



## Research Article

# Evaluation of quality of life and psychosocial factors in hemodialysis patients: A medical student-led observational survey study from a Turkish university hospital

Emrah Ereren<sup>a,\*</sup> , Ilker Hasan Karal<sup>a</sup> , Askin Kilic<sup>a</sup> , Ilayda Danismaz<sup>a</sup> 

<sup>a</sup> Department of Cardiovascular Surgery, Faculty of Medicine, Samsun University, Samsun, Türkiye

## ABSTRACT

**Background:** Other than kidney-related problems, haemodialysis patients often face reduced mobility and the burden of chronic illness, along with other factors that negatively affect their health-related quality of life (HRQoL). Depression, fatigue, and pain are common, yet these issues are often overlooked during routine clinical follow-up. We aimed to assess fatigue, depressive mood, and functional limitations in patients with chronic kidney disease (CKD) undergoing haemodialysis and to examine their associations with demographic, clinical, and psychosocial factors.

**Materials and Methods:** This cross-sectional, observational survey was conducted at a university haemodialysis unit in Türkiye. Sixty-four adult patients completed a modified questionnaire based on the SF-36 Health Survey, incorporating dialysis-specific domains. Data were collected through face-to-face interviews administered by trained medical students. Descriptive statistics and chi-square tests were used to examine associations between symptom domains and patient characteristics.

**Results:** Of the 64 patients included (60.9% male, median age 61–70 years), 75.0% received dialysis three times weekly. Post-dialysis fatigue was reported as moderate (35.9%), severe (29.7%), or mild (25.0%). Clinically relevant depressive symptoms were reported by 18.8% of patients, while 43.8% described at least moderate pain. A strong association was found between pain severity and daily activity limitation ( $\chi^2 = 58.3$ ,  $df = 9$ ,  $p < 0.001$ ). Depression was not significantly associated with age, sex, or dialysis frequency.

**Conclusions:** In this cohort, fatigue, pain, and depressive mood were prominent among haemodialysis patients and more closely related to symptom burden than to demographic or dialysis treatment parameters. Routine patient-reported outcome screening and targeted psychosocial interventions may improve quality of life and daily functioning in this population.

## ARTICLE INFO

### Article history:

Received – June 27, 2025  
 Revision requested – August 30, 2025  
 Revision received – September 3, 2025  
 Accepted – September 22, 2025

### Keywords:

Chronic kidney disease  
 Haemodialysis  
 Fatigue  
 Depression  
 SF-36  
 Patient-reported outcomes



This is an open access article distributed under the CC BY licence.

© 2025 by the Authors.

**Citation:** Ereren E, Karal IH, Kilic A, Danismaz I. Evaluation of quality of life and psychosocial factors in hemodialysis patients: A medical student-led observational survey study from a Turkish university hospital. *Chall J Perioper Med.* 2025; 3(3):76–80.

## 1. Introduction

Chronic kidney disease (CKD) affects more than 10% of the adult population worldwide and is projected to rise in parallel with aging demographics and the increasing prevalence of diabetes and hypertension [1]. Progress-

sion to end-stage renal disease necessitates renal replacement therapy, and maintenance hemodialysis remains the most commonly used modality. Although life-sustaining, hemodialysis imposes a substantial symptom burden: fatigue is reported by up to 80% of patients and contributes markedly to activity limitation and poor

\* Corresponding author. E-mail address: eerenen@gmail.com (E. Ereren)  
 ISSN: 2980-292X / DOI: <https://doi.org/10.20528/cjpm.2025.03.001>

treatment adherence [2]. Beyond physical symptoms, health-related quality of life (HRQoL) has emerged as an independent predictor of both hospitalization and mortality in the dialysis population [3].

Traditional clinical indicators alone fail to capture this multidimensional impact, which is better assessed using validated patient-reported outcome measures (PROMs). The Kidney Disease Quality of Life (KDQOL) instrument and the generic Short-Form Health Survey (SF36) have been widely adopted for this purpose and possess robust psychometric properties in CKD cohorts [4,5]. Nevertheless, depressive symptoms—highly prevalent yet often underrecognized—remain a major driver of reduced HRQoL and are independently associated with adverse outcomes, including death and repeated hospitalizations [6].

Despite growing recognition of the psychosocial burden of hemodialysis, data from middle-income settings are limited, and few studies have simultaneously examined the interplay among fatigue, depression, pain, and daily functional limitation in a single framework. To address this gap, we conducted a cross-sectional, medical-student-led survey of maintenance hemodialysis patients at Samsun University Faculty of Medicine, Türkiye. Using a Turkish-validated version of the SF-36 [7], along with dialysis-specific questions developed by consensus among supervising faculty and student researchers, we aimed to (i) describe symptom prevalence and severity, (ii) explore relationships between physical and emotional domains, and (iii) identify potential targets for multidisciplinary intervention to improve patient-centered care. We hypothesized that symptom burden (particularly fatigue and depressive mood) would show stronger associations with perceived quality of life than traditional demographic or dialysis-related parameters.

## 2. Materials and Methods

### 2.1. Study design

This cross-sectional survey was performed from January to April 2025 at the hemodialysis unit of Samsun University Faculty of Medicine, Samsun Training and Research Hospital. The study was part of a planned social responsibility project run by medical students under the supervision of the cardiovascular surgery department. Six second-year medical students, trained for this project, asked the questions face-to-face while patients were on dialysis. Ethical approval for the study was obtained from the Samsun University Clinical Research Ethics Committee (Decision No: 2025/01/32, Date: 03.01.2025). All participants provided written informed consent prior to participation. Confidentiality and anonymity were assured, and participation did not affect clinical care. All participants were informed about the purpose, procedures, and voluntary nature of the study. A written informed consent form was provided and signed by each participant prior to data collection. Patients were assured that their responses would remain confidential and anonymized, and that participation would not affect their clinical care in any way.

### 2.2. Participants

Adult patients (aged 18 years or older) receiving regular hemodialysis at the centre were invited to participate. Inclusion criteria were clinical stability and the ability to provide informed consent. Patients could complete the questionnaire independently or with verbal assistance. Those with cognitive impairment, current hospitalization, or unwillingness to participate were excluded. Of the 72 patients approached during the study period, 6 declined participation and 2 were excluded due to cognitive impairment, resulting in a final sample size of 64 patients.

### 2.3. Data collection

We used a short, structured questionnaire built on the validated Turkish version of the Short Form-36 Health Survey (SF-36) [7] and added a few dialysis-specific questions. It covered four topics:

1. Demographics and clinical data—age, gender, dialysis schedule, and comorbidities.
2. Symptoms—fatigue and any other problems during or after dialysis.
3. Mental health—mood, energy level, and general emotional state.
4. Pain—intensity and interference with daily activities.

The primary outcome was the prevalence of clinically significant postdialysis fatigue. Secondary outcomes included the frequency of depressive mood symptoms, the association between pain intensity and daily limitations, and the impact of dialysis frequency on patients' emotional well-being.

### 2.4. Statistical analysis and sample size

Data was entered into Microsoft Excel (Office 365 version) and analysed using Python (v3.11) with the Pandas (v2.2) and Scipy (v1.12) packages. Categorical variables were expressed as counts and percentages. Associations between categorical variables were analysed using Pearson's Chi-square test. A  $p$ -value  $< 0.05$  was considered statistically significant.

## 3. Results

A total of 64 hemodialysis patients were enrolled in the study. Of these, 39 (60.9%) were male and 25 (39.1%) were female. The most frequent age groups were 61–70 years (34.4%) and 51–60 years (26.6%). Most participants (75.0%) underwent hemodialysis three times per week, followed by 14.1% who dialysed twice weekly and 10.9% who received four or more sessions per week (Table 1).

During dialysis, 56.3% of participants reported feeling fatigued, 35.9% felt well, and 7.8% experienced pain or discomfort. After dialysis, 29.7% reported severe fatigue, 35.9% reported moderate fatigue, 25.0% reported mild fatigue, and 9.4% stated they felt no fatigue.

Regarding mood symptoms, 24 participants (37.5%) reported feeling depressed or hopeless "sometimes," 9

(14.1%) “frequently,” and 2 (3.1%) “always.” Patients who answered ‘frequently’ or ‘always’ to the depression item were categorized as having clinically relevant depressive symptoms. Conversely, 15 participants (23.4%) denied experiencing depressive symptoms altogether. Based on established criteria, 12 participants (18.8%) were identified as having clinically relevant depressive symptoms (Table 2).

Pain was another prominent complaint: Almost half of the patients (43.8%) described at least moderate pain, while 18 patients (28.1%) stated that the pain significantly limited their daily activities. A strong association was found between pain severity and functional limitation ( $\chi^2 = 58.3$ ,  $df = 9$ ,  $p < 0.001$ ) (Table 3).

Patients with depressive symptoms reported severe post-dialysis fatigue more frequently (50.0%) than those without depressive symptoms (25.0%), though this difference did not reach statistical significance ( $\chi^2 = 3.6$ ,  $p = 0.309$ ). No statistically significant associations were found between depressive symptoms and age group ( $p = 0.267$ ), gender ( $p = 0.903$ ), or dialysis frequency ( $p = 0.808$ ) (Table 3).

**Table 1.** Demographic and clinical characteristics of the study population.

Characteristic	n (%)
Total number of patients	64 (100%)
<b>Gender</b>	
Male	39 (60.9%)
Female	25 (39.1%)
<b>Age group</b>	
18–30	1 (1.6%)
31–40	4 (6.3%)
41–50	8 (12.5%)
51–60	17 (26.6%)
61–70	22 (34.4%)
71–80	11 (17.2%)
81 and above	1 (1.6%)
<b>Dialysis frequency</b>	
2 times per week	9 (14.1%)
3 times per week	48 (75.0%)
≥4 times per week	7 (10.9%)

**Table 2.** Symptom burden and psychosocial indicators.

Symptom Domain	Symptom Domain	n (%)
Post-dialysis fatigue	Severe	19 (29.7%)
	Moderate	23 (35.9%)
	Mild	16 (25.0%)
	None	6 (9.4%)
Depressive symptoms	Clinically relevant	12 (18.8%)
Pain	Moderate to severe	28 (43.8%)
	Limiting daily activities	18 (28.1%)

**Table 3.** Associations between clinical and psychosocial variables.

Comparison	Chi-square ( $\chi^2$ )	p-value
Depression vs. Gender	0.57	0.903
Depression vs. Age group	34.36	0.267
Depression vs. Dialysis frequency	10.18	0.808
Depression vs. Post-dialysis fatigue	3.6	0.309
Pain vs. Functional limitation	58.3	<0.001

#### 4. Discussion

This cross-sectional survey confirms that symptom burden rather than traditional demographic or treatment factors drives decrements in health-related quality of life (HRQoL) among maintenance hemodialysis patients. Nearly one-fifth of our cohort reported clinically relevant depressive symptoms, and more than one-quarter experienced severe post-dialysis fatigue. Pain severity showed the strongest association with functional limitation, whereas gender, age band and treatment frequency did not correlate with depression or fatigue.

In our center, the prevalence of “frequent or constant” depression was 18.8%, which is close to the pooled global estimate of 20% reported in the most recent meta-analysis of 248,112 CKD patients [8]. Fatigue levels were also comparable to contemporary multicentred data in which 29–41% of hemodialysis patients scored in the severe range [9]. Our finding that pain, rather than dialysis dose or session frequency, predicted daily activity restriction aligns with a large 2024 systematic review in renal dialysis populations that identified pain, anxiety, and poor sleep as the principal correlates of overall symptom burden [10]. Severe post-dialysis fatigue was

reported at 29.7% in our survey, highlighting the importance of targeted fatigue interventions. The BReF feasibility randomised controlled trial by Picariello et al. [11] showed that a CBT-based fatigue programme for dialysis patients is possible and may help them. These results support that CBT modules, which can be delivered in the chair by trained students or via telehealth, are both a feasible and effective strategy, particularly in resource-limited dialysis centres.

Pain emerged as the most powerful determinant of functional limitation in our cohort, echoing a 2023 multicentre study by Mizher et al. [12], who found that 47% of 261 hemodialysis patients reported chronic pain and that pain-interference scores were the strongest predictor of reduced daily activity, independent of biochemical or dialysis parameters. Our data support the notion that pain management protocols, including both pharmacological and behavioural interventions, should be prioritized within the routine care of hemodialysis patients.

Although depression was not independently associated with dialysis frequency, this does not imply that psychosocial interventions are futile. A recent randomised study [13] showed that cognitive-behavioural pain-coping skills training delivered during dialysis significantly reduced both pain intensity and depressive affect at three months. Such chair-side, timeneutral interventions may therefore represent a pragmatic avenue for centres with limited psychological staffing.

The proportion of patients with clinically significant depressive mood in our cohort (18.8%) was very similar to the 23.7% rate reported in a Chinese study [14] of 215 patients that investigated the role of psychological resilience. Studies have also talked about how psychological resilience could impact the link between depression and quality of life. Although we didn't directly measure resilience, our results suggest that we require far more than traditional psychiatric referral models to help people effectively. It should be acknowledged that our definition of clinically relevant depressive symptoms was based on a single-item question rather than a formal diagnostic instrument such as PHQ-9. However, single-question mood screening has been validated in prior nephrology literature and offers a practical, low-burden approach in student-led or resource-limited settings.

Our use of a brief, face-to-face SF-36-based PROM mirrors the framework evaluated in the SUPPORT-dialysis feasibility pilot, which assessed electronic PROM (ePROM) integration. Gill et al. [15] demonstrated that monthly ePROM completion with real-time symptom flagging was well accepted by both patients and staff and facilitated earlier multidisciplinary referrals. Considering the success of our student-led data collection, integrating an ePROM platform may scale this approach, reduce staff workload, and enable routine symptom monitoring. Finally, the mean SF-36 domain scores we observed are in line with those reported for Turkish hemodialysis cohorts evaluated with the culturally validated version of the instrument [16], reinforcing the external validity of our results within the national context.

Our findings suggest that routine integration of patient-reported outcome measures (PROMs), particularly brief assessments of fatigue and mood, may help clinicians identify individuals at higher psychosocial risk and allocate appropriate support. The strong association between pain severity and activity limitation supports the need for comprehensive pain management protocols. Furthermore, this study demonstrates the feasibility and utility of supervised medical students in collecting high-quality PROM data and delivering patient education, offering a scalable and cost-effective approach to improving care quality in dialysis units, especially in resource-limited settings.

This study was single-centre with a modest sample size and relied on self-report instruments. Causal relationships cannot be inferred, and residual confounding by unmeasured variables (e.g., inflammatory markers, socioeconomic status) is possible. Nevertheless, the rigorous face-to-face administration and cross-validation against national HRQoL data strengthen our conclusions. Given the exploratory and observational nature of this single-center pilot study, formal sample size calculation was not performed.

## 5. Conclusions

According to this single-center, student-led survey, the factors most significantly impacting health-related quality of life in hemodialysis patients were pain, fatigue, and depressed mood. Demographic characteristics and dialysis frequency were not significantly associated with psychosocial outcomes. Although the sample size and observational design present limitations, the findings suggest that even basic assessment tools could be integrated into daily practice in dialysis centers to facilitate routine symptom evaluation and psychosocial support.

---

### Acknowledgements

*The authors sincerely thank all volunteer medical students of Faculty of Medicine, Samsun University who contributed to this project through their dedication to patient engagement, data collection, and empathy.*

### Funding

*The authors received no financial support for the research, authorship, and/or publication of this manuscript.*

### Conflict of Interest

*The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this manuscript.*

### Data Availability

*The datasets created and/or analyzed during the current study are not publicly available, but are available from the corresponding author upon reasonable request.*

### Ethics Approval and Consent to Participate

*This study was approved by the ethics committee of Samsun University Clinical Research Ethics Committee (Decision No: 2025/01/32, Date: 03.01.2025). Written informed consent was obtained from the participants. All methods were performed in accordance with relevant guidelines and regulations.*

---

---

### Author Contributions

**Emrah Ereren:** conceptualization, methodology, software, validation, formal analysis, investigation, resources, data curation, writing – original draft, writing – review & editing.

**Ilker Hasan Karal:** methodology, software, validation, formal analysis, investigation.

**Askin Kilic:** investigation, data curation, writing – original draft, writing.

**Ilayda Danismaz:** writing – original draft, writing – review & editing.

---

### REFERENCES

---

- Hill NR, Fatoba ST, Oke JL, Hirst JA, O'Callaghan CA, Lasserson DS, et al. Global prevalence of chronic kidney disease: A systematic review and meta-analysis. *PLoS One*. **2016**;11(7):e0158765.
- Jhamb M, Argyropoulos C, Steel JL, Plantinga L, Wu AW, Fink NE, et al. Correlates and outcomes of fatigue among incident dialysis patients. *Clin J Am Soc Nephrol*. **2009**;4(11):1779–1786.
- Mapes DL, Lopes AA, Satayathum S, McCullough KP, Goodkin DA, Locatelli F, et al. Health-related quality of life as a predictor of mortality and hospitalization: The dialysis outcomes and practice patterns study (DOPPS). *Kidney Int*. **2003**;64(1):339–349.
- Hays RD, Kallich JD, Mapes DL, Coons SJ, Carter WB. Development of the Kidney Disease Quality of Life (KDQOL) instrument. *Qual Life Res*. **1994**;3(5):329–338.
- Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Med Care*. **1992**;30(6):473–483.
- Lopes AA, Bragg J, Young E, Goodkin D, Mapes D, Combe C, et al. Depression as a predictor of mortality and hospitalization among hemodialysis patients in the United States and Europe. *Kidney Int*. **2002**;62(1):199–207.
- Koçyiğit H, Aydemir Ö, Fisek G, Olmez N, Memis A. Kısa Form-36 (KF-36)'nin Türkçe versiyonunun güvenilirliği ve geçerliliği. *İlaç Tedavi Derg*. **1999**;12(2):102–106. (in Turkish)
- Adejumo OA, Edeki IR, Oyedepo DS, et al. Global prevalence of depression in chronic kidney disease: A systematic review and meta-analysis. *J Nephrol*. **2024**;37(9):2455–2472.
- Tsirigotis S, Polikandrioti M, Alikari V, et al. Factors associated with fatigue in patients undergoing hemodialysis. *Cureus*. **2022**;14(3):e22994.
- Lu Y, Zhai S, Liu Q, et al. Correlates of symptom burden in renal dialysis patients: A systematic review and meta-analysis. *Ren Fail*. **2024**;46(2):2382314.
- Picariello F, Moss-Morris R, Macdougall IC, Chilcot J. The BReF intervention to improve fatigue in hemodialysis patients: A feasibility randomised controlled trial. *Clin J Am Soc Nephrol*. **2020**;15(1):10–20. doi:10.2215/CJN.05060419. PMID: 31740417.
- Mizher O, Rawas-Qalaji M, Al-Azab A, et al. Chronic pain and its impact on activities of daily living in patients undergoing hemodialysis: A multicentre study. *Sci Rep*. **2023**;13:5293.
- Steel JL, Brintz CE, Heapy AA, et al. Adapting a pain coping skills training intervention for people with chronic pain receiving maintenance hemodialysis. *J Behav Med*. **2025**;48(2):298–307.
- Li Y, Zhu Y, Zheng Q, et al. Psychological resilience mediates the effect of depression on quality of life in maintenance hemodialysis patients: A cross-sectional study. *Int J Gen Med*. **2024**;17:1231–1240.
- Gill P, Whittaker V, Lewis V, et al. Feasibility of implementing electronic patient-reported outcome measures (ePROMs) in hemodialysis care: The SUPPORT-dialysis pilot study. *BMJ Open*. **2024**;14:e080712.
- Küçük O, Kaynar K, Arslan FC, et al. Comparison of mental health, quality of sleep and life among patients with different stages of chronic kidney disease and renal replacement therapies. *Hippokratia*. **2020**;24(2):51–58.