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Hemodiyaliz Hastalarında COVID-19 Pandemisi Öncesi ve Sırasında Depresif Belirtilerin Yaygınlığı ve Şiddetinin Karşılaştırılması

Comparison of Prevalence and Severity of Depressive Symptoms in Hemodialysis Patients Before and During The COVID-19 Pandemic

Nilgün TAN TABAKOĞLU[1], Sedat ÜSTÜNDAĞ[2]

ABSTRACT

Aims: To examine the presence and severity of depressive symptoms in hemodialysis patients before and during the COVID-19 epidemic and to evaluate its relationship with the pandemic.

Methods: This study was conducted retrospectively with 21 adult hemodialysis patients who were administered the beck depression inventory between September 2018 and June 2021. The conformity of beck depression inventory scores to normal distribution was evaluated with the Shapiro-Wilk test. The Friedman test was used to compare beck depresyon inventory scores between 3 different repeated measurement times, and the Dunn test with Bonferroni correction was used for multiple comparisons. Cochran Q test was used to compare patients' depression status (no vs. yes) between 3 different repeated measurement periods. P-value < 0.05 was considered statistically significant.

Results: The mean age of the 21 patients who participated in the study (16 men and 5 women) was 66.6±9.6 years, and their ages ranged from 48 to 84 years. 23.8% of the patients were female and 76.2% were male. Beck depresyon inventory scores during the COVID-19 pandemic were significantly higher than pre-pandemic scores (p<0.001). The severity of depressive symptoms during the COVID-19 pandemic was considerably higher in women than in men (p = 0.038).

Conclusion: The COVID-19 pandemic increased beck depression inventory scores in hemodialysis patients. We think that the application of the beck depression İnventory in the routine follow-up of hemodialysis patients will contribute significantly to the early recognition of patients who may become depressed, provide the necessary treatments, and ensure compliance with hemodialysis treatment..

Keywords: Beck depression inventory, COVID-19, hemodialysis.

ÖZET

Amaç: Hemodiyaliz hastalarında COVID-19 salgını öncesi ve sırasında depresif belirtilerin varlığını ve şiddetini incelemek ve pandemi ile ilişkisini değerlendirmek.

Gereç ve Yöntem: Bu çalışma, Eylül 2018-Haziran 2021 tarihleri arasında beck depresyon anketi uygulanan 21 yetişkin hemodiyaliz hastası ile retrospektif olarak gerçekleştirildi. Beck depresyon anketi skorlarının normal dağılıma uygunluğu Shapiro-Wilk testi ile değerlendirildi. 3 farklı tekrarlı ölçüm zamanı arasındaki beck depresyon anketi skorlarını karşılaştırmak için Friedman testi, çoklu karşılaştırmalar için Bonferroni düzeltmeli Dunn testi kullanıldı. Hastaların depresyon durumunu (hayır ve evet) 3 farklı tekrarlanan ölçüm periyodu arasında karşılaştırmak için Cochran Q testi kullanıldı. P değeri <0.05 istatistiksel olarak anlamlı kabul edildi.

Bulgular: Çalışmaya katılan 21 hastanın (16 erkek, 5 kadın) yaş ortalaması 66,6±9,6 yıl olup, yaşları 48 ile 84 arasında değişmekteydi. Hastaların %23,8'i kadın, %76,2'si erkekti. COVID-19 salgını sırasında beck depresyon anketi skorlarının pandemi öncesine göre anlamlı derecede yüksek olduğu görüldü (p < 0,001). COVID-19 salgını sırasında depresif belirtilerin şiddeti kadınlarda erkeklere göre oldukça yüksekti (p = 0,038).

Sonuç: COVID-19 salgını hemodiyaliz hastalarında beck depresyon anketi skorlarını artırdı. Hemodiyaliz hastalarının rutin takibinde Beck Depresyon Anketi'nin uygulanmasının, depresyona girebilecek hastaların erken tanınmasına, gerekli tedavilerin sağlanmasına ve hemodiyaliz tedavisine uyumun artmasına önemli katkı sağlayacağını düşünüyoruz.

Anahtar kelimeler: Beck depresyon envanteri, COVID-19, hemodiyaliz.

[1] MD. Trakya University, Medical Faculty, Health Research and Application Center, 22030, Edirne / Turkey
E-mail: tabakoglunilgun@gmail.com

[2] Prof. Dr., Trakya University, Medical Faculty, Department of Nephrology, Edirne / Turkey
E-mail: sedatustundag@trakya.edu.tr

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INTRODUCTION

COVID-19, which first manifested in China as pneumonia of unknown origin in late December 2019, was declared a pandemic in March 2020 by the World Health Organization.[1] The first case in Turkey was reported on March 10, 2020.[2] COVID-19 has since become a global crisis that has resulted in millions of deaths and numerous health problems. In addition to the direct effects of the virus, quarantine and pandemic prevention measures have also caused different health problems. Studies have shown that COVID-19 is influential on the emergence of emotions such as depressive symptoms, fear, and anxiety in individuals due to previous psychological issues and chronic diseases. [3,4] In addition, since the beginning of the outbreak, it has been experienced that chronic diseases increase the risk of contracting COVID-19 and that COVID-19 is more mortal in these patients compared to those without chronic diseases. Patients with chronic diseases were concerned about whether their treatment and follow-up of their diseases could be done on time due to quarantine practices and the transformation of many wards of hospitals into COVID-19 wards. [4,5,6]

End-stage chronic kidney disease is one of the chronic diseases with a high prevalence in societies. Even before the COVID-19 pandemic, these patients had some level of depressive symptoms due to the 4-6 hours of dialysis, the need for transportation for their treatment, and, moreover, many complications caused by chronic kidney disease and hemodialysis treatment. Studies have shown that the prevalence of depression before the pandemic is between 20% and 30% in hemodialysis patients. [7, 8] With the COVID-19 pandemic, especially at the time when people avoid going to health units and being in public spaces, hemodialysis patients have to go to the hospital 2 or 3 times a week for treatment, exacerbating already existing depressive symptoms. Indeed, studies have shown that hemodialysis patients are a vulnerable group to COVID-19 infection due to their advanced age and other chronic diseases and need to be in congregate areas for treatment.[7, 9] For all these reasons, it has become much more likely for hemodialysis patients to become infected with COVID-19 and develop critical illness, and this process will result in death.[7]

One comorbidity that does not receive much consideration is depression in hemodialysis patients. Depression is also more prevalent in people who suffer physical, social, or sexual losses. Which many hemodialysis patients suffer from. Depression is associated with treatment nonadherence, suicidal tendencies, and mortality.[9] Beck Depression Inventory (BDI) is a frequently used scale to evaluate the presence and severity of depressive symptoms for the systemic evaluation of depression in hemodialysis patients. [10, 11, 12]

However, limited study has examined depression symptoms in hemodialysis patients before and during the COVID-19 pandemic.[13] Therefore, this study aimed to determine the presence and severity of depressive symptoms among hemodialysis patients before, at the beginning of and during the COVID-19 pandemic.

METHODS

Study design and participants

This retrospective study retrospectively evaluated the files of 42 program patients in a hemodialysis unit in a

research and application center of a university in Turkey between September 2018 and June 2021. Age, gender, and BDI scores were recorded from the patients' files. Three different dates were determined for the evaluation of the surveys. While deciding the dates, March 2020, when the COVID-19 epidemic started in Turkey, was taken as the center. The other 2 dates were chosen as September 2018 and June 2021, covering the pre-pandemic and pandemic period. Two patients under the age of 18, 9 patients with a history of psychiatric treatment, 5 patients receiving treatment at an external center, and 5 Patients who died during the COVID-19 pandemic were excluded from the study. The study was conducted with 21 patients who participated in 3 of the surveys conducted in September 2018 (pre-pandemic period), March 2020 (the period when the pandemic started in Turkey) and June 2021 (pandemic period). The flow diagram of our study is shown in Figure 1. Beck depression scores of these patients were compared with each other, and their relationship with the pandemic process was evaluated. The data were transferred to the SPSS program. The power of the study was calculated as 100% by a post hoc power analysis for repeated measures design based on an effect size of 0.791 at the depression scores (Partial Eta squared = 0.385), with an alpha level of 5%, total sample size 21, number of measurements 3, and correlation among repeated measures 0.5.

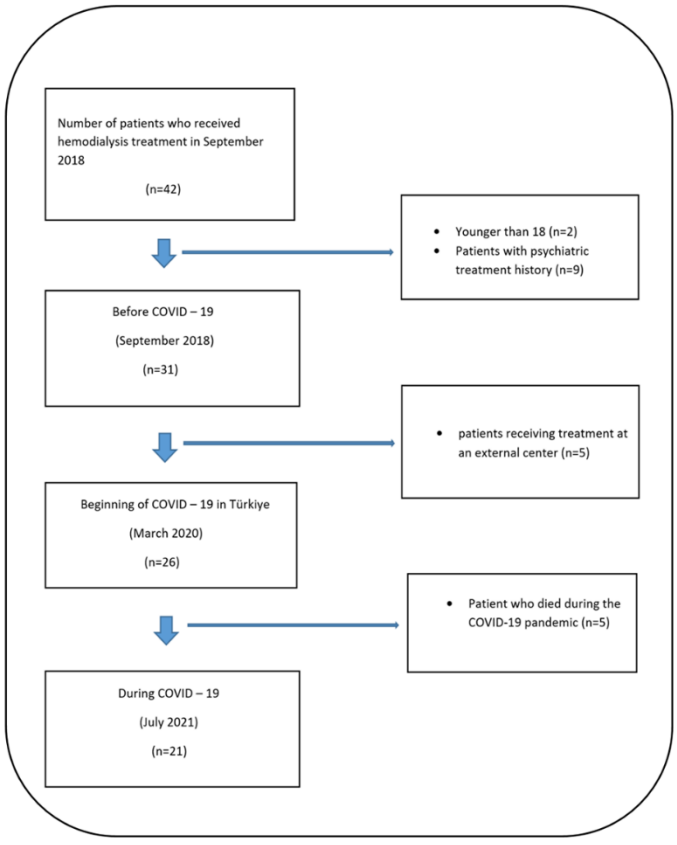

Figure 1. Flow diagram of the study.

The inclusion criteria required patients to be at least 18 years old, to have been receiving treatment at the Hemodialysis Unit of this University Hospital since 2018, and participate in all 3 surveys administered on 3 different dates. The exclusion criteria were participation in a hemodialysis program for less than 6 months, a history of renal transplantation, a history of mental or neurological disease, long-term alcohol or drug use, long-term use of opioids or valium-containing drugs, psychiatric treatment, and cognitive or severe audio-visual impairments, not having participated in one of the surveys conducted on 3 different dates determined by the researchers.

The Beck Depression Inventory (BDI)

The BDI is used to determine the level of depression and has thus also been used to determine the depression level of hemodialysis patients. [11, 12, 14] The BDI is a scale that measures the level and severity of depressive symptoms. It consists of 21 items total, each receiving a gradually increasing score between 0 and 3 for a total BDI score of 0–63. Higher scores show higher depressive symptom levels. The best BDI cut-off for the presence of depressive symptoms in hemodialysis patients was > 14, with a sensitivity 62% and a specificity 81%.[11] The validity and reliability of the inventory regarding the measurement of depression in the Turkish population have been previously proven.[15, 16] Turkish version of the BDI was used in the study.

Ethics approval

The study was approved by the Ethics Committee of the University (protocol code: TÜTF-BAEK 2021/300). The Declaration of Helsinki and its subsequent amendments conducted all procedures in this study.

Statistical analysis

The IBM SPSS Statistics for Windows, Version 20.0 (Armonk, NY: IBM Corp.) was used in the statistical analysis. Descriptive statistics were presented as mean ± standard deviation, median (minimum–maximum), and number (%). The conformity of the BDI scores to a normal distribution was evaluated with the Shapiro-Wilk test. The Friedman test was used to compare BDI scores among the 3 different repeated measurement times, and the Dunn test with Bonferroni correction was used for multiple comparisons. Cochran's Q test was used to compare the depression status of the patients (no vs yes) among the 3 different repeated measurement times. A p-value of < 0.05 was accepted as statistically significant.

RESULTS

The Cronbach's alpha coefficients for the BDI were determined to be 0.811 for the pre- COVID-19 pandemic, 0.844 for the onset of COVID-19, and 0.726 for during the COVID-19, which were evaluated as sufficiently reliable.

The mean age of the 21 patients included in the study was 66.6 ± 9.6 years, ranging from 48 to 84. In total, 23.8% were female and 76.2% were male.

The patients' COVID-19 depressive symptoms severity was found to be significantly higher than their pre-COVID-19 depressive symptoms severities in 2018 and 2020 ($p < 0.001$; Table 1 and Figure 2).

Table I. Beck Depression Inventory (BDI) scores in hemodialysis patients before, at the beginning of, and during COVID-19

	Beck Depression Inventory (BDI) scores			p
	Before COVID-19 (September 2018)	Beginning of COVID-19 (March 2020)	During COVID-19 (June 2021)	
Total	9 (0 – 38)	12 (3 – 41)	19 (6 – 30) [a, b]	<0.001
Depression rate, *(BDI score >14)*	23.8%	33.3%	76.2% [c]	0.002
Male (n = 16)	7.5 (0 – 38)	10.5 (3 – 41)	16 (6 – 28) [a, b]	<0.001
Female (n = 5)	14 (5 – 20)	12 (10 – 29)	25 (15 – 30)	0.074
P	0.199	0.247	0.038	

[a] p < 0.001 compared with before COVID-19

[b] p = 0.010 compared with beginning of COVID-19

[c] p = 0.002 compared with during COVID-19

Median (Minimum-Maximum)

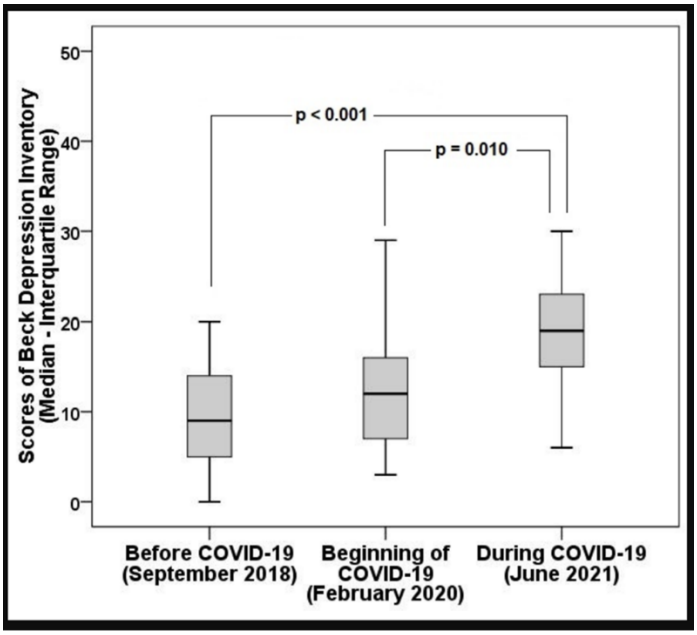

Figure 2. Comparison of the Beck Depression Inventory scores of hemodialysis patients before, at the beginning of, and during COVID-19

Furthermore, the severity of depressive symptoms during COVID-19 in females was significantly higher than in males (p = 0.038). If hemodialysis patients with a BDI score >14 are considered as presence of depressive symptoms, while the prevalence of symptoms indicating depression was 23.3% in the pre-COVID-19 period, it increased to 33.3% at the onset of COVID-19 and 76.2% in June 2021.

DİSCUSSİON

In this study, the changes in depressive symptoms in hemodialysis patients before, at the beginning and during the pandemic were investigated. It was observed that there was a significant increase in the depressive symptoms of these patients compared to other periods.

Patients receiving hemodialysis at any health center facetwice the risk of COVID-19 infection compared to patients receiving hemodialysis or peritoneal dialysis at home.[17] Studies have shown that the COVID-19 hospitalization rate among patients who receive hemodialysis is three or four times higher than patients receiving peritoneal dialysis in the United States.[18, 19]

it was concluded that the frequency of anxiety and depressive symptoms were relatively higher in hemodialysis patients during this period.[5] The results of our study are also compatible with this study. The presence of depressive symptoms in the pre-COVID-19 period was found to be 23.8%, but this rate increased to 33.3% at the beginning of COVID-19 and reached 76.2% in June 2021 is shown in Table I and Figure 2. In another meta-analysis study investigating the frequency of depression in chronic kidney patients, MEDLINE and EMBASE databases were searched until January 2012, and the prevalence of depression among end-stage renal

Further, hemodialysis units are at increased risk in terms of disease transmission, and their patients have a very severe to high mortality rate after COVID-19 infection (16–30%).[20, 21, 22]

The COVID-19 pandemic has caused worldwide consequences, such as denial, anger, stress, anxiety, insomnia, and depression, as it is a highly contagious and lethal disease that is difficult to prevent and control; it has no effective treatment method either. Since hemodialysis patients are a sensitive group for COVID-19 infection, this patient group experienced depressive symptoms more intensely. Depression is the second most common diagnosis in hemodialysis patients. Therefore, it is worth investigating for this disease group.[20,23] Studies have shown that depression affects treatment compliance in hemodialysis patients and patients' cooperation with the clinic and is moreover associated with mortality and morbidity.[24, 25]

In a study conducted with 180 hemodialysis patients in China, the patient's depressive symptoms and anxiety levels were examined during the COVID-19 period, and

disease patients was found to be 22.8%. The results of our study are also compatible with this meta-analysis. In our study, BDI scales administered in September 2018, the pre-pandemic period, were evaluated, and the prevalence of depressive symptoms was found to be 23.8%, as shown in Table I and Figure 2. [25]

The limitations of this study are its low sample size in gender categories and sample selection from only one center. As soon as the BDI does not definitely diagnose depression (sensitivity of 62% and specificity of 81%), it shows the presence and severity of depressive symptoms.

CONCLUSİON

The presence and severity of depressive symptoms increased significantly in hemodialysis patients during the COVID-19 pandemic. The high scores of the BDI may indicate a predisposition to the severity of depressive symptoms in these patients. It can be considered as a preliminary finding of a process that affects the success of the treatment, which may result in the patient's withdrawal from the treatment and, thus, death. Psychiatric evaluation of these patients with high scores would be appropriate, and the use of the BDI at regular intervals is essential in identifying the presence and severity of depressive symptoms in hemodialysis patients who may be overlooked.

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Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the study's design, the collection, analysis, or interpretation of data, the writing of the manuscript, or the decision to publish the results.

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Authors Contributions

N.T., S.Ü., designed research. N.T., S.Ü. analyzed data. N.T., S.Ü. wrote the manuscript. All authors read and approved the manuscript.

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