ORIGINAL ARTICLE

The Effect of Sleep Quality of Patients Under Hemodialysis on Death Anxiety, Depression and Pain

Hemodiyaliz Hastalarında Uyku Kalitesinin Ölüm Kaygısı, Depresyon ve Ağrı Üzerine Etkisi

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ABSTRACT

Background/Aims: Poor sleep quality in hemodialysis patients causes a decrease in quality of life. In this study, we aimed to investigate the relationship between sleep quality, depression, death anxiety and perceived pain.
Methods: A total of 101 patients with chronic kidney disease under hemodialysis were included in this cross-sectional study. The assessment tools were Beck Depression Inventory, Death Anxiety Scale, Pittsburgh Sleep Quality Index, and Visual Analogue Scale.
Results: The mean age of the patients was 51.9±13.1. Ninety-six (95%) patients had a Pittsburgh Sleep Quality Index score of 6 or above which indicates poor sleep quality. 64.4% of the patients had mild to severe depressive symptoms in terms of the Beck Depression Inventory. There were significant correlations between Pittsburgh Sleep Quality Index and Death Anxiety Scale (r: 0.382), Visual Analogue Scale (r: 0.261), and Beck Depression Inventory (r: 0.483).
Conclusion: Poor sleep quality is a common problem in hemodialysis patients. Death anxiety, pain, and depression are associated with poor sleep in hemodialysis patients. It is recommended to consider poor sleep quality to provide appropriate treatment.

Keywords: Death anxiety, pain, sleep quality, depression, hemodialysis

ÖZ

Amaç: Hemodiyaliz tedavisi gören Kronik Böbrek Hastalığı olan hastalarda kötü uyku kalitesi, yaşam kalitesinin düşmesine neden olur. Bu çalışmada uyku kalitesi ile depresyon, ölüm kaygısı ve algılanan ağrı arasındaki ilişkinin araştırılması amaçlandı.
Gereç ve Yöntemler: Bu kesitsel çalışmaya hemodiyaliz tedavisi gören toplam 101 Kronik Böbrek Hastalığı olan hasta dahil edildi. Değerlendirme araçları Beck Depresyon Envanteri, Ölüm Kaygısı Ölçeği, Pittsburgh Uyku Kalitesi İndeksi ve Visuel Analog Skala idi.
Bulgular: Hastaların yaş ortalaması 51.9±13.1 idi. Hastaların yüzde doksan beşinde Pittsburgh Uyku Kalitesi İndeksi skoru 6 veya daha yüksek olup, bu da kötü uyku kalitesine işaret etmektedir. Hastaların %64,4'ü Beck Depresyon Envanteri açısından hafif ve şiddetli depresif belirtilere sahipti. Pittsburgh Uyku Kalitesi İndeksi ile Ölüm Kaygısı Ölçeği (r = 0,382), Visuel Analog Skala (r = 0,261) ve Beck Depresyon Envanteri (r: 0,483) arasında anlamlı ilişkiler görüldü.
Sonuç: Hemodiyaliz hastalarında kötü uyku kalitesi yaygın bir sorundur. Ölüm kaygısı, ağrı ve depresyon, hemodiyaliz altındaki hastalarda yetersiz uyku ile ilişkilidir. Hemodiyaliz altındaki hastalara uygun tedavi sağlamak için düşük uyku kalitesinin göz önünde bulundurulması önerilir.

Anahtar Kelimeler: Ölüm kaygısı, ağrı, uyku kalitesi, depresyon, hemodiyaliz

Introduction

Chronic kidney disease (CKD) affects an average of 10% to 14% of the general population (1). Renal replacement therapies are hemodialysis, peritoneal dialysis, or renal transplantation for patients with CKD (1). The most preferred and life-saving renal replacement therapy, especially in emergencies, is hemodialysis (2). CKD leads to premature death and therefore a significant financial burden on the health system (3). Patients undergoing hemodialysis treatment experience a tiring process due to chronic hemodialysis treatment. These patients have many disturbing symptoms such as fatigue, anxiety, depression, death anxiety, and poor sleep quality that may affect their quality of life (4, 5). Considering the estimated rates in current studies, 70-86% of the patients have poor sleep quality, 43% anxiety, 54% fatigue and 30-32% had depressive symptoms (4,

6, 7). Unfortunately, all these challenges may even lead to withdrawal from treatment (8). Poor sleep quality in hemodialysis patients leads to poor quality of life and, unfortunately, premature death (9). If the patients have a sleep disturbance, it is important to explore this problem early. Moreover, investigating the factors associated with sleep disorders in CKD patients is important to improve sleep quality and life quality indirectly. Pain is a common complaint in patients undergoing HD (10). Pain has a negative relationship with the patient's compliance with dialysis, and affects sleep quality and depression (11). Moreover, depression and anxiety increase the perception of pain severity (12). All these factors affect each other in two ways. Therefore, it should be considered that pain, sleep and depressive symptoms should be evaluated together in patients with CKD.

A better understanding of the sleep quality experienced by hemodialysis patients is crucial to support their mental health. Therefore, related psychological factors such as death anxiety and depression should be considered. In this study, we aimed to investigate the relationship between sleep quality, and depression, death anxiety. We also consider the pain in dialysis patients with a common symptom and have a high relationship with psychological symptoms because we think that perceived pain will increase poor sleep quality.

Material and Methods

Participants

This cross-sectional study was carried out between 27.06.2022 and 31 08.2022. The required sample size was determined as 101 with the G-Power program (maximum sample size α = 0.05, test power (1 – β) 0.95). To collect data, patients receiving dialysis treatment were interviewed alone and face to face. A total of 101 hemodialysis patients treated in Gaziantep University Şahinbey Research Hospital Dialysis Unit were included in the study. Inclusion criteria were that the participants were 18 years of age or older, had been receiving dialysis treatment for at least 3 months, were oriented, had a glomerular filtration rate below 15, those with a hemoglobin value above 11 and had not undergone transplantation. Exclusion criteria were using psychotropic drugs including hypnotics, having any psychotic disorder, substance and alcohol use disorder according to DSM-5. The patients who were not diagnosed with major depression previously but were detected in new psychiatric examinations were included in the study. Ethics committee approval numbered 2021/273 was obtained from Gaziantep University Ethics Committee Presidency and institutional permission was obtained from Gaziantep Governorship Provincial Health Directorate Gaziantep University Şahinbey Research Hospital Chief Physician on 22.06.2022. Informed consent was obtained from all participants.

Assessment Tools

Socio-demographic Form: This form, prepared by the researchers, consists of 20 questions in total, including the socio-demographic characteristics of the patient and information about the disease, mental disorder and alcohol and substance use.

Beck Depression Inventory (BDI): This scale was developed by Beck et al. in 1961. The Cronbach's alpha coefficient of the scale was found as 0.87. Its validity and reliability in Turkish were made by Hisli in 1988 and it was adapted to Turkish society. Hisli found the Cronbach alpha coefficient as 0.90. Each item on the scale is related to somatic, emotional, cognitive or motivational symptoms. The scale consists of 21 questions. The maximum score that can be obtained at the end of the scale is 63. A high total score indicates a high level or severity of depression. According to the total score, the level of depression severity is interpreted as "0-9=Minimal, 10-16=Mild, 17-29=Moderate, 30-63=Severe" (13, 14).

Death Anxiety Scale (DAS)

The validity and reliability study of the "Death Anxiety Scale", was developed by Templer in 1970 to measure death anxiety. It is a 15-item, true-false scale that measures an individual's anxieties and fears about his death and the risk of death. The sum of the scores obtained by the subject gives the death anxiety score. The highest score that can be obtained from the test is 15. Death anxiety is evaluated as 0-4 points "mild", 5-9 points "moderate", 10-14 points "severe", and 15 points "panic level (15, 16)

Pittsburgh Sleep Quality Index (PSQI)

It was developed by Buysse et al. in order to evaluate the sleep quality, the amount of sleep and sleep disturbances in individuals. It is a self-report scale that provides detailed information on sleep quality and the type and severity of sleep disorder in the last month. Scores are obtained for 7 components consisting of a total of 24 questions. PSQI; consists of seven sub-components assessing subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping pills, and daytime dysfunction. The response of each is scored between 0-3 according to symptom frequency. The sum of the scores of the seven components gives the total PSQI score. The total score obtained varies between 0-21, and high values indicate poor sleep quality and high levels of sleep disturbance. A total score of 6 or above indicates that the quality of sleep is clinically significantly worse. The diagnostic sensitivity of PSQI in distinguishing between good and bad sleepers was 89.6% and specificity was 86.5%. The Turkish standardization of the scale was made by Ağargün et al. (17, 18).

Visual Analogue Scale (VAS)

VAS is used to measure perceived pain. It is a 10 cm ruler that says painlessness at one end and the most severe pain possible at the other. It has been reported to have a high sensitivity in the assessment of pain severity. The use of the VAS should be explained to the patient very well and the patient should be told that there are two endpoints and that he is free to mark any place between these points that fits the severity of his pain (19).

Statistical Analysis

Compliance of numerical variables with normal distribution was tested with the Shapiro-Wilk test. Spearman rank correlation coefficient was used to evaluate the relation between DAS, VAS, BDI and PSQI. Regression analysis could not be performed because the data did not fit the normal distribution. Relationships between categorical variables were tested with the Chi-square test. SPSS 22.0 Windows package program was used in the analysis. P<0.05 was considered significant.

Results

This study included 101 patients. The mean age of the patients was 51.9±13.1. Male/female ratio was 60/41. The mean duration since the onset of hemodialysis

was 54.5±50.0 months. The sociodemographic and clinical data of the patients are summarized in Table-1.

The median level and 25/75 percentiles were 9 (7/13), 6 (4/10.75), 5 (3/7) and 13 (6/21) for PSQI, DAS, VAS and BDI, respectively. Ninety-six (95%) patients had a PSQI score of 6 or above.

According to the BDI score, 36 (35.6%) patients had minimal depressive symptoms. Twenty-nine (28.7%) had mild, 23 (22.8%) moderate, 13 (12.9%) severe depressive symptoms.

There were significant correlations between PSQI and DAS (r: 0.382), and VAS (r: 0.261), and BDI (r: 0.483). Correlations are shown in Table 2. There were significant correlations between sub-components of PSQI and VAS / DAS. Correlations are shown in Table 3

Table 1: Descriptive Features of the Patients

		Means±SS
Age		51.9±13.1
Duration since the onset of diagnosis (CKD) (months)		87.3±74.5
Duration since the onset of hemodialysis (months)		54.5±50.0
BMI		25.1±4.7
Gender	Female	41 (40.6%)
	Male	60 (59.4%)
Marital Status	Single	15 (14.9%)
	Married	86 (85.1%)
Level of education (Years)		10.1± 4.4
The Caregiver	Wife or Husband	76 (75.2 %)
	Daughter or Son	9 (8.9 %)
	Other	16 (15.9 %)
Comorbidity	Diabetes Mellitus	60 (59.4 %)
	Hypertension	41 (40.6 %)
	Chronic Obstructive Pulmonary Disease	0 (0 %)
Smoking Status	Yes	26 (25.7 %)
	No	75 (74.3 %)

Table 2: Correlations Between DAS-PSQI-BDI-VAS

	PSQI	BDI	VAS
DAS	,382**	,397**	,389**
PSQI		,483**	,261**
BDI			,403**

**. Correlation is significant at the 0.01 level (2-tailed).
PSQI: Pittsburg Sleep Quality Index, BDI: Beck Depression Inventory, VAS: Visual Analog Scale, DAS: Death Anxiety Scale

Table 3: Correlations between sub-components of PSQI and VAS / DAS

	1 Daytime Dysfunction	2 Use of Sleeping Pills	3 Sleep Disturbances	4 Habitual Sleep Efficiency	5 Sleep Latency	6 Subjective Sleep Quality	DAS
VAS	.408**	.259**	.410**	.170	.263**	.219*	.402**
1		.402**	.561**	-.003	.640**	.452**	.401**
2			.444**	.054	.250*	.293**	.251*
3		*		-.123	.520**	.407**	.456**
4					-.131	.115	.045
5						.532**	.222*
6	.						.334**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
PSQI: Pittsburg Sleep Quality Index, BDI: Beck Depression Inventory, VAS: Visual Analog Scale, DAS: Death Anxiety Scale

Discussion

This study investigated sleep quality and its relationship with death anxiety, depression, and pain. Poor sleep quality is a common problem in hemodialysis patients (3). We found that 95% of the patients with CKD under hemodialysis had worse sleep quality, and poor sleep quality was significantly related to death anxiety, pain score and depressive symptoms. All these factors that affect the quality of life of patients under hemodialysis seem to affect each other significantly.

Sleep quality was impaired in the majority of patients under hemodialysis in this study. Unfortunately, the incidence of sleep disorders in this patient population is accompanied by low quality of life and high mortality rates (20). Similar studies have also found a high rate of disturbed sleep in this population and that poor sleep quality is associated with depression and pain (7, 21). However, in our literature review, we could not find a study investigating the direct relationship between sleep quality and death anxiety. In our study, there was a significant relationship between poor sleep quality and death anxiety. Impaired sleep quality has been shown to increase death anxiety in some chronic diseases other than CKD like patients with arrhythmia (22). Considering the correlation between sleep quality and pain/depression/death anxiety, sleep quality should be evaluated as soon as possible in hemodialysis patients and necessary treatment approaches should be applied.

Depression is one of the most important factors independently associated with sleep quality and is common in hemodialysis patients (7). 64.4% of the patients had mild to severe depressive symptoms in this study and there was a significant moderate positive relationship between depressive symptoms and poor sleep quality. It has been shown that sleep quality plays a "bridge" role in the relationship between chronic diseases and depressive symptoms (23). Therefore, improving sleep quality should be one of

our primary concerns in order to reduce the incidence of depressive symptoms in hemodialysis patients.

Pain is associated with perceived low quality of life in patients under hemodialysis (24). It has been shown that there is a direct relationship between sleep disorders and pain perception. The perception of pain can cause delayed sleep. Insufficient sleep can also increase pain perception and decrease tolerance (25). Similarly, our study showed that there was a significant relationship between pain and poor sleep quality. Pain management should be done with care in hemodialysis patients.

The present study had a few limitations. First of all, since the research was a cross-sectional study, the cause-effect relationships between the variables could not be explained. Second, the samples were collected from a single center. Third, using only scales without using a structural interview is another limitation of this study. Another limitation is that we did not record the albumin and uric acid values of the patients. Because these parameters are confounding factors that have an effect in sleep quality.

Poor sleep quality is a common problem in hemodialysis patients and is significantly related to death anxiety, pain score and depressive symptoms. Health professionals who find death anxiety, pain and depression in hemodialysis patients should also consider poor sleep quality to provide appropriate treatment. Knowledge of the factors associated with sleep disorders can help design preventive and therapeutic strategies for these patients.

Author Contributions

Conception: Ahmet Ziya Şahin, Nurgül Özdemir Data Collection and Processing: Nurgül Özdemir, Şengül Şahin, Design: Bahadır Demir, Ahmet Ziya Şahin Supervision: Ahmet Ziya Şahin, Nurgül Özdemir, Analysis and Interpretation: Ahmet Ziya Şahin,Bahadır Demir , Literature Review: Ahmet Ziya Şahin, Nurgül Özdemir , Writer: Ahmet Ziya Şahin, Şengül Şahin , Critical Review: Ahmet Ziya Şahin, Şengül Şahin

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