) or median (interquartile range)	P value	
Age		51 (19/5)	52 (20/25)	0/184	Mann-Whitney-U
Years of having ckd		2 (2/3)	3 (3/6)	0/063	
Duration of receiving hemodialysis		4 (0)	4 (0)	0/907	
Average monthly cost of treatment		100 (350)	200 (237)	0/551	
BMI		51 (19/5)	52 (20/25)	0/061	
qualitative variable		number (%)	number (%)		
gender	female	16 (2/55)	18 (60)	0/708	Pearson Chi-square
	male	13 (8/44)	12 (40)		
marital status	single	4 (13/8)	4 (13/3)	0/627	Fisher 's Exact Test
	married	25 (86/2)	26 (86/7)		
monthly income	without income	15 (51/7)	14 (46/7)	0/528	Pearson Chi-square
	below one million	7 (24/14)	5 (16/7)		
	above one million	7 (24/1)	11 (36/7)		
familial history of kidney failure	yes	6 (20/7)	4 (13/3)	0/343	Fisher 's Exact Test
	no	232 (79/3)	26 (86/7)		
level of education	illiterate	4 (13/8)	12 (40)	0/185	Pearson Chi-square
	elementary	6 (20/7)	6 (20)		
	middle school degree	9 (31)	4 (13/3)		
	diploma	5 (17/2)	4 (13/3)		
	associate degree and above	5 (17/2)	4 (13/3)		
status of employment	unemployed	8 (27/5)	11 (36/7)	0/388	Fisher 's Exact Test
	housewife	12 (41/3)	10 (33/3)		
	freelancer	7 (24/1)	5 (16/7)		
	employee	2 (6/9)	3 (10)		

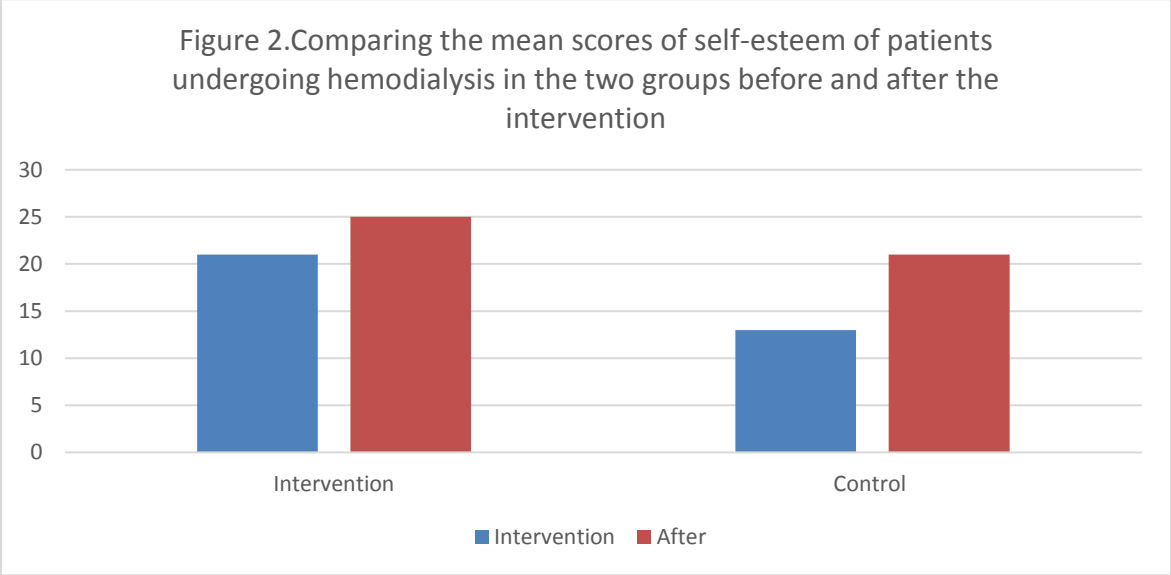

Table 2 Comparing the mean scores of self-esteem of patients undergoing hemodialysis in the two groups before and after the intervention

group / self-esteem		Intervention	control	intergroup changes		coefficient of effect (Cohen coefficient d)
		mean (standard deviation)	mean (standard deviation)	P- Value	type of test	
before		21/03 (78/4)	21/13 (60/02)		In dependent t-test	
after		25/03 (23/3)	(67.2)20.97	P<0/001	In dependent t-test	1/37
intragroup changes	P- Value	P<0/001				
	test	Paired t-test	Paired t-test			

Table 3 Comparing the mean self-care scores of patients undergoing hemodialysis in the two groups before and after the intervention

group / self-care		Intervention	control	intergroup changes		coefficient of effect (Cohen coefficient d)
		mean (standard deviation)	mean (standard deviation)	P- Value	type of test	
before		56/24 (6/61)	58/73 (7/21)		In dependent t-test	
after		79/96 (4/45)	59/73 (8/09)	P<0/001	In dependent t-test	3/09
intragroup changes	P- Value	P<0/001				
	test	Paired t-test	Paired t-test			

Habibzadeh et al (2011) also confirmed dependence of hemodialysis patients and stated that application of Orem care model has been able to cause a significant difference between intervention and control groups in the dimension of educational needs assessment for self-care (13), which is in line with the results of this study.

In the present study, presentation of self-care program based on Orem model enhanced the self-esteem of hemodialysis patients. Since the presented self-care program had also improved the self-care activities of these patients, possibly acquiring the ability of self-care and diminished dependence on others have been effective in enhancing the self-esteem of these patients. In this regard, Pudineh (2014) states that the outcome of self-care programs is independence of patients and diminished doubt and indecisiveness about their abilities (1). Confirming this point, Habibzadeh et al (2011) reported that given the dependence of hemodialysis patients in receiving care services, understanding the self-care needs of patients based on nursing theories will be effective in patient adaptation (13). In this regard, Asgari (2011) states that hemodialysis patients need psychological support to adapt to their situation. Nurses can help adaptation of these patients to the problems and fears resulting from the disease through emotional support and education (19). Rezaei et al (2016) also emphasized the role of nurses in promoting the self-esteem of hemodialysis patients and helping them in using problem-oriented rather than emotion-oriented methods (3). Pourgholami et al (2016) also reported the effect of self-care education on enhancing the self-esteem of patients undergoing hemodialysis (8). The results of the study by Kamal Mohammad et al (2016) also confirmed the effect of a designed self-care program on the level of dependence of hemodialysis patients (9). Pudineh Moghadam et al (2014) also reported that use of self-care program based on Orem model has had a positive effect on different aspects of dependence of hemodialysis patients, as the aim of the theory is preparing and helping the patient to take care of themselves and achieve independence (1). Jahanpeyma et al (2016) also concluded that implementing self-care education based on Orem model can mitigate the problems of hemodialysis patients (20). All these studies are in accordance with the findings of the present research. During the searches, the researcher encountered studies examining the effect of Orem self-care model on non-hemodialysis patients. For example the studies by Masoudi 2010 (21) in MS patients and Hemmati (2015) (12) in the elderly confirmed the positive effect of this model on the self-esteem of the research samples. Although these studies have been different with the present study in terms of the studied population, since they suggest the positive effect of this model on self-esteem, they were recognized as suitable for comparison.

CONCLUSION

Based on the findings of the present research, self-care program based on Orem model can be effective for patients undergoing hemodialysis in a sample of Iranian population. Furthermore, in line with other investigations, these findings suggest that possibly the prediction and provision of such programs in the health care system will be useful and effective for patients.

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Ethical approval
This study approved by Zabol university of medical science (Code: Zbmu.1.REC.1396.220)

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Conflict of interest
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