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Determination of Beck Depression Inventory Scores of the Patients in a Hemodialysis Center: Evaluation with a Holistic Approach

Bir Hemodiyaliz Merkezindeki Hastalarının Beck Depresyon Envanteri Puanlarının Belirlenmesi: Holistik Bir Yaklaşımla Değerlendirme

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ABSTRACT

Aim/ Background: The holistic approach in medicine refers to addressing an individual as a whole. Family physicians should be familiar with psychological as well as physical problems of their hemodialysis patients. This study aims to measure depressive mood levels of patients in a hemodialysis center, and to investigate the potential risk factors with a holistic approach. **Method:** This study was conducted on patients receiving treatment at a private hemodialysis center. During the hemodialysis session, the patients's blood samples were taken, and serum phosphorus, creatinine, albumin, and hematocrit levels were measured. A semi-structured questionnaire form was used to investigate the sociodemographic characteristics and the Beck Depression Inventory (BDI) was used to determine depressive mood level of the patients. **Results:** This study was conducted on a sample of 88 patients (33 female, 55 male). The mean BDI scores were 16.7±9.8, and when the cut-off point of BDl was taken as 15, the rate of depressive mood was %56.8 for hemodialysis patients. We evaluated the duration of illness, family structure, educational level, having non-renal comorbid disease, employment status, economic status, and also blood creatinine, albumin, phosphorus, and hematocrit levels. The mean BDI score was significantly lower in patients who lived in simple nuclear families with fewer than six individuals at home. **Conclusion:** The holistic approach is essential, especially in chronic disease follow-up in primary healthcare. Family support and psychological evaluation with a holistic approach are vital for hemodialysis patients.

Keywords: Chronic renal failure, depression, family physicians, hemodialysis, holistic approach

ÖZET

Amaç: Tıpta bütüncül yaklaşım, bireyi bir bütün olarak ele almayı ifade eder. Aile hekimleri, takip ettikleri hemodiyaliz hastalarının fiziksel problemleri kadar psikolojik sorunlarından da haberdar olmalıdır. Bu çalışmada, bir hemodiyaliz merkezinde tedavi gören hastaların depresif duygudurum seviyesi ve olası risk faktörlerini bütüncül yaklaşımla tespit etmeyi amaçladık. **Yöntem:** Bu çalışma, özel bir hemodiyaliz merkezinde tedavi gören hastalar üzerinde gerçekleştirildi. Hemodiyaliz seansı sırasında hastalar tartılarak diyete uyum tespiti yapıldı, serum fosfor, kreatinin, albümin ve hematokrit düzeyleri ölçüldü. Hastaların sosyodemografik özelliklerini araştırmak için yarı yapılandırılmış bir anket formu ve depresif duygudurum seviyesinin belirlenmesi için Beck Depresyon Envanteri (BDE) kullanıldı. **Bulgular:** Bu çalışma 88 hastadan (33 kadın, 55 erkek) oluşan bir örnek üzerinde yürütülmüştür. Ortalama BDE skoru 16.7 ± 9.8 idi ve BDE'nin kesme noktası 15 olarak alındığında, hemodiyaliz hastalarında depresyon oranı % 56.8 idi. Hastalık süresi, aile yapısı, eğitim düzeyi, böbrek dışı komorbid hastalık varlığı, istihdam durumu, ekonomik durum ve ayrıca kan kreatinin, albümin, fosfor ve hematokrit düzeyleri değerlendirildi. Evde altı kişiden az birey olan basit çekirdek ailelerde yaşayan hastalarda ortalama BDE skoru anlamlı olarak düşük saptandı. **Sonuç:** Bütüncül yaklaşım birinci basamakta özellikle kronik hastalık takibinde önemlidir. Hemodiyaliz hastaları için aile desteği ve bütüncül bir yaklaşımla psikolojik değerlendirme hayatidir.

Anahtar kelimeler: Kronik böbrek yetmezliği, depresyon, aile hekimi, hemodiyaliz, bütüncül yaklaşım

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INTRODUCTION

Chronic renal failure (CRF) is a life-threatening disease that may affect all age groups and lead to various physical complications, such as anemia, serum electrolyte imbalances, and fluid buildup as well as psychological complications such as depression and anxiety.[1] Chronic renal failure is increasingly becoming common in developed and developing countries. [1,2]

Current treatment options for end-stage renal disease (ESRD) include renal transplantation (RT), peritoneal dialysis (PD) and hemodialysis (HD).[1,2] As the population of CRF patients grows, primary care physicians are needed increasingly to be involved in the management of these patients. [3,4]

Hemodialysis is an important treatment modality that improves the quality of life and prolongs the life expectancy of renal patients. However, some psychosocial difficulties, such as deterioration of working capacity, decrease in physical activity, domestic problems, and sexual dysfunctions, may make compliance to treatment difficult and may negatively affect the prognosis of the disease. [5]

After the dialysis phase, the survival of CRF patients is highly dependent on a mechanical device, and psychological disorders may appear quite common in patients under severe physical and psychosocial stress factors. Therefore, CRF is considered as a clinical picture that leads up to both physical and psychological symptoms, and thus working with a mental healthcare team at every stage of its treatment is frequently recommended.[6]

Depression is a common but underdiagnosed problem in patients with CRF. Depression is a significant cause of morbidity worldwide, as the epidemiology has shown; lifetime prevalence estimates vary widely, from 3% to 17%. However, challenging situations may arise for making an accurate diagnosis because of the overlap between symptoms of CRF and those of depression.[7]

Emotional status, personal and environmental adjustment, and personality traits of dialysis patients have been evaluated in many studies. [8-11] It was shown that psychiatric morbidity increased in dialysis patients, and the prevalence of mental disorders, such as depression, anxiety, adjustment disorder, and sexual disorders, could be as high as 50%. [8,9] Quality of life among dialysis patients is lower as compared to some other chronic diseases, such as congestive heart failure, diabetes, depression, and even cancer. [10] Dialysis patients and patients who had undergone kidney transplantation were compared, and it was found that patients who had undergone transplantation had a better quality of life. Problems were less common compared to dialysis patients. [11]

The World Health Organisation (WHO) defines ‘health’ as "a state of complete physical, mental, and social well-being not merely the absence of disease or infirmity".[12] That definition requires consideration of the ‘holistic approach’ in a ‘biopsychosocial’ model, for the management and prevention of disease. Physicians in primary healthcare are expected, addressing the majority of healthcare needs by offering integrated healthcare services, and they become the first resort for essential medical services among people with health issues.[13] Therefore, family medicine is served as the advocate of the holistic or biopsychosocial model as part of the perspective of the discipline.[13] The holistic approach is particularly useful to address chronic diseases, and primary healthcare professionals may use this perspective to improve clinical outcomes through creating awareness on the interactions among biological, psychological, socio-cultural, and spiritual factors.[13] It can be seen that chronic illnesses may cause a lifestyle for such patients with physical as well as psychological aspects.[14] Chronic renal failure has forced a particular lifestyle for patients, especially after hemodialysis has begun to be implemented. [15] In patients with chronic renal failure undergoing hemodialysis, it has been reported that psychosocial factors, as well as disease variables and treatment characteristics, play a role in compliance with hemodialysis treatment.[16]

One of the most common symptoms in hemodialysis patients is their great dilemma. On the one hand, they want to be as independent as possible in their work, family, and social lives. On the other hand, they need to be strictly dependent on the hemodialysis treatment and specific protocols for a significant part of their daily lives. Moreover, they may face a life-threatening condition at any moment, just like patients in intensive care units. Despite all the advances in treatment modalities, the annual mortality rate is currently 8% in patients undergoing hemodialysis treatment, and patients are aware of this. [16] Furthermore, the gradual weakening of social relations, increasing financial problems related to low productivity in social life, and especially the changes in family roles are some of the challenges posed by the new lifestyles of these patients.

In this study, we aimed to evaluate the depressive mood levels of patients in a hemodialysis center and to investigate the risk factors with a holistic approach.

METHODS

Design and Setting

This study is a cross-sectional evaluation of depressive mood of the hemodialysis patients in a certain medical center between 1st December and 30th December 2002. It was conducted on patients receiving treatment at Private Capa Hemodialysis Center. To carry out this study, written permission was obtained from the institution where this study was conducted, ethical approval was obtained from the Ethics Committee of the Taksim Training and Research Hospital for the thesis of specialization in medicine which was registered at the archive of the Databases of National Thesis Center of the Council of Higher Education (No:10334630 / 2003).

Patient's medical records of examination and medical history were used to identify the eligibility according to the inclusion and exclusion criteria of the study. Patients were informed about the purpose of this study, and verbal and written consent was obtained from each participant.

The inclusion criteria were as follows:

1- Age:18-74 years old
2- Hemodialysis at least twice a week

The exclusion criteria were as follows:

1- Having history of being diagnosed with major depression
2- Having a physical or psychological disorder that would prevent the participant from completing the tests by herself / himself
3- Having a physical or psychological disorder that would prevent the participant's communication

Hemodialysis patients were asked to answer the questionnaires presented to them in relaxation during the period between two hemodialysis sessions. The patients were interviewed for an average of 10-15 minutes. After briefly explaining the purpose and importance of this study, they were provided with explanatory information about the tests to be completed, and the tests were delivered to the patients to be returned by the next session.

In the first part of this study, patients were divided into two groups according to BDI results (cut-off point = 15), and both groups were compared with each other concerning socio-demographic characteristics and patient history. In the second part of this study, both groups were evaluated concerning blood tests and fluid-diet compliance.

Measures

Semi-structured Interview Form: This form was used to collect information about the patients' age, gender, education, marital status, and income status, and their personal and family medical history.

Beck Depression Inventory (BDI): It is a multiple-choice self-report inventory created by Aaron T. Beck for measuring the severity of depression. In this study, the Turkish version of BDI that is a valid and reliable questionnaire was used.[17] This scale consists of a total of 21 items, each consisting of four statements and scored between 0-3 according to the selected answer. The highest score that can be obtained is 63, and high scores indicate the severity of depressive symptoms. Although in the literature, the proposed cut-off values differ, in the present study, we based our analysis on the reports stating that the cut-off value should be as 15 points.[18]

Blood Tests: Blood samples were collected during the hemodialysis session, and serum creatinine, phosphorus, albumin, and hematocrit levels were determined.

Patient's Medical Record (PMR): It is used to identify the patients who meet the inclusion criteria of the study. Patients' compliance with the fluid-diet was also determined by interdialytic daily weight gain retrieved from the medical records.

Statistical Analysis

SPSS for Windows 10.0 statistical package program was used to evaluate the results of this study. Chi-square test, t-test, Manny-Whitney U test, Fisher exact test, and Kruskal-Wallis variance analysis tests were used where necessary. Descriptive statistics of the data were given as percentage values, arithmetic mean, standard deviation (SD), median, minimum and maximum values. Shapiro-Wilk normality test was used to determine whether the data showed normal distribution. In case the data did not show normal distribution, Mann-Whitney U test was used for independent group comparisons, Kruskal-Wallis test was used for more than two independent group comparisons, and Wilcoxon Signed Rank Test was used for the two dependent groups comparison. Statistical significance level was accepted as $p<0.05$. Besides, the correlation between the scales was determined using the Pearson correlation test. [19]

RESULTS

With the population of 100 patients who receive regular treatment in the hemodialysis center, for a 95% level of confidence and a 5% margin of error, the sample size would be 80 patients. This study was conducted on a sample of 88 patients, 33 females (37.5%), and 55 males (62.5%), who met the inclusion criteria. The mean age was 53.14 ± 15.88 (range 18-74 years), the mean duration of the CRF

was 5.07 ± 3.45 years, and the mean duration of dialysis treatment was 3.18 ± 3.15 months.

Table 1. Mean and standard deviation (SD) values of BDI

	Mean	SD
BDI	16,68	9,79
Age	53,14	15,88
Number of people in the house	3,99	1,69
Income (TL/month)	517,3	337,02
Hemodialysis duration (years)	3,18	3,15
Creatinine	2,79	1,02
Phosphorus	5	1,53
Albumin	3,78	0,51
Hematocrit	30,3	5,16

BDI: Beck Depression Inventory

Patients were divided into two groups based on their BDI scores as patients with a score of 14 or less and patients with a score of 15 or more. BDI scores of female patients were higher; however, the correlation between BDI scores and gender differences were not found to be significant ($p > 0.05$)

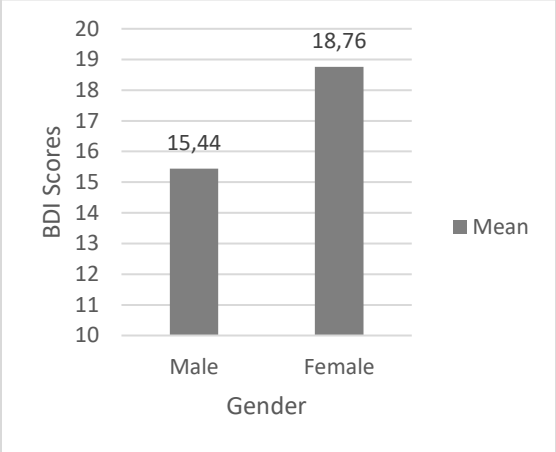

Figure 1. Relationship between gender and BDI scores.

In the statistical evaluation of the data obtained from the aforementioned forms and scales, the mean BDI score of the study group was found to be 16.68 ± 9.79. When the BDI cut-off point was taken as 15, depressive mood rate was found to be 56.8% in the study group. There was no statistically significant difference in accordance with the patients' compliance with the fluid-diet, regarding their Beck Inventory scores ($p > 0.05$). There was no significant correlation between Beck Depression Inventory scores and creatinine, phosphorus, albumin, and hematocrit levels ($p > 0.05$).

There was no significant correlation between the Beck Depression Inventory scores and age, gender, employment status, income level, education level, social security, weekly dialysis session frequency, satisfaction with a dialysis center, duration of hemodialysis treatment, presence of comorbidities ($p > 0.05$).

There was no statistically significant correlation between marital status and the Beck Depression Inventory scores ($p > 0.05$)

Table 2. Relationship between the conditions in the house and BDI scores.

BDI	**0-14**		**15 and over**		
Marital Status	**N**	**%**	**N**	**%**	**p**
Married	27	45,8	32	54,2	0,617
Single	7	50	7	50	
Widowed / Divorced	5	33,3	10	66,7	
Number of individuals in the house					
3 and less	15	44,1	19	55,9	0,205
4 or 5	21	51,2	20	48,8	
6 and over	3	23,1	10	76,9	

BDI: Beck Depression Inventory

However, it was found that the mean Beck Depression Inventory score was significantly lower in patients who lived in simple nuclear families with fewer than six individuals at home ($p < 0.019$).

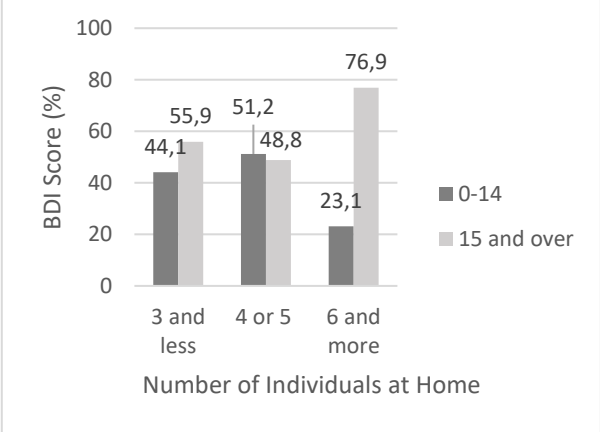

Figure 2. Relationship between the conditions in the house and BDI scores

DISCUSSION

Quite number of epidemiological studies have evaluated the psychosocial stress and the prevalence of depression in CRF patients. [20-33] Several studies have examined the relationship between the level of depressive effects and diagnosis of depression and medical factors in different ethnic groups or genders.[24-28] Gender differences in the prevalence of depression are well documented, and females are more likely to present with internalizing disorders, such as depression and anxiety.[29] In the present study, although the BDI scores of female patients were higher, the correlation between BDI scores and gender differences were not found to be significant (Figure 1).

According to literature, various psychological disorders, including depression, can be seen in uremia, [29,30] however, it is possible that the changes in blood biochemistry can be successfully treated in patients who regularly attend a hemodialysis program. According to Akman et al., depressive disorder in dialysis was associated with a doubled risk of no compliance with calcium-phosphorus dietary prescriptions. Cirillo et al. reported that the severity of depressive symptoms seemed to be related to serum phosphorus levels. [30] Teles et al. showed that anemia and hypoalbuminemia were associated with a reduced quality of life in hemodialysis patients. [31]

A possible relation between depressive mood and diet compliance of patients has been studied. [32, 33] According to Natasha et al., depressed patients are less likely to adhere to weight gain restrictions[34]; however, several other studies found no relationship between fluid restriction compliance and depressive symptoms.[33]

Previously, Najafi et al. showed that the prevalence of depression was higher in women than in men.[33] Literature also suggests that depression is associated with the length of hemodialysis, and the prolongation of the duration of both the disease and hemodialysis treatment plays a role in the formation of depression.[34,35] Epidemiological research has also shown that education has protective effects on health[36] and low socio-economic status is associated with a higher prevalence of depression.[37, 38]

In this study, the average Beck Depression Inventory score was significantly less in patients who live in nuclear families with fewer individuals living at home. This result can be explained by the possible poor distribution of income since, in the literature, low economic status is associated with a higher prevalence of depression.[37,38] On the other hand, lack of privacy is a common complaint among people who live in a crowded joint family with many members in a small house. While there are some studies which have considered nuclear type family system, a risk factor,[39] family abandonment is a significant risk factor for depression.[40]

As a limitation, this study was based on the data that was collected from a limited number of patients from a certain medical center. Furthermore, in participants with concomitant physical illness such as CRF, the BDI's reliance on physical symptoms such as fatigue may artificially inflate scores due to symptoms of the illness, rather than of depression. The BDI is a screening device for depressive mood rather than a diagnostic tool for clinical depression. To diagnose depression, clinical examination is needed and symptom criteria for major depressive disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) are commonly used. Further studies with multivariate statistical analysis of a larger sample size and a more extended follow-up period with clinical examination are required to conclude a causal association.

CONCLUSION

The holistic approach is crucial particularly for hemodialysis patients. In chronic physical diseases, psychological statuses of patients are known to have a significant effect on the success of the treatment, life expectancy, and quality of life of the patient. When we look at the results of our study from this perspective, the importance of close cooperation between hemodialysis units and psychiatry clinics and the necessity of increasing the number of consultation-liaison psychiatry units become evident. Thus, psychological support and counseling services can be provided from the onset of hemodialysis treatment and help to control the level of hopelessness and depression that are highly frequent in this patient group.

The relationship between perceived decreased family support and depression levels in hemodialysis patients should be considered. To compensate for this situation, the treatment team must establish close relations with the patient and the family. By doing so, the patient and his/her family can be informed about the type, treatment, and necessities of the disease, and also, the meaning and importance of the support needed by the patient can be emphasized to the family members.

It is vital to ask the patients how they are, how their family relationships are going, and listen to their answers carefully. Psychological evaluation of hemodialysis patients should be carried out, and psychological support should be provided. The family has a fundamental role for all patients, and lack of family support is a risk factor for depression.

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