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The Effect of Frailty on Quality of Life in Older Patients Receiving Hemodialysis and Associations With Fear of Falling

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ABSTRACT

Purpose: This study investigated the effect of frailty and avoidance behavior due to fear of falling on the quality of life in older patients receiving hemodialysis treatment.

Methods: This study is cross-sectional and descriptive. The study was conducted between January 2 and 31, 2022, with 154 individuals aged 65 years and over receiving treatment in dialysis centers. The study data were collected using the Patient Information Form, Edmonton Frail Scale, Fear of Falling Avoidance-Behavior Questionnaire, and Quality of Life Scale (SF-12).

Results: The Mean Edmonton Frail Scale score was found to be 8.7 ± 3.36, the mean Fear of Falling Avoidance-Behavior Questionnaire score was found to be 33.17 ± 9.11, the mean SF-12 physical component score was found to be 34.32 ± 8.51, and the mean mental component score was seen as 41.77 ± 8.35. The Fear of Falling Avoidance-Behavior Questionnaire was an associated factor in the effect of the Edmonton Frail Scale on quality of life. It strengthened the negative impact of the Edmonton Frail Scale on quality of life. The predictive effect of these two variables in explaining quality of life was 59.3%.

Conclusion: It was found that the participants had moderate levels of frailty, moderate levels of activity limitation, and participation restriction due to fear of falling, and low levels of physical and mental quality of life. It was determined that frailty had a direct impact on quality of life. Also, the indirect effect of frailty on quality of life was determined through the role of avoidance behavior due to fear of falling.

1 | Introduction

Hemodialysis is the world's most common renal replacement therapy, accounting for approximately 69% of all renal replacement therapy and 89% of all dialysis [1]. According to center-based data in Turkey, 58,944 patients received renal replacement therapy as of the end of 2021, and the number of patients receiving renal replacement therapy continued to increase. It was also found that the most common type of renal replacement therapy was hemodialysis (70.06%) [2]. It is noteworthy that more than 80% of the hemodialysis population consists of middle-aged and older patients [3]. Various comorbid factors affect mortality and quality of life in older hemodialysis patients [4, 5]. These factors include anxiety, depression, frailty, fatigue, and falls [4–6].

According to the World Health Organization, a fall is defined as lying on the ground or at a lower level than the person himself/herself due to carelessness or accident [7]. Although the possibility of falls is always present in individuals, it is higher in patients receiving hemodialysis than in the general population,

and falls have been associated with higher morbidity in these patients [8, 9]. In diseases affecting all organs and systems, such as chronic renal failure, and in treatment processes, such as hemodialysis, functional losses may increase the risk of falls with decreases in physical activity capacity [10, 11]. In addition, in patients receiving hemodialysis treatment, mobility can often be impaired due to prolonged sitting during dialysis treatment, and postural hypotension and fatigue develop after treatment [12, 13]. These also increase the risk of falls in patients compared to the general population. Loss of proprioception and peripheral neuropathy in hemodialysis patients also leads to significant impairment of balance and makes them more prone to falls [14].

It is also reported in the literature that variables such as medications, instability (hemodynamic and metabolic) caused by treatment, malnutrition, depression, low body mass index, high comorbidity, post-dialysis fatigue, orthostatic hypotension, vitamin D deficiency, hematological disorders, advanced age, and frailty increase the risk of falls in older adults receiving hemodialysis treatment [4, 9, 11, 15]. Falls have significant negative consequences in older hemodialysis patients [6, 11, 16]. Falls are the primary cause of chronic disability in older patients receiving hemodialysis. Serious falls experienced by hemodialysis patients can lead to conditions such as hip fractures, joint dislocations, or brain damage. When patients receiving hemodialysis treatment were compared with the general population, it was reported that the risk of hip fracture was 4.44 times higher for male patients on dialysis and 4.40 times higher for female patients on dialysis. It has also been reported that the risk of additional fractures associated with dialysis increases with increasing age [17]. Such situations cause a decrease in functionality in hemodialysis patients, loss of independence, a decrease in quality of life, limitations in social participation, admission to nursing homes, and an increase in healthcare costs. Most importantly, serious falls can result in hospitalization, disability, and death [9, 11]. In addition, quality of life can be affected by falls, resulting in disability and loss of independence and causing patients to experience fear of falling [11]. Fear of falling is an ongoing concern that limits the performance of daily activities. Fear of falling can lead to a more sedentary lifestyle. This can result in loss of fitness, frailty, and an increased risk of falling [18]. Fear of falling can cause severe anxiety in individuals. In this case, individuals may develop behaviors to avoid the behavior of falling. These behaviors may also trigger exaggerated or disproportionate avoidance behavior. Avoidance behavior may be appropriate, inappropriate, or disproportionate. In both cases, appropriate strategies need to be developed for appropriate patients. This is because avoidance behavior can trigger a vicious circle, putting individuals at even greater risk of falling in the future due to deconditioning and weakening [19]. In this case, it is essential to evaluate patients' fear and risk of falling and to take appropriate measures.

Frailty is a complex age-related clinical condition characterized by a decrease in the physiological capacity of various organ systems and, thus, increased susceptibility to relevant stressors [20]. The prevalence of frailty is high in older hemodialysis patients [21]. and frailty leads to disease progression and poor outcomes such as disability, emergency admissions, hospitalization, and mortality [21–23]. Frailty also causes older hemodialysis patients to be incapable of activities of daily living such as shopping, housework, and bathing; to demonstrate decreased walking speed and movement; and to be dependent on all activities, including daily activities, which leads to a decrease in their quality of life [4, 21]. In addition, health-related quality of life in hemodialysis patients is strikingly lower than in the general population [24] and it is thought that studies conducted on this issue will be critical.

The risk of dialysis complications is increased in older hemodialysis patients due to geriatric problems such as frailty, insomnia, depression, and falls [25]. When the literature was examined, no studies were found in which frailty, fear of falling, and quality of life components were addressed in older hemodialysis patients. With the gradual increase in the number of older hemodialysis patients in the world and in Turkey, the increase in the proportion of older hemodialysis patients cannot be ignored, and it will become increasingly important to address the geriatric problems experienced by older hemodialysis patients [4, 25]. Therefore, this study was conducted to determine the role of fear of falling avoidance behavior in the effect of frailty on quality of life in older patients receiving hemodialysis treatment.

2 | Materials and Methods

2.1 | Design

The study has a cross-sectional descriptive-correlational design.

2.2 | Population and Sample of the Study

The population of this study consisted of 240 patients receiving treatment in dialysis centers (one public and three private dialysis units) in Elazığ in eastern Turkey between January 2 and 31, 2022. Priori power analysis was performed using the G-Power 3.1.9.4 program to determine the study's sample size. Since there are no similar studies in the literature, considering the effect size of 0.15 (medium size) in the regression analysis test in Cohen's effect size table for the priori power analysis of the study [26], when the significance level was 0.05 [27] and power was 0.95 [28], it was determined that the minimum number of patients to be included in the study was 107.

The study was completed with 154 older patients who met the inclusion criteria—being 65 years of age or older having the cognitive ability to understand and respond to data collection tools, and having no communication problems (hearing, language, comprehension, etc.)—and who volunteered to participate in the study. These values show that the sample size is at the desired level [28]. In this study, 90% of the sample was reached by patients who met the inclusion criteria. Among the patients registered in dialysis centers, 61 patients were not included in the study because they were under 65 years of age, nine older patients had communication problems, and 16 older patients did not want to participate.

2.3 | Data Collection Tools

Patient Information Form, Edmonton Frail Scale, Fear of Falling-Behavior Questionnaire, and SF-12 Quality of Life Scale

were used for data in the study. Data were collected through face-to-face interviews with patients.

2.4 | Patient Information Form

The patient information form was used to determine the sociodemographic and disease characteristics of the patients. Researchers prepared this form. The form contains 13 questions. Questions were included regarding the patients' age, gender, educational status, marital status, occupation, income level, presence of chronic disease, smoking, alcohol use, history of falls, and length of hospital stay due to falls.

2.5 | Edmonton Frail Scale

The Edmonton Frail Scale was developed by Rolfson et al. at the University of Alberta in Canada to assess frailty in older individuals [29]. A Turkish validity and reliability study was conducted by Aygör in 2013 [30]. The scale consists of 11 items and nine subdimensions. These subscales are also included in the Comprehensive Geriatric Assessment and are considered determinants of frailty. These frailty dimensions include cognitive status, general health status, functional independence, social support, medication use, nutrition, mood, continence, and functional status. "Clock test" is used to assess cognitive status, and "Timed up and test" is used to assess functional performance [29, 30]. The highest possible score is 17, and the lowest is 0. A high total score on the scale indicates that the severity of fragility is also high. In addition, the total score is categorized into five levels: 0–4 is not frail, 5–6 is vulnerable, 7–8 is mildly frail, 9–10 is moderately frail, and 11 and above is severely frail. Cronbach's alpha coefficient was found to be 0.75 by Aygör when determining the internal consistency of the Edmonton Frail Scale [30]. In this study, Cronbach's alpha value was determined to be 0.71.

2.6 | Fear of Falling Avoidance-Behavior Questionnaire

Fear of Falling Avoidance Behavior Questionnaire was developed by Landers et al. to assess the avoidance behavior of older people living in the community [31]. Turkish validity and reliability of the scale was carried out by Candan et al. and the Cronbach's alpha value obtained for the scale was 0.95 [32]. Fear of Falling Avoidance-Behavior Questionnaire consists of a total of 14 items and 2 subscales. The "Challenging Balance Demands in Daily Life" subscale determines activities such as going up and down, walking on different surfaces, exercising, sitting and getting up from a chair. The "Instrumental Activities of Daily Living and Socialization" subdimension determines activities such as showering or bathing, doing housework, entertainment and leisure. The highest score that can be obtained from the scale is 56 and the lowest score is 0. A high score indicates activity limitation and participation restriction due to fear of falling [32]. In this study, Cronbach's alpha value was determined as 0.94.

2.7 | SF-12 Quality of Life Questionnaire (SF-12)

In this study, the SF-12 was used to determine the quality of life. The Turkish validity and reliability of the scale were conducted by Soylu et al. [33] SF-12 was preferred in this study because it is a scale that can be easily understood by older people. It evaluates the quality of life during the last 4 weeks. SF-12 consists of 8 subscales and 12 items. The subdimensions are physical functioning, physical role, physical pain, general health, vitality, social functionality, emotional role, and mental health. The Physical Component score is obtained from the subscales of general health, physical functioning, physical role, and bodily pain. The Mental Component score is obtained from the subscales of social functionality, emotional role, mental health, and vitality. Physical Component and Mental Component scores range from 0 to 100. High scores on the scale indicate a good quality of life. The Cronbach alpha value was found to be 0.75 in this study.

2.8 | Evaluation of Data

The findings obtained from the research were analyzed in the SPSS 25 package program. In this study, the SPSS PROCESS macro four regression analysis was used. Percentage, number, arithmetic standard deviation, and mean are descriptive statistics regarding the variables used in the analysis of the findings. Normality tests of the measurement values were performed with Shapiro–Wilk tests. Since the p value was below 0.05, nonparametric tests were administered. The Spearman correlation test was used to evaluate the correlation between variables. The findings were assessed at the $p < 0.05$ significance level.

3 | Results

When the sociodemographic and disease characteristics of the patients are examined, it is seen that the mean age of the participants is 73.17 ± 6.29. The mean number of falls was 2.06 ± 0.75 (per year), 55.2% were male, 71.4% were married, 53.9% were primary school graduates, 61%'s income was equal to their expenses, 50.6% lived with their spouses, and 65.6% did not smoke. Of the patients, 35.7% used assistive devices, 12.3% exercised regularly (inter-dialytic exercise), 31.8% had a history of falls, and 11% had a history of hospitalization due to falls (Table 1).

Table 2 shows the mean Edmonton Frail Scale, Fear of Falling Avoidance-Behavior Questionnaire and SF-12 scores of the participants. The mean Edmonton Frail Scale score of the individuals was 8.7 ± 3.36; frailty levels were determined as 9.7% not frail, 16.2% vulnerable, 24% mildly frail, 23.4% moderately frail and 26.6% severely frail. The mean score of Fear of Falling Avoidance-Behavior Questionnaire was 33.17 ± 9.11, the mean score of challenging balance demands in daily life subscale was 20.54 ± 6.19, the mean score of instrumental activities of daily living and socialization was 12.63 ± 3.5, the mean score of Physical Component subscale was 34.32 ± 8.51, and the mean score of Mental Component subscale was 41.77 ± 8.35 (Table 2).

TABLE 1 | Sociodemographic and disease characteristics of participants (*n*: 154).

	Mean ± SD	Min–max (median)
Age	73.17 ± 6.29	65–89 (72)
Number of falls (year)	2.06 ± 0.75	1–4 (2)
Gender, *n* (%)		
Female	69	44.8
Male	85	55.2
Marital status, *n* (%)		
Married	110	71.4
Single	44	28.6
Educational status, *n* (%)		
Illiterate	26	16.9
Literate	24	15.6
Elementary education	83	53.9
High school	15	9.7
Undergraduate and above	6	3.9
Level of income, *n* (%)		
Income < expense	58	37.7
Income = expense	94	61.0
Income > expense	2	1.3
Individuals living with the patient, *n* (%)		
Spouse	78	50.6
Spouse and children	30	19.5
Alone	25	16.2
Other (children)	21	13.6
Smoking status, *n* (%)		
Yes	53	34.4
No	101	65.6
Use of assistive device, *n* (%)		
Yes	55	35.7
No	99	64.3
Status of doing regular inter-dialytic exercise, *n* (%)		
Yes	19	12.3
No	135	87.7
History of fall, *n* (%)		
Yes	49	31.8
No	105	68.2
Hospitalization due to fall, *n* (%)		
Yes	17	11.0
No	137	89.0

TABLE 2 | Mean Edmonton Frail Scale, Fear of Falling Avoidance-Behavior Questionnaire, and SF-12 Quality of Life Questionnaire Measurements of the participants (*n*: 154).

	Mean ± SD	Min–max (median)
Edmonton Frail Scale	8.7 ± 3.36	1–17 (8.5)
Frailty, *n* (%)		
Not frail	15	9.7
Vulnerable	25	16.2
Mildly frail	37	24.0
Moderately frail	36	23.4
Severely frail	41	26.6
Fear of Falling, Avoidance Behavior Questionnaire Subdimensions, *n* (%)		
Challenging Balance Demands in Daily Life	20.54 ± 6.19	3–34 (20)
Instrumental Activities of Daily Living and Socialization	12.63 ± 3.50	3–20 (13)
Fear of Falling Avoidance Behavior Questionnaire, *n* (%)	33.17 ± 9.11	6–54 (33)
SF-12 subdimensions		
Physical subdimension	34.32 ± 8.51	17.68–54.01 (33.43)
Mental subdimension	41.77 ± 8.35	19.35–60.26 (43.43)

There is a significant positive correlation between the participants' Edmonton Frail Scale and Challenging Balance Demands in Daily Life ($r = 0.749$, $p < 0.01$), Instrumental Activities of Daily Living and Socialization ($r = 0.575$, $p < 0.01$), and Fear of Falling Avoidance-Behavior Questionnaire ($r = 0.733$, $p < 0.01$). There is a significant negative correlation between Edmonton Frail Scale and Physical Component ($r = -0.651$, $p < 0.01$) and Mental Component ($r = -0.319$, $p < 0.01$). There is a significant negative correlation between Challenging Balance Demands in Daily Life and Physical Component ($r = -0.734$, $p < 0.01$) and Mental Component ($r = -0.277$, $p < 0.01$). There is a significant negative correlation between Instrumental Activities of Daily Living and Socialization and Physical Component ($r = -0.667$, $p < 0.01$) and Mental Component ($r = -0.220$, $p < 0.01$). There is a significant negative correlation between Fear of Falling Avoidance-Behavior Questionnaire and Physical Component ($r = -0.759$, $p < 0.01$) and Mental Component ($r = -0.274$, $p < 0.01$) (Table 3).

SPSS PROCESS macro 4 Model was used to show the effect of frailty on quality of life and the role of fear of falling avoidance in this effect. The analysis results shown in Figure 1 are presented in Table 4. According to the results of the analyses, both frailty ($\beta = -0.288$) and fear of falling avoidance ($\beta = -0.285$) affect quality of life negatively. According to another finding, fear of falling avoidance behavior is an associated factor in the effect of frailty on quality of life ($\beta = -0.559$; ($1.963X - 0.285$)) and reinforces the negative effect of frailty on quality of life ($\beta = -0.847$). The predictive effect of these two variables in explaining the quality of life was found to be 59.3% (Table 4).

4 | Discussion

The incidence of patients with end-stage renal failure treated with hemodialysis is gradually increasing with age [34]. According to population projections, this number is expected to follow an upward trend in the coming years. Not only the increase in the older population but also the fact that this population is a unique group in terms of medical and social needs has increased the interest in the hemodialysis management of older patients [4]. With the increase in clinical comorbidities with age, the management of hemodialysis issues such as vascular intervention and hypertension should be addressed by calculating specific risks and benefits. Functional decline, cognitive impairment, depression, and malnutrition are common features of this dialysis population [35]. In this study, the effect of frailty and the role of avoidance behavior due to fear of falling on the quality of life in older patients receiving hemodialysis treatment was investigated.

In this study, the frailty level of the patients was found to be at a moderate level. The prevalence of frailty in older hemodialysis patients can reach as high as 73% and is a strong indicator of mortality on its own [36]. The process of dialysis has been shown to increase dependence on daily activities among the residents of nursing homes [37]. It was found that the rate of frailty was higher in older hemodialysis patients [21]. In another study, the rate of frailty was found to be high in hemodialysis patients [38]. In a previously conducted meta-analysis, the collective prevalence of frailty in end-stage renal failure patients receiving hemodialysis was 46%–95% confidence interval (CI) 34.2%–58.3% [39]. The prevalence of frailty in the normal population ranges between 7% and 32%; in inpatients,

TABLE 3 | Correlation Analysis of Edmonton Frail Scale, Fear of Falling Avoidance-Behavior Questionnaire, and SF-12 Quality of Life Questionnaire (*n*: 154).

		EFS	Challenging Balance Demands in Daily Life	Instrumental Activities of Daily Living and Socialization	FFABQ
EFS	*r*	1			
	p				
Challenging Balance Demands in Daily Life	*r*	0.749	1		
	p	0.000			
Instrumental Activities of Daily Living and Socialization	*r*	0.575	0.743	1	
	p	0.000	0.000		
FFABQ	*r*	0.733	0.966	0.885	1
	p	0.000	0.000	0.000	
PC-12	*r*	−0.651	−0.734	−0.667	−0.759
	p	0.000	0.000	0.000	0.000
MC-12	*r*	−0.319	−0.277	−0.220	−0.274
	p	0.000	0.000	0.006	0.001

Note: Spearman's, $p < 0.05$.
Abbreviations: EFS, Edmonton Frail Scale; FFABQ, Fear of Falling Avoidance Behavior Questionnaire; MC-12: SF-12 Mental Component; PC-12: SF-12 Physical Component.

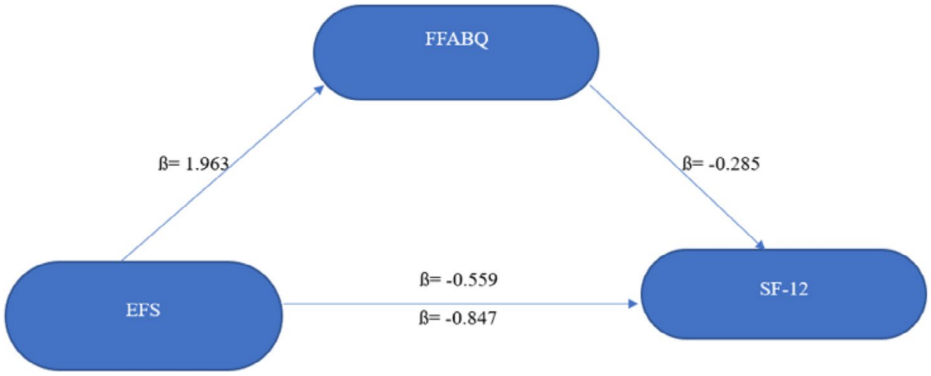

FIGURE 1 | Research model. EFS, Edmonton Frail Scale, FFABQ, Fear of Falling Avoidance Behavior Questionnaire, SF-12, SF-12 Quality of Life Questionnaire.

TABLE 4 | Direct and Indirect Effects of Frailty, Fear of Falling, Avoidance Behavior, and Quality of Life (*n*: 154).

				95% CI			
	β	SE	*t*	Lower	Upper	*p*	R^2
Direct effect							
EFS → SF-12	−0.288	0.065	−4.025	−0.412	−0.135	0.001*	0.341
FFABQ → SF-12	−0.285	0.071	−4.032	−0.424	−0.145	0.001*	
EFS → FFABQ	1.963	0.151	12.969	1.664	2.262	0.001*	
Indirect effect							
EFS → FFABQ → SF-12	−0.559	0.165	−4.658	−0.958	−0.985	0.001*	
Total effect							
EFS → SF-12	−0.847	0.189	−4.479	−1.221	−0.473	0.001*	0.593

Abbreviations: EFS, Edmonton Frail Scale; FFABQ, Fear of Falling Avoidance-Behavior Questionnaire; SF-12, SF-12 Quality of Life Questionnaire.
*$p < 0.05$.

it is as high as 48.8% [40]. In this study, the prevalence of frailty was determined to be 74% and it appears to be higher than the normal population. Frailty is not synonymous with aging. The concept of frailty predicts more than chronological age, and it is reported that frailty may be a better criterion for identifying older adults in need of intervention. Frailty develops slowly and its presence is associated with various adverse health outcomes such as functional decline, hospitalization, and death [38, 41]. Despite improved care and innovative technological advances in hemodialysis, the mortality of end-stage renal failure patients is 10–30 times higher than in the general population [42]. In a meta-analysis, patients with frailty were reported to have a higher risk of all-cause mortality than those without (hazard ratio [HR]: 2.02, 95% GA: 1.65–2.48) [39]. Several mechanisms have been proposed to explain the relationship between frailty and chronic kidney disease, including the presence of inflammatory markers, anemia, malnutrition, hormonal changes, depression, and decreased muscle strength. It has been suggested that identifying and treating the underlying mechanisms in the pre-frailty stage may help delay or even prevent further deterioration [38, 39]. It is emphasized that frailty can potentially be reduced. Therefore, appropriate interventions are very important for patients. It is stated that interventions such as exercise, nutrition, cognitive training, rehabilitation, geriatric assessment, and management reduce the level of frailty. The compliance rate of patients with these interventions has been reported to be about 70% [43]. These interventions can be included in the care planning of older patients receiving hemodialysis.

In this study, activity limitation and participation limitation caused by fear of falling were found to be moderate. Older hemodialysis patients avoid performing challenging balance movements in daily life such as going up and down, sitting on a chair and getting up, and avoid participating in daily life and social activities such as char, free time activities, and hobbies. Gait and balance in older hemodialysis patients are worse than in the general population [4]. older patients are more prone to falls because the aging process leads to gait and balance disorders, decreased postural reflexes, neurosensory disorders, neurological and cardiovascular comorbidity, osteoarthritis, and loss of muscle strength [44]. da Silva de Jesus et al. found a higher fear of falling in hemodialysis patients in a comparative study conducted with individuals without chronic kidney disease [45]. “Falls” are frequently observed in patients receiving hemodialysis treatment. Experiencing a fall causes fear of falling, leading to less activity and less time out of the house. This immobility due to fear of falling may lead to decreased strength, agility, and balance, which, in turn, may predispose to loss of independence, further functional decline, and subsequent falls [11].

In this study, it was determined that the physical and mental subdimensions of the participants' quality of life were low. In different studies, it has been reported that older hemodialysis patients have low quality of life [46]. Older hemodialysis patients receiving hemodialysis treatment often experience physical limitations, itching, and sexual dysfunction. In addition to these symptoms, hemodialysis sessions can be painful due to access to the vascular line. Due to all these situations, the quality of life in older hemodialysis patients tends to be low, so it is very important to make evaluations that can improve the quality of life. This is important because poor quality of life increases the likelihood of death and hospitalization in older patients who receive hemodialysis [47]. It is thought that the changes that occur due to aging with hemodialysis treatment (decreased functional capacity, systemic problems, etc.) reduce the quality of life in these patients.

In this study, frailty has a negative impact on quality of life, as it reinforces the role of fear of falling in avoidance behavior. Frailty reduces the physiological reserve of older individuals and decreases the quality of life [4]. Frailty develops slowly and can also be triggered by a disease process such as chronic kidney disease. Frailty is associated with a variety of adverse health outcomes, including functional decline (reduced mobility, inability to perform activities of daily living, recurrent falls, hip and non-spine fractures), hospitalization, and death [38, 39]. Literature shows that frailty is associated with falls and that falls increase the risk of death and hospitalization. Falling can impair quality of life by initiating a downward cycle [11]. Falls negatively affect quality of life as they can lead to disability, loss of independence, and fear of falling [44, 48]. Those who fall have a higher prevalence of fear of falling, and they perform limited activities [48]. Participation in activities has positive consequences on general health and quality of life [49]. Physical inactivity is the fourth leading cause of death worldwide, accounting for approximately 3.2 million deaths each year [50]. Avoidance behavior due to fear of falling can lead to frailty, avoidance of social activities, falls, and dependence [49]. Fear of falling avoidance behavior was found to be high in frail older people [51]. In a study conducted by Ertan et al., it was found that avoidance behavior affected quality of life negative [52]. Different studies also found that high avoidance behavior decreased quality of life [53, 54]. Compared to non-frail patients, being frail affects both physical and mental health negatively and reduces quality of life [55]. Avoidance behavior due to fear of falling affects nutrition, health, and personal care in older people, restricting their movement and housework. Considering the importance of social integration and social participation for a productive and dynamic life, these limitations play a key role in isolating older people [56]. Because older individuals are afraid of falling, they try to stay away from activities that may pose a risk of falling for them (such as walking in crowded places, climbing stairs, doing household chores, lifting and carrying objects). This restriction of activity and participation affects their quality of life negatively [57]. Frailty affects the quality of life in older hemodialysis patients negatively. Due to the fear of falling, patients avoid performing challenging balance movements in daily life and participating in daily life and socializing activities, which further increases the negative impact on quality of life. It is very important to plan and implement appropriate strategies to improve quality of life and survival in older patients receiving hemodialysis. It has been reported that fear of falling is associated with the amount of physical activity in hemodialysis patients, and interventions targeting the fear of falling can be effective in reducing the risk of falls in hemodialysis patients by increasing physical activity [58]. It has been reported that intradialytic cycling, installation of activity trackers, staff and patient education, reorganization of the environment, use of nonslip socks, walking belts, bed, and

chair alarms are interventions that reduce falls in hemodialysis patients [59].

4.1 | Limitations

This study has some limitations. First, the study was conducted in a single center and has a small sample size. Since it is a cross-sectional study, it does not assess the causal relationship between variables. Additionally, the small sample size may limit the adjustment for confounding variables. The second limitation is that the research results are only valid for the patients included in the study and cannot be generalized to the entire population. The third limitation is that the reliability of the data is limited to the responses of the patients participating in the study. Another limitation is that the comorbidity index of the patients was not questioned. Evaluating whether the low quality of life in hemodialysis elderly patients is due to frailty and/or fear of falling or other comorbidities would be useful in overcoming these limitations.

5 | Conclusion

In the study, it was concluded that the severity of frailty of the patients was at a moderate level, their activity limitation and participation restrictions due to fear of falling were at a moderate level, and their physical and mental quality of life were low. Frailty in older individuals receiving hemodialysis treatment negatively affects the quality of life. The negative impact is reinforced by the role of avoidance behavior. Frailty in older individuals is a very important concept, and it is very important to determine its effects. Fear of falling can cause older people to limit many activities, which can affect their lives and increase their addiction. Both frailty and fear of falling can affect quality of life. Therefore, it is recommended to constantly evaluate these situations, determine the affecting factors, and take appropriate measures. It is also recommended to conduct different studies on these concepts in different populations and cultures.

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Ethics Statement

Before starting the research, approval was obtained from the ethics committee of a university (09.24.2021 dated and 2021/09 numbered). Patients included in the study were informed about the study, and their written and verbal consents were obtained. The ethical standards of the Declaration of Helsinki were adhered to throughout the research. Voluntary patients were included in the research. They were explained that they could leave the study whenever they wanted. Participants' information is kept confidential.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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