

**Original Article**

## **The Effect of Education Given to Hemodialysis Patients on Drug and Diet Compliance, Quality of Life, Self-Care Agency**

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### **Abstract**

**Aim:** This study was conducted to evaluate the effect of the education given to the patients hemodialysis on their self-care agency and quality of life.

**Material and Method:** The study was conducted in accordance with pretest posttest one group design. The study was conducted between 2015 and 2017. The population of the study consisted of 65 patients who received the treatment of chronic renal failure in the hemodialysis service and agreed to participate voluntarily in the study. "Questionnaire", "Self-Care Agency Scale", and "KDQOL-36" were used in the study. Pretest was used in the first measurement and after completing the education, the posttest was applied.

When the mean scores of the patients for the KDQOL-36 Scale subscale were compared as the pretest and posttest, it was determined that after the educations, posttest mean scores increased in all subscales.

**Results:** The education given to the patients significantly reduced their non-compliance to diet, medication non-adherence and compliance to salt consumption and enhanced their life quality.

**Key Words:** Hemodialysis, nursing, education, self-care agency, quality of life.

### **Introduction**

Chronic diseases are disorders and diseases shortening the expected length of life in individuals and reducing their self-care agency and life quality (Kosar and Besen, 2015). Chronic diseases change the perception of individuals and may cause them to abandon their future goals and purposes which they mind a lot, get dependent on others in a constantly increasing way, and may also affect their perceived life quality negatively (Akpınar and Ceran, 2019). The purpose of care and treatment provided to individuals with a chronic disease is to enable individuals to adapt to their chronic disease and the treatment program as desired and cooperate with themselves and their families, reduce their dependence, and enhance their life quality positively (Dogan et al., 2019). The end-stage chronic renal failure (CRF) which is

among today's prevalent chronic diseases is a chronic and terminal disease that includes commonly a large number of irreversible and progressive findings, brings the changes in many future plans and lifestyle of patients due to psycho-social problems, and affects their self-care agency and quality of life negatively (Kiziltan, 2018). Renal replacement treatment (replacing what is missing) is essential in the treatment of chronic renal failure. Renal replacement treatment (RRT) consists of hemodialysis (HD), peritoneal dialysis (PD), and renal transplantation applied at home or healthcare organizations (Suleymanlar, Ates and Seyahi, 2016). Professional nurses play an important role in determining the self-care agency and life quality of CRF patients, providing patient-specific care, and planning health education (Uysal and Karatas, 2017). Individuals with a desired and sufficient level

of self-care agency will be able to meet their self-care activities and needs properly and adequately, take personal responsibility for their own health, and realize their activities of daily living without being constantly dependent on other individuals (Guner et al., 2018; Yildirim, 2017). Hemodialysis treatment aims to extend individuals' life expectancy at birth; however, today it also aims to constantly develop their self-care agency and life quality, which is stated to be important and necessary for patients (Tuna, Ovayolu and Kes, 2018). The patient's attitudes and behaviors regarding the disease, treatment and care are important in long-term nursing care. Thus, supporting the self-care agency of individuals by nurses will affect their quality of life and life satisfaction positively. In the studies, it is stated that there is a significant difference and a positive correlation between the individual's self-care agency behaviors and quality of life and as their level of self-care agency increases, their quality of life also enhances (Akpınar and Ceran, 2019).

## Method

**Aim:** The aim of the study is to evaluate the factors affecting the self-care agency and life quality of patients undergoing hemodialysis and determine the effect of nursing education given to patients on their self-care agency and quality of life.

**Design and Sample:** The study was planned and implemented as a pretest-posttest one group to evaluate the nursing education given to patients undergoing hemodialysis on their self-care agency and quality of life. The study was conducted in the hemodialysis service of the public hospital between December 2015 and October 2017. The population of the study consisted of 65 patients who received HD treatment in the hemodialysis service, agreed to participate in the study voluntarily, and received chronic renal failure treatment. The study was completed with 55 patients due to reasons like the death and migration of the patients and their reluctance to fill in the questionnaire.

**Measures: The data of the study were collected applying:**

**Questionnaire for Socio-Demographic Characteristics:** The questionnaire includes 12 questions about socio-demographic characteristics of hemodialysis patients.

**Self-Care Agency Scale:** Development, validity, and reliability of Self-Care Agency Scale were conducted by Oren in 2010. It is a three-point Likert

scale which can be answered by individuals on their own and applied easily and consists of a total of four subscales and 22 items scored between 0-2 points. In the study by the Cronbach's Alpha coefficient of the scale was found to be 0.74. In this study, on the other hand, the Cronbach's Alpha coefficient of the overall Self-Care Agency Scale was calculated as 0.74 (Oren B, 2010).

**KDQOL-36-Kidney Disease Quality of Life Form: KDQOL-36-Kidney Disease Quality of Life Form** is a disease-specific scale most frequently used for the End-Stage Chronic Renal Failure (ESCRF). Developed by R. Hays et al., in the United States of America in 1994, the KDQOL-36 scale was translated into Turkish by Yildirim et al. in 2007 and its validity and reliability were conducted. The KDQOL-36 scale includes sections specific to both general and chronic kidney disease (Yildirim et al., 2007). The scale consists of five subscales and 36 items. In the Turkish version, the Cronbach's Alpha coefficient was found to be 0.93. In this study, on the other hand, the Cronbach's Alpha coefficient was found to be 0.73.

**Intervention:** The pretest was applied to the patients in January 2016 and after a 3-month waiting period, the education was applied to the patients with "Nursing Education Guide for Problems Faced by Patients Undergoing Hemodialysis" in March 2016. The education was provided to the patients face-to-face and individually in groups consisting of two or three using a verbal narration method and educational materials for 35-40 minutes. In order for the trainings to be effective, reinforcement educations were provided to the patients at certain intervals for 3 months. After completing the education, the posttest was applied in June 2016.

**Ethical considerations:** Before starting the study, the ethics committee approval was received. Necessary permissions were obtained from the where the study would be implemented. Their consent was taken with a written consent form and thus, the "Principle of Informed Consent" was fulfilled.

**Data collection:** The data were collected by the researcher at the hemodialysis service. Personal Information Form and pretest was used in the first measurement and After completing the education, the posttest was applied.

**Analytic strategy:** The data of the study were transferred into computer environment via the SPSS for Windows 22 (SPSS 22.) program and analyzed

statistically. Number, percentage, minimum and maximum values were used in analyzing the data of the study; On the other hand, Wilcoxon Test, McNemar's Test, Spearman Correlation Analysis, Mann Whitney-U Analysis, and Independent Samples t-test were used in evaluating the mean scores of the scales and standard deviations.

## Results

When examining the descriptive characteristics of the patients who participated in the study and received hemodialysis (Table 1), it was determined that 58.2% of them were male, 81.8% were married, 74.5% had a nuclear family, 32.7% were illiterate, 60% had an income less than the expenses and almost all of them (98.2%) had social security, were in the age range of 26-89 years, had a mean age of 56.89 years, and had 4.65 children on average (Table 1). When examining the disease and treatment-related characteristics of the patients who participated in the study (Table 2), it was determined that 50.9% of them did not receive any training regarding their disease, 54.5% had no adherence to therapy, 78.2% had a medication adherence, and 58.2% had salt consumption. In addition, it was determined that the patients' average duration of treatment was  $=5.80 \pm 5.66$  months, average number of drugs used was  $=6.75 \pm 2.53$ , average duration of sessions was  $=3.98 \pm 0.13$  hours and average duration of weekly sessions was  $=3.00$  days (Table 2).

When examining the comparison of the pretest-posttest mean scores in the subscales of the KDOQL-36 life quality scale (Table 3), it was determined that the mean scores of the subscales of "Symptom/Problem List", "Effect of Kidney Disease" and "Burden of Kidney Disease" were

significantly different in the pretest and posttest ( $p < 0.05$ ), whereas the mean scores of the subscales of "SF-12 Physical Component" and "SF-12 Mental Component" were not statistically significant ( $p > 0.05$ ). This increase observed in the posttest compared to the pretest showed that the nursing education reduced the symptoms, the effect of kidney disease, and the burden of kidney disease. When comparing the pretest-posttest mean scores of the Self-Care Agency Scale and its subscales (Table 4), it was determined that "Use of Medicine", "Diet", "Self-Monitoring", "Hygienic Care", and "Mental Status" and total mean scores obtained from the scale were not statistically significant in the pretest and posttest ( $p > 0.05$ ). When examining the pretest-posttest comparison of "Compliance to Diet" of the patients who participated in the study (Table 5), it was determined that the rates of compliance to diet were statistically significant in the pretest and posttest ( $p < 0.05$ ) and noncompliance to diet decreased significantly in the posttest after the education interventions ( $p < 0.05$ ). When examining the pretest-posttest comparison of "Adherence to Therapy" of the patients who participated in the study (Table 5), it was found that the rates of medication adherence were statistically significant in the pretest and posttest ( $p < 0.05$ ). Medication non-adherence decreased significantly in the posttest after the nursing education interventions ( $p < 0.05$ ). When examining the pretest-posttest comparison of "Salt Consumption" of the patients who participated in the study (Table 5); it was determined that the rates of salt consumption were statistically significant in the pretest and posttest ( $p < 0.05$ ) and salt consumption decreased significantly in the posttest after the education interventions ( $p < 0.05$ ).

**Table 1. Distribution of Descriptive Characteristics of the Patients (n=55)**

		n	%
<b>Gender</b>	Female	23	41.8
	Male	32	58.2
<b>Marital status</b>	Single	4	7.3
	Married	45	81.8
	Widowed	6	10.9
<b>Family structure</b>	Nuclear family	41	74.5
	Extended family	13	23.6
	Broken family *	1	1.8

		<b>n</b>	<b>%</b>
<b>Educational level</b>	Illiterate	18	32.7
	Literate	12	21.8
	Primary school	16	29.1
	Secondary school	6	10.9
	High school	3	5.5
<b>Income status</b>	More than expenses	22	40.0
	Less than expenses	33	60.0
<b>Social security *</b>	Yes	54	98.2
	No	1	1.8
	<b>Min-Max</b>	<b><math>\bar{X}</math></b>	<b>SD</b>
Age	26-89	56.69	14.81
Number of Children	0-12	4.65	3.10

\*Not included in the analyses.

**Table 2. Disease and Treatment-related Characteristics of the Patients (n=55)**

		<b>N</b>	<b>%</b>
<b>Status of receiving any training on their disease</b>	Yes	27	49.1
	No	28	50.9
<b>Compliance to diet</b>	Yes	25	45.5
	No	30	54.5
<b>Medication adherence</b>	Yes	43	78.2
	No	12	21.8
<b>Salt consumption</b>	Yes	32	58.2
	No	23	41.8
	<b>Min.-Max.</b>	<b><math>\bar{X}</math></b>	<b>SD</b>
<b>Duration of treatment</b>	1-19	5.80	5.66
<b>Number of drugs</b>	2-13	6.75	2.53
<b>Duration of sessions</b>	3-4	3.98	0.13
<b>Duration of weekly sessions</b>	3-3	3.00	0.00

**Table 3.** Comparison of Pretest-Posttest Mean Scores of the Subscales of

	n	Symptom/Problem List		Effect of Kidney Disease		Burden of Kidney Disease		SF12 Physical Component		SF12 Mental Component	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
<b>Pretest</b>	55	60.91	20.81	45.23	18.69	21.82	21.28	30.48	8.94	36.10	7.14
<b>Posttest</b>	55	72.12	17.07	52.79	12.81	43.07	22.04	31.92	7.04	36.97	6.01
<b>Significance</b>		Z = -3.425 p = <b>0.001</b>		Z = -3.478 p = <b>0.001</b>		Z = -4.938 p = <b>0.000</b>		Z = -1.315 p = 0.189		Z = -1.231 p = 0.218	

KDOQL-36 Scale

<b>Pretest</b>	55	6.75	2.27	5.93	2.04	4.20	1.41	5.75
<b>Posttest</b>	55	7.31	1.98	6.40	1.49	4.22	1.36	5.91
<b>Significance</b>		Z = -1.581 p = 0.114		Z = -1.735 p = 0.083		Z = -0.26 p = 0.979		Z = -

**Table 4.** Comparison of Pretest-Posttest Mean Scores of the Self-Care Agency Scale and Its Subscales

	n	Use of Medicine		Diet		Self-Monitoring Medication Adherence		Hygienic Care, of Salt Consumption		Mental Status		Compliance to Diet, of Total Score	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
<b>Compliance to Diet</b>		<b>Posttest</b>				<b>Significance*</b>							
		<b>Yes</b>	<b>No</b>	<b>Total</b>									
<b>Pretest</b>	<b>Yes</b>	23 (%92.0)	2 (%8.0)	25		p= <b>0.004</b>							
	<b>No</b>	14 (%46.7)	16 (%53.3)	30									
<b>Total</b>		37 (%67.3)	18 (%32.7)	55									
<b>Medication Adherence</b>		<b>Posttest</b>				<b>Significance*</b>							
		<b>Yes</b>	<b>No</b>	<b>Total</b>									
<b>Pretest</b>	<b>Yes</b>	42 (%97.7)	1 (%2.30)	43		p= <b>0.021</b>							
	<b>No</b>	9 (%75.0)	3 (%25.0)	12									
<b>Total</b>		51 (%92.7)	4 (%7.30)	55									
<b>Salt Consumption</b>		<b>Posttest</b>				<b>Significance*</b>							
		<b>Yes</b>	<b>No</b>	<b>Total</b>									
<b>Pretest</b>	<b>Yes</b>	30 (%93.8)	2 (%6.3)	32		p= <b>0.004</b>							

Compliance to Diet	Posttest			Significance*
	Yes	No	Total	
No	14 (%60.9)	9 (%39.1)	23	
<b>Total</b>	44 (%80)	11 (%20.0)	55	

### Discussion

Concerning the disease-related and treatment-related characteristics of the patients, it was determined that majority of patients did not receive ant training regarding their disease, had no adherence to therapy, had medication adherence and salt consumption and the average duration of treatment was 6 months, average number of drugs used was 7, average duration of hemodialysis sessions was 4 hours, and average duration of weekly sessions was 3 days (Table 2). Similar to this study conducted a study for the purpose of examining the quality of life and self-care agency of patients receiving HD treatment and the variables affecting them and determined that the patients who participated in the study were in the age range of 18-65 years, mostly male and married, had social security, but could not fully meet their treatment expenses, and went into dialysis for 3 sessions and 5 hours a week on average (Muz at al., 2018). In the study conducted by to determine the self-care agency of 92 dialysis patients and the influencing factors, it was reported that a great majority of the patients who participated in the study were male, were in the age range of 41-60 years, were married, were primary school graduate, had social security, income less than expenses, were undergoing dialysis for approximately 1-3 years, had an adherence to treatment and diet, and paid attention to fluid intake (Akgoz and Arslan, 2017). In the study conducted by to determine the factors affecting the self-care agency of HD patients, it was stated that the patients who participated in the study were generally male, primary school graduate, had middle income and higher knowledge level and received the training regarding their disease, which is different from the present study (Soylu, 2018). In the study by to examine the effect of the self-care agency on quality of life of hemodialysis patients,

it was reported that the patients who participated in the study were married and averagely 58 years old in general just like the present study, but majority of them were female and primary school graduate, which contradicts with the present study (Alemdar, 2015). According to the present study, demographic data show many similarities in this patient group just like in similar studies.

When comparing the mean scores of the subscales of the life quality scale as pretest-posttest, it was observed that there was an increase in the mean scores of the posttest. A significant increase ( $p < 0.05$ ) was observed in the mean scores of "Symptom/Problem List", "Effect of Kidney Disease" and "Burden of Kidney Disease" after the nursing education (Table 3). In the study conducted by to determine the factors affecting the life quality of 100 patients undergoing HD treatment and their life quality levels, it was determined that life quality mean scores were higher in the group which received disease-related and HD-related nursing education than the group which did not (Aydın, 2014). On the other hand, there was no statistically significant increase and difference ( $p > 0.05$ ) in the subscales of "Physical Component" and "Mental Component" after the nursing education, except a normal increase (Table 3). Patients frequently experience conditions such as chronic disease with an advancing and gradually hardening prognosis, advanced age, a long and tiring duration of disease, insufficient treatment and care conditions, continual dependence on the hospital, spending too much time at bed, decrease in physical activities and failure to realize daily life activities sufficiently (Akpınar and Ceran, 2019; Kumsar and Yılmaz, 2014).

In the study conducted in the Bingol using the patient database of the Fresenius Medical Care Institution keeping the data of dialysis patients, it was indicated that obtaining a mean score less than 51 points especially from the subscale of "Mental Component" of the KDQOL-36 scale would increase the mortality risk of patients (Aslan, 2018). In the present study, even though this rate increased after the nursing education, the mortality risk was still too high because it was 36 points (Table 3). Likewise, in another study conducted in Sivas, lower mean scores less than 41.8 points (below 41.8 points on average) were also obtained from the subscale of "Mental Component" of the KDQOL-36 scale (Ozturk, 2014). In another study conducted, it was found that score of the subscale of "Mental Component" was 42 In the study by (Chow and Tam, 2014), evaluating the quality of life in 134 patients undergoing hemodialysis in the Hong Kong using the SF-36, it was stated that the mean scores of the subscales of "Physical Component" and "Mental Component" were significantly lower than the healthy community. The total mean scores obtained by the patients from the Self-Care Agency Scale in the pretest were above the average value, which showed that they displayed positive health behaviors regarding the self-care agency (Table 4).

When the mean scores of Self-Care Agency Scale subscales in the pretest were evaluated in the present study, it was determined that the participants obtained mean scores from the subscales of "Use of Medicine", "Diet", "Self-Monitoring", "Hygienic Care" and "Mental Status" (Table 5). Based on these results; it is possible to state that the mean scores of the patients for the subscales of use of medicine, diet, self-monitoring and hygienic care were above the average value, they displayed positive health behaviors, and also supported their self-care agency. Only mean score of the subscale of "Mental status" remained below the average value. This can be asserted to be associated with the disease-associated discomfort, stress, economic inadequacies, and thus insufficiencies in living conditions, problems with family members, and failure of coping. Similar to the present study, in the study conducted by (Oren, 2014) to examine the factors affecting the life quality and self-care agency in patients with chronic

renal failure, it was determined that the mean scores obtained from the subscales of "Use of Medicine", "Diet", "Self-Monitoring", "Hygienic Care", and "Mental status" of the Self-Care Agency Scale were above the average value.

In the present study, comparing the pretest-posttest mean scores obtained by the patients from the Self-Care Agency Scale and its subscales, it was determined that total mean scores obtained from the scale and the subscales of "Use of Medicine", "Diet", "Self-Monitoring", "Hygienic Care" and "Mental status" were not statistically significant ( $p>0.05$ ) in the pretest and posttest (Table 5). As it is understood in the results, it was observed that even though there was no significant difference in the self-care agency of the patients, there was an increase in the total mean scores and subscale mean scores, except for "Mental status". The nursing trainings aim to actively support patients to develop positive health behaviors in all areas regarding their health, adopt a healthy development, and attain a self-efficacy that may contribute to the development of all this. Accordingly, in the present study, the increase in self-care scores after the education was an expected result, but it was not statistically significant due to factors such as the continual struggle of patients with the disease, lack of sufficient number of supporters, spending most of their time in the hospital and non-compliance to the education. In the study, it was reported that the patients complying with the education given at the hospital had a higher self-care agency (Ozdemir and Akyol, 2019).

In the study conducted by with patients receiving peritoneal dialysis, it was observed that nursing care and follow-up provided for the self-care agency increased the self-care agency of the patients (Uysal and Karatas, 2017). In the study conducted by with cardiac patients, it was observed that the patients who received properly a training regarding their disease and treatment options had higher self-care skills and behaviors (Alkan, 2016). In many studies conducted with patients with a chronic disease, it was determined that the education given to patients had a positive effect on self-care activities of patients and their knowledge about the disease

(Schwalm et al., 2015; Ruppert, Delgado and Temple, 2015).

When comparing the pretest-posttest of "Compliance to Diet" of the patients in the present study, it was determined that there was a statistically significant difference in their compliance to diet in the pretest and posttest ( $p < 0.05$ ). There was a significant decrease in their non-compliance to diet in the posttest after the education (Table 5), which may be interpreted as an indicator for the fact that the CRF patients considered the nutrition advices given in the education. In the study by (Acar, 2018), it was determined that there was a significant improvement in compliance to diet of the hemodialysis patients who were informed about the diet in the CRF. In contrast to that study, determined that the disease education, given to hemodialysis patients who experienced problems about compliance to diet had no effect on that situation (Gokdogan et al., 2017).

When comparing the pretest-posttest "Medication Adherence" of the patients in the present study, it was determined that there was a statistically significant change in the rates of Medication Adherence of the patients in the pretest and posttest ( $p < 0.05$ ). It was determined that there was a significant decrease in their medication non-adherence in the posttest after the education (Table 5), which may be commented as an indicator for the fact that the CRF patients had considered the medication advices given in the education. In the study by it was determined that majority of patients undergoing hemodialysis complied with their medication (Çavuş, 2016). In the study conducted by to determine medication adherence levels of the patient undergoing hemodialysis it was determined that a great majority of the patients (70-93%) had medication adherence (Acar, 2018). In parallel with this study, some studies reported that disease-related education and information had a positive effect on adherence to therapy of patients who received hemodialysis treatment and underwent a kidney transplantation (Yakar, Demir and Canpolat, 2019).

When comparing the pretest-posttest "Salt Consumption" of the patients in the present study, it

was determined that there was a statistically significant difference in salt consumption rates of the patients in the pretest and posttest ( $p < 0.05$ ). There was a significant decrease in their salt consumption in the posttest after the education (Table 5), which may indicate that the CRF patients considered the salt consumption advices given in the education. In parallel with the present study, in their study (Zengin and Oren, 2015; Duzalan, 2014) determined that HD patients who received sufficient nursing education on salt restriction complied with salt consumption at higher rate.

**Conclusion:** The patients undergoing hemodialysis had a moderate self-care agency and the education given to them increased their life quality and self-care agency,

- The mean scores of the subscales of use of medicine, diet, self-monitoring and hygienic care of the Self-Care Agency Scale were also higher in the posttest compared to the pretest; however, the mean score of mental status was lower in the posttest than the pretest,
- The education given to the patients significantly reduced their non-compliance to diet, medication non-adherence and compliance to salt consumption and enhanced their life quality.

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