




Examination of depression and perceived social support levels and affecting factors in hemodialysis patients

Hemodiyaliz hastalarının depresyon ve algılanan sosyal destek düzeyleri ve etkileyen faktörler incelenmesi

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ABSTRACT

Aim: The aim of this study is to investigate depression and perceived social support levels and affecting factors in hemodialysis patients

Materials and Methods: This descriptive cross section study was conducted hemodialysis patients in two hemodialysis units. Patient identification forms representing the information, Beck Depression Inventory and Multidimensional Scale of Perceived Social Support were used for the data collection.

Results: It was found that hemodialysis patients was 44.7% of them had mild level depression, 20.4% of had medium depression and 1.6% of had severe depression. It was also identified that the multidimensional scale of perceived social support score average of hemodialysis patients was 63.91±14.2 The mean friend subscale score of the patients over the age of 60 was found to be low ($p<0.05$). In our study, the difference in the total BDI score average depending on the hemodialysis patients'gender was statistically detected as significant($p<0.01$). The depression level of female patients was higher than that of male patients. There was a significant negative correlation between BDI total score and social support scale ($r= -0.225$, $p= 0.000$).

Conclusion: In this study, a negative relationship was found between social support and depression. High-risk patients (such as female gender, low education level, unemployed) should be screened for depression. Attempts to strengthen the social support networks of hemodialysis patients will contribute to the reduction of depression.

Keywords: Hemodialysis, depression, perceived social support.

ÖZ

Amaç: Bu çalışmanın amacı hemodiyaliz hastalarında depresyon ve algılanan sosyal destek düzeylerinin ve etkileyen faktörlerin incelenmektir.

Gereç ve Yöntem: Tanımlayıcı-kesitsel tipteki bu çalışma, iki hemodiyaliz ünitesinde hemodiyaliz hastaları ile yürütüldü. Verilerin toplanmasında hastaların sosyodemografik ve hastalık bilgilerini içeren hasta tanıtım formu, Beck Depresyon Envanteri ve Çok Boyutlu Algılanan Sosyal Destek Ölçeği kullanılmıştır.

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Bulgular: Hemodiyaliz hastalarının depresyon puan ortalaması $12,18 \pm 6,41$ olarak belirlendi. Çalışmamızda hastaların %44,7'sinin daha düşük düzeyde depresyon, %20,4'ünün orta düzeyde depresyon yaşadığı saptandı. Hemodiyaliz hastalarının çok boyutlu algılanan sosyal destek puan ortalamasının $63,91 \pm 14,2$ olduğu belirlendi. 60 yaş üstü hastaların arkadaş alt ölçeği puan ortalaması düşük bulundu ($p < 0.05$). Çalışmamızda hemodiyaliz hastalarının cinsiyetine bağlı olarak toplam depresyon puan ortalamasındaki fark istatistiksel olarak anlamlı olarak tespit edildi ($p < 0.01$). Kadın hastaların depresyon düzeyi erkek hastalara göre daha yüksekti. BDÖ toplam puanı ile sosyal destek ölçeği arasında negatif yönde anlamlı bir ilişki vardı ($r = -0.225$, $p = 0.000$).

Sonuç: Bu çalışmada sosyal destek ile depresyon arasında negatif yönde bir ilişki olduğu bulundu. Yüksek riskli hastalara depresyon taraması yapılmalıdır. Hemodiyaliz hastalarının sosyal destek ağlarını güçlendirmeye yönelik girişimler depresyonun azalmasına katkı sağlayacaktır.

Anahtar Sözcükler: Hemodiyaliz, depresyon, algılanan sosyal destek.

INTRODUCTION

The advances in medicine have made the extension of lifespan possible for the patients having a chronic disease; however this has caused the patients not only to be exposed to the disease for a long time but also to undertake the burden of treatment. Furthermore, the quality of life and the importance of parameters influencing it represents an increase (1). The patients suffering from the end stage renal disease live the experience of loss both biologically and psychologically. With these losses, addiction to the treatment triggers the lack of control and the feeling of insufficiency. The inclusion of invasive intervention for the hemodialysis practice and getting the patients addicted to the healthcare organizations all the time result in frequent symptoms such as impairment of social support network and depression in hemodialysis patients (2, 3). The depression rate among the hemodialysis patients ranges between 20% and 70% (4). It was stated that the daily life, the interpersonal relations and the marriage of hemodialysis patients were affected negatively the depression has a direct effect on the biological process and behaviors. It was pointed out that there is an association between the dialysis patients' depressive symptoms and negative clinical results (5, 6). It was also emphasized that hospitalization, morbidity and mortality rates are higher for the depressed dialysis patients compared to the non-depressed patients (7). The social isolation, the change in life style, the loss of freedom and the decrease in self-perception associated with the chronic disease induce the existence of depression. It is stated that the social support in the chronic diseases provides decreased levels of depressive symptoms increasing the emotional and functional support and also it is protective as

it prevents isolation or loneliness (8). It was stated that the low social support in dialysis patients is correlated with poor nutrition and fluid intake (9). Depression leads to the loss of energy and appetite, the decrease in interests and the lack of self-care. It was determined that there is a correlation between social support and low depression. The prevalence of social support produce positive effects for chronically ill patients' self-care ability, nutrition and adaptability to the healthcare (8, 10). There is a requirement to determine the social support perception and the depression levels of hemodialysis patients to identify the relations and influencing factors between them. The aim of this study is to seek answers to the following questions; a) what is the level of depression and perceived social support in hemodialysis patients b) is there a relationship between depression and social support c) what factors influence depression and perceived social support.

MATERIALS and METHODS

This is a descriptive cross section study. The research was conducted between February, 2015 and July, 2015. Participants of this study are the patients in two hemodialysis units. The patients aged 18 years or older, speaking and understanding Turkish and undergoing hemodialysis for at least 6 months were included. Exclusion criteria were, current diagnosis of depression. The interviews were carried out with 182 outpatients from two hemodialysis units and the study was conducted with 123 of them accepting to participate in the research and meeting the inclusion criteria.

Measurements

Face-to-face interview method was conducted in order to collect the data of this study. Patient identification forms representing the information

on patients' socio-demographic characteristics and their diseases, Beck Depression Inventory (BDI) and Multidimensional Scale of Perceived Social Support (MSPSS) were used for the data collection.

Beck Depression Inventory (BDI)

The Beck Depression Inventory (BDI) is self-report rating scale that measures severity of depression. This scale was first developed by Beck et al. The validity and reliability of the Turkish version of were adapted by Hisli (11). The inventory has 21 items and each item represents one characteristic attitude or symptom of depression. Each question in the test has a set of four possible responses and a value of 0 to 3 is assigned for each answer (12). The maximum total score obtained from the scale can be 63. The score classification is given as follows: no depression or minimal depression between 0-9; mild depression between 10-16; moderate depression between 17-29; and severe depression between 30- 63. BDI's Cronbach Alpha coefficient was assessed as 0.79 in our study.

Multidimensional Scale of Perceived Social Support (MSPSS)

Multidimensional Scale of Perceived Social Support (MSPSS) subjectively measures the support from family, friend and significant other. The self-report scale was developed by Zimet et al (13). The validity and reliability of Turkish version of the scale was conducted by Eker et al. (14). The scale consists of 12 items with 4 items for each subscale. Items (3, 4, 8, and 11) evaluate family support, items (6, 7, 9 and 12) evaluate friend support and items (1, 2, 5 and 10) evaluate a significant person other support. The assessment is graded in a 7-point Likert scale including response descriptors as "very strongly agree" and "very strongly disagree". The score of the subscale is calculated with the sum of the four items composing their subscale and the final mean score is calculated with the sum of all subscales' scores. The summated scores can range from a low of 12 to a high of 84. High scores represent high perceived social support (13). Eker et al. (2001) assessed the Cronbach's alpha coefficient of internal consistency for each subscales and found the values between 0.80 and 0.92 (14). In our study, the Cronbach's alpha coefficient of internal consistency of the subscales is 0.84 for family support, 0.92 for family support and 0.70 for a significant person other support.

Statistical Analysis

Percentages and standard deviation values were used to measure the patients' socio-demographic characteristics and the symptoms of the disease. Mann Whitney U-test and Kruskal-Wallis test were used to analyze the differences between the score averages of Perceived Social Support according to the dialysis patients' indications and Beck Depression Inventory. Pearson correlation analysis was used as a measure to determine the association between the depression and perceived social support. Statistical analysis was performed using SPSS for Windows 22. The limits for significance in these analyses were set at $p \leq 0.05$.

Ethical Approval

The Institutional Review Ethics Boards at Akdeniz University (Date: 15.10.2014- Decision No: 453) approved the study and all participants provided informed consent. In order to carry out the study, all necessary written permissions were granted by authorities.

RESULTS

Among the patients, 62.6% were male and 53.7% were older than 60 years. 69.9% of hemodialysis patients were married, 52.0% of them had attained primary education and 89.4% of them were not working. Living with their spouses and children was 72.4%. Most of the participants were living in the city center. Before starting hemodialysis, the percentage of patients having received peritoneal dialysis was and, hemodialysis patients treated by kidney transplantation and faced with rejection was 17.1%. The rate of patients having a second chronic disease was 49.6%. The rate of hemodialysis patients informed on hemodialysis and renal failure 58.5%. The mean duration of hemodialysis is approximately 6.10 ± 5.28 and 50.4% of them has been a hemodialysis patient for less than 5 years. Hemodialysis patients was 44.7% of them had mild depression (Table-1).

The mean MSPSS score of the hemodialysis patients was 63.91 ± 14.5 and the mean BDI score was 12.18 ± 6.41 (Table-2).

There was a significant negative correlation between BDI total score and social support scale ($r = -0.225$, $p = 0.000$). There was also a significant negative correlation between the BDI total score and the subscales of the social support scale friend ($r = -0.228$, $p = 0.001$) and an important person ($r = -0.166$, $p = 0.013$) (Table-3).

Table–1. The sociodemographic and disease characteristics of hemodialysis patients.

Characteristics	n (123)	%
Age		
Under 40	20	16.3
40-48	13	10.6
49-59	24	19.5
Over 60	66	53.7
Gender		
Female	46	37.4
Male	77	62.6
Marital Status		
Married	86	69.9
Single	37	30.1
Education Level		
Illiterate	28	22.8
Primary	64	52.0
Secondary	17	13.8
University	14	11.4
Working Status		
Employed	13	10.6
Unemployed	110	89.4
Other Person at Home		
Alone	18	14.6
The Spouse and Children	89	72.4
Relatives	16	13.0
Residence		
City	98	79.7
County and Town	25	20.3
Prior ERS D Intervention		
Never	91	74.0
Peritoneal Dialysis	11	8.9
Kidney Transplantation	21	17.1
Other Chronic Diseases		
Yes	61	49.6
No	62	50.4
Informed of the Disease		
Yes	72	58.5
No	51	41.5
The Duration of Hemodialysis		
Less Than 5 Years	62	50.4
5-9 Years	38	30.9
10 Years or More	23	18.7
The Score of BDI		
Minimal	41	33.3
Mild	55	44.7
Medium	25	20.4
Severe	2	1.6

Table-2. Mean scores of scales and subscales.

Scales	Mean	SD
BDI	12.18	6.41
MSPSS	63.91	14.52
Family Support	25.96	4.32
Friend Support	15.43	9.56
A Significant Person Other Support	22.50	5.35

Table-3. The correlation of BDI and MSPSS scores.

BDI	Family	Friend	A Significant Person Other	MSPSS Total
	-0.106	-0.228**	-0.166*	-0.225**

* $p < 0.05$, ** $p < 0.001$

The difference in the total BDI score average according to the hemodialysis patients' gender was statistically significant ($p < 0.01$). The depression level of female patients is higher than that of male patients. The statistical difference between the patients' level of education and Beck Depression Inventory total score ($p < 0.05$) was identified as significant. The depression score average of the college graduates was determined to be low. According to the working status of the hemodialysis patients, the depression symptoms were analyzed and the BDI total score average of the patients who are not working is higher compared to that of patients who are working ($p < 0.01$). The difference between the duration of hemodialysis and the score averages from Beck Depression Inventory total score was found to be statistically significant ($p < 0.05$). The depression score average was identified to be high for the patients having the duration of hemodialysis between 5 and 9 years. The existence of another chronic disease increases the depression score average ($p < 0.05$). MSPSS family support subscale score average of women was higher whereas the friend support subscale of men was higher than that of women. However, these differences were not statistically significant.

The MSPSS's friend subscale score average of patients aged over 60 years was found to be lower than that of other age groups and there is a statistically significant difference ($p < 0.05$). According to the marital status of the patients and the people they live with the MSPSS family support subscale score average was found to be statistically significant ($p < 0.01$). The family support perception score average for married patients living with their spouses and children was higher. The differences between hemodialysis patients' level of education and the score average from MSPSS friend subscale was found to be statistically significant ($p < 0.01$). The friend support perception score averages of the college graduates were determined to be higher. According to the working status of hemodialysis patients, when the social support network was examined, it was determined that the friend support subscale score average of patients who were not working was lower than that of the patients who were working and the difference between them was statistically significant ($p < 0.05$). In addition, the MSPSS friend subscale score average of the patients experiencing another chronic disease and the MSPSS total score average were found to be significantly low ($p < 0.05$) (Table-4).

Table-4. The Relationship between Sociodemographic and Disease Characteristics of the Patients and Total Scores of BDI and MSPSS.

Characteristics	Beck Depression Inventory (mean±SD)	Family Support (mean±SD)	Friend Support (mean±SD)	A Significant Person Other Support (mean±SD)	MSPSS Total (mean±SD)
Gender					
Female	15.3 ± 7.1	26.3± 4.1	13.6±9.4	22.6±5.3	62.6± 14.5
Male	10.3 ± 5.1	25.7±4.4	16.5±9.5	22.4±5.4	64.6±14.5
	Z: -3.969 p< 0.001	Z: -.036 P=0.971	Z: -1.647 p=0.100	Z: -.037 p=0.970	Z: -.893 p=0.372
Age					
Under 40 years	11.3±7.5	24.8±5.4	20.3±7.4	21.3±7.0	66.4±15.5
40-48 years	10.6±9.0	26.2±3.3	18.7±7.2	24.1±4.0	69.1±10.6
49-59 years	12.5±5.4	25.5±5.8	14.6±10.3	22.2±6.2	62.4±17.0
Over 60 years	12.6±5.8	26.4±3.4	13.5±9.7	22.6±4.6	62.6±13.8
	KW: 4.403 p=0.221	KW: 1.026 p=0.795	KW: 9.052 p<0.05	KW: .932 p=0.818	KW: 3.364 p=0.339
Marital Status					
Married	12.2±6.5	26.6±3.8	15.0±9.4	23.3±4.5	65.0±13.9
Single	12.0±6.2	24.4±5.0	16.2±9.8	20.5±6.4	61.2±15.7
	Z: -.094 p=0.925	Z: -3.575 p< 0.001	Z: -.706 p=0.480	Z: -1.907 p=0.057	Z: -1.348 p=0.178
Education Level					
Illiterate	13.7±6.1				
Primary	12.2±6.1	26.7±2.5	11.7±8.81	22.7±3.9	61.1±12.2
Secondary	12.6±7.8	25.8±4.7	5.5±9.2	22.2±5.6	63.5±14.9
University	8.0±4.7	24.7±5.1	15.8±9.3	21.7±6.5	62.3±16.7
	KW: 8.842 p<0.05	26.5±4.0 KW:1.215 p=0.749	22.1±9.5 KW:12.621 p<0.05	24.1±5.1 KW:2.112 p=0.550	72.7±11.6 KW:7.525 p=0.057
Other Person at Home					
Alone	11.8±5.6		13.0±9.9	22.1±5.5	60.4±15.6
The Spouse and Children	12.3±6.6	25.2±4.4	15.3±9.5	23.2±4.7	65.1±14.0
Relatives	11.6±6.3	26.5±3.7	18.4±9.2	19.0±7.1	60.8±15.7
	KW:137 p=0.934	23.4±5.9 KW: 11.358 p <0.05	22.1±9.5 KW: 2.944 p =0.229	24.1±5.1 KW: 3.885 p =0.143	72.7±11.6 KW: 2.549 p =0.280
Working Status					
Employed	9.0±8.8				
Unemployed	12.5±6.0	25.3±5.0	20.1±8.6	22.4±5.4	67.9±15.2
	Z:-2.608 p <0.05	26.0±4.2 Z: -.351 p =0.725	14.8±9.5 Z:-2.007 p <0.05	22.5±5.3 Z: -.067 p =0.946	63.4±14.4 Z:-1.174 p =0.240
The Duration of Hemodialysis					
Less Than 5 Years	11.5±6.4	26.1±3.9	15.2±9.4	22.3±5.1	63.7±13.6
5-9 Years	14.3±6.2	26.1±4.5	14.5±9.4	22.6±5.1	63.3±15.0
10 Years or More	10.3±5.9	25.1±4.9	17.3±10.1	22.7±6.5	65.2±16.3
	KW: 6.828 p <0.05	KW: 2.687 p =0.261	KW: 1.635 p =0.442	KW: 1.333 p =0.514	KW: .531 p =0.767
Other Chronic Diseases					
Available	13.6±6.7	25.8±4.6	12.6±9.1	22.3±5.7	60.8±14.7
Not Available	10.7±5.7	26.1±4.0	18.1±9.2	22.6±4.9	66.9±13.7
	Z: -2.415 p <0.05	Z: -.302 P = 0.763	Z: -2.985 p <0.05	Z: -.244 p =0.808	Z: -2.326 p <0.05

SD: Standard Deviation, Z: Mann Whitney U-test, KW: Kruskal- Wallis test

DISCUSSION

In this study that hemodialysis patients was 44.7% of them had mild level depression, 20.4% of had medium depression and 1.6% of had severe depression. The previous studies, it was reported that the rate of depression in hemodialysis patients was between 29% and 93.7% and that depression negatively affected the quality of life (15-18). Our study corresponds to the results of other studies although there are differences in the prevalence of depression rate because of the social characteristics.

The MSPSS score average of hemodialysis patients was found to be 63.91 ± 14.2 . This score shows that the perceived social support of hemodialysis patients is at medium level. Moreover, our study identified the family support for hemodialysis patients to be higher. Spinale et al. (2008) conducted a study including 166 hemodialysis patients with the same scale and they found that MSPSS score average was (69.1 ± 13.2), which is similar to our study results (19). In two different studies carried out in Turkey, it was stated that the perceived social support of hemodialysis patients was at medium level and the families of hemodialysis patients provided the highest support (20, 21).

This study, according to the gender of hemodialysis patients a significant difference in the BDI total score averages was found ($p < 0.01$). The depression level of female patients is higher than that of male patients. The reasons for higher depression levels can be the roles given to women in Turkish society as they involve more caring activities and the sense of responsibilities. In addition, the women try to get help from other easily compared to the men. In the studies examining the hemodialysis patients' depression, it was determined that the depressive symptoms of female patients are higher (22, 23). On the other hand, the studies conducted on the association between gender and depression represents inconsistent results (24, 25). The social support in chronic diseases produces an improvement in access to the healthcare, the adaptability to the treatment, amelioration of nutritional status and life quality in general, the reduction in depressive symptoms and enhancement to the immune system (26). It was stated that with the older ages, the social interaction and the support of people decreases (27). In our study, it was found out that the gender did not have a significant

effect on MSPSS; however, the MSPSS's friend subscale score average of patients aged over 60 years was low ($p < 0.05$). In this study, the family support perception score average for married patients living with their spouses and children was determined to be higher.

We found that the difference between hemodialysis patients' level of education and the score average from BDI's total score and MSPSS's friend subscale was statistically significant ($p < 0.05$). It was determined that the depression score average of the college graduates was low, but the score average of friend support perception was higher. It was emphasized that hemodialysis patients' level of education is an important factor that determines the frequency of depression level as well (28). In another study conducted in Turkey it was reported that the depression score average of the patients who had attained secondary school or higher degrees is lower (29). Özdemir (2019) stated that perceived social support was higher for those with education levels of secondary school and above (21). The lower educational degree is an obstacle for the patients to access to the correct information on the disease and it also prevents access to the health care services producing a reduction in the life quality (30). It can be suggested that higher levels of education of the patients and improvements in their social communication networks have impacts on depression and perceived social support. In parallel with the burden of the treatment, work withdrawal increases the risk of depression for the dialysis patients (29). The BDI total score average of working hemodialysis patients was detected to be higher than that of non-working patients ($p < 0.01$). Tezel et al. (2011) determined in their study including 147 hemodialysis patients that depression rate for non-working patients were high (31). The depression score of patients with low monthly income was higher versus those who had higher monthly income, but the difference between two groups was not statistically significant (29). A strong association between the economic status and depression rates of dialysis patients was identified and the depression rate of unemployed patients was found to be higher versus employed patients (32-34).

In our study, the difference between the patients' hemodialysis duration and the score average they had from the total score was found to be statistically significant ($p < 0.05$).

Beck Depression Inventory score average was identified to be high for the patients whose hemodialysis process lasted between 5 and 9 years. Kocaman et al.'s study with 124 hemodialysis patients, a strong positive correlation between the increase in the duration of hemodialysis undergone and depression risk was determined (35). Baydogan and Dağ stated that a positive relation between the duration hemodialysis and the depressive symptom levels was identified (25). The existence of another chronic disease increases the depression score average ($p < 0.05$). Hemodialysis patients experiencing another chronic disease had higher depression rates. Araujo et al. (2012); Rosenthal et al. (2012) determined the correlation between the existence of another chronic disease and depression and mortality (23, 36). The existence of comorbid conditions, especially the diabetes, and the existence of depression were identified to be positively correlated (3, 7, 37). Lin et al. (2013) stated that the depression scores of peritoneal dialysis patients suffering from diabetes were higher than the patients who did not suffer from diabetes (38). In our study, the MSPSS friend subscale score average and the MSPSS total score average ($p < 0.05$) of hemodialysis patients experiencing another chronic disease were found to be significantly low.

The existence of comorbid situations, e.g., another chronic disease impairs the social support network, increases the burden of disease, decreases the adaptability to the treatment and exerts a negative effect on life qualities and survivals, so our study results supports the other study results (10,39,40). In the present study, a negative correlation was identified between the BDI, MSPSS total scores and friend, a significant person other subscale scores. In the study examining the peritoneal

dialysis patients by Lin et al., (2013), the social support for depressed patients was determined to be low (38). In a systematic review analyzing the social support for the patients with coronary artery disease, it was stated that low social support produces negative effects on individuals' psychological conditions and leads to depression and anxiety symptoms. It was emphasized that the social support and depression were directly related to each other (10, 41).

Limitations

The study was conducted with a limited number of hemodialysis patients and because of this reason, the generalization of the results were restricted.

CONCLUSION

In our study, socio-demographic characteristics such as age, gender, level of education, marital status, living with the family, working status, the duration of hemodialysis, employment status and the disease characteristics such as the duration of being hemodialysis patient and the existence of comorbid conditions were represented to influence the social support and level of depression. In addition, it was determined that the social support and depression were inversely correlated. High-risk patients (such as female gender, low education level, unemployed) should be screened for depression. It is evident that improving the social support network of the hemodialysis patients exerts a positive influence on the life quality and lifespan and also reduces the rate of depression. Consequently, it is essential for the healthcare organizations and professionals to work on this area meticulously in order to ameliorate the conditions for hemodialysis patients.

Conflict of interest: The authors declare no conflict of interest.

References

1. Mitema D, Jaar BG. How can we improve the quality of life of dialysis patients. *Semin Dial* 2016; 29 (2): 93-102.
2. Pei M, Aguiar R, Pagels AA, Heimbürger O, Stenvinkel P, Bárány P, Qureshi AR. Health-related quality of life as predictor of mortality in end-stage renal disease patients: an observational study. *BMC Nephrology* 2019; 20 (1): 1-10.
3. Stasiak CES, Bazan KS, Kuss RS, et al. Prevalence of anxiety and depression and its comorbidities in patients with chronic kidney disease on hemodialysis and peritoneal dialysis. *J. Bras. Nefrol* 2014; 36(3): 325-31.

4. Kimmel PL, Cukor D, Cohen SD, et al. Depression in endstage renal disease patients: a critical review. *Adv Chronic Kidney Dis* 2007;14 (4): 328–34.
5. Clark S, Farrington K, Chilcot J. Nonadherence in dialysis patients: prevalence, measurement, outcome, and psychological determinants. *Semin Dial* 2014; 27(1): 42-9.
6. Loosman WL, Rottier MA, Honig A, et al. Association of depressive and anxiety symptoms with adverse events in dutch chronic kidney disease patients: a prospective cohort study. *BMC. Nephrol* 2015; 16 (1): 1-8.
7. Chen SF, Wang IJ, Lang HC. Risk of major depression in patients with chronic renal failure on different treatment modalities: a matched-cohort and population-based study in Taiwan. *Hemodial Int* 2016; 20 (1): 98-105.
8. Davaridolatabadi E, Abdeyazdan G. The relation between perceived social support and anxiety in patients under hemodialysis. *Electronic Physician* 2016; 8(3): 21-44.
9. Kara B, Çağlar K, Kılıç S. Nonadherence with diet and fluid restrictions and perceived social support in patients receiving hemodialysis. *J Nurs Scholarsh* 2007; 39(3): 243-8.
10. Cohen SD, Sharma T, Acquaviva K, et al. Social support and chronic kidney disease: an update. *Adv Chronic Kidney Dis* 2007; 14(4): 335-44.
11. Hisli N. Reliability and validity of Beck Depression Inventory in university students. *Psikol Derg* 1989; 23:3–13.
12. Tezel A, Arslan S, Topal M, et al. The investigation of the problem solving skill and depression level of nursing students. *Journal of Anatolia Nursing and Health Sciences* 2009; 12(4):1-10.
13. Zimet GD, Dahlem NW, Zimet SG, et al. The multidimensional scale of perceived social support. *J Pers Assess* 1988; 52(1): 30–41.
14. Eker D, Arkar H, Yaldız H. Factorial structure, validity, and reliability of revised form of the multidimensional scale of perceived social support. *Turkish Journal of Psychiatry* 2001; 12(1):17-25
15. Teles F, Amorim de Albuquerque AL, Freitas Guedes Lins IK, Carvalho Medrado P, Falcão Pedrosa Costa A. Quality of life and depression in haemodialysis patients. *Psychology, Health & Medicine* 2018; 23(9): 1069-78.
16. Daniel SC, Azuero A, Gutierrez OM, Heaton K. Examining the relationship between nutrition, quality of life, and depression in hemodialysis patients. *Quality of Life Research* 2021; 30(3): 759-68.
17. Santos DGM, Ferreira LGS, Pallone JM, Ottaviani AC, Santos-Orlandi AA, Pavarini SCI, Orlandi FDS. Association between frailty and depression among hemodialysis patients: a cross-sectional study. *Sao Paulo Medical Journal* 2022; 140: 406-11.
18. Noor MU, Kuma S, Junejo A M, Rehman S, Lal O, Khan MT, Rani B. Prevalence of anxiety and depression in hemodialysis patients of end stage renal disease. *Rawal Medical Journal*, 2021; 46(4): 844.
19. Spinale J, Cohen SD, Khetpal P, et al. Spirituality, social support, and survival in hemodialysis patients. *Clin J Am Soc Nephrol* 2008; 3(6):1620-7.
20. Karadağ E, Ugur O, Mert H, Erunal M. The relationship between psychological resilience and social support levels in hemodialysis patients. *JBACHS*. 2019; 3(1): 9-15.
21. Ozdemir N. The relationship between perceived social support, psychological resilience and happiness levels of hemodialysis patients. *Annals of Medical Research* 2019; 26(10): 2286-94.
22. Hedayati SS, Bosworth HB, Kuchibhatla M, et al. The predictive value of self-report scales compared with physician diagnosis of depression in hemodialysis patients. *Kidney Int* 2006; 69:1662–8.
23. Araujo SM, de Bruin V, Daher EDF, Almeida GH, Medeiros CA, de Bruin PFC. Risk factors for depressive symptoms in a large population on chronic hemodialysis. *International Urology and Nephrology* 2012; 44 (4): 1229-35.
24. Cukor D, Coplan J, Brown C, et al. Anxiety disorders in adults treated by hemodialysis: a single-center study. *Am J Kidney Dis* 2008; 52:128-36.
25. Baydogan M, Dağ I. Prediction of depression by locus of control, learned resourcefulness and sociotropy-autonomy in hemodialysis patients. *Turkish Journal of Psychiatry* 2008; 19:19- 28.
26. Cohen SD. Social support interventions will improve the quality of life of ESRD patients. *Semn Dial*. 2013-May; 26(3): 262-5.
27. Siedlecki KL, Salthouse TA, Oishi S, et al. The relationship between social support and subjective well-being across age. *Soc Indic Res* 2014; 117(2): 561-76.

28. Anees M, Barki H, Masood M, et al. Depression in hemodialysis patients. *Pak J Med Sci* 2008; 24(4): 560-65.
29. Çelik HC, Acar T. The investigation of depression and anxiety level of chronic hemodialysis patients according to different variables. *Firat University Medical Journal of Health Sciences* 2007; 12:23-7.
30. Imam SZ, Hashmi SH, Malick GI, et al. Liaison psychiatry and depression in medical inpatients. *J Pak Med Assoc* 2007; 57: 159-61.
31. Tezel A, Karabulutlu E, Sahin Ö. Depression and perceived social support from family in Turkish patients with chronic renal failure treated by hemodialysis. *J Res Med Sci* 2011; 16(5):666-73.
32. Kojima M, Hayano J, Tokudome S, et al. Independent associations of alexithymia and social support with depression in hemodialysis patients. *J Psychosom Res* 2007; 63(4): 349-56.
33. Bokhari SS, Samad AH, Hanif S, et al. Prevalence of depression in patients with coronary artery disease in a tertiary care hospital in Pakistan. *J Pak Med Assoc* 2002; 52(9): 436-9.
34. Son YJ, Choi KS, Park YR, et al. Depression, symptoms and the quality of life in patients on hemodialysis for end-stage renal disease. *Am J Nephrol* 2008;29 (1): 36-42.
35. Kocaman Yıldırım N, Okanlı A, Yılmaz Karabulutlu E, et al. Effects of illness perception on anxiety and depressive symptoms in hemodialysis patients: a multi-center study. *Anatolian Journal of Psychiatry* 2013; 14(3): 252-9.
36. Rosenthal Asher D, Ver Halen N, Cukor D. Depression and nonadherence predict mortality in hemodialysis treated end-stage renal disease patients. *Hemodial Int* 2012; 16(3): 387-93.
37. Hedayati SS, Minhajuddin AT, Toto RD, et al. Prevalence of major depressive episode in CKD. *Am J Kidney Dis* 2009; 54: 424-32.
38. Lin J, Guo Q, Ye X, et al. The effect of social support and coping style on depression in patients with continuous ambulatory peritoneal dialysis in southern china. *Int Urol Nephrol* 2013; 45(2): 527-35.
39. Gomez AT, Kiberd BA, Royston JP, et al. Comorbidity burden at dialysis initiation and mortality: A cohort study. *Can J Kidney Health Dis* 2015; 2(1):2-9.
40. Ibrahim N, Teo SS, Din NC, et al. The role of personality and social support in health-related quality of life in chronic kidney disease patients. *Plos One* 2015; 10(7): 1-11.
41. Barth J, Schneider S, Von Känel R. Lack of social support in the etiology and the prognosis of coronary heart disease: a systematic review and meta-analysis. *Psychosomatic Medicine* 2010; 72(3): 229-38.