

Anxiety-depression levels and coping strategies among renal transplant waitlisted and non-waitlisted hemodialysis patients

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Ethics Committee Approval

This study was approved by the Ethics Committee of Baskent University Faculty of Medicine (09/03/2016 date, App Nb: 9460333-604.01.02/8605, Project No: KA16/39). All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

Conflict of Interest

No conflict of interest was declared by the authors.

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Abstract

Background/Aim: Although hemodialysis provides prolonged survival, patients face major challenges, including conflicts about life decisions, limited physical, mental, and lifestyle activities, psychological distress, high prevalence of anxiety and depression symptoms, and compromised health-related quality of life. This study aimed to compare anxiety-depression levels and coping strategies between renal transplant waitlisted and non-waitlisted hemodialysis patients.

Methods: A total of 75 hemodialysis patients were enrolled in this case-control analytical study, including renal transplant waitlisted (n = 35) and non-waitlisted (n = 40) patients. Patients were asked to fill out a questionnaire including socio-demographic characteristics, duration of hemodialysis, the Hospital Anxiety and Depression Scale, and the Ways of Coping Questionnaire. Comparative analyses were performed via Student's t-test and Pearson Correlation test.

Results: The mean age was 57.1 (15.3) years; 56% were males, and being under hemodialysis treatment was 7.3 (5.9) years. Waitlisted and non-waitlisted patients were matched. Overall, 28 patients (37.3%) had anxiety, and 34 patients (45.3%) had depression. There was no significant difference between the two groups regarding depression scores. Anxiety was more common among non-waitlisted than waitlisted patients (P = 0.043). The fatalistic approach was the most common coping strategy applied, and there was a significant negative correlation between anxiety scores and the problem-solving approach (P = 0.034) and a significant positive correlation between depression scores and the helplessness approach (r = 0.234, P = 0.043).

Conclusion: Both waitlisted and non-waitlisted hemodialysis patients have significantly higher levels of depression, with anxiety being higher in non-waitlisted patients. Since coping strategies differed concerning anxiety and depression but not transplant candidacy, psychiatric evaluation and counseling would be essential in hemodialysis patients to control the stressors.

Keywords: Depression, Anxiety, Coping strategies, Hemodialysis, Renal transplantation

Introduction

Chronic kidney disease (CKD) is a global public health problem that leads to end-stage renal disease (ESRD) [1], necessitating renal replacement therapy via dialysis or renal transplantation [2-4]. Data from the CREDIT (A population-based survey of Chronic REnal Disease In Turkey) study revealed the overall prevalence of CKD to be 15.7% (in adults) in this population-based study [5]. The Turkish Society of Nephrology 2016 annual report indicated that the point prevalence of ESRD needing renal replacement therapy was 933 per million population, with a marked increase in ESRD prevalence compared to previous years. In Turkey, the total number of renal transplants from cadaveric donors was only 779 in 2016 [6].

ESRD is associated with dramatic and stressful life changes, which require major coping efforts among patients and their families [7]. Although hemodialysis provides prolonged survival, patients face major challenges, including conflicts about life decisions, limited physical, mental, and lifestyle activities, psychological distress, high prevalence of anxiety and depression symptoms, and compromised health-related quality of life [3, 8-13]. As renal transplantation is the only cure, the transplant program's waitlist with a limited donor pool only serves the renal transplant candidacy [4]. Hence not every patient is lucky enough to receive a kidney transplant or eligible to be referred for the waitlist, presumably because of co-morbid diseases or lower life expectancy [4, 13]. Besides, renal transplant candidates on a waitlist experience hope and uncertainty regarding the timely availability of a renal transplant [13, 14].

Given that hemodialysis is inevitable in ESRD [15], a wide range of coping mechanisms has been suggested to be used by patients with ESRD to manage the illness and daily life, depending on the personality, religion, culture, moral and socio-economic support [4, 16-18]. Dietary restrictions, financial and transportation problems, changes in the family, social and work-life practices, duration of treatment, uncertainty about the future, and sleep disturbance, muscle cramps, fatigue, pruritus are considered among the stressors specific to a disease or hemodialysis treatment in patients with ESRD [19-21]. Accordingly, awareness of the coping strategies used by hemodialysis patients and identifying patients who could benefit from psychological counseling was associated with better control of stressors, more appropriate definition of therapeutic targets, increased adherence to the therapeutic regimen, and, therefore, a higher therapeutic effect [7, 21, 22].

This study was designed to evaluate coping strategies, anxiety, and depression levels among renal transplant waitlisted and non-waitlisted hemodialysis patients.

Materials and methods

Study population

A total of 75 hemodialysis patients with chronic renal failure but with no previous renal transplant history were enrolled in this case-control analytical study at the university hospital dialysis center.

Sample size calculation was done in accordance with previous similar studies using G*power 3.1.9.7. The sample size is calculated as there should be a total of 32 people, including at least 16 people in each group, with 95% confidence (1-alpha), 95.5% test power, $d = 1.337$ (large) effect size [7].

The study group included renal transplant waitlisted ($n = 35$) and non-waitlisted ($n = 40$) patients, with 56% male gender. The exclusion criteria were the presence of malignancy, having another organ failure, functional or not functional renal transplant, any psychiatric disorder diagnosis, and psychiatric treatment for psychiatric disease.

Written informed consent was obtained from each patient following a detailed explanation of the objectives and protocol of the study under the ethical principles stated in the "Declaration of Helsinki" and approved by the Ethics Committee.

Assessments

The patients were asked to fill in questionnaires that included socio-demographic characteristics, age, gender, marital status, educational status, duration of hemodialysis, the Hospital Anxiety and Depression Scale (HADS), and the Ways of Coping Questionnaire (WCQ).

Ways of Coping Questionnaire (WCQ)

WCQ, developed and later revised by Folkman and Lazarus, addresses a broad range of cognitive and behavioral strategies that individuals use when encountering an internal or external stressful situation [23]. In this study, a 42-item version of the Turkish adaptation of the questionnaire by Karancı et al. was used, including eight additional items about fatalism and superstition that are considered relevant to Turkish culture [24]. Based on the WCQ used in our study, four different approaches, including problem-solving, optimism, fatalism, helplessness, and avoidance, were evaluated.

Hospital Anxiety and Depression Scale (HADS)

Anxiety and depression levels were determined using the Turkish version of HADS, which was initially developed by Zigmond and Snaith (1983) [25] and adapted to Turkish by Aydemir (1997) [26]. The HADS is a fourteen-item scale with seven items related to anxiety (HADS-A) and seven related to depression (HADS-D). Each item on the questionnaire is scored from 0 - 3, leading to an overall score ranging from 0 to 21 and categorized as normal (scores 0 - 7) and borderline abnormal/abnormal (scores 8 - 21) status for anxiety or depression.

Statistical analysis

Statistical analysis was performed using SPSS version 18.0, SPSS Inc. Chicago, IL, USA. Student's t-test and Chi-square test (Fisher exact test) were used to compare parametric and categorical variables, respectively. Correlation analysis was performed using the Pearson Correlation test, and $P < 0.05$ was considered statistically significant.

Results

Socio-demographic characteristics

There was no significant difference between waitlisted and non-waitlisted patients in terms of marital status, educational status, and duration of hemodialysis. A higher percentage of

males than females was noted among waitlisted patients (68.6% vs. 31.4%, $P = 0.034$) (Table 1).

Table 1: Socio-demographic characteristics

	Total (n = 75)	Waitlisted (n = 35)	Non waitlisted (n = 40)	P-value
Age (years), mean (SD)	57.1 (15.3)	47.9 (13.2)	65.2 (12.3)	<0.001
Gender				0.034
Female n (%)	33 (44.0)	11 (31.4)	22 (55.0)	
Male n (%)	42 (56.0)	24 (68.6) ^a	18 (45.0)	
Marital status				0.678
Married n (%)	48 (64)	21 (60)	27 (67.5)	
Single n (%)	15 (20)	11 (31.4)	4 (10)	
Widow(er) n (%)	12 (16)	3 (8.6)	9 (22.5)	
Divorced n (%)	0 (0)	0 (0)	0 (0)	
Educational status				0.487
Illiterate n (%)	6 (8)	1 (2.9)	5 (12.5)	
Primary school n (%)	36 (48)	14 (40)	22 (55)	
High school n (%)	22 (29.3)	15 (42.8)	7 (17.5)	
University n (%)	11 (14.7)	5 (14.3)	6 (15)	
Duration of hemodialysis (years), mean (SD)	7.3 (5.9)	8.2 (5.9)	6.5 (5.7)	0.221

* $P < 0.05$; compared to females. Fisher exact test, SD: standard deviation, Student's t-test

In the non-waitlisted group of hemodialysis patients, the reasons for not being referred to the wait list were older age (24 patients aged > 65 years, nine patients aged > 75 years) and comorbid conditions such as complicated diabetes mellitus (n = 17), severe coronary artery disease (n = 9), cerebrovascular disease (n = 1), or severe peripheral artery disease (n = 26). In the waitlisted group (n = 35), only three patients were older than 65, and four had hypertension.

Coping strategy scores

The overall fatalistic approach was the most commonly used strategy (mean score: 2.36 [0.4]), followed by the problem-solving approach (mean score: 2.22 [0.4]). There was no significant difference in coping strategy scores between waitlisted and non-waitlisted patient groups (Table 2).

Table 2: Coping strategy scores

	Total (n = 75)	Waitlisted (n = 35)	Non-waitlisted (n = 40)	P-value
Coping strategy scores, mean (SD)				
Problem solving-optimistic approach	2.22 (0.4)	2.27 (0.4)	2.18 (0.4)	0.384
Fatalistic approach	2.36 (0.4)	2.33 (0.4)	2.38 (0.5)	0.638
Helplessness approach	1.93 (0.4)	1.89 (0.4)	1.95 (0.5)	0.535
Avoidance approach	1.90 (0.4)	1.83 (0.3)	1.96 (0.4)	0.153

SD: standard deviation, Student's t-test

HADS scores

Based on HADS-A and HADS-D scores, 37.3% of patients had anxiety, and 45.3% had depression. Mean HADS-A scores were significantly higher (9.25 [5.5] vs. 6.85 [5.1], $P = 0.05$), and anxiety was more common among non-waitlisted than waitlisted patient groups (47.5% vs. 25.7%, $P = 0.043$). There was no significant difference between waitlisted and non-waitlisted patient groups concerning depression scores (Table 3).

Table 3: Hospital anxiety and depression scale scores

HADS Questionnaire scores	Total (n = 75)	Waitlisted (n = 35)	Non-waitlisted (n = 40)	P-value
HADS-A				
Overall score, mean (SD)	8.13 (5.4)	6.85 (5.1)	9.25 (5.5)	0.050 ^a
Category, n (%)				
Normal (scores 0-10)	47 (62.7)	26 (74.3)	21 (52.5)	0.043 ^b
Anxiety (scores >10)	28 (37.3)	9 (25.7)	19 (47.5)	
HADS-D				
Overall score, mean (SD)	6.33 (4.1)	5.94 (3.7)	6.67 (4.6)	0.447 ^a
Category, n (%)				
Normal (scores 0 - 7)	41 (54.7)	20 (57.1)	21 (52.5)	0.433 ^b
Depression (scores >7)	34 (45.3)	15 (42.9)	19 (47.5)	

SD: standard deviation, HADS: Hospital Anxiety and Depression Scale, HADS-A: Anxiety scale, HADS-D: Depression scale, ^a Student's t-test, ^b Fisher Exact Test

Gender influence

There was no significant difference between overall females and males for mean HADS-A scores (9.09 [6.2] vs. 7.38 [4.7], $P = 0.179$), HADS-D scores (5.88 [3.7] vs. 6.69 [4.6], $P = 0.408$), and coping strategies including problem solving-

optimistic approach (2.25 [0.4] vs. 2.21 [0.5], $P = 0.693$), fatalistic approach (2.41 [0.4] vs. 2.31 [0.5], $P = 0.371$), helplessness approach (1.90 [0.4] vs. 1.95 [0.4], $P = 0.655$), and avoidance approach (1.89 [0.4] vs. 1.92 [0.4], $P = 0.733$).

Correlation between HADS and coping strategy scores

There was a significant negative correlation between HADS-A scores and the use of the problem-solving approach ($r = -0.245$, $P = 0.034$) and a significant correlation between HADS-D scores and the use of the helplessness approach ($r = 0.234$, $P = 0.043$) (Table 4).

Table 4: Correlation between HADS and coping strategy scores

Coping strategy		HADS-A	HADS-D
Problem solving-optimistic approach	r	-0.245	-0.124
	P-value	0.034	0.288
Fatalistic approach	r	-0.025	-0.025
	P-value	0.834	0.833
Helplessness approach	r	0.186	0.234
	P-value	0.111	0.043
Avoidance approach	r	0.070	0.146
	P-value	0.562	0.213

HADS: Hospital Anxiety and Depression Scale, HADS-A: Anxiety scale, HADS-D: Depression scale, r: correlation coefficient, Pearson Correlation test

Age, duration of dialysis, and coping strategy scores with respect to HADS categories

The use of the problem-solving-optimistic approach was more common among patients without anxiety than those with anxiety (2.30 [0.4] vs. 2.09 [0.4], $P = 0.039$). In contrast, the use of the helplessness approach (2.08 [0.3] vs. 1.80 [0.4], $P = 0.002$) and the avoidance approach (2.01 [0.4] vs. 1.81 [0.4], $P = 0.030$) were more common in patients with depression. The mean age and mean duration of hemodialysis did not differ significantly between patients with and without anxiety or depression (Table 5).

Table 5: Age, duration of dialysis, and coping strategy scores with respect to HADS categories

Mean (SD)	HADS-A Category			HADS-D Category		
	Normal (n = 47)	Anxiety (n = 28)	P-value	Normal (n = 41)	Depression (n = 34)	P-value
Age (years)	55.4 (15.7)	60.0 (14.5)	0.214	55.8 (16.3)	58.8 (14.0)	0.405
Duration of HD (years)	7.10 (5.9)	7.57 (5.9)	0.742	7.43 (6.1)	7.08 (5.6)	0.799
Coping strategy scores						
Problem solving-optimistic approach	2.30 (0.4)	2.09 (0.4)	0.039	2.21 (0.4)	2.24 (0.4)	0.786
Fatalistic approach	2.38 (0.5)	2.32 (0.4)	0.601	2.32 (0.5)	2.40 (0.4)	0.418
Helplessness approach	1.88 (0.5)	2.0 (0.3)	0.226	1.80 (0.4)	2.08 (0.3)	0.002
Avoidance approach	1.89 (0.4)	1.92 (0.3)	0.714	1.81 (0.4)	2.01 (0.4)	0.030

SD: standard deviation, HADS: Hospital Anxiety and Depression Scale, HADS-A: Anxiety scale, HADS-D: Depression scale, Student's t-test

Discussion

Our findings revealed anxiety in 37.3% and depression in 45.3% of hemodialysis patients, using the fatalistic approach as the most common coping strategy. There was no significant difference between transplant waitlisted and non-waitlisted patient groups regarding coping strategies and HADS-D depression scores. Higher HADS-A scores that imply a higher rate of anxiety were also recorded among the non-waitlisted than the waitlisted patient groups. However, even though hemodialysis enables prolonged survival, hemodialysis patients face unique struggles related to physical, mental, and lifestyle limitations [3, 8, 13, 14].

Anxiety, depression, and a feeling of inadequacy have been reported to be the most frequent psychosocial stressors [27-29], leading to a high prevalence of depression and anxiety symptoms among hemodialysis patients [9, 10]. Accordingly,

depression was evident in 45.3% of our patients, similarly in waitlisted and non-waitlisted patient groups. In comparison, a two-fold higher rate of anxiety (47.5%) was noted among the non-waitlisted patient group. Our results are consistent with previous studies showing a high rate of depression in ESRD patients [30-32]. As depression has been reported to be the most frequent co-morbidity in patients with ESRD, with a higher mortality rate, psychiatric counseling is essential in hemodialysis patients to enable early diagnosis and treatment of depression [7, 30, 33-35]. Confirming this, we found depression in almost half of our patients regardless of the renal transplant candidacy.

A positive relationship between the female gender and higher anxiety levels has been reported in some studies [36, 37]. However, no gender influence was evident on anxiety or depression scores in our cohort.

After renal transplantation, improvement in anxiety or depression as compared with hemodialysis patients was reported in some studies [7, 38, 39]. In contrast, in other studies, a similar rate of depression was reported among renal transplant recipients versus hemodialysis patients [40, 41]. Our findings suggest that being on a waitlist is likely to reduce anxiety but not depression.

The fatalistic approach was our cohort's most commonly used coping strategy, followed by a problem-solving approach regardless of the renal transplant candidacy. This seems consistent with the increased likelihood of hemodialysis patients using religion-based strategies to cope with their illness, as reported in previous studies [7, 22, 42-44]. In contrast, problem-focused coping was common in studies reported from other countries [19, 20, 45, 46]. Indeed, the use of religion-based coping strategies has been associated with finding hope, the meaning of life, and strength in severely ill patients [7, 13, 47-50].

Problem-focused coping strategies have been suggested to be more commonly used in changeable and controllable situations, while emotion-focused coping has been associated with unchangeable and uncontrollable situations [51]. Accordingly, the use of emotion-oriented coping strategies like the fatalistic approach rather than a more effective strategy in our cohort may suggest the role of cultural factors and patient perception of disease control.

Notably, while adopting religious coping methods has been associated with reduced psychological distress in hemodialysis patients [13, 52], depression was evident in almost half of the patients in our cohort regardless of renal transplant candidacy.

Besides, the more common use of helplessness and avoidance strategies in our patients with depression agrees with the reported association between the use of less active and more passive coping strategies with increasing symptoms of depression in patients living with chronic illnesses [53]. Along with the less common use of the problem-solving approach in patients with anxiety, our findings support that more active coping, planning, and social support-seeking coping strategies are more adaptive in the early periods of disease or high expectancy of recovery [7].

Our study showed no association between age, gender, duration of hemodialysis, or transplant candidacy with coping strategies. Besides, depression and anxiety were associated with

the more common use of specific coping strategies. This should be considered in assessing therapeutic goals and efficacy and encouraging positive coping methods [7, 21].

Limitations

Our study, being a single-center instead of a multi-center study, could be considered a limitation. However, a broader evaluation would be suitable for further research, including the economic situation and support mechanisms.

Conclusion

Our findings revealed similarly high rates of depression in waitlisted and non-waitlisted hemodialysis patients and a higher rate of anxiety among non-waitlisted patients. Since coping strategies differ concerning anxiety and depression but not transplant candidacy, psychiatric evaluation and counseling are essential in hemodialysis patients to control the stressors.

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