



# Comparison of Body Image Perception and Social Functioning Among Patients with End-Stage Renal Failure and Patients with Chronic Renal Failure

Nurgul Gungor Tavsanlı,<sup>1\*</sup> and Sevgi Nehir<sup>1</sup>

<sup>1</sup>Manisa Celal Bayar University, Health Sciences Faculty, Manisa, Turkey

\*Corresponding author: Nurgul Gungor Tavsanlı, Assistant Professor, Manisa Celal Bayar University Health Sciences Faculty, Manisa, Turkey. Tel: +90-2362391318, Fax: +90-2362320058, E-mail: nurgul.gungor@hotmail.com

Received 2017 November 14; Revised 2018 January 09; Accepted 2018 January 23.

## Abstract

**Background:** End-stage renal failure (ESRD) deteriorates the quality of life of patients, as it increases their dependence on others and reduces their self-esteem.

**Objectives:** This study was conducted to investigate whether body image perception and social functioning of dialysis patients with End-stage renal failure (ESRD) differed in dialysis patients with chronic renal failure (CRF).

**Methods:** This case-control study included 120 patients, who underwent dialysis treatment in a state hospital from November 2014 to January 2016. The patient information form, body image scale, and social functioning scale were used for data collection. Data were analyzed using descriptive statistics (e.g., frequency, percentage, and mean), Chi-square test, independent t-test, and correlation tests.

**Results:** Among ESRD patients, 88.6% were  $\geq 56$  years old, 65.7% were male, 97.1% underwent dialysis three times a week, and 97.1% were shunted. On the other hand, among patients with CRF, 71.8% were  $\leq 55$  years old, 51.8% were male, 52.7% underwent dialysis three times a week, and 50.8% were shunted. Regarding body image, 51.3% of ESRD patients, whose children noticed the change in their body image, felt most uncomfortable with the change in their body image, while 48.2% and 22.0% of CRF patients, whose children or others noticed the change in their body image, felt most uncomfortable, respectively; the difference between the groups was significant ( $P < 0.05$ ).

**Conclusions:** In the present study, there was no significant difference among CRF and ESRD patients in terms of body image perception. However, there were differences in terms of social functioning. In fact, social functioning of CRF patients was superior to the ESRD group. It was concluded that better perception of body image is associated with the better social functioning of these patients.

**Keywords:** Body Image, Dialysis, Nursing, Social Behavior

## 1. Background

Diseases not only affect an individual's physical and mental health, but also result in their inability to fulfill their social roles and functions properly and lead to psychological, social, and economic problems. A chronic disease refers to the onset of long-lasting conditions, which are likely to progress adversely (1). With the onset of a chronic disease, the patient, and his/her family face serious psychosocial problems (2,3). Patients generally exhibit various psychological, emotional, and social reactions to their disease due to the loss of basic physical functions to maintain everyday life. A patient with impaired psychological and social adaptation has problems with participation in social and economic activities and may face difficulties in

maintaining social and family relations.

Chronic diseases deeply affect not only the patient, but also other members of the family. However, the response given to a chronic disease varies from one person to another (4). The purpose of treatment for chronic diseases is not to rehabilitate patients or treat them, but to ensure their compliance with the treatment program and their cooperation with the health personnel in order to have a balanced and high-quality life (5).

Chronic renal failure (CRF), which is considered a major chronic disease, is defined as the chronic and irreversible loss of renal function (6,7). As in all chronic diseases, CRF affects the individual not only physically, but also psychologically, socially, and economically. The patients' continuous dependence on some equipment and

other people increases their dependence problems. Moreover, their family, social, and work life is adversely affected, as treatment cannot be postponed or interrupted, and patients should undergo dialysis two to three times a week and follow a strict diet, which can restrict their freedom.

Patients with CRF experience loss of function due to physical, social, and emotional factors, leading to reduced quality of life (8, 9). Owing to physical and psychological changes caused by the disease, the patients' roles and responsibilities in the family undergo changes, giving rise to the compliance issue of patients and families with the new situation. On the other hand, end-stage renal disease (ESRD) deteriorates the quality of life of patients, as it increases their dependence on others and damages their self-esteem (10, 11).

Over time, changes occur in the body of patients undergoing hemodialysis due to CRF. Uremia-related skin changes, changes in skin color due to anemia (resulting from bone marrow suppression due to uremia), having a continuous shunt or fistula in the arm, and physical changes (e.g., weight gain due to fluid overload) can negatively affect the patients' body image (12).

Regardless of the importance of physical appearance, issues such as diminished functioning, feelings of inadequacy, and other problems due to renal failure can adversely affect one's psychological health (13-15). It is important to determine how to prevent the adverse effects of social functioning disruption in dialysis patients who spend significant amounts of time on treatment, to provide therapeutic help for patients if there is an association between body image perception and social functioning, and to prepare them before treatment.

In the present study, we aimed to determine whether body image perception and social functioning of dialysis patients with ESRD were different from those of dialysis patients with CRF. We found no studies in the literature, examining social behaviors and body image perceptions of dialysis patients; therefore, the present study can contribute to the available literature.

## 2. Methods

### 2.1. Study Sample and Sampling Method

This cross-sectional study includes 172 dialysis patients, treated at a state hospital in West of Turkey between November 2014 and January 2016. A total of 172 outpatients, who underwent dialysis in the first six months of 2014 in the nephrology clinic of the hospital, were monitored. Simple random sampling method was applied for sample selection. Twenty participants who did not meet the inclusion criteria, as well as 30 participants who did

not complete the forms properly or at all, were excluded from the study.

The sample size was calculated based on previous studies (12, 16). The total scores of body image and social functioning scales were also measured, and the following sample size formula was applied:

$$n = \frac{Nt^2(p.q)}{d^2(N-1) + t^2(p.q)} \quad (1)$$

where "n" refers to the sample size, "N" denotes the number of individuals in the target group, and "p" represents the prevalence of effective dialysis in the pilot study (0.16); "q" is (1-p), "t" is 1.96, and "d" is 0.05 (standard error). Considering 25% attrition and 95% statistical power, it was planned to recruit 129 outpatients in the study.

The inclusion criteria were as follows: 1, age  $\geq$  18 years; 2, being literate; 3, diagnosis of renal failure by a nephrologist; 4, ability to communicate; and 5, no diagnosis of psychiatric disorders. On the other hand, the exclusion criteria were: 1, inability to communicate; 2, diagnosis of psychiatric disorders; and 3, lack of mental health. In order to avoid the risk of bias, data were collected by one researcher. The patients were selected from the patients' medical files. In order to ensure the accuracy of data and to avoid the risk of bias, data were collected via face-to-face interviews in a separate room of the dialysis clinic, where patients felt most comfortable.

Shapiro-Wilk W test was used for evaluating the normal distribution of data. Data distribution was found to be normal for the body image scale (BIS; 0.519 > 0.05) and social functioning scale (SFS; 0.628 > 0.05) at a confidence interval of 95% ( $P > 0.05$ ). In sample selection, female and male distribution was not taken into account. Finally, this cross-sectional study was conducted on 120 patients, diagnosed by a nephrologist.

In order to make comparisons, the patients were divided into two groups according to the guidelines of kidney disease improving global outcomes (KDIGO, 2012): patients with ESRD and patients with CRF (KDIGO 2012, clinical practice guideline for evaluation and management, volume 3, issue 1, January 2013; <http://www.kidney-international.org>). The ESRD group comprised of 35 patients undergoing dialysis with a glomerular filtration rate (GFR) below 15 mL/min/1.73 m<sup>2</sup>, while the CRF group included 85 patients undergoing dialysis with GFR of 15 - 29 mL/min/1.73 m<sup>2</sup>.

The ESRD group included 35 patients with the following characteristics: 1, registration in the dialysis unit; 2, ESRD diagnosed by a nephrologist; 3, GFR < 15 mL/min/1.73 m<sup>2</sup>; 4, being literate; 5, ability to communicate and cooperate; 6, lack of physical impairments; and 7, willingness to participate in the study. On the other hand, the CRF

group included 85 patients with the following characteristics: 1, registration in the dialysis unit; 2, CRF diagnosed by a nephrologist; 3, GFR < 15 - 29 mL/min/1.73 m<sup>2</sup>; 4, being literate; 5, ability to communicate and collaborate; 6, lack of physical impairments; and 7, willingness to participate in the study.

## 2.2. Data Collection Tools

In this study, the patient information form, BIS, and SFS were used to collect data. It took 30 - 35 minutes to complete the scales.

### 2.2.1. Patient Information Form

This form has two sections. The first section evaluates the patient's sociodemographic characteristics, such as age, gender, marital status, duration of the marriage, educational level, and occupation. The second section, which is related to diseases and treatment methods, determines the year CRF was diagnosed, dialysis treatment was started, and shunt was opened.

### 2.2.2. BIS

This scale was developed by Secord and Jourand in 1953, and Cronbach's  $\alpha$  was measured to be 0.930 for the total scale. The validity and reliability of the Turkish version of the scale were determined by Hovardaoglu in 1989, and Cronbach's  $\alpha$  was reported to be 0.910 for the total scale. This scale consists of 40 items, each related to a body organ (e.g., arm, leg, and face) or function (e.g., sexual activity). Each item is rated on a five-point scale: "strongly disagree," "disagree," "not sure," "agree," and "strongly agree." The minimum and maximum scores are 40 and 200 on the scale, respectively. The higher is the score, the higher is the level of satisfaction (17). Cronbach's  $\alpha$  in the present study was 0.926 for the total scale.

### 2.2.3. SFS

This scale is used to assess the roles and functions of an individual. It assesses the person's key skills and social behaviors quantitatively. It was developed by Birchwood et al. in 1990, and Cronbach's  $\alpha$  was measured at 0.800 for the total scale (18). The validity and reliability of the Turkish version of the scale were determined by Erakay in 2001 and Cronbach's  $\alpha$  was 0.807 for the total scale (19). Cronbach's  $\alpha$  in the present study was 0.908 for the total scale.

SFS consists of seven subscales: 1, social engagement/withdrawal; 2, interpersonal behaviors; 3, prosocial activities; 4, recreation; 5, independence-competence; 6, independence-performance; and 7, occupation/profession. The social engagement/withdrawal subscale includes five items; the lowest and highest possible scores on this subscale are 0 and 15, respectively. The

interpersonal behavior subscale comprises of four items, although only items one and two are rated; the lowest and the highest possible scores in this subscale are 0 and 9, respectively.

The lowest and highest possible scores are 0 and 39 for the independence-competence subscale, 0 and 45 for the independence-performance subscale, and 0 and 66 for the prosocial activities subscale, respectively. As for the occupation/profession subscale, if the person is employed, two items are answered. However, if the person is unemployed or has not looked for a job in the past six months, this subscale is omitted. The lowest and highest possible total scores are 0 and 223 in this scale, respectively; therefore, a higher total score on each subscale is indicative of a more positive functioning (18, 19).

## 2.3. Data Analysis

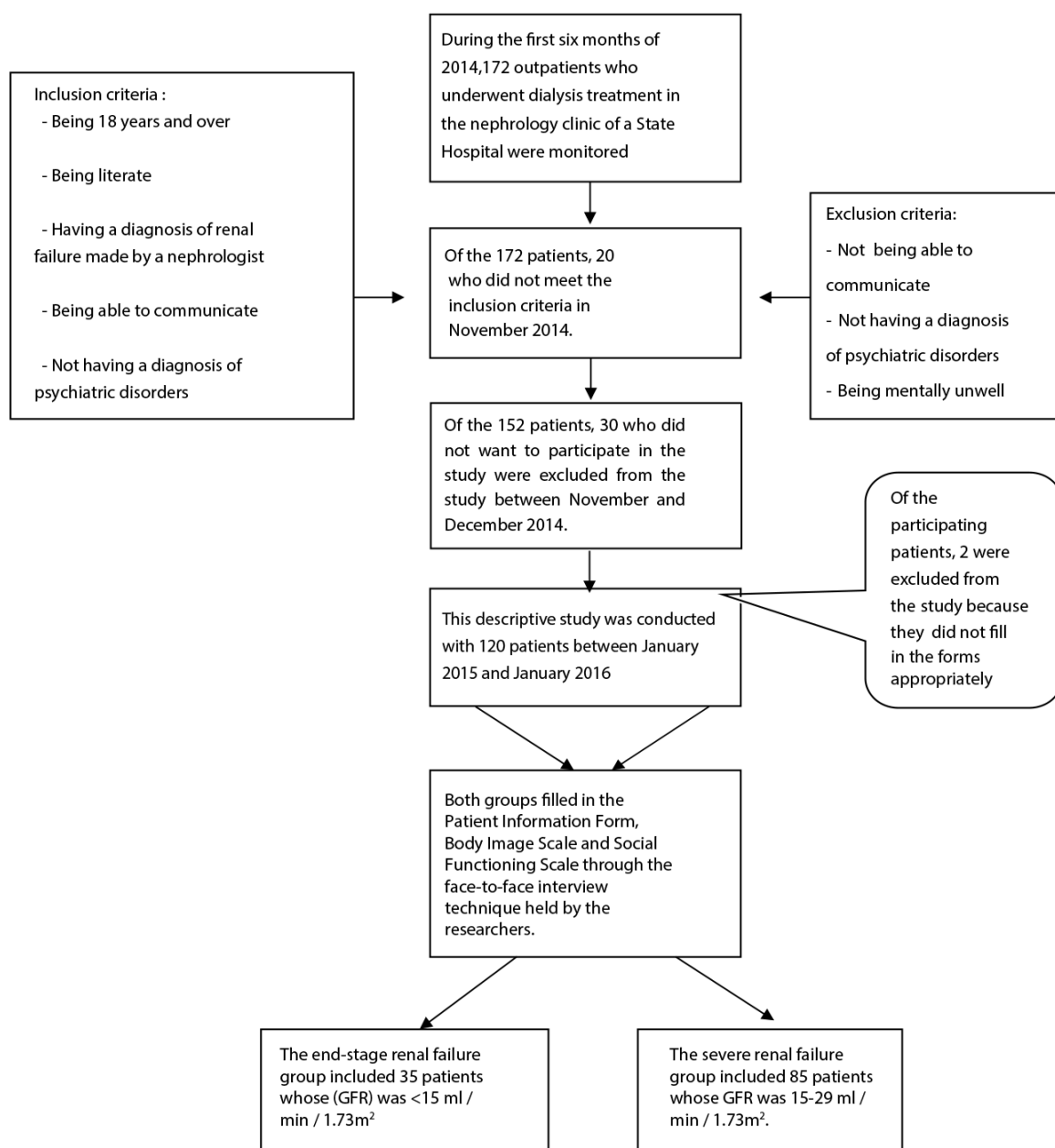
Data were analyzed using SPSS Statistics for Windows version 15.0 (SPSS Inc., Chicago, ILL., USA) 15.0. To determine the normal distribution of data, the skewness-kurtosis test was used. The results obtained by dividing the skewness-kurtosis values by standard errors ranged between +0.545 and -0.545, and the data were normally distributed. For analysis of descriptive data, frequency, percentage, mean, standard error, and minimum and maximum values were measured. For data analysis, frequency, percentage, and mean values were determined, and Chi-square, independent t-test, and correlation tests were performed (20, 21). P value < 0.05 was considered statistically significant.

## 2.4. Ethical Considerations

This study was approved by the research Ethics committee of Manisa Celal Bayar University of Medical Sciences, Manisa, Turkey (03.12.2014). In addition, informed consents (oral and written) were obtained from all the participants. This study was registered in the Turkish registry of clinical trials (registration code, 20478486-387).

## 3. Results

All patients were residing in the city where the study was conducted. While 88.6% of patients with ESRD were 56 years or older, 71.8% of patients with CRF were 55 years or younger; the difference between the groups was significant ( $\chi^2$ , 36.354;  $P < 0.01$ ). Based on the findings, 65.7% and 51.8% of patients with ESRD were male, respectively; the difference between the groups was not significant ( $\chi^2$ , 0.288;  $P > 0.05$ ). While 71.4% of patients with ESRD were primary school graduates, 51.8% of patients with CRF were primary school graduates, and the difference between the groups was significant ( $\chi^2$ , 3.923;  $P < 0.05$ ).



**Figure 1.** The design of the study

As the findings revealed, 65.7% and 81.2% of patients with ESRD and CRF were married, respectively, and the difference between the groups was not significant ( $\chi^2$ , 3.313;  $P > 0.05$ ). Moreover, 60.0% of ESRD patients had a nuclear family, whereas 75.3% of CRF patients had an extended family; the difference between the groups was found to be significant ( $\chi^2$ , 13.575;  $P < 0.01$ ). In addition, 62.9% and 75.3%

of patients with ESRD and CRF had children, respectively, and the difference between the groups was significant ( $\chi^2$ , 27.677;  $P < 0.01$ ).

While 71.4% of patients with ESRD had an income equal to expenses, 48.2% of patients with CRF had an income equal to expenses, and the difference between the groups was significant ( $\chi^2$ , 5.388;  $P < 0.05$ ). As the findings re-

vealed, 91.4% and 75.3% of ESRD and CRF patients were unemployed, respectively, and the difference between the groups was significant ( $\chi^2$ , 4.034;  $P < 0.05$ ) (Table 1).

The participants' disease-related sociodemographic characteristics are presented in Table 2. While 60.0% of ESRD patients had a comorbidity, 39.2% of CRF patients showed a comorbidity, and the difference between the groups was significant ( $\chi^2$ , 9.001;  $P < 0.01$ ). Among participants with ESRD, 40% had chronic glomerulonephritis, 31.4% had diabetes mellitus, 14.3% had hypertension, and 14.3% had coronary artery disease. On the other hand, among participants with CRF, 69.4% had chronic glomerulonephritis, 10.6% had diabetes mellitus, and 15.3% had hypertension; the difference between the groups was significant ( $\chi^2$ , 36.986;  $P < 0.01$ ).

Based on the findings, all ESRD patients were in stage III, whereas CRF patients were in stage II; the difference between the groups was significant ( $\chi^2$ , 35.436;  $P < 0.01$ ). Overall, 97.1% of patients with ESRD underwent dialysis three times a week, while 52.7% of patients with CRF underwent dialysis three times a week; the difference between the groups was found to be significant ( $\chi^2$ , 39.501;  $P < 0.01$ ). Moreover, 97.1% of patients with ESRD had a shunt, whereas 50.8% of CRF patients had a shunt, and the difference between the groups was significant ( $\chi^2$ , 42.399;  $P < 0.01$ ).

Disease and treatment led to changes in the body image of 100% of ESRD patients and 97.5% of CRF patients; however, the difference between the groups was not significant ( $\chi^2$ , 1.267;  $P > 0.05$ ). While 51.3% of patients with ESRD felt most uncomfortable when their children noticed the change in their body image, 48.2% and 22.0% of CRF patients felt most uncomfortable when their children or others noticed the change in their body image, respectively; the difference between the two groups was significant ( $\chi^2$ , 27.199;  $P < 0.01$ ).

In Table 3, the distribution of the mean scores of participants on BIS and SFS is presented. The difference between the groups in terms of BIS scores was not significant ( $t$ , -4.965;  $P > 0.05$ ). On the other hand, there was a significant difference between the groups in terms of social engagement/withdrawal ( $t$ , -2.367;  $P < 0.01$ ), interpersonal behavior ( $t$ , -2.367;  $P < 0.01$ ), prosocial activities ( $\chi^2$ , -4.372;  $P < 0.01$ ), recreation ( $\chi^2$ , -3.897;  $P < 0.01$ ), independence-competence ( $t$ , -6.653;  $P < 0.01$ ), independence-performance ( $\chi^2$ , -5.035;  $P < 0.01$ ), and occupation/profession ( $t$ , -3.092;  $P < 0.01$ ) scores, as well as total SFS score ( $t$ , -6.186;  $P < 0.01$ ); overall, the scores of participants from the CRF group were higher than the ESRD group (Table 3).

The relationship between the scores of participants on BIS and SFS subscales indicated a positive correlation between BIS and social engagement/withdrawal scores ( $r$ ,

0.207;  $P < 0.05$ ), BIS and interpersonal behavior scores ( $r$ , 0.207;  $P < 0.05$ ), BIS and recreation scores ( $r$ , 0.269;  $P < 0.01$ ), and BIS and independence-performance scores ( $r$ , 0.229;  $P < 0.05$ ) (Table 4).

#### 4. Discussion

The majority of participants in the present study were male, 56 years old, and unemployed. This finding is consistent with the results of many studies on hemodialysis patients (22-24). In a previous study on 244 patients in Australia, the majority were male, over 60 years old, and unemployed.

In the literature, it has been emphasized that patients' dependence on equipment, side effects of treatment, and approaches to disease cause patients to have difficulties in maintaining their work life and fulfilling their responsibilities. In addition, hemodialysis patients often leave their profession inevitably or willingly due to their disease and lead a more passive life. This sedentary lifestyle is likely to make the person more dependent on others and bring about other health problems. These changes, especially in occupational settings for male patients, should be taken into account in interventions to protect the physical capacity and social functioning of patients.

In CRF patients, the disease causes problems in psychosocial interactions. Patients may have difficulties maintaining their usual social relations. They may be even pitied or rejected by others; as a result, they may become withdrawn or unwilling to join social activities. In the broadest sense, functionality is defined as a person's ability to fulfill the expected roles in professional and social areas and to adapt to social life (16). In the present study, scores of social functioning scale and subscales in ESRD patients were significantly different from CRF patients; in fact, the scores of CRF patients were significantly higher than ESRD patients.

Since patients with ESRD undergo dialysis less frequently, they have better social functioning than patients with CRF. Other people's attention is also drawn to the visible shunt, which is opened for hemodialysis. If a shunt malfunction occurs after a certain amount of time, another shunt is inserted in other parts of the body, giving rise to a negative body image in patients due to surgical procedures. Moreover, considering the side effects of treatment, color changes, and dryness and/or itching of the skin, patients may feel discomforted (25, 26).

In the present study, a shunt was opened in the majority of participants with ESRD or CRF; therefore, no significant difference was found between the BIS scores of these patients. Since participants from both groups underwent dialysis and experienced changes in their body structure

**Table 1.** Distribution of the Participants' Sociodemographic Characteristics<sup>a</sup>

Sociodemographic Characteristics	ESRD Group	CRF Group	$\chi^2$	PValue
<b>Age, y</b>			36.354	< 0.05 <sup>b</sup>
≤ 55	4 (11.4)	61 (71.8)		
≥ 56	31 (88.6)	24 (28.2)		
<b>Gender</b>			0.288	> 0.05
Female	15 (34.3)	41 (48.2)		
Male	20 (65.7)	44 (51.8)		
<b>Education</b>			3.923	< 0.05 <sup>b</sup>
Elementary school	25 (71.4)	44 (51.8)		
High school and above	10 (28.6)	41 (48.2)		
<b>Family type</b>			13.575	< 0.01 <sup>b</sup>
Extended family	14 (40.0)	21 (24.7)		
Nuclear family	21 (60.0)	64 (75.3)		
<b>Marital status</b>			3.313	> 0.05
Single	12 (34.3)	16 (18.8)		
Married	23 (65.7)	69 (81.2)		
<b>Having children</b>			27.677	< 0.01 <sup>b</sup>
No	13 (37.1)	3 (3.5)		
Yes	22 (62.9)	82 (75.3)		
<b>Income status</b>			5.388	< 0.05 <sup>b</sup>
Income less than expenses	10 (28.6)	44 (51.8)		
Income equal to expenses	25 (71.4)	41 (48.2)		
<b>Employment status</b>			4.034	< 0.05 <sup>b</sup>
Employed	3 (8.6)	21 (24.7)		
Unemployed	32 (91.4)	64 (75.3)		
<b>Total</b>	35 (100)	85 (100)		

<sup>a</sup>Values are expressed as No. (%).<sup>b</sup>Chi-square test is significant at P < 0.05.

and image, the BIS scores were similar. As the findings indicated, body image is equally affected in patients with ESRD and CRF.

In Polat's study, the patients confronted reactions, such as wonder (45.0%) and confusion (34.3%) when others noticed changes in their body. It was determined that most patients (89.1%) were affected by changes in their body image (25). Generally, patients may feel anxious when they are constantly asked questions about the noticeable changes in their body. In several studies, patients who had changes in their physical appearance were found to have lower self-esteem and body image, compared to those whose body image was not affected (12, 27, 28). Moreover, several studies on ESRD patients demonstrated that dialysis reduced social functioning and body image (29-32). Changes in body image may cause the patient to feel alien-

ated, lose his/her confidence and social relations, and experience fear of rejection by others. Also, negative body image, sexual functioning problems, deterioration of self-care behaviors, and feelings of despair are associated with these changes.

While ESRD patients felt most uncomfortable when their children noticed changes in their body image, patients with CRF felt most uncomfortable when their children or others noticed the change in their body image; the difference between the groups was significant ( $\chi^2$ , 27.199; P = 0.000). In Polat's study, changes in the patient's body image were easily noticed by children and affected them negatively (25); this finding supports the results of the present study. Considering the side effects of shunting and treatment, color changes, besides dryness and/or itching, may occur in the skin, and patients may feel uncomfortable.

**Table 2.** The Participants' Disease-Related Sociodemographic Characteristics<sup>a</sup>

Characteristics	ESRD Group	CRF Group	$\chi^2$	P Value
<b>Comorbidities of renal failure</b>			9.001	< 0.01
Yes	21 (60.0)	26 (30.6)		
No	14 (40.0)	59 (69.4)		
<b>Etiology of disease</b>			36.986	< 0.01
Chronic glomerulonephritis	14 (40.0)	59 (69.4)		
Diabetes mellitus	11 (31.4)	9 (10.6)		
Hypertension	5 (14.3)	13 (15.3)		
Chronic interstitial nephritis	-	-		
Kidney stone/occlusion	-	-		
Cystic kidney	-	1 (1.2)		
Coronary artery disease, heart failure, or other cardiac diseases	5 (14.3)	3 (3.5)		
Disorders with an unknown origin	-	-		
<b>Stage of renal failure</b>			35.436	< 0.01
Stage I: decrease in renal reserve	-	-		
Stage II: renal failure	-	85 (100.0)		
Stage III: ESRD	35 (100.0)	-		
<b>Frequency of dialysis per week</b>			39.501	< 0.01
Once	-	7 (8.2)		
Twice	1 (2.9)	49 (57.6)		
Three times	34 (97.1)	29 (34.1)		
<b>Shunt opening</b>			42.399	< 0.01
Yes	34 (97.1)	27 (31.8)		
No	1 (2.9)	58 (68.2)		
<b>Have disease and treatment caused changes in the body image?</b>			1.267	> 0.05
Yes	35 (100.0)	82 (96.5)		
No	-	3 (3.5)		
<b>Whose attention to the change in your body image bothers you?</b>			27.199	< 0.01
Spouse/partner	-	7 (8.2)		
Children	18 (51.3)	41 (48.2)		
Mother	-	6 (7.1)		
Friends	1 (2.9)	6 (7.1)		
Nobody	15 (42.9)	7 (8.2)		
Anybody	1 (2.9)	17 (22.0)		
<b>Total</b>	35 (100)	85 (100)		

<sup>a</sup>Values are expressed as No. (%).

In the present study, a trivial positive correlation was found between BIS scores and scores of social engagement/withdrawal, interpersonal behavior, recreation, and independence-performance subscales of SFS. Generally, diseases causing stress prevent an individual from life

adaptations (33) and affect the individual physically, mentally, and emotionally (34). Therefore, patients undergoing dialysis may experience feelings of loss, role limitations, job loss, functional limitations, reduced potential independence, social isolation, and body image changes.

**Table 3.** Comparison of the Mean Scores of Participants on BIS and SFS

Variables	ESRD Group			CRF Group			t	P Value
	Mean ± SD	Min	Max	Mean ± SD	Min	Max		
<b>BIS</b>								
Total score	134.82 ± 15.66	80	168	131.75 ± 18.55	69	166	-4.965	> 0.05
<b>SFS subscales</b>								
Social engagement/withdrawal	9.34 ± 1.78	6	12	10.10 ± 1.52	6	14	-2.367	< 0.01 <sup>a</sup>
Interpersonal behavior	9.34 ± 1.78	6	12	10.10 ± 1.52	6	14	-2.367	< 0.01 <sup>a</sup>
Prosocial activities	14.65 ± 6.16	6	27	21.15 ± 7.84	6	41	-4.372	< 0.01 <sup>a</sup>
Recreation	11.71 ± 5.06	4	27	15.85 ± 5.37	6	31	-3.897	< 0.01 <sup>a</sup>
Independence-competence	25.71 ± 9.79	13	38	35.27 ± 5.74	13	39	-6.653	< 0.01 <sup>a</sup>
Independence-performance	12.74 ± 11.41	0	36	26.58 ± 14.51	0	77	-5.035	< 0.01 <sup>a</sup>
Occupation/profession	0.42 ± 0.60	0	2	1.07 ± 1.16	0	4	-3.092	< 0.01 <sup>a</sup>
SFS total score	83.94 ± 31.60	36	146	120.15 ± 28.05	40	174	-6.186	< 0.01 <sup>a</sup>

<sup>a</sup>Independent sample t-test is significant at  $P < 0.01$ .

In particular, changes in body image, deterioration of lifestyle, and role changes cause radical changes in the sense of self; at this stage, an individual's sense of self is affected. Considering the nature of dialysis and disease, reductions in social functioning and changes in body image perception may bring about negative consequences (26, 33). Therefore, adequate training and information are needed to develop appropriate adaptation methods and social relations, provide continuous social support, and design health policies in order to provide the necessary services and support for patients.

#### 4.1. Conclusion

In the present study, no significant difference was found between ESRD and CRF patients in terms of body image perceptions. However, there was a significant difference in terms of social functioning; in fact, the social functioning of CRF patients was superior to ESRD patients. Moreover, improvement of patients' perceptions of body image resulted in an increase in social functioning. In conclusion, the effects of dialysis should be taken into account, as the patients' physical, psychological, and social functions are affected. In addition, patients who experience limitations due to their disease should be encouraged to focus on their functions and skills. The following measures should be also taken by nurses and other health workers:

- Factors affecting the patient's body image and social functioning should be identified and corrected.
- Perceptions of body image and self-esteem of hemodialysis patients should be regularly assessed in terms of changes and considered in their treatment.
- Patients who notice changes in their body image should be asked whether they receive negative reac-

tions from others and whether they experience emotional changes due to these reactions.

- Training and awareness-raising of hemodialysis patients should be continuous.
- Patients' functionality should be monitored periodically.
- Nursing care given to the patient should be improved.
- In-service training should be provided for nurses to increase the patients' quality of life and quality of care.

#### 4.2. Limitations

The results of this study are only applicable to hemodialysis patients, who were treated at Manisa State Hospital in the province of Manisa, Turkey. The main shortcoming of this study was that it was conducted in only one city and one hospital. By performing a randomized controlled study with a larger sample size, we could have compared CRF and ESRD patients more precisely. On the other hand, a strength point of this study was its comparative design. Also, the results revealed that the social functioning of patients decreased and their body image deteriorated, as their dependence on dialysis increased due to renal failure progress and duration of dialysis increased. In order to ensure that CRF patients are sociable, a multidisciplinary approach should be integrated, and support should be provided by social workers, psychologists, psychiatric consultation-liaison nurses, and psychiatrists. Patients should be also treated holistically.

#### Footnote

**Conflicts of Interest:** The authors declare no conflicts of interest.



**Table 4.** The Relationship Between BIS and SFS Scores of the Participants

SFS Subscales	BIS Total Score
<b>Social engagement/ withdrawal</b>	
r	0.207 <sup>a</sup>
P value	< 0.05
<b>Interpersonal behavior</b>	
r	0.207 <sup>a</sup>
P value	< 0.05
<b>Prosocial activities</b>	
r	0.114
P value	0.215
<b>Recreation</b>	
r	0.269 <sup>b</sup>
P value	< 0.01
<b>Independence-competence</b>	
r	-0.087
P value	0.342
<b>Independence-performance</b>	
r	0.229 <sup>a</sup>
P value	< 0.05
<b>Occupation/profession</b>	
r	-0.119
P value	0.194
<b>SFS total score</b>	
r	0.170
P value	0.063

<sup>a</sup>Correlation is significant at 0.05 (two-tailed).

<sup>b</sup>Correlation is significant at 0.01 (two-tailed).

## References

- Aujoulat I, Marcolongo R, Bonadiman L, Deccache A. Reconsidering patient empowerment in chronic illness: a critique of models of self-efficacy and bodily control. *Soc Sci Med*. 2008;**66**(5):1228-39. doi: [10.1016/j.socscimed.2007.11.034](https://doi.org/10.1016/j.socscimed.2007.11.034). [PubMed: [18155338](https://pubmed.ncbi.nlm.nih.gov/18155338/)].
- Kutner NG, Zhang R, McClellan WM, Cole SA. Psychosocial predictors of non-compliance in haemodialysis and peritoneal dialysis patients. *Nephrol Dial Transplant*. 2002;**17**(1):93-9. [PubMed: [11773470](https://pubmed.ncbi.nlm.nih.gov/11773470/)].
- Matteson ML, Russell C. Interventions to improve hemodialysis adherence: a systematic review of randomized-controlled trials. *Hemodial Int*. 2010;**14**(4):370-82. doi: [10.1111/j.1542-4758.2010.00462.x](https://doi.org/10.1111/j.1542-4758.2010.00462.x). [PubMed: [20796047](https://pubmed.ncbi.nlm.nih.gov/20796047/)].
- Kara B. Adherence to treatment in hemodialysis patients: a multiple-aspect approach. *Gülhane Med J*. 2007;**49**(2):132-6.
- Kuyurtan F. Examination of their illness and treatment compliance chronic patient' who treated Harran University research and practice hospital. *Nurse J*. 1998;**48**(1):25-7.
- Tolkoff-Rubin N. Treatment of irreversible renal failure. In: Goldman L, Ausiello D, editors. *Goldman: Cecil Medicine*. 23th ed. Philadelphia: Pa: Saunders Elsevier; 2007.
- Fradelos EC, Tsaras K, Tzavella F, Koukia E, Papatthanasios IV, Alikari V, et al. Clinical, Social and Demographics Factors Associated with Spiritual Wellbeing in End Stage Renal Disease. *Adv Exp Med Biol*. 2017;**987**:77-88. doi: [10.1007/978-3-319-57379-3\\_8](https://doi.org/10.1007/978-3-319-57379-3_8). [PubMed: [28971449](https://pubmed.ncbi.nlm.nih.gov/28971449/)].
- Küçükdeveci A. Assessing health outcomes. In: Arasil, T, editor. *Kelley Romatoloji*. Ankara: Gunes Bookstore; 2006. p. 435-9.
- Perneger TV, Leski M, Chopard-Stoermann C, Martin PY. Assessment of health status in chronic hemodialysis patients. *J Nephrol*. 2003;**16**(2):252-9. [PubMed: [12768073](https://pubmed.ncbi.nlm.nih.gov/12768073/)].
- Merkus MP, Jager KJ, Dekker FW, Boeschoten EW, Stevens P, Krediet RT. Quality of life in patients on chronic dialysis: self-assessment 3 months after the start of treatment. The Necosad Study Group. *Am J Kidney Dis*. 1997;**29**(4):584-92. doi: [10.1016/S0272-6386\(97\)90342-5](https://doi.org/10.1016/S0272-6386(97)90342-5). [PubMed: [9100049](https://pubmed.ncbi.nlm.nih.gov/9100049/)].
- Blake CW, Courts NF. Coping strategies and styles of hemodialysis patients by gender. *ANNAJ*. 1996;**23**(5):477-82. discussion 483-4. [PubMed: [9069776](https://pubmed.ncbi.nlm.nih.gov/9069776/)].
- Oyekcin DG, Gulpek D, Sahin EM, Mete L. Depression, anxiety, body image, sexual functioning, and dyadic adjustment associated with dialysis type in chronic renal failure. *Int J Psychiatry Med*. 2012;**43**(3):227-41. doi: [10.2190/PM.43.3.c](https://doi.org/10.2190/PM.43.3.c). [PubMed: [22978081](https://pubmed.ncbi.nlm.nih.gov/22978081/)].
- Feroze U, Martin D, Reina-Patton A, Kalantar-Zadeh K, Kopple JD. Mental health, depression, and anxiety in patients on maintenance dialysis. *Iran J Kidney Dis*. 2010;**4**(3):173-80. [PubMed: [20622304](https://pubmed.ncbi.nlm.nih.gov/20622304/)].
- Güler Ö, Yüksel Ş, Acartürk, G, Emül, H. M, Özbulut, Ö, Çölbay, M. Psychosocial assessment in patients with end-stage renal disease treated with hemodialysis. *Anatolian J Psychiatry*. 2007;**8**(3):173-8.
- Fructuoso MR, Castro R, Oliveira L, Prata C, Morgado T. Quality of life in chronic kidney disease. *Nefrologia*. 2011;**31**(91-6).
- Topbaş, E, Bingöl, G. With the psychosocial perspective, dialysis treatment and nursing interventions towards adaptation process. *Turk Nephrol Dial Transplant Nurs Assoc Nephrol Nurs J*. 2017;**1**(12).
- Hovardaoğlu, S. Body sensitivity scale. *Psychiatry, Psychol Psychopharmacol J (3P)*. 1992.
- Birchwood M, Smith J, Cochrane R, Wetton S, Copestake S. The Social Functioning Scale. The development and validation of a new scale of social adjustment for use in family intervention programmes with schizophrenic patients. *Br J Psychiatry*. 1990;**157**:853-9. [PubMed: [2289094](https://pubmed.ncbi.nlm.nih.gov/2289094/)].
- Erakay SY. *The validity and reliability of the Turkish version of the Social Functioning Questionnaire (SFS) in schizophrenia patients*. 2001.
- Aksakoğlu, G. *Health research and analysis*. 3th ed. Izmir; 2013. p. 167-98.
- Kim HY. Statistical notes for clinical researchers: assessing normal distribution (2) using skewness and kurtosis. *Restor Dent Endod*. 2013;**38**(1):52-4. doi: [10.5395/rde.2013.38.1.52](https://doi.org/10.5395/rde.2013.38.1.52). [PubMed: [23495371](https://pubmed.ncbi.nlm.nih.gov/23495371/)]. [PubMed Central: [PMC3591587](https://pubmed.ncbi.nlm.nih.gov/PMC3591587/)].
- Bale C, Douglas A, Jegatheesan D, Pham L, Huynh S, Muly A, et al. Psychosocial Factors in End-Stage Kidney Disease Patients at a Tertiary Hospital in Australia. *Int J Nephrol*. 2016;**2016**:2051586. doi: [10.1155/2016/2051586](https://doi.org/10.1155/2016/2051586). [PubMed: [27807482](https://pubmed.ncbi.nlm.nih.gov/27807482/)]. [PubMed Central: [PMC5078664](https://pubmed.ncbi.nlm.nih.gov/PMC5078664/)].
- Alosaimi FD, Asiri M, Alsuwayt S, Alotaibi T, Bin Mugren M, Almufarrih A, et al. Psychosocial predictors of nonadherence to medical management among patients on maintenance dialysis. *Int J Nephrol Renovasc Dis*. 2016;**9**:263-72. doi: [10.2147/IJNRD.S121548](https://doi.org/10.2147/IJNRD.S121548). [PubMed: [27826207](https://pubmed.ncbi.nlm.nih.gov/27826207/)]. [PubMed Central: [PMC5096770](https://pubmed.ncbi.nlm.nih.gov/PMC5096770/)].
- Polikandrioti M, Koutelekos I, Gerogianni G, Stefanidou S, Kyriakopoulos V, Floraki E, et al. Factors Associated with Hemodialysis Machine Dependency. *Med Arch*. 2017;**71**(2):122-7. doi: [10.5455/medarh.2017.71.122-127](https://doi.org/10.5455/medarh.2017.71.122-127). [PubMed: [28790544](https://pubmed.ncbi.nlm.nih.gov/28790544/)]. [PubMed Central: [PMC5511538](https://pubmed.ncbi.nlm.nih.gov/PMC5511538/)].
- Polat A. *Determination of self image and self esteem level within hemodialysis patients in Düzce city*. Duzce: Abant İzzet Baysal University; 2007.
- Muringai T, Noble H, McGowan A, Channey M. Dialysis access and the impact on body image: role of the nephrology nurse. *Br J*

- Nurs. 2008;**17**(6):362-6. doi: [10.12968/bjon.2008.17.6.28900](https://doi.org/10.12968/bjon.2008.17.6.28900). [PubMed: [18414304](https://pubmed.ncbi.nlm.nih.gov/18414304/)].
27. Tan M, Karabulutlu M. The evaluation of the level of self-esteem and body image satisfaction of continuous ambulatory peritoneal dialysis patients. *Ataturk Univ J Nurs Sch*. 2004;**7**(3):67-73.
  28. Kivrak, B. *A research about the effects of the body image perception on the interpersonal relationships of the dialysis and kidney transplant patients*. Istanbul: Istanbul Maltepe University; 2008.
  29. Shoji T, Tsubakihara Y, Fujii M, Imai E. Hemodialysis-associated hypotension as an independent risk factor for two-year mortality in hemodialysis patients. *Kidney Int*. 2004;**66**(3):1212-20. doi: [10.1111/j.1523-1755.2004.00812.x](https://doi.org/10.1111/j.1523-1755.2004.00812.x). [PubMed: [15327420](https://pubmed.ncbi.nlm.nih.gov/15327420/)].
  30. Yang F, Griva K, Lau T, Vathsala A, Lee E, Ng HJ, et al. Health-related quality of life of Asian patients with end-stage renal disease (ESRD) in Singapore. *Qual Life Res*. 2015;**24**(9):2163-71. doi: [10.1007/s11136-015-0964-0](https://doi.org/10.1007/s11136-015-0964-0). [PubMed: [25800727](https://pubmed.ncbi.nlm.nih.gov/25800727/)].
  31. Tannor EK, Archer E, Kapembwa K, van Schalkwyk SC, Davids MR. Quality of life in patients on chronic dialysis in South Africa: a comparative mixed methods study. *BMC Nephrol*. 2017;**18**(1):4. doi: [10.1186/s12882-016-0425-1](https://doi.org/10.1186/s12882-016-0425-1). [PubMed: [28056851](https://pubmed.ncbi.nlm.nih.gov/28056851/)]. [PubMed Central: [PMC5217650](https://pubmed.ncbi.nlm.nih.gov/PMC5217650/)].
  32. Makkar V, Kumar M, Mahajan R, Khaira NS. Comparison of Outcomes and Quality of Life between Hemodialysis and Peritoneal Dialysis Patients in Indian ESRD Population. *J Clin Diagn Res*. 2015;**9**(3):OC28-31. doi: [10.7860/JCDR/2015/11472.5709](https://doi.org/10.7860/JCDR/2015/11472.5709). [PubMed: [25954652](https://pubmed.ncbi.nlm.nih.gov/25954652/)]. [PubMed Central: [PMC4413101](https://pubmed.ncbi.nlm.nih.gov/PMC4413101/)].
  33. Shahgholian N, Tajdari S, Nasiri M. Reviewing and comparing self-concept in patients undergoing hemodialysis and peritoneal dialysis. *Iran J Nurs Midwifery Res*. 2012;**17**(2 Suppl 1):S85-90. [PubMed: [23833607](https://pubmed.ncbi.nlm.nih.gov/23833607/)]. [PubMed Central: [PMC3696965](https://pubmed.ncbi.nlm.nih.gov/PMC3696965/)].
  34. Potter PA, Perry AG. *Fundamentals of nursing*. Philadelphia: Elsevier Mosby; 2009. p. 414-5.