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Article · January 2016

DOI: 10.7813/2075-4124.2016/8-1/A.7

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DEPRESSION AND QUALITY OF LIFE IN HEMODIALYSIS AND PREDIALYSIS PATIENTS IN A SAMPLE FROM TURKEY

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DOI: 10.7813/2075-4124.2016/8-1/A.7

Received: 27 Dec, 2015
Accepted: 26 Jan, 2016

ABSTRACT

In this study, we aimed to examine the quality of life, depression, and anxiety in chronic renal failure at the predialysis and hemodialysis stage and groups, to show that depression anxiety start prior to dialysis, and to explore the impact of depression and anxiety on the quality of life of these patients. We included 49 hemodialysis and 50 predialysis (stage IV chronic kidney failure) patients who were followed up at the Bakırkoy Dr. Sadi Konuk Training and Research Hospital's Dialysis Unit and Nephrology Outpatient Clinic. Sociodemographic data were obtained from all patients in addition to the Hospital Anxiety and Depression Scale and the MOS 36-Item Short-Form Health Survey (SF-36). **Results:** No significant differences were found in terms of sociodemographic characteristics of two study groups. No significant differences were found in terms of HADS scores of two study groups SF-36 scores were not significantly different except for pain and physical function subscale scores. Quality of life component scores were found significantly lower in depression risk group based on HADS scores, regardless of renal failure stages. Our findings revealed that the quality of life levels were similar in both predialysis and dialysis patients. Depression and anxiety were determinant of quality of life, regardless of the stage of the kidney disease. Since the quality of life in patients with chronic renal failure was considered to be an important factor that determines mortality and morbidity, the treatment of depression at all stages of the illness is gaining importance. Psychiatric examination, psychoeducation and treatment of depression and anxiety symptoms would facilitate psychosocial adjustment and improve patient's coping skills prior to developing end-stage renal failure and lower the mortality and morbidity rates in these patients.

Key words: Hemodialysis, Predialysis, Depression, Quality of Life, Mortality, Morbidity

1. INTRODUCTION

Chronic renal failure is a clinical syndrome as a result of progressive and irreversible loss of nephrons due to a number of diseases. Glomerular filtration rate (GFR) usually decreases over the years. Duration of this decrease may vary depending on underlying reasons (1). Chronic renal failure is diagnosed when the kidney damage takes about at least 3 months and/or GFR is less than 60 mL/min/ 1.73m^2 for a period of at least 3 months (2). Chronic kidney disease can vary on a spectrum from asymptomatic kidney function decrease to uremic syndrome with 5 stages separated from each other. In the last stage of renal failure, the GFR significantly decreases below 15 mL/min/ 1.73m^2 and requires renal replacement treatments (3). In the 4th stage (predialysis), the GFR is 15-30 mL/min/ 1.73m^2 (4).

Studies regarding to psychiatric disorders seen in chronic renal failure patients are limited. Many of these studies are conducted primarily by disciplines other than psychiatry and the study sample have been only from patients who are in need of dialysis. In patients with end-stage renal disease (ESRD), the most common psychiatric disorder is known to be depression and this depression due to having a chronic medical illness is often under-recognized, left untreated, and yield into negative consequences (5-7). End-stage renal disease patients who are dialysis program have been reported to have increased co-morbid psychiatric disorders, primarily depression and anxiety, and they have 1.5-3 times reported hospitalization rates (8). All of these factors negatively affect the prognosis, treatment compliance, and the quality of life. In many studies, the quality of life in dialysis patients have been shown to be lower than healthy controls. This was presumed to be related to both having a chronic kidney disease and treatment methods used. In predialysis stage, patients are expected to have close monthly outpatient follow-ups, this led to additional stress and anxiety that would negatively impact the quality of life, however, no studies have been conducted at this stage (9).

While prevalent, depression is still often unrecognized, reflecting a lack of routine psychological/ psychiatric evaluation in this patient population. It has been estimated that approximately 20-30% of ESRD patients suffer from major depressive disorder (5, 10, 11). Recent studies in the US conducted by using DSM-based structural clinical interviews consistently revealed that prevalence of depressive disorders in hemodialysis patients was 25-30% of (12). Assessments with different scales showed that the prevalence of depression in dialysis patients was 19-71.4% (13-16), in addition to increased risk of suicide in these patients compared to normal population (17). In these cases, another evidence in favor of the presence of depression is the fact that 20% of these patients made informed decision about terminating their dialysis treatment (18-19). Smith et al., using Beck's Depression Inventory, reported the prevalence of depression in dialysis patients as 47% (13). This rate was found to be 46.4% by Kimmel et al. (10) and this rate was 71.4% when Martin et al. used the Hospital Anxiety Depression Rating Scale (HADS) (14). Hedayati et al. used structured clinical interview and reported a prevalence of 26.5% (15). Watnick et al. have found a prevalence rate of 19% using the same assessment tools (16). Kurella et al. reported that the risk of suicide in ESRD patients was 84% higher than the normal population (17). 20% of patients with ESRD were terminating the dialysis with their own will (18-20).

To maintain quality of life at the highest possible level is crucial at all stages of chronic kidney disease. Hemodialysis was shown to improve quality of life in ESRD patients, although most studies were small and largely uncontrolled. While dialysis may be more effective in controlling uremia, the impact of dialysis and increased treatment-related stress might amplify the burden of treatment. One of the most important factor that determines the morbidity and mortality in dialysis patients is quality of life. In many studies, the quality of life in dialysis patients have been shown to be lower than healthy controls. This was presumed to be related to both having a chronic kidney disease and treatment methods used. While the quality of life is known to be an important factor that determines the morbidity and mortality in dialysis patients, some studies have highlighted the negative effect of depression on the quality of life in these patients (21-23). Some researchers have shown that depressive symptoms in these patients have higher impact on quality of life above and beyond the effects of dialysis criteria, socidemographic variables, and even low hemoglobin level (24). In this present study, we aimed to examine the relationship between depression and quality of life in patients with chronic renal failure, wheter they are in predialysis or dialysis stages.

2. METHODS

2.1. Study Participants

This study included 49 hemodialysis and 50 predialysis (stage IV chronic kidney failure) patients who were followed up at the Bakırkoy Dr. Sadi Konuk Training and Research Hospital's Dialysis Unit and Nephrology Outpatient Clinic. Exclusion criteria were; pregnancy, cancer, chronic liver disease, organic brain syndrome, mental retardation, and edicational status of illiteracy. Sociodemographic form for all the predialysis and hemodialysis patients were completed during the interviews. The Hospital Anxiety and Depression Scale (HADS), The MOS 36-Item Short-Form Health Survey (SF-36) which evaluates the quality of life, both self-report scales were filled by patients.

2.2. Psychometric Measurements

2.2.1. Sociodemographic Data Form

This form includes demographic variables including gender, age, marital status, number of children, education, location, household members, occupation, employment status, number of siblings, family history of chronic disease, duration of kidney disease, the cause of the renal failure, duration of dialysis treatment, relatives who provided support during treatment, other known physical illnesses, and previous psychiatric treatments.

2.2.2. The Hospital Anxiety and Depression Scale (HADS)

The Hospital Anxiety and Depression Scale (HADS), a self-assessment scale, that was developed to measure states of depression, anxiety and emotional distress amongst patients who were being treated for a variety of clinical problems (29). The scale consisted of 14 items, of which 7 items relating to depression and 7 items relating to anxiety, with responses being scored on a scale of 0–3 (3 indicates higher symptom frequencies. Scores for each subscale (anxiety and depression) range from 0 to 21 with scores categorized as follows: normal 0–7, mild 8–10, moderate 11–14, and severe 15–21. Scores for the entire scale (emotional distress) range from 0 to 42, with higher scores indicating more distress. Aydemir et al. validated this scale in Turkish In 1977. The cut-off value was 7/8 for probable depression and 10/11 for probable anxiety (30).

2.2.3. The MOS 36-Item Short-Form Health Survey (SF-36)

The 36-item short-form (SF-36) was constructed for use in clinical practice and research, health policy evaluations, and general population surveys to examine health status in the Medical Outcomes Study (31). The SF-36 was designed for use in clinical practice and research, health policy evaluations, and general population surveys. This scale has been reported to be used in the evaluation of the quality of life in patients with physical illness. The SF-36 includes one multi-item scale that assesses eight health concepts: 1) limitations in physical activities because of health problems; 2) limitations in social activities because of physical or emotional

problems; 3) limitations in usual role activities because of physical health problems; 4) bodily pain; 5) general mental health (psychological distress and well-being); 6) limitations in usual role activities because of emotional problems; 7) vitality (energy and fatigue); and 8) general health perceptions reflecting quality of life. Turkish version of SF-36 has been validated by Kocyigit et al. (32). Lower scales are evaluated from 0 to 100, and higher scores are interpreted as higher quality of life.

2.3. Ethical Considerations

This study was approved by the Ethical Committee of Bakirkoy Prof. Dr. Mazhar Osman Training and Research Hospital. Written informed consents were obtained from the participants following the study protocol was thoroughly explained.

2.4. Statistical Analysis

All variables were screened for accuracy of data entry, missing values, and homosce- dasticity using SPSS 23. The data had less than 5% of missing items and no pattern was detected. Descriptive statistictic was reported using means and standard deviations for continues variables and frequencies and percentages for categorical variables. A quantitative descriptive design using t-test, MANOVA was performed to examine the relationhip between depression and quality of life for predialysis and dialysis patients. This procedure allowed us to use more than one variable as dependent variable and controlled error rate. The relationship between demographic variables was quality of life was analyzed using correlation coefficients. The alpha level of 0.05 was set up to indicate significance.

3. RESULTS

Duration of kidney disease was 1 to 30 year (5.53+ 4.76 years) in dialysis patients and 1 to 30 year (4.76+ 5.33 years) in predialysis patients. There were no satistically significant differences between the two groups in terms of gender, marital status, educational status, employment status, and history of psychiatric treatment (Table 1).

Table 1. Socio-demographic characteristics of the participants

		Dialysis patients		**Predialysis patients**		
		n	%	n	%	P
Gender	Female	24	49	21	42	>0.05
	Male	25	51	29	58	
Marital status	Single	15	30.6	1	2	>0.05
	Married	30	61.2	34	68	
	Divorced	0	0	5	10	
	Widowed	4	8.2	10	20	
Education	Literate	15	30.6	11	22	>0.05
	Elementary School	15	30.6	27	54	
	Middle School	7	14.3	5	10	
	High School	9	18.4	3	6	
	College	1	2	1	2	
	Graduate School	2	4.1	3	6	
Employment	Unemployed	40	81.6	43	86	>0.05
	Part-time	7	14.3	1	2	
	Full-time	2	4.1	5	10	
	Student	0	0	1	2	
Psychiatric treatment history	Present	1	2	0	0	>0.05
	Not Present	49	98	50	100	

Pain and physical function subscales of SF-36 scores were significantly different between dialysis and predialysis patients ($p < 0.05$, $p < 0.001$ respectively) (Table 2). Other subscales of the SF-36 did not reveal any differences.

Table 2. SF-36 scores comparison of the participants

	Dialysis patients n=49		Dialysis patients n=50		P
	Mean	Sd	Mean	Sd	
Pain	74.86	27.25	62.70	31.25	**<0.05**
General health	41.80	17.99	42.82	19.31	>0.05
Social function	57.14	21.65	61.00	35.00	>0.05
Vitality (Energy)	41.22	19.54	35.00	20.50	>0.05
Emotional difficulties	49.66	32.00	54.67	29.94	>0.05
Mental health	58.04	16.49	59.12	21.03	>0.05
Physical function	52.24	23.41	68.00	22.09	**<0.01**
Physical role difficulties	38.27	48.44	41.50	44.78	>0.05

The Hospital Anxiety and Depression Scale (HADS) scores of two groups were shown in Table 3. HAD-A, HAD-D, and HADS total scores were not significantly different between the two study groups.

Table 3. Comparison of HADS scores in the study groups

	Dialysis patients n=49	Predialysis patients n=50	P
HADS-A	8.63±3.96	7.90±5.00	>0.05
HADS-D	8.24±3.91	7.64±5.34	>0.05
HADS-Total	16.87±6.67	15.54±9.13	>0.05

HADS-A: The Hospital Anxiety and Depression Scale Anxiety Subscale
HADS-D: The Hospital Anxiety and Depression Scale Depression Subscale
HADS-Total: The Hospital Anxiety and Depression Scale Total Subscale

When the quality of life scores were examined in subjects with risk for depression and anxiety disorders and non-risky group, all subscale scores of SF-36 were lower in high anxiety score group and general health perception, vitality, general mental health, and physical activities were statistically different. In terms of depression risk, the quality of life subscale scores of pain, general health perception, social functionality, vitality, mental health, and physical functionality were found significantly lower compared to non-risky group (Table 4).

Table 4. Quality of life scores based on depression and anxiety scores using cut-off values

Quality of Life	HADS-A<11 (n=44)	HADS-A≥11 (n=55)	F	p	HADS-D<8 (n=50)	HADS-D≥8 (n=49)	F	p
Pain	63.0±31.1	72.9±28.5	0.74	0.10	61.9±32.7	75.7±25.1	5.61	0.02
General health	37.0±17.2	46.4±18.9	0.17	0.01	33.5±16.9	51.3±15.8	1.50	0.00
Social function	54.9±20.1	63.0±30.5	12.0	0.14	48.5±22.4	69.9±26.6	3.44	0.00
Vitality (Energy)	30.6±16.7	44.0±21.0	2.07	0.00	26.6±15.1	49.8±17.9	1.15	0.00
Emotional difficulties	48.8±41.4	54.5±19.6	2.49	0.36	47.3±38.7	57.1±19.2	2.15	0.11
Mental health	50.3±15.6	65.4±18.6	1.49	0.00	47.7±15.6	69.7±15.0	0.01	0.00
Physical function	54.5±22.0	64.5±25.0	0.31	0.04	51.0±24.2	69.6±20.0	2.12	0.00
Physical role difficulties	30.2±47.1	47.7±45.2	1.60	0.06	32.0±47.1	48.0±44.7	1.26	0.08

HADS-A: The Hospital Anxiety and Depression Scale Anxiety Subscale
HADS-D: The Hospital Anxiety and Depression Scale Depression Subscale

The multivariate analysis of variance (MANOVA) was conducted to determine the relationship between depression, dialysis status, and quality of life. Box`s M test had a p level of 0.03 indicating homogenity of covariance matrices of dependent variables across eight health related concepts. The multivariate test was significant by depression status ($F(8, 88) = 11.421$, $p<.01$) and dialysis status ($F(8, 88) = 5.158$, $p<0.01$). Univariate tests showed that there were significant differences between chronic renal failure patients with and without depression had significant differences on pain ($F(1, 95) = 8.928$, $p<0.01$), general health ($F(1, 95) = 30.405$, $p<0.01$), social function ($F(1, 95) = 18.200$, $p<0.01$), vitality ($F(1, 95) = 63.624$, $p<0.01$), mental health ($F(1, 95) = 53.705$, $p<0.01$), physical function ($F(1, 95) = 13.419$, $p<0.01$). However, no significant differences were found on emotional role difficulties ($F(1, 95) = 2.015$, $p=0.15$) and physical role difficulties ($F(1, 95) = 2.798$, $p<0.09$) (Table 5).

Table 5. MANOVA for differences in means between patients with and without depression

Variables	Depression	No Depression	*F* value	*df*	*p* value	*Part Eta*^{2}
Pain	8.14 (3.26)	9.56 (2.50)	8.92	1,95	0.00	0.08
General Health	11.69 (3.38)	15.26 (3.15)	30.40	1,95	0.00	0.24
Social Function	5.88 (1.79)	7.59 (2.13)	18.20	1,95	0.00	0.16
Vitality (Energy)	9.32 (3.01)	13.95 (3.58)	63.62	1,95	0.00	0.40
Emotional role difficulties	4.42 (1.16)	4.71 (0.57)	2.05	1,95	0.15	0.02
Mental health	16.92 (3.90)	22.42 (3.74)	53.70	1,95	0.00	0.36
Physical function	51.00 (24.15)	69.59 (19.99)	13.41	1,95	0.00	0.12
Physical role difficulties	32.00 (47.12)	47.95 (44.73)	2.79	1,95	0.09	0.02

There were significant differences between chronic renal failure predialysis and hemodialysis patients on pain ($F(1, 95) = 6.960$, $p<0.01$), vitality ($F(1, 95) = 13.102$, $p<0.01$), physical function ($F(1, 95) = 7.819$, $p<0.01$). However, no significant differences were found on general health ($F(1, 95) = 0.713$, $p=0.40$), social

function (F (1, 95) = 0.013, p=0.91), emotional role difficulties (F (1, 95) = 0.234, p=0.62), mental health F (1, 95) = 1.404, p=0.23), and physical role difficulties (F (1, 95) = 0.000, p=0.99) (Table 6).

Table 6. MANOVA for differences in means between dialysis and predialysis patients

Variables	Dialysis	No Dialysis	*F* value	*df*	*p* value	*Part Eta*^{2}
Pain	9.44 (2.74)	8.27 (3.12)	6.96	1,95	0.01	0.06
General Health	13.35 (3.59)	13.56 (3.86)	0.71	1,95	0.40	0.00
Social Function	6.57 (1.73)	6.88 (2.47)	0.01	1,95	0.91	0.00
Vitality (Energy)	12.24 (3.90)	11.00 (4.10)	13.10	1,95	0.00	0.12
Emotional role difficulties	4.48 (0.96)	4.64 (0.89)	0.23	1,95	0.62	0.00
Mental health	19.51 (4.12)	19.78 (5.25)	1.40	1,95	0.23	0.01
Physical function	52.24 (23.40)	68.00 (22.08)	7.81	1,95	0.00	0.07
Physical role difficulties	38.26 (48.43)	41.50 (44.78)	0.00	1,95	0.99	0.00

Additionally, interaction effect for chronic renal failure predialysis and hemodialysis patients with and without depression was tested. The results indicated interaction effect was not significant for all of the health concepts.

4. DISCUSSION

The current literature reveals that almost all of the studies in patients with chronic renal failure include end-stage renal disease patients who need renal replacement therapies (dialysis and transplantation). To the best of our knowledge, no studies included patients in the predialysis stage. Since depression and anxiety symptoms are the most common psychological problems seen in patients with hemodialysis patients, we can assume that these psychological effects on the patients' quality of life would gain increased importance (33). Comorbid depression and anxiety in the dialysis patients would amplify the impact of chronic illnesses, and increase functional disability and the use of health care services. The relationship and predictive value of symptoms of anxiety and depression on quality of life have been examined in several studies (34,35). Kimmel et al. have demonstrated that depression has negative adverse effects on quality of life of hemodialysis patients (36). Research shows that depression increases mortality due to increased risk of cardiovascular disease (37). The most common cause of death in dialysis patients is cardiovascular events (38). The psychological and somatic effects of depression on chronic diseases cause a variety of complications including, reduced quality of life, reduces the motivation for personal care, and increase the hospitalization rates (10, 23, 39, 40, 41, 42). A relationship between depression and immune parameters and mortality in ESRD patients was shown (40). As a result of the deterioration of the immune function in patients with the ESRD, the second most frequent cause of death is thought to be due to infections (43).

The relationship between depression and mortality in hemodialysis patients was reported by Shulman et al. (44) and Lopes et al. (42), and Kimmel et al (45). Kimmel et al. reported that depressive mood did not increase mortality as a stand-alone criteria, however, depressed mood during the follow-up peridod has been shown to be a mortality criterion (46).

Today, dialysis treatment is not only viewed as a way to prolong life, but also to viewed to improve the quality of life (47, 48). When chronic nature of chronic renal insufficiency was taken into consideration and assuming that concepts and perception of illness and insufficiency began before dialysis, we aimed to show psychopathological would begin prior to dialysis and the role of these have effects on the quality of life of the patients.

When looking at the sociodemographic characteristics of two study groups no significant differences were found in terms of age, gender, education, marital status, occupational status, and duration of kidney disease. This lack of difference is noteworthy. 81.6% of dialysis group and 86% of the predialysis group were unemployed. In Vasquez et al.'s study in 194 hemodialysis patients, employment rate was found as 79.9% (45). This rate was 73.3% in Sagduyu et al.'s study (49). Our results suggests that dialysis has not caused an additional burden on dialysis patients and the loss began before the need for dialysis.

When looking at the the anxiety, depression, and total HADS scores of two study groups, although hemodialysis group scores were higher, no significant differences were found between the two groups. In terms of HAD depression scores, 49% of cases were in depression risk group. Diagnosis rates of depression in dialysis patients vary according to the screening methods used (10, 13). Using HAD scale, Martin and his colleagues reported a prevalence of depression in hemodialysis patients as 71.4%, while Kimmel et al. reported a prevalence rate of 46.4% using Beck Depression Inventory with a cut-off value of 11 points (10, 14), 28.8%. While current literature reveals incidence of psychiatric disorders in patients with ESRD as 20-30% using structured diagnostic tools, increased levels of depressed mood are known to be much higher (46). Depressed mood without associated psychiatric disorder is known to be an important risk factor in terms of quality of life and morbidity and it deserves treatment (46, 49).

Depression assessment can involve screening or diagnostic assessment. Diagnosis can be undertaken using a diagnostic criterion such as DSM-IV or the International Classification of Diseases (ICD-10). When

applied to chronically ill populations, both screening tools and diagnostic schemes are sensitive to criterion contamination, in that they include somatic examination, which overlaps with the symptomatology of physical illness (5,49). With regard to ESRD, the somatic ramifications of uraemia, including fatigue, sleep disorders and reduced appetite, are also somatic indicators of depression (24). A patient with significant uremic symptoms will score highly on these elements. Consequently researchers and clinicians are left in a dilemma about whether these somatic symptoms are the result of depression, illness or a combination of both. The issue of criterion contamination is not unique to ESRD, and impacts upon a range of conditions. It is probable that criterion contamination interferes with depression screening in most, if not all, medical illnesses to varying degrees. Between 50 and 80% of medical inpatients report somatic complaints, including psychomotor retardation, fatigue, anorexia, weight loss and insomnia. These milder symptoms have been attributed to an emotional response to the stress of illness and hospitalization. Whether these overlapping symptoms should be removed, substituted or included in the diagnostic scheme remains open to debate (50-52).

In our study, we used HADS which excludes the symptoms of chronic illness, severity of depressive symptoms between the two groups were not statistically significant. Although The multiple stressors associated with hemodialysis such as significant changes in the way of life of these patients may have profound effects on depressive symptoms in these patients (5, 51), our results did not support this association. In this present study, presence of hemodialysis in patients with ESRD did not significantly affect depression scores.

Another intriguing finding of our study is that no significant differences were found in SF-36 subscales pain, general health, social function, vitality, emotional role difficulties, mental health, physical function, and physical role difficulties of two study groups. SF-36's inability to evaluate sexual functions and domestic roles presents a limitation for this scale. Our SF-36 scores in dialysis patient are consistent with Kadir et al.'s study in dialysis patients (9). Similar unemployment rates, no differences in quality of life subscales support the idea that reduction in quality of life and functionality started even before dialysis and dialysis did not create additional burden in these patients and the results can be attibuted to changes related to chronic kidney failure even from the predialysis stage.

When all of the patients were grouped into depressed and non-depressed groups, quality of life scale scores between the two groups were found statistically significant. Depression, evidently affects the quality of life in a negative way. Several studies confirmed this finding previously (32,48,76,89,90,94). Birmele et al. reported that in depression was predictive of quality of life in hemodialysis patients (54). The SF-36 scores were found to be significantly negatively correlated with HADS scores. In other words, the higher the anxiety and depressive symptom scores, the lower the quality of life was in these patients. In fact, the impact of depression on quality of life was more than the sum attibuted to clinical disease and sociodemographic variables (12) and our findings confirmed that prediction. Given the quality of life in patients with chronic renal failure was considered to be an important factor that determines mortality and morbidity, the treatment of depression not only at the last stage of the disease but at all stages of the illness is gaining importance (9,21).

Univariate tests showed that there were significant differences between chronic renal failure patients with and without depression on pain, general health, social function, vitality, mental health, physical function. However, no significant differences were found on emotional role difficulties and physical role difficulties. There were significant differences between chronic renal failure predialysis and hemodialysis patients on pain, vitality, and physical function. However, no significant differences were found on general health, social function, emotional role difficulties, mental health, and physical role difficulties. Additionally, predialysis patients were reported to have significantly higher quality of life scores except for pain and vitality dimensions. Overall, our findings provided support for the notion that presence of depression had an impact on certain dimensions of quality of life ranging from somatic complaints to social function and mental health. The low quality of life scores in hemodialysis patients clearly demonstrate that daily activities were disturbed in ESRD patients as they were more dependent on the renal replacement treatment for their survival.

The results reported in this study should be considered in light of certain limitations. First, HADS includes several somatic complaints which might present as a limitation in evaluation of depressive symptomsin predialysis and hemodialysis groups. We presume that obtained depression rates would be lower if structured diagnostic interview tools were used. And finally, due to cross-sectional nature of our study, we cannot provide a conclusive statement about the nature of relationship between the quality of life and depression in predialysis and hemodialysis patients. Further longitudinal studies are needed to clarify the nature of these relations. However, we hope to see that our cross-sectional study findings will set the stage for more definitive longitudinal studies.

5. CONCLUSIONS

Our findings provide support for the requirement of chronic renal failure patients to undergo psychiatric examination, receive psychoeducation and treatment if needed to facilitate psychosocial adjustment and improve their coping skills prior to developing end-stage renal failure. In this way, quality of life will increase and hence the mortality and morbidity rates would be lower by facilitating the compliance in these patients. Further research is needed to clarify the causal antecedents of depression in ESRD patients, the predictive risk factors, its prevalence, its relation to modality and its influence on the decision to withdraw from treatment.

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