

# Anxiety and Depression in Patients Waiting for a Kidney Transplantation

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## Abstract

**Objective:** The objective of this cross-sectional study is to evaluate the depression and anxiety levels of patients who are on a cadaveric kidney transplantation waiting list due to end-stage renal disease.

**Methods:** A total of 200 patients were involved in the study. Group 1 included 100 patients aged 18-75 years diagnosed with end-stage renal disease and on the transplant waiting list. Group 2 (control group) included 100 healthy volunteers aged 18-75 years with no chronic disease. Data were obtained by using demographic information form, Beck's Depression Inventory, State-Trait Anxiety Inventory. Beck's Depression Inventory and State-Trait Anxiety Inve scores were statistically compared between groups. In addition, in group 1 patients, depression and anxiety scores were compared in terms of gender and the presence of other chronic diseases.

**Results:** The Beck's Depression Inventory, STAI scores of group 1 were observed to be statistically significantly higher than group 2 ( $P < .05$ ). When the anxiety levels of the group 1 patients were evaluated according to gender, Beck's Depression Inventory and State-Trait Anxiety Inve mean scores were significantly higher in women than in men ( $P < .05$ ). In addition, Beck's Depression Inventory and State-Trait Anxiety Inve scores of group 1 patients with chronic renal failure as well as other chronic diseases were found to be statistically significantly higher than those without additional chronic diseases ( $P < .05$ ). The Beck's Depression Inventory and State-Trait Anxiety Inve scores of the patients in group 1 without any other chronic disease were significantly higher than the patients in group 2 ( $P < .05$ ).

**Conclusion:** Patients with end-stage renal failure and on the transplant waiting list have more tendency toward depression and anxiety.

**Keywords:** Anxiety, depression, kidney transplantation, waiting list

## Böbrek Nakli Bekleyen Hastalarda Anksiyete ve Depresyon

### Öz

**Amaç:** Bu kesitsel çalışmanın amacı son dönem böbrek yetmezliği endikasyonu ile kadavradan nakil bekleyen hastaların anksiyete ve depresyon düzeylerinin değerlendirilmesidir.

**Yöntemler:** Çalışmaya toplam 200 hasta katıldı. Grup 1, 18-75 yaş arası, son dönem böbrek yetmezliği tanısı konulan ve nakil bekleme listesinde bulunan 100 hastayı içeriyordu. Grup 2 (kontrol grubu) ise 18-75 yaş arası, kronik hastalığı olmayan 100 sağlıklı gönüllüden oluşuyordu. Veriler; demografik bilgi formu, Beck depresyon ölçeği, Durumluluk ve Sürekli Kaygı ölçeği kullanılarak elde edildi. BDÖ ve Durumluluk ve Sürekli Kaygı ölçeği skorları gruplar arasında istatistiksel olarak karşılaştırıldı. Ayrıca Grup 1'deki hastaların depresyon ve anksiyete skorları cinsiyet ve diğer kronik hastalıkların varlığı açısından karşılaştırıldı.

**Bulgular:** Grup 1'in Beck depresyon ölçeği ve Durumluluk ve Sürekli Kaygı ölçeği skorlarının Grup 2'den istatistiksel olarak anlamlı ölçüde daha yüksek olduğu gözlemlendi ( $P < .05$ ). Grup 1 deki hastaların cinsiyete göre kaygı düzeyleri değerlendirildiğinde Beck depresyon ölçeği ve Durumluluk ve Sürekli Kaygı ölçeği ortalama skorları kadınlarda erkeklere oranla anlamlı ölçüde daha yüksekti ( $P < .05$ ). Ayrıca kronik renal yetmezliğinin yanısıra başka kronik hastalığı olan Grup 1 hastalarının Beck depresyon ölçeği ve Durumluluk ve Sürekli Kaygı ölçeği skorlarının ek kronik hastalığı olmayanlara göre istatistiksel anlamlı ölçüde yüksek olduğu bulundu ( $P < .05$ ). Grup 1'deki başka kronik hastalığı olmayan hastaların Beck depresyon ölçeği ve Sürekli Kaygı Ölçeği Grup 2'deki hastalardan anlamlı ölçüde daha yüksekti ( $P < .05$ ).

**Sonuç:** Son dönem böbrek yetmezliği olan ve nakil listesinde bekleyen hastalar depresyon ve anksiyeteye daha fazla eğilimlidirler.

**Anahtar Kelimeler:** Anksiyete, depresyon, böbrek transplantasyonu, bekleme listesi

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Chronic renal failure (CRF) is a worldwide major public health problem. End-stage renal disease (ESRD) is a clinical picture characterized by the irreversible loss of endogenous renal functions where continuous renal replacement therapies are applied to the patient to prevent life-threatening uremia.<sup>1</sup> The goal of modern medicine is to initiate treatment with dialysis or transplantation before patients develop advanced signs of uremia.<sup>2</sup> Although each treatment option has its advantages, the best survival rate and quality of life can be ensured by transplantation.<sup>3,4</sup>

The most common mental disorders faced by ESRD patients who are candidates for transplantation are adjustment disorder, depression, anxiety disorders, and substance abuse disorder.<sup>5-7</sup> Fear of death, loss of physical strength and endurance, economic difficulties, restriction of diet and fluid intake, and medical dependence in ESRD is summarized with the concept of "illness intrusiveness." It means the limitation of rewarding experiences and lower quality of life due to illness-related restriction of valued activities and interests.<sup>8</sup> Because cadaveric transplantation patients enter a waiting period of uncertain time and result. The level of anxiety increases in patients who are aware of the fact that a suitable donor or organ may not be found at the end of this period and a complete cure may not be achieved even if it's found.<sup>9,10</sup>

It has been reported that patients on dialysis due to ESRD have a higher rate of mental disorders, such as anxiety and depression, and these mental disorders lead to 1.5-3 times more hospitalization.<sup>11</sup> Therefore, a psychiatric evaluation of the patients on the renal transplant waiting list and providing psychiatric support, if necessary, will reduce the anxiety burden of the patients, increase the success of the treatment, the quality of life, and compliance of the treatment.<sup>12</sup>

The aim of this study is to evaluate the depression and anxiety level of patients who are on the cadaveric waiting list due to ESRD.

## Methods

This clinical cross-sectional study was performed in the Florence Nightingale Hospital Nephrology Clinic involving 200 patients after the approval of the Ethics Committee (approval no: 24.03.2015/29-223). Written consent was obtained from all patients participating in the study. Group 1 included 100 patients aged 18-75 years diagnosed with ESRD and on the transplant waiting list. Group 2 (control group) included 100 healthy volunteers (relatives of the patients) aged 18-75 years with no chronic disease, such as hypertension, diabetes mellitus, coronary artery disease, psychiatric disorder, and so on. Participant selection for group 1 was made in 2 steps. The first step was a random selection and the second step was based on exclusion criteria. Patients on living donor transplant waiting lists, patients with any psychiatric condition, patients currently receiving psychiatric support, patients who had a renal transplant and in need of a second transplant, and ESRD patients under the age of 18 were excluded from the study.

Data were obtained by using demographic information form, Beck's Depression Inventory (BDI), State-Trait Anxiety Inventory (STAI). Age, gender, marital status, education level, monthly income, other chronic diseases (hypertension, chronic obstructive lung disease, coronary artery disease,

etc.), date when diagnosed with CRF, duration in the renal transplant waiting list, BDI score, and STAI score of people participated in the study were recorded. The BDI was developed by Beck et al.<sup>13</sup> in 1961 and measures the emotional, somatic, cognitive, and motivational symptoms of depression. BDI consists of 21 items. Each item gets a score between 0 and 3. An increase in the total score indicates an increase in the severity or level of depression. Hisli<sup>14</sup> (1988) conducted validity-reliability studies for BDI in our country. In the reliability study of the Turkish form, the Cronbach alpha coefficient was found to be 0.80.<sup>15</sup> STAI was developed by Spielberger.<sup>16</sup> It consists of 2 separate scales of 20 items each. The total score value from both scales ranges from 20 to 80. A high score indicates a high level of anxiety, and a low score indicates a low level of anxiety. It was adapted into Turkish by Öner and Le Compte in 1985.<sup>17</sup> In the reliability study of the Turkish form, the Cronbach alpha coefficient was found to be 0.83 for the Trait Anxiety Scale and 0.96 for the State Anxiety Scale. If the score value obtained from both scales is above 35, it is evaluated as "there is anxiety" and as "no anxiety" if it is below 35.<sup>15</sup> STAI is a Likert-type scale. On the State Anxiety Scale, answer options collected in 4 classes are scored in the form of (1) not at all, (2) a little, (3) somewhat, and (4) very much so. Answers on the Trait Anxiety Scale are scored with options: (1) never, (2) sometimes, (3) frequently, and (4) almost always. The BDI and STAI scores were statistically compared between the 2 groups.

The presence of chronic disease was obtained from medical reports of patients. The cut-off value for the monthly income level was determined as 1.202 Turkish Lira (TL), which corresponds to the 2015 minimum wage in our country. Participants with an average income of less than 1.202 TL per capita were classified as low-income, those with an income 3 times of the minimum wage were classified as middle-income, and those with an income of more than 3 times the minimum wage were classified as high-income.

## Statistical analysis

Statistical Package for the Social Sciences 22.0 (IBM SPSS Corp., Armonk, NY, USA) program was used in the analysis. Average, standard deviation, median, lowest, highest, and rate values were used in the descriptive statistics of the data. The distribution of variables was measured by the Kolmogorov-Smirnov test. Kruskal-Wallis test, Mann-Whitney *U*-test, and independent-sample *t*-tests were used in the analysis of quantitative data. Chi-square and Fisher's exact tests were used in the analysis of qualitative data. Pearson and Spearman correlation analyzes were used in the correlation analysis. A *P*-value of less than .05 was accepted as significant for all statistical analyses.

## Results

The mean age of group 1 was 47, while it was 46 in group 2. The male/female ratio was 52/48% and 50/50% in groups 1 and 2, respectively. There was no significant difference in terms of age and gender distribution between the groups (Table 1). There was no statistically significant difference between the marital status, education level, and monthly income levels of individuals in the groups (Table 1).

All patients in group 1 were waiting for a cadaveric transplant. The average time since these patients were added to

**Table 1.** Demographic Characteristics of the Groups

	Group 1	Group 2	P
	n = 100	n = 100	
Age*	47.2 ± 12.4	46.4 ± 13.0	.677
<b>Gender</b>			
Female	52	50	.777
Male	48	50	
<b>Marital status</b>			
Married	68	61	.301
Single	32	39	
<b>Education level</b>			
Primary school	65	69	.863
Secondary school	11	10	
High school	18	14	
University	6	7	
<b>Monthly income level (TL)</b>			
Low	52	53	.881
Middle	48	47	
High	0	0	

\*Mean, TL, Turkish Lira.

the transplant list was 14 months (1-125 months). Sixty percent of patients in group 1 had other chronic diseases other than CRF.

The mean BDI score in group 1 was 15.6, while it was 4.4 in group 2 and the mean State Anxiety Scale score in group 1 and group 2 was 34.1 and 29.1, respectively. The mean Trait Anxiety Scale score in group 1 was 43.9, while it was 33.2 in group 2. It was observed that BDI, State Anxiety Scale, and Trait Anxiety Scale scores of group 1 were statistically significantly higher than group 2 ( $P < .05$ ) (Table 2).

When the anxiety levels of the patients in group 1 were evaluated according to gender, the mean score of all 3 scales was found to be significantly higher in women than in men

**Table 2.** Comparison of Beck's Depression Inventory, State Anxiety Scale, and Trait Anxiety Scale Scores Between Groups

	Group 1 (n = 100)	Group 2 (n = 100)	P
	Mean ± SD	Mean ± SD	
Beck's Depression Inventory	15.6 ± 10.2	4.4 ± 4.7	<b>.001</b>
State Anxiety Scale	34.1 ± 8.9	29.1 ± 7.5	<b>.001</b>
Trait Anxiety Scale	43.9 ± 9.0	33.2 ± 8.8	<b>.001</b>

**Table 3.** Comparison of Depression and Anxiety Scores by Gender in Patients in Group 1

	Female (n = 52)	Male (n = 48)	P
	Mean ± SD	Mean ± SD	
Beck's Depression Inventory	18.3 ± 10.9	12.8 ± 8.5	<b>.009</b>
State Anxiety Scale	36.1 ± 9.4	31.8 ± 7.8	<b>.022</b>
Trait Anxiety Scale	46.8 ± 9.0	41.0 ± 8.1	<b>.001</b>

( $P < .05$ ) (Table 3). No statistically significant relationship was found between marital status, education level, and monthly income levels and depression and anxiety scores ( $P > .05$ ) of patients in group 1.

It was observed that BDI, State Anxiety Scale, and Trait Anxiety Scale scores were statistically significantly higher in group 1 patients who had chronic illness other than CRF than those with no chronic illness ( $P < .05$ ) (Table 4). In addition, the BDI and Trait Anxiety Scale scores of the patients in group 1 without any other chronic disease were significantly higher than the patients in group 2 ( $P < .05$ ) (Table 5).

The waiting times and anxiety/depression levels of the patients in group 1 after entering the transplant list were analyzed by the spearman correlation test. No statistically significant relationship was found between waiting times after entering the transplant list of patients in group 1 and BDI, State Anxiety Scale, Trait Anxiety Scale scores ( $P: .464, P: .723, P: .542$ , respectively).

**Discussion**

ESRD is an important psychosocial stress factor causing many psychological problems. such as deterioration of the normal lifestyle, progressive restrictions, social difficulties, a decrease in the will to work, deterioration in marital relations, the feeling that life is under threat, and fear of death.<sup>18</sup> ESRD patients have a significantly poor quality of life. Patients generally do not show adequate social activity and work harmony. Especially coming to the hospital 2-3 times

**Table 4.** The Relationship Between Depression and Anxiety Scores in Patients in Group 1 and the Presence of Other Chronic Diseases

	Other Chronic Disease (n = 60)	No Other Chronic Disease (n = 40)	P
	Mean ± SD	Mean ± SD	
Beck's Depression Inventory	18.5 ± 9.6	11.3 ± 9.5	<b>.000</b>
State Anxiety Scale	36 ± 8.8	31.1 ± 8.3	<b>.010</b>
Trait Anxiety Scale	46.2 ± 8.8	40.5 ± 8.3	<b>.002</b>

**Table 5.** Comparison of Depression and Anxiety Scores of Patients Without Other Chronic Disease in Group 1 with Group 2 (Control Group)

	No Other Chronic Disease (n = 40)	Group 2 (Control) (n = 100)	P
	Ort. ± s.s.	Ort.±s.s.	
Beck's Depression Inventory	11.3 ± 9.5	4.4 ± 4.7	<b>.000</b>
State Anxiety Scale	31.1 ± 8.3	29.1 ± 7.5	.465
Trait Anxiety Scale	40.5 ± 8.3	33.2 ± 8.8	<b>.03</b>

a week and being on a dialysis device for 4-6 hours have a devastating effect on personal autonomy.<sup>19,20</sup>

Successful transplantation is the method that provides the closest result to normal kidney function among ESRD treatment options. However, dialysis is the main source of support for ESRD patients due to insufficient organ donation. Dialysis is challenging to patients since it is a time-consuming procedure, mostly performed outside one's home, restricts diet and fluid intake, shortens the lifetime due to serious complications, and is an expensive method in the long term.<sup>8</sup> Psychosocial problems may develop in patients before and after transplantation. Patients expecting to find a suitable organ have to shoulder a greater stress burden since they are aware that transplantation is a risky procedure and complications or failure may occur after transplantation.

Whether or not psychogenic problems are more common in ESRD than other chronic diseases is still controversial. Some researchers argue that psychiatric morbidity is higher in ESRD patients, while others have reported that psychiatric morbidity is independent of specific diagnoses and that the mental health of patients with ESRD is better than those applying to primary health care.<sup>8</sup>

In our study, we concluded that the anxiety levels and depression tendencies of patients diagnosed with ESRD and on the transplant waiting list were statistically higher than the normal healthy population. Similar to our study, many studies in the literature reported that anxiety levels increased significantly in patients diagnosed with ESRD.<sup>21-24</sup> Veater and East,<sup>25</sup> in their literature review, reported that dialysis-dependent patients waiting for kidney transplants had higher levels of depression than dialysis patients not on the transplant list. The main reasons for this are worries that a suitable donor may not be found, fear of death during or after transplantation, and immunosuppressive therapies, diet restriction, and organ rejection risks after transplant.<sup>24</sup> Ayar et al.<sup>26</sup> in their study reported that the anxiety level in the post-transplant period was similar to the normal population.

Tong et al.<sup>27</sup> reported that prolonged transplant waiting time deepens anxiety and depression. In our study, on the contrary, we observed that there was no significant relation between waiting time on the transplant list

and anxiety and depression levels. Similar to our study, Sağduyu et al.<sup>6</sup> reported that waiting time on the transplant list had no statistically significant effect on anxiety and depression. After diagnosis, the patients' acceptance of the situation over time and getting used to living with the disease enable them to cope with this stress burden. In a study by Duran and Güngör,<sup>28</sup> 62% of patients were reported to get used to the dialysis process and transplant planning over time. In another study by Mollahadi et al.<sup>29</sup> it was reported that acceptance over time replaced anger and fear in patients on the transplant waiting list.

It is known that women experience more depression and anxiety than men.<sup>30,31</sup> In our study, it was observed that BDI and STAI scores were higher in women ( $P < .05$ ). This significant difference is consistent with other studies in the literature.<sup>32,33</sup> The greater exposure to stress caused to women by having to assume the roles of mother, wife, and business-woman (multiple-role woman) at the same time may be an important factor.<sup>34</sup>

Kidney transplantation from a cadaver is not at the desired level and speed in our country and the world. The number of patients on the kidney transplant waiting list is increasing day by day. The uncertainty about whether there will be an appropriate organ increases psychosocial problems in patients while waiting for a transplant. To increase transplantation from cadavers, increasing the awareness of organ transplantation in society is critical. Besides, there is another requirement to have professional consultants to provide psychological support in dialysis units.

It can be expected that the anxiety levels of patients with ESRD are higher than healthy individuals without psychiatric disease. Therefore, the most important limitation of our study is the absence of another group consisting of patients who have just been transplanted or who have not yet started dialysis. In addition, the fact that the diagnosis is not confirmed by psychiatrists and is based only on the scale evaluation adds to the list.

## Conclusion

This research revealed that depression and anxiety scores were higher in end-stage renal failure patients. Therefore, a psychiatric evaluation of patients diagnosed with ESRD and waiting on the transplant list and, if necessary, initiating psychiatric treatment programs will both facilitate the psychosocial adaptations of the patients and increase the success of the treatment and the quality of life of the patient.

**Ethics Committee Approval:** This study was approved by T.C. Demiroğlu Bilim University, Clinical Trials Ethics Committee (approval date and number: March 24, 2015/29-223).

**Informed Consent:** A written informed consent concerning the study was obtained from all patients.

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## References

1. O'Connor NR, Corcoran AM. End-stage renal disease: Symptom management and advance care planning. *Am Fam Physician*. 2012;85(7):705-710.
2. Tonelli M, Wiebe N, Knoll G, et al. Systematic review: Kidney transplantation compared with dialysis in clinically relevant outcomes. *Am J Transplant*. 2011;11(10):2093-2109. [CrossRef]
3. Raiz L, Davies EA, Ferguson RM. Sexual functioning following renal transplantation. *Health Soc Work*. 2003;28(4):264-272. [CrossRef]
4. Veroux M, Corona D, Veroux P. Kidney transplantation: future challenges. *Minerva Chir*. 2009;64(1):75-100.
5. House A. Psychosocial problems of patients on the renal unit and their relation to treatment outcome. *J Psychosom Res*. 1987;31(4):441-452. [CrossRef]
6. Sağduyu A, Erten Y. Hemodiyalize giren kronik böbrek hastalarında ruhsal bozukluklar. *Türk Psikiyat Derg*. 1998;9:13-22.
7. Rundell JR, Hall RCW. Psychiatric characteristics of consecutively evaluated outpatient renal transplant candidates and comparisons with consultation-liaison inpatients. *Psychosomatics*. 1997;38(3):269-276. [CrossRef]
8. Özçürümez G, Tanrıverdi N, Zileli L. Kronik böbrek Yetmezliğinin Psikiyatrik ve Psikososyal Yönleri. *Türk Psikiyat Derg*. 2003;14(1):72-80.
9. Christopherson LK. Cardiac transplantation: A psychological perspective. *Circulation*. 1987;75(1):57-62. [CrossRef]
10. Özdemir Ü, Taşcı S. Kronik hastalıklarda psikososyal sorunlar ve bakım. *Erciyes Univ Sağlık Bilimleri Fak Derg*. 2013;9:57-72.
11. Kimmel PL, Thamer M, Richard CM, Ray NF. Psychiatric illness in patients with end-stage renal disease. *Am J Med*. 1998;105(3):214-221. [CrossRef]
12. Dimartini A, Twillman R. Organ transplantation and paranoid schizophrenia. *Psychosomatics*. 1994;35(2):159-161. [CrossRef]

13. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry*. 1961;4:561-571. [CrossRef]
14. Hisli NB. Depresyon Envanteri'nin geçerliği üzerine bir çalışma. *Türk Psikhol Derg*. 1988;6:118-126.
15. Kaçmaz N, Barlas ÜG. Karaciğer nakli yapılan hasta ve hasta yakınlarının psikososyal durumlarının yaşam kalitesi üzerine etkisi. *Psikiyat Hemsireliği Derg*. 2014;5(1):1-8.
16. Spielberger CD. *Anxiety: Current Trend in Theory and Research*. New York: Academic Press; 1972.
17. Oner N, Le Compte A. Durumluk-Sürekli Kaygı Envanteri Elkitabı. Basım İstanbul: Boğaziçi Üniversitesi Yayınları. 1985;20:3-5.
18. Özcan Y, Baştürk M, Aslan SS, Utaş C. Hemodiyaliz ve sürekli ayaktan periton diyalizi uygulanan hastalarda psikiyatrik morbidite ve yaşam kalitesi. *Turgut Özal Tıp Merkezi Derg*. 2000;7(4):333-337.
19. Kaplan HI, Sadock BJ. *Synopsis of Psychiatry*. 8th ed. Williams&Wilkins, Baltimore; 1998:818-824.
20. Roger W, Evans D, Diane L. The quality of life with end-stage renal disease patients. *N Engl J Med*. 1985;312:553-559.
21. Cimilli C. Hemodiyalizin psikiyatrik yönleri. *Türk Nefroloji Diyaliz Transplantasyon Derg*. 1994;3(3):88-92.
22. Çetinkaya S, Nur N, Ayvaz A, Özdemir D. Bir üniversite hastanesinde hemodiyaliz ve sürekli ayaktan periton diyalizi hastalarında depresyon, anksiyete düzeyleri ve stresle başa çıkma tutumları. *Nöropsikiyatri Ars*. 2008;45:78-84.
23. de Brito DCS, Machado EL, Reis IA, Carmo LPFD, Chergiglia ML. Depression and anxiety among patients undergoing dialysis and kidney transplantation: A cross-sectional study. *Sao Paulo Med J*. 2019;137(2):137-147. [CrossRef]
24. Goh ZS, Griva K. Anxiety and depression in patients with end-stage renal disease: Impact and management challenges – a narrative review. *Int J Nephrol Renovasc Dis*. 2018;11:93-102. [CrossRef]
25. Veater NL, East L. Exploring depression amongst kidney transplant recipients: A literature review. *J Ren Care*. 2016;42(3):172-184. [CrossRef]
26. Ayar Y, Ersoy A, Isiktas Sayilar EI, Yılmaz A, Aydın ME. Evaluation of depression, anxiety and life quality in kidney transplant recipients. *Türk Neph Dial Transpl*. 2015;24(1):98-105. [CrossRef]
27. Tong A, Hanson CS, Chapman JR, et al. "Suspended in a paradox" – patient attitudes to wait-listing for kidney transplantation: Systematic review and thematic synthesis of qualitative studies. *Transpl Int*. 2015;28(7):771-787. [CrossRef]
28. Duran S, Güngör E. Diyaliz hastalarının duygusal ve sosyal sorunlarının belirlenmesi. *Uludağ Univ Tıp Fak Derg*. 2015;41(2):59-63.
29. Mollahadi M, Yayyebi A, Ebadi A, Daneshmandi M. Comparison of anxiety, depression and stress among hemodialysis and kidney transplantation patients. *Iran J Crit Care Nurs*. 2010;2(4):153-156.
30. Özer SK, Demir B, Tuğal Ö, Ölçeği M-ADD. Değerlendiriciler arası Güvenilirlik ve Geçerlik Çalışması. *Türk Psikiyat Derg*. 2001;12:185-194.
31. Öztürk MO. *Ruh Sağlığı ve Bozuklukları*. 9. Basım. Ankara: Feryal Matbaası; 2002.
32. Çelik CH, Acar T. Kronik hemodiyaliz hastalarında depresyon ve anksiyete düzeylerinin çeşitli değişkenlere göre incelenmesi. *Fırat Tıp Derg*. 2007;12(1):23-27.
33. Mittal SK, Ahern L, Flaster E, Maesaka JK, Fishbane S. Self assessed physical and mental function of hemodialysis patients. *Nephrol Dial Transplant*. 2001;16(7):1387-1394. [CrossRef]
34. Sumra MK, Schillaci MA. Stress and the multiple-role woman: Taking a closer look at the "superwoman". *PLOS ONE*. 2015;10(3):e0120952. [CrossRef]