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Illness Perception of Turkish Patients Undergoing Hemodialysis and Peritoneal Dialysis: Similarities and Differences

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ABSTRACT

Objective: The aim of this study was to determine the illness perception of Hemodialysis (HD) and Peritoneal Dialysis (PD) patients having end-stage renal failure.

Methods: This cross-sectional study was carried out in Organ Transplantation and Dialysis Hospital. Data were collected between January-June 2016. The study was conducted with a total of 93 individuals including 45 patients undergoing PD and 48 patients undergoing HD between the indicated dates. An information form and Illness Perception Questionnaire-Revised (IPQ-R) were used as data collection instruments. Independent samples t test, one way anova and pearson correlation analysis were used to assess data.

Results: Among the patients, mean duration of disease was 81.4±77.7 (HD: 82.7±93.5, PD: 80.1+60.1) months, mean duration of dialysis was 57.7±58.3 (HD: 58.6±67.0, PD: 56.8±49.4) months and mean number of comorbid diseases was 1.4±0.6 (min: 1.0, max: 4.0). 93.5% of the patients had familial support (HD: 91.1%, PD: 95.8) and 69.9% (HD: 37.8%, PD: 100.0%) had taken a training about the disease and its treatment from healthcare professionals. It was also found that mean scores of PD patients from IPQ-R subscales including personal control, illness coherence and timeline acute/chronic were found to be significantly higher than HD patients ($p<0.05$).

Conclusion: As a result of this study, it was determined that HD patients perceived their illnesses as more challenging compared to PD patients. Therefore, especially HD patients may be given disease-related trainings with the onset of their treatment process and a psychological support may be recommended to accept their chronic diseases.

Keywords: Hemodialysis, illness perception, peritoneal dialysis, Turkish patients

1. INTRODUCTION

Illness Perception in Turkish patients undergoing Hemodialysis (HD) and Peritoneal Dialysis (PD) Chronic Kidney Disease (CKD) is a common public health problem both in the world and in our country. Renal replacement therapies are applied to patients who have been diagnosed with end-stage renal disease. According to 2018 summary report of Turkish Society of Nephrology, a total of 63.835 patients have received renal replacement therapies by the end of 2018; and among these patients, 60.643 were HD and 3.192 were PD patients, and these numbers were indicated to be increasing (1). CKD is a chronic disease requiring compliance to disease itself and to the adverse effects of treatment. This disease often affects daily lives and freedom of the individuals in a negative way. Some patients perceive their diseases negatively and they declare that their freedom is limited. Negative perception of illness causes experiencing psychological problems such as unhappiness and depression more intensely (2). Dialysis patients see themselves as dependent and their conditions as desperate due to the progressive nature of their diseases and difficult and restrictive treatment methods. Feeling of despair involves negative expectations for the future and it is closely associated with depression and suicidal ideation (3). Despite that, it was reported that positive perception of disease by CKD patients positively affected self-esteem and autonomy (4). Illness perception is defined as cognitive aspect of disease state. Patients try to explain their diseases in the light of their personal experiences, knowledge, values, beliefs and needs. Patients' individual interpretations regarding disease, their perception and evaluation and their emotional and behavioral responses are the factors determining their coping styles, their psychosocial stress and development of psychiatric disorder and their quality of life (5). Emotional responses shown towards the disease vary from individual to individual. Responses may show differences based on the meaning of affected organ or loss-of-function for the individual, type of disease, age of the individual, developmental period, nature of personality, beliefs and attitudes, defense mechanisms and coping patterns, their previous experiences and attitudes of their relatives regarding the disease (6). The course of disease was found to be better in individuals who had a high perception of internal control (5).

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Chronic Kidney Disease itself as a chronic disease and its treatment cause compulsory experiences in the lives of individuals (7). The differences between HD and PD treatments may lead patients to have different experiences in their illness perception and management skills (8).Recognition of these differences by the healthcare professionals may facilitate their understanding of patients, and it may be guiding while determining their approaches. Some preventive practices may be planned in order to protect mental health of dialysis patients by acquiring information about their illness perception styles (9). These practices are considered to affect life quality of dialysis patients and the course of disease in a positive manner.

In this study, it was aimed to identify the differences in illness perception styles of patients undergoing HD and PD and to shed a light on future protective mental health practices through these data.

Hypotheses:

H_0: There is no difference between illness perceptions of HD and PD patients.

H_1: There is a difference between illness perceptions of HD and PD patients.

2. METHODS

In this cross-sectional study, it was aimed to identify illness perceptions of HD and PD patients suffering from end-stage renal failure.

2.1. Sample

This cross-sectional study trying to reach the full course in the time in the drawing and taking the accepted study was carried out in the Organ Transplantation and Dialysis Hospital of a University Faculty of Medicine in Turkey. This Organ Transplantation and Dialysis Hospital is a district hospital and accepts patients from many cities within the Central Anatolia region. Thus, the common feature of these patients is that all of them were living in Central Anatolia region. In this hospital, HD patients generally undergo HD treatment 3 times a week. PD patients admit for control regularly every month. Data of the study were collected between January-June 2016. All HD patients who were registered during the indicated dates were reached during the study. Again, 45 PD patients, who had similar characteristics with the HD patients included during the same dates for age, sex, education level, disease duration, diagnosis time and the number of comorbid diseases, were included in the study. The number of PD patients registered in the hospital was 121. The study was conducted with a total of 93 individuals including 45 patients undergoing PD and 48 patients undergoing HD between the indicated dates. An attempt was made to reach all patient. 40% of the sample reached. One PD patient was not included in the study due to the lack of written consent.

Inclusion criteria of the study were being 18 years and older, being voluntary to participate in the study, not having any physical and mental disability that may prevent participation in the study and being able to read and understand Turkish. Data of the study were collected by a questionnaire form which was generated to identify descriptive and disease-specific characteristics of the patients and the Illness Perception Questionnaire-Revisedto measure perception of disease. Data were collected through face-to-face interviewing method. Interviews lasted for nearly 10 minutes.

2.2. Data Collection Instruments

Information Form: This form was composed of demographic characteristics of patients such as sex, age, marital status, education level, family type and employment status and the questions determining disease-related characteristics.

Illness Perception Questionnaire-Revised (IPQ-R):This questionnaire was developed by Weinmann in1996 and revised by Moss-Morris *et al.* in 2002. Turkish adaptation study and validity and reliability studies of the scale were carried out by Kocaman *et al.* (2007). IPQ-R involves three dimensions including illness identity, attributions concerning the disease and probable causes (5,10)

1) Illness Identity (Disease Symptoms): It involves 14 common disease symptoms (pain, sore throat, nausea, breathlessness, weight change, fatigue, stiff joints, sore eyes, wheeziness, headache, upset stomach, dizziness, sleeping difficulties, loss of strength). For each of these symptoms, the individuals are first asked whether "they experienced these since the onset of disease" and then, whether "they experienced these symptoms associated with their illness". This scale was arranged as giving a response for each symptom as yes/no. A high score of identity scale indicates a strong view of the patient on the presence of a high number of symptoms accompanying the disease.

2) Attributions concerning the disease (Illness Perception): This part is composed of 38 items including the views of the patient regarding the disease. A 5-point Likert-type grading (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree) is used.

This scale involves seven subscales. These are called timeline (acute/chronic), timeline (cyclical), consequences, personal control, treatment control, illness coherence and emotional representations.

a. Timeline subscales investigate individual's perception regarding the duration of illness and it is grouped as acute/chronic and cyclical/episodic.
   A high score from timeline (acute/chronic) subscale indicates that the condition is chronic.

b. A high score from timeline (cyclical/episodic) subscale indicates that condition has a cyclic nature.

c. Consequences subscale investigates individual's views on the possible effects of the severity of disease on physical,

social and psychological functionality. A high score from consequences subscale indicates that the disease has negative outcomes.

d. Personal control investigates individual's internal control perception on the duration, course and treatment of the illness.

e. Treatment control investigates individual's views on the efficiency of the treatment given. A high score of personal and treatment control subscales indicates that the individual has positive views on his/her efficiency to control disease and treatment.

f. Illness coherence investigates individual's understanding of the disease. A high score from illness coherence indicates greater understanding of the condition.

g. Emotional representations investigate individual's emotions regarding the disease. A high score from emotional representations subscale indicates an increase in negative emotions provoked by the disease.

3) Probable Causes: It is composed of 18 items including probable causes in the formation of diseases. A 5-point Likert-type grading (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree) is used. This dimension investigates individual's views on the probable causes of the illness and includes four subscales. These are psychological attributions (for instance; stressor worry, family problems, personality characteristics), risk factors (e.g. hereditary, smoking, alcohol and aging), immunity (e.g. a germ or virus and an altered body resistance) and accident or chance (e.g. accident, injury, bad luck).

2.3. StatisticalAnalysis

Statistical analysis of data was performed by using SPSS 21.0 (Statistical Packagefor Social Science) package program. Normality analysis of the data was carried out with Shapiro Wilk test. Independent samples t test, one way anova and pearson correlation analysis were used to assess data. Tukey analysis was used in post-hoc tests. $P<0.05$ was considered significant.

2.4. Ethical Consideration

The individuals undergoing peritoneal dialysis and hemodialysis in the study were informed about the aim of the study. Then, they provided written and verbal consents and signed informed consent form. Necessary permissions were taken from the Ethics Committee of Erciyes University. 2016/71-05.02.2016

3. RESULTS

Among 93 patients included in the study, mean age was 55.9±15.1 years old (min: 21.0, max: 86.0); mean duration of illness was 81.4±77.7 months (min: 3.0, max:468.0), mean duration of dialysis was 57.7±58.3 months (min: 3.0, max:264.0) and mean number of comorbid diseases was 1.4±0.6 (min: 1.0, max: 4.0). Out of all patients, 53.8% were males; 80.6%were married; 45.2% were elementary school graduates; 91.4% were unemployed; 67.7% had an income at a moderate level; and 74.2% had a core family (Table 1). 93.5% of the patients had family support (HD: 91.1%, PD: 95.8%), and 69.9% (HD: 37.8%, PD: 100.0%) had training from healthcare professionals regarding their illness and its treatment.

Table 1. *Descriptive characteristics of patients according to the dialysis modality*

Descriptive characteristics	HD n (%)	PD n (%)	Total n (%)
Sex			
Female	21(46.7)	22(45.8)	43(46.2)
Male	24(53.3)	26(54.2)	50(53.8)
Marital status			
Married	34 (75.6)	41 (85.4)	75 (80.6)
Single	11 (24.4)	7 (14.6)	18 (19.4)
Education			
Illiterate	3(6.7)	3(6.3)	6(6.5)
Literate	5(11.1)	4(8.3)	9(9.7)
Elementary	21(46.7)	21(43.8)	42(45.2)
Secondary school	8(17.8)	4(8.3)	12(12.9)
High school	5(11.1)	9(18.8)	14(15.1)
University	3(6.7)	7(14.6)	10 (10.8)
Employment status			
Employed	4(8.9)	4(8.3)	8(8.6)
Unemployed	41(91.1)	44(91.7)	85(91.4)
Monthly income			
Good	7(15.6)	13(27.1)	20(21.5)
Moderate	30(66.7)	33(68.8)	63(67.7)
Poor	8(17.8)	2(4.2)	10(10.8)
Family type			
Core	34(75.6)	35(72.9)	69(74.2)
Large	7(15.6)	10(20.8)	17(18.3)
Broken/ living alone	4(8.9)	3(6.3)	7(7.16)
Age (years) (Mean ± SD)	56.5±16.3	55.4±13.9	55.9±15.1
Duration of illness (months) (Mean ± SD)	82.7±93.5	80.1±60.1	81.4±77.7
Duration of dialysis (months) (Mean ± SD)	58.6±67.0	56.8±49.4	57.7±58.3
Number of comorbid diseases (Mean ± SD)	1.5±0.7	1.4±0.5	1.4±0.6

Abbreviation; HD: Hemodialysis, PD: Peritoneal Dialysis, SD: Standard Deviation

The presence of a high score in IPQ-R subscale of personal control represents a high positive belief that the individual can control his/her disease and its treatment. The increase in the mean score of illness coherence indicates that individual's level of understanding on his/her condition is enhanced. While timeline acute/chronic shows the way of individuals to perceive their diseases as acute or chronic, a high score shows that the condition is perceived as chronic. In this study, it was found that mean scores personal control, illness coherence and timeline acute/chronic of PD patients were found to be higher than HD

patients at a statistically significant level (p<0.05). No statistically significant differences were found in the other subscales of IPQ-R based on two dialysis modalities (p>0.05) (Table 2).

Table 2. *Comparison of IPQ-R subscales mean scores according to dialysis modality*

IPQ-R Subscales	HD Mean (SD)	PD Mean (SD)	Statistics*	p
Attributions concerning the disease (Illness Perception)				
Consequences	20.6(4.6)	19.9(5.2)	0.710	0.479
Personal control	20.6(4.0)	23.7(3.4)	**-3.936**	**0.000**
Treatment control	17.2(4.3)	17.1(3.4)	0.092	0.927
Illness coherence	17.1(4.9)	19.4(5.6)	**-2.078**	**0.041**
Timeline cyclical	13.0(3.5)	14.4(3.9)	-1.874	0.064
Emotional representations	21.2(5.4)	18.6(7.3)	1.916	0.058
Timeline acute/ chronic	22.6 (5.6)	25.4(5.2)	**-2.484**	**0.015**
Illness Identity (Disease Symptoms)	6.8(3.3)	6.6(3.3)	0.196	0.845

Abbreviation; HD: Hemodialysis, PD: Peritoneal Dialysis, SD: Standard Deviation

**Based on independent samples t-tests.*

Table 3. *Comparison of IPQ-R probable causes subscales mean scores according to dialysis modality*

PROBABLE CAUSES	HD Mean (SD)	PD Mean (SD)	Statistics*	p
Psychological attributions	14.68(4.95)	14.39(6.30)	0.250	0.803
Stress or worry	3.06 (1.40)	3.14 (1.66)	-0.247	0.805
My mental attitude e.g. thinking about life negatively	2.13 (1.28)	2.08 (1.51)	0.171	0.865
Family problems or worries	2.37 (1.33)	2.04 (1.50)	1.170	0.245
Overwork	2.84 (1.38)	2.60 (1.64)	0.760	0.449
My emotional state e.g. feeling down. lonely. anxious or empty	2.20 (1.15)	2.29 (1.50)	-0.328	0.744
Risk factors	15.55 (4.90)	14.35 (5.49)	1.110	0.270
Hereditary – it runs in my family	2.37 (1.45)	2.31 (1.67)	0.200	0.842
Diet or eating habits	2.57 (1.19)	2.31 (1.48)	0.943	0.348
Poor medical care in my past	2.0 (0.95)	1.97 (1.48)	0.080	0.936
My own behavior	2.40 (1.25)	2.68 (1.62)	-0.951	0.344
Ageing	2.33 (1.27)	2.02 (1.48)	1.086	0.280
Alcohol	1.71 (1.05)	1.29(0.98)	1.977	0.051
Smoking	2.15(1.31)	1.75(1.31)	1.488	0.140
Immunity	6.84 (2.52)	6.45 (3.13)	0.652	0.516
A Germ or virus	1.84 (0.79)	1.56 (1.04)	1.452	0.150
Pollution in the environment	2.08 (1.04)	2.02 (1.49)	0.253	0.801
Altered immunity	2.91 (1.37)	2.87 (1.74)	0.110	0.912
Accident or chance	4.24 (1.72)	3.54 (1.87)	1.877	0.064
Chance or bad luck	2.57 (1.30)	2.45 (1.71)	0.376	0.708
Accident or injury	**1.66 (0.79)**	**1.08 (0.45)**	**4.370**	**0.000**

Abbreviation; HD: Hemodialysis, PD: Peritoneal Dialysis, SD: Standard Deviation

**Based on independent samples t-tests.*

Table 4. *Comparison of IPQ-R subscales mean scores according to some variables*

Variables	IPQ-R Subscales	Statistics	p	Post-hoc***
Duration of illness	**Timeline acute/ chronic**			
less than a year	21.44(4.91)	**3.766****	**0.027**	**1-3 (0.025)**
2-4 year	23.50(6.72)			
5 year and above	25.40(4.76)			
Duration of illness	**Immunity**			
less than a year	8.11(2.54)	**3.173****	**0.047**	**1-3 (0.039)**
2-4 year	6.46(3.11)			
5 year and above	6.20(2.67)			
Duration of dialysis	**Timeline acute/ chronic**			
less than a year	21.86(4.51)	**3.468****	**0.035**	**1-3 (0.027)**
2-4 year	23.93(6.31)			
5 year and above	25.64(5.06)			
Sex	**Emotional representations**			
Female	21.65(6.60)	**2.491***	**0.015**	
Male	18.34(6.20)			
Sex	**Risk factors**			
Female	13.79(4.48)	**-1.992***	**0.049**	
Male	15.92(5.63)			
Maritial status	**Risk factors**			
Married	24.73(5.30)	**2.262***	**0.026**	
Single	21.50(6.01)			
Education	**Emotional representations**			
Illiterate	22.44(5.83)			
Literate	27.33(3.50)			**1-5(0.040)**
Elementary	19.61(6.45)	**2.698****	**0.026**	**1-6(0.020)**
Secondary school	19.66(6.42)			
High school	18.14(7.22)			
University	16.80(5.39)			

** Based on independent samples t-tests.** Based on one way anova test.*** Post-hoc test: Tukey*

Mean score of HD patients for accident or injury was found to be significantly higher than PD patients (p=0.000). There were no statistically significant differences in all other dimensions of IPQ-R probable causesbased on two dialysis modalities (p>0.05) (Table3).

In this study, mean IPQ-R and subscale scores of PD and HD patients and disease duration and diagnosis time were tested by one way anova analysis. Tukey post-hoc analysis was used to determine which group caused the difference between the mean scores. It was also found that there were statistically significant differences between the duration of diagnosis and mean scores IPQ-R timeline acute/chronic (F =3.766, p=0.27) and immunity (F =3.173, p=0.47). When the origin of difference was investigated in terms of the duration of diagnosis, mean score IPQ-R timeline acute/chronicof the ones whose duration of diagnosis was less than one year (21.4±4.9) was found to be significantly lower than the ones whose duration was 5 years and longer (25.4±4.7) (p=0.027).

Variables	IPQ-R Subscales							
	Attributions concerning the disease (Illness Perception)							Illness Identity
	Consequences	Personal control	Treatment control	Illness coherence	Timeline cyclical	Emotional representations	Timeline acute/ chronic	
Age (year)								r= – 0.213 p=0.040
Comorbid disease		r=-0.232 p=0.025	r=0.233 p=0.024				r=0.232 p=0.025	
Duration of illness							r=0.208 p=0.046	
Timeline acute/ chronic	r=0.271 p=0.009		r=-0.296 p=0.004					
Conseguences			r=-0.230 p=0.026	r=-0.362 p=0.000	r=0.402 p=0.000			
Treatment control		r=0.207 p=0.047						
Timeline cyclical				r=-0.355 p=0.000				
Emotional representations				r=-0.375 p=0.000				
Identity	r=0.295 p=0.004							
Psychological attributions	r=0.254 p=0.014							
Risk factors	r=0.237 p=0.022							
Chance or bad luck	r=0.287 p=0.005			r=-0.0222 p=0.032		r=0.222 p=0.032		

Besides, mean score IPQ-R immunity of the patients whose duration of diagnosis was less than one year (8.1±2.5) was found to be significantly lower than the ones whose duration was 5 years and longer (6.2±2.6) (p=0.047)

A statistically significant difference was found between the mean scores of IPQ-R timeline acute/chronic (F =3.468, p=0.35) and duration of dialysis (p=0.035). When the origin of difference was investigated in terms of the duration of dialysis, it was found that mean IPQ-R timeline acute/chronic score of the patients, whose duration of dialysis was less than one year (21.8±4.5) was significantly less than the ones whose duration of dialysis was 5 years and longer (25.6±5.0) (p<0.05).

A high score obtained from IPQ-R emotional representations subscale shows that negative emotions provoked by the disease are increased. In this study, IPQ-R emotional representations mean score of women (21.6±6.6) was found to be significantly higher than the mean score of men(18.3±6.2) (p=0.015). In addition to this, mean IPQ-R risk factors score of women (13.7±4.4)was found to be significantly lower than the mean score of men (15.9±5.6) (p=0.049).The comparisons between mean IPQ-R scores and sex variable were analyzed by independent samples t test.

In this study, patients' mean scores of IPQ-R and its subscales and marital status and education level were assessed by one way anova analysis. Tukey post-hoc analysis was used to determine which group created the difference between the means. Timeline acute/chronic mean score of the participants, who were married (24.7±5.3), was found to be significantly higher than the single individuals (21.5±6.0) p=0.026).

Moreover, it was found that there was a statistically significant difference between education level of the participants and mean IPQ-R emotional representations score (F =2.698 p=0.026). Mean score of the illiterate participants (27.3±5.8) was found to be significantly higher than the ones who were graduates of high school (18.1±7.2) and university (16.8±5.3) (p=0.026).

In this study, it was also found that there were not significant differences between the participants in both groups based on their employment states, monthly income, family type, state of getting support with IPQ-R mean score(p>0.05).

The increase in mean IPQ-R illness coherence score shows that individual's level of understanding concerning his/her condition is enhanced. The increase in the mean score of treatment control subscale indicates that the beliefs of

individuals on that their diseases can be kept under control and the treatment is effective are increased.

The increase in the mean score of IPQ-R consequences subscale shows that individuals believe that the disease has negative consequences on their physical, social and psychological functions. According to the results of pearson correlation analysis in the study, negative and significant correlations were found between consequences and treatment control (r=-0.230, p=0.026) and illness coherence (r= – 0.362, p<0.001). Again, consequences dimension was found to have positive and significant correlations with timeline cyclical (r= 0.402, p=0<0.001), emotional representations (r= 0.550, p=0.000), identity (r= 0.295, p=0.004), psychological attributions (r=0.254, p=0.014), risk factors (r= 0.237, p=0.022), immunity (r=0.230, p=0.026) and accident or chance (r= 0.287, p=0.005).

Moreover, there were positive and significant correlations between timeline acute/chronic and duration of diagnosis (r=0.208, p=0.046) and consequences (r=0.271, p=0.009) whereas there was a negative and significant correlation between timeline acute/chronic and treatment control (r=-0.296, p=0.004).

The number of comorbid diseases was found to be positively correlated with timeline acute/chronic (r=0.232, p=0.025) whereas it was found to have negative and significant correlations with personal control (r=-0.273, p=0.008) and treatment control (r=0.233, p=0.024).

Furthermore, accident or chance was found to have negative and significant correlations with illness coherence (r=-0.222, p=0.032) and emotional representations (r=-0.222, p=0.032). Similarly, illness coherence was found to be negatively correlated with emotional representations (r=-0.375, p<0.001) and timeline cyclical (r= – 0.355, p<0.001). In addition, there was a negative and significant correlation between age and identity (r= – 0.213, p=0.040); and treatment control and personal control was found to be positively correlated (r= 0.207, p=0.047).

4. DISCUSSION

According to the studies investigating the relationship between illness perception and disease outcomes, the course of disease is better in individuals whose internal control perceptionis high (5). In the study by Iskandarsyah *et al*. which was carried out in 2014, it was determined that patients, whose illness perception was good, had a better treatment compliance (11). In order to enhance treatment compliance, patients with a poor illness perception may be identified and they may be oriented to individualized treatment for depression or anxiety. In this study which was conducted to determine and evaluate illness perception in dialysis treatment used in CKD, mean age of 93 patients was 55.97 years old, mean duration of disease was 81.4±77.7 months and mean duration of dialysis was 57.7±58.3 months. In the study by Jansen *et al*., mean age was found to be 64 years old.In their study with HD patients, Karabulutlu *et al*. found mean age as 52 years old, mean duration of disease as 75 months and duration of HD treatment as 64 months (12). Also in the study by Krespi *et al*.,dialysis patients stated that they experienced loss of strength, they could not do the things they could previously, they had to get rest more often and they got tired in a short time (13). Symptoms associated with disease and its treatment such as weakness and fatigue may affect compliance of patients negatively (14).

In this study, mean scores of IPQ-R attributions concerning the disease (Illness Perception) subscales including personal control, illness coherence and timeline acute/chronic among PD patients were found to be significantly higher than the scores of HD patients. In this study, illness perception was found to be more positive in PD patients compared to HD patients in three dimensions; and thus, H_1 hypothesis was accepted and H_0 hypothesis was rejected. While patients are dependent on the machines and healthcare staff in HD treatment, patients can perform treatment on their own at home environment and more independently in PD (15). In other words, patients can use PD alternative since they have cognitive and physical capacity to take their own responsibility. Considering that HD patients do not have these features, more positive perception of PD patients for the disease and its treatment compared to HD patients was not evaluated as a surprising finding. Thus, HD patients may feel a loss of control on their bodies and lives since they can not undertake their own care responsibilities; and may perceive the condition more negatively.

This may be derived from the fact that it is necessary to choose conscious patients, who have a good sociocultural level, for PD. Feelings of personal control are important for the life quality of dialysis patients (16,17). As similar to our results, Jansen *et al*. reported that mean scores of dialysis patients were 6.3 in “anxiety” dimension and 4.9 in “personal control” dimension (18). In the study by Karabulutlu *et al*. which was conducted with HD patients, mean scores of emotional representations, timeline (acute/chronic) and personal control were found to be higher than the other subscales (12). Moreover, the results of the study by Alharbi *et al*. indicated that PD patients perceived their illnesses as less chronicand managed disease better as similar to our study (19).

It has been reported that dialysis patients with a high personal control had a better compliance to treatment, they had a high quality of life and less experienced psychiatric problems such as anxiety and depression (16,20). In the study by Cvengros *et al.,* it was shown that low control perception of patients decreased treatment compliance (21). It was also found that mean accident or injury scores of HD patients were significantly higher than PD patients. This can be considered as HD patients have difficulties in controlling disease and they see disease like bad luck as a defense mechanism. In addition to this, Karabulutlu *et al*. reported the causes of disease as risk factors and psychological attributions mostly. It was observed that patients stated probable causes as

accident or chance at the least (12). Cultural tendencies are also important in the perception of illness besides disease-related individual perceptions. When causes of disease were evaluated in general, they were reported as stress, distress and anxiety as a reflection of culture in Turkish society (12).

Dialysis process, that is carried out besides medications in dialysis patients, is a phenomenon causing time consumption in the patients' lives at a significant level (12). It was found that there were significant differences between the duration of diagnosis and IPQ-R timeline and immunity mean scores of the participants. When the origin of this difference was examined, it was found that IPQ-R timeline acute/chronic mean score of the participants who had a duration of diagnosis less than one year was lower than the ones whose duration was 5 years and longer. This situation may be due to that patients begin to perceive their conditions as chronic since they accept the condition and lose the hope for recovery as the duration of diagnosis progresses. IPQ-R immunity mean score of the individuals whose duration of diagnosis was less than one year was found to be significantly lower than the ones whose duration was 5 years and longer.The reason of this situation may be that individuals are not yet hopeless and exhausted at the onset of disease. Depletion of power later in the treatment process may cause a decrease in the score.

A significant difference was found between the duration of dialysis and IPQ-R timeline acute/chronic mean score of the participants. When the reason of this difference was examined, it was found that IPQ-R timeline acute/chronic mean score of the participants whose duration of dialysis was less than one year was significantly lower than the ones whose duration was 5 years and longer. This may due to the fact that patients begin to perceive disease as chronic since they accept the condition and lose the hope for recovery as the duration of treatment increases. Also in the study by Karabulutlu *et al*.,it was found that the majority of patients had opinions such that the disease would last long, it was permanent rather than being temporary and they would spend the rest of their lives with this disease (12).

IPQ-R emotional representations mean score of women was found to be higher than men at a statistically significant level. This high score might be derived from the condition that women are more sensitive in emotional terms. In addition to this, IPQ-R risk factors mean score of women was found to be significantly lower than men. The reason may be that habits such as alcohol and smoking are seen mostly amongmen in Turkish society.

Timeline acute/chronic mean score of the married participants was found to be higher than single ones. This situation may be derived from the fact that married individuals have more roles within the society (such as father, spouse or mother), and change in these roles may affect individuals more.

A significant difference was found between education level of the participants and their mean scores of IPQ-R emotional representations. Mean score of illiterate patients was found to be significantly higher than high school and university graduates. The reason may be that it may be easier to investigate better and to find out ways of compliance as education level increases. Educated individuals may understand disease and treatment better and integrate them into normal life.

5. CONCLUSIONS

There are studies in the literature investigating illness perceptions of the patients in several chronic diseases; but, there is a limited number of studies examining illness perception among dialysis patients in our country. One limitation of our study was the limited number of patients included in the study. Sample size was small but the results are guiding since the number of HD and PD patients were close to each other. Besides being instructive as is, this study may be guiding for many studies when it is conducted with a large sample size.

As a result of this study, it was determined that HD patients perceived their illnesses as more challenging compared to PD patients. Therefore, especially HD patients may be given disease-related trainings with the onset of their treatment process and a psychological support may be recommended to accept their chronic diseases.

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