Elderly Health Journal 2024; 10(1): 1-6.
Shahid Sadoughi University of Medical Sciences, Yazd, Iran
Journal Website : http://ehj.ssu.ac.ir

Original Article

Fear of Falling and Quality of Life in Older Hemodialysis Patients in Tehran Hospitals

Mohammad Dehesh [1], Parvaneh Samady Kia [2], Nahid Rejeh [3*], Seyed Davood Tadrisi [4]

1. Department of Nursing, Faculty of Nursing & Midwifery, Shahed University, Tehran, Iran
2. Department of Community Health and Geriatric Nursing, School of Nursing and Midwifery, Iran University of Medical Sciences, Tehran, Iran
3. Elderly Care Research Center, Department of Nursing, Faculty of Nursing & Midwifery, Shahed University, Tehran, Iran
4. Trauma Research Center, Faculty of Nursing, Baqiyatallah University of Medical sciences, Tehran, Iran

* **Corresponding Author:** Elderly Care Research Center, Department of Nursing, Faculty of Nursing & Midwifery, Shahed University, Tehran, Iran. **Tel:** +98 (21)51212150**, Email address**: nrejeh@yahoo.com

A B S T R A C T

Article history
Received 22 Feb 2024
Accepted 19 May 2024

Citation: Dehes M, Samady Kia P, Rejeh N, Tadrisi SD. Fear of falling and quality of life in older hemodialysis patients in Tehran hospitals. Elderly Health Journal. 2024; 10(1): 1-6.

Introduction: Several factors influence the quality of life (QoL) of older adults, particularly those on hemodialysis. Fear of falling and its resulting limitations are significant contributors. This study investigated the association between fear of falling and QoL in older hemodialysis patients in Tehran hospitals .

Methods: A descriptive-correlational design was used with 197 older hemodialysis patients in Tehran hospitals (2021) recruited through convenience sampling. Data were collected using a demographic questionnaire, the Falls Efficacy Scale-International , and the Leiden International Psychogeriatric Assessment of Life Functions scale to assess QoL. Spearman's rank correlation was performed using SPSS-21 software.

Results: The mean QoL score (54.68 ± 16.09) indicated a moderate level. The mean fear of falling score (35.29 ± 13.54) reflected a high level. A significant negative correlation (R = -0.63, p = 0.001) was found between fear of falling and QoL.

Conclusion: Our findings suggest that increased fear of falling is associated with a decrease in QoL among older hemodialysis patients. Further research is warranted to explore interventions aimed at managing fear of falling, preventing falls, and ultimately improving QoL in this population.

Keywords: Aged, Quality of Life, Fear of Falling

Introduction

The global population of older adults is growing rapidly, including in Iran, which boasts one of the highest rates of increase (1). Aging is associated with changes in physical structure and function, increasing the risk of chronic diseases (2). These conditions can affect balance and motor function, leading to complications like falls and fractures (3). End-stage renal disease (ESRD), a chronic condition culminating in chronic renal failure (CRF), is one such example (4). The average age of hemodialysis patients, the most common treatment for ESRD, is also rising, with approximately 40% exceeding 65 years old in most countries (5, 6).

While hemodialysis offers life-saving benefits for ESRD patients, it presents challenges for older adults (7). Compared to healthy individuals, older patients on hemodialysis experience a significant decrease in independence and require greater assistance with daily activities, negatively impacting their quality of life (8). Studies indicate that nearly half (45%) of older dialysis patients experience dizziness and hypotension, leading to falls at least once a year (9). Fall prevalence among this population is estimated between 36% and 47%, with one in seven patients suffering fractures that decrease

[DOI: 10.18502/ehj.v10i1.15959]

independence and increase hospitalization and mortality risks (10, 11). Given the high prevalence of falls among the general older adult population (20-28% in Iran experiencing at least one fall in six months) (12, 13), falls pose a significant threat to this demographic.

Fear of falling, a common psychological complication of falls in older adults, further exacerbates the issue (14). This fear, coupled with balance problems, leads to reduced mobility (15). Characterized by a lack of confidence in performing daily activities without losing balance, the fear of falling can initially be a positive reaction, promoting increased caution. However, it can also create a vicious cycle. The fear of falling can lead to decreased activity levels, prolonged hospitalization, and ultimately, a diminished quality of life (16). This fear, and the resulting complications, further reduces functional independence and increases dependence on others, lowering overall quality of life for older adults (14).

A systematic review found a strong correlation between increased fear of falling and decreased quality of life in older adults (17). Additionally, research exploring the relationship between quality of life and demographic factors in dialysis patients suggests a significant link between physical activity, balance, and quality of life (18). While fear of falling and its consequences undeniably diminish quality of life in older adults, particularly when compounded by other psychological factors, limited data exists regarding this specific population of older dialysis patients.

To address this knowledge gap, this study aimed to evaluate the relationship between fear of falling and quality of life in older patients undergoing hemodialysis in Tehran hospitals during 2021. The findings of this study can contribute to the development of effective educational and counseling interventions for this population, ultimately promoting a healthier and more fulfilling aging experience.

Methods

Study design

This study employed a descriptive-correlational design to investigate the relationship between fear of falling and quality of life in older hemodialysis patients.

Participants

Participants were recruited using a convenience sampling method from April to July 2021 in Tehran hospitals. The sample size of 197 was calculated based on the findings of Ozcan et al., (19), considering a 95% confidence level and 80% power.

Data collection

Ethical approval was obtained from the Shahed University Ethics Committee. Additionally, permission was granted by the university's Research Deputy, and coordination occurred with officials from selected Tehran hospitals. The researcher visited these centers, explained the study objectives to relevant personnel, and recruited participants who met the inclusion criteria which included: age 60 years or older, no diagnosed cognitive disorders; ability to perform daily activities independently, no speech impairments hindering response to questions, history of at least two falls in the past year, undergoing hemodialysis for a minimum of six months.

Procedure

The researcher introduced themself and explained the study's purpose to potential participants. Those who expressed willingness to participate and met all inclusion criteria provided written informed consent. Participants were assured of questionnaire anonymity and information confidentiality. Additionally, they were encouraged to answer all questions honestly and accurately.

Instruments

The study employed three instruments to collect data:

Demographic Characteristics Form: This researcher-administered form collected personal and clinical information through interviews. It included questions on age, gender, education level, marital status, employment status, dialysis history, smoking habits, underlying diseases, medications, past fall history (including location and use of mobility aids).

Falls Efficacy Scale-International (FES-I): Developed by Yardley et al., (20), this 16-item scale assesses fear of falling in older adults. It measures their confidence in performing daily activities without losing balance. Each item uses a 4-point Likert scale (1-4) to gauge their "level of worry about falling" during specific activities. Scores range from 16 to 64, with interpretations as follows:

- 16-19: Low fear
- 20-27: Moderate fear
- 28-64: High fear

The FES-I demonstrates good internal consistency and test-retest reliability (Cronbach's alpha = 0.73) (21). The Iranian version was psychometrically evaluated by Khajavi et al., (22).

The Leiden International Psychogeriatric Assessment of Life Functions Scale (LEIPAD): Developed by Diego et al., (23), this 31-item scale measures quality of life in older adults across seven dimensions: physical function, self-care, depression/anxiety, mental function, social function, sexual function, and life satisfaction. A 4-point Likert scale (0-3) is used, with 0 representing the worst state and 3 the best. Total scores range from 0 to 93 and are categorized as follows:

- 0-31: Poor quality of life
- 32-62: Moderate quality of life
- 63-93: Good quality of life

Higher scores indicate better quality of life. This scale has been recommended as a culturally neutral tool for use with older adults in various societies (23). Ghasemi et al., (24) reported its reliability coefficient in Iranian older adults at 0.83 using Cronbach's alpha.

Data analysis

Data were analyzed using IBM SPSS Statistics 21. Descriptive statistics (mean, frequency distribution, and standard deviation) were used to summarize participant characteristics and questionnaire scores. Analytical statistics included the Shapiro-Wilk test to assess data normality and Spearman's rank correlation coefficient to examine the relationship between fear of falling and quality of life.

[DOI: 10.18502/ehj.v10i1.15959]

Ethical considerations

This study adhered to the ethical principles outlined in the code of ethics (IR.SHAHED.REC.1399.054) established by the Shahed University Ethics Committee. We obtained the necessary permissions from the university's Research Deputy and coordinated with officials from selected Tehran hospitals to ensure informed consent from all participants.

Results

The study participants (n = 197) had a mean age of 70.02 years (SD = 8.12). Among them, 63.5% (n = 125) were male, 37% (n = 73) were illiterate, and 70.1% (n = 138) were married. The average duration of dialysis treatment was 29.03 months (SD = 50.16). Most participants (n = 124, 62.9%) were retired, and the majority (58.9%) had been on dialysis for over 12 months. Over half (52.8%, n = 104) reported experiencing fewer than three falls in the past year, and 45.7% (n=90) had fallen at home. Consequently, 52.8% (n = 104) used mobility aids. A significant majority (72.6%, n = 143) had at least one underlying disease, and most (59.9%, n = 118) took less than five medications daily. (Table 1)

The participants' overall quality of life score indicated a moderate level (54.68 ± 16.09). The self-care dimension received the highest score (12.62 ± 4.39), while the sexual function dimension received the lowest (1.96 ± 1.53). The Shapiro-Wilk test revealed that neither the individual dimension scores nor the total score followed a normal distribution. (Table 2)

The total fear of falling score (35.29 ± 13.54) indicated a high level of fear among the participants. This fear was primarily associated with daily activities considered major fall risk factors (21.08 ± 8.44). (Table 3)

Spearman's rank correlation coefficient analysis (p = 0.001, R = -0.63) revealed a significant inverse relationship between fear of falling (both total score and individual dimension scores) and quality of life (both total score and individual dimension scores). The strength of this correlation was considered moderate. In simpler terms, as fear of falling increased, quality of life scores decreased. (Table 4)

Table 1. Frequency distribution of the demographic variables of the older patients studied

Demographic variables	Categories	N (%)
Age	70 ≥	122 (61.9)
	70 ≤	75 (38.1)
Gender	Female	72 (36.5)
	Male	125 (63.5)
Marital status	Married	138 (70.1)
	Widow	50 (25.3)
	Divorced	9 (4.6)
Education level	Illiterate	73 (37)
	High school	25 (12.7)
	Diploma	54 (27.4)
	Academic	45 (22.9)
Job status	Housewife	38(19.3)
	Retired	124 (62.9)
	Out of service	35 (17.8)
History of dialysis	≤ 12 months	81(41.1)
	> 12 months	116 (58.9)
Underlying disease	No	54 (2.4)
	Yes	143 (72.6)
The number of medications used	Less than 5 medications	118 (59.6)
	More than 5 medications	79(40.1)
History of falls in the past	Less than 3 times	104 (52.8)
	More than 3 times	93 (47.2)
Use of mobility aids	No	93 (47.2)
	Yes	104 (52.8)

Table 2. Quality of life score in the older patients undergoing hemodialysis

Dimensions	Mean	SD	Shapiro-Wilk test	Rank
Physical function	8.19	3.09	0.001	5
Self-care	12.62	4.39	0.001	1
Depression and anxiety	7.48	3.09	0.001	3
Mental function	9.82	3.60	0.001	2
Social function	50.5	20.2	0.001	4
Sexual function	1.96	1.53	0.001	7
Satisfaction with life	9.11	3.29	0.001	6
Total score	54.68	16.09	0.004	Average

[DOI: 10.18502/ehj.v10i1.15959]

Table 3. Fear of falling in older patients undergoing hemodialysis

Dimensions of fear of falling	N (%)	Mean	SD	Rank
Fear of falling due to daily activities (primary factors of falling)	-	21.08	8.44	1
Fear of falling during other activities	-	14.21	5.45	2
The total score of fear of falling	-	35.29	13.54	High fear
Low fear (16-19)	25 (12.17)	-	-	
Moderate fear (20-27)	38 (19.3)	-	-	
High fear (24-64)	134(68)	-	-	

Table 4. The relationship between fear of falling and quality of life in older patients undergoing hemodialysis

←Response ↓Stimulus	Physical	Self-care	Depression	Mental	Social	Sexual	Satisfaction	Quality of life
Primary efficacy of falling	R = -0.61 P = 0.001	R = -0.67 P = 0.001	R = -0.41 P = 0.001	R = -0.40 P = 0.001	R = -0.32 P = 0.001	R = 0.43 P = 0.001	R = -0.37 P = 0.001	R = -0.64 P = 0.001
Non-primary efficacy of falling	R = -0.55 P = 0.001	R = 0.65 P = 0.001	R = -0.39 P = 0.001	R = 0.26 P = 0.001	R = -0.29 P = 0.001	R = -0.41 P = 0.001	R = -0.39 P = 0.001	R = -0.58 P = 0.001
Fear of falling	R = -0.64 P = 0.001	R = -0.168 P = 0.001	R = -0.41 P = 0.001	R = -0.40 P = 0.001	R = -0.32 P = 0.001	R = -0.43 P = 0.001	R = -0.40 P = 0.001	R = -0.63 P = 0.001

Discussion

This study investigated the relationship between fear of falling and quality of life in older adults undergoing hemodialysis in Tehran hospitals. Our findings revealed a significant inverse correlation, indicating that as fear of falling increases, quality of life decreases.

Quality of life is a multifaceted concept encompassing physical function, self-care, depression/anxiety, mental function, social function, sexual function, and life satisfaction, as measured by the LEIPAD questionnaire. Notably, the self-care and physical activity dimensions were most impacted by fear of falling in our study.

These findings align with previous research by Mohammadi et al., who identified a direct association between fear of falling and depression in diabetic older adults (11). This suggests that reduced physical activity due to fear of falling can lead to decreased social interaction, social isolation, and ultimately, lower quality of life. Additionally, another study supports the notion that fear of falling can limit physical activity even in active older adults with good physical function (25). Fear of falling restricts participation in various activities and daily tasks, ultimately leading to decreased mobility, weakened muscles, and a higher risk of falls. This creates a vicious cycle, with frequent falls further intensifying fear of falling and limiting physical activity (26). Importantly, fear of falling can be present even in healthy and functionally independent older adults (25).

A review study highlighted that weakness and malnutrition in hemodialysis patients can increase fall risk (26). Sarcopenia, cachexia, and muscle weakness, along with bone fractures, contribute to frequent falls and reduced physical activity in older dialysis patients, further fueling fear of falling. Our findings are consistent with this existing research.

A systematic review also reported a moderate to strong correlation between fear of falling and quality of life, with the strongest associations observed in the physical and mental function dimensions, followed by a moderate association with social function (17). These findings align with our study results.

Conclusion

The statistically significant relationship between fear of falling and quality of life underscores the importance of developing comprehensive care programs and educational interventions to prevent and manage fear of falling in older adults. Strengthening screening programs and implementing educational programs, particularly for conditions that lead to dialysis dependence, could be beneficial in improving their quality of life. Future studies should explore and design appropriate interventions to prevent falls, control fear of falling, and improve quality of life in older hemodialysis patients.

Study limitations

This study encountered limitations. The COVID-19 pandemic during data collection may have affected participant responses and willingness to be interviewed due to concerns surrounding the pandemic. Additionally, fatigue experienced by older dialysis patients while answering questionnaires posed a challenge. To address this, the researcher offered to meet with participants again during subsequent dialysis sessions. The non-random sampling method employed in this study introduces the possibility of bias. Therefore, future studies should utilize random sampling techniques.

[DOI: 10.18502/ehj.v10i1.15959]

Conflict of interest

The authors declare no conflict of interest in the research, writing, or publication of this article.

Acknowledgments

The authors would like to express their gratitude to the officials and staff of the Tehran hospitals involved in this study, as well as the older adult participants for their cooperation. This research was derived from a master's thesis in geriatric nursing.

Authors' contributions

All authors meet the criteria for authorship established by Elderly Health Journal and have approved the final content of the manuscript.

References

1. Statistical Center Of Iran. detailed results of the Population and Housing Census [Internet]. 2016 [Cited 17 October 2023]. Available from: http://www.sci.org

2. Soleimani MA, Bastani F, Negarandeh R. Exploring of challenges of self-care in people with Parkinson's disease: Resulting from qualitative research study. Journal of Gerontology. 2016; 1(1): 63-78. [Persian]

3. Immonen M, Haapea M, Similä H, Enwald H, Keränen N, Kangas M, et al. Association between chronic diseases and falls among a sample of older people in Finland. BMC Geriatrics. 2020; 20(1): 1-12.

4. Afkand S, Nourozi Tabrizi K, Fallahi Khoshknab M, Reza Soltani P. The impact of multidimensional model of psychiatric rehabilitation care on hemodialysis patient's depression. Journal of Health Promotion Management. 2012; 1(3): 7-16. [Persian]

5. Hosseini A, Fotokian Z, Jannat Alipour Z. Studying the degree of frailty and its related factors in the elderly undergoing hemodialysis. Caspian Journal of Health and Aging. 2022; 7(2): 11-27. [Persian]

6. Auguste BL, Chan CT. Home dialysis among elderly patients: outcomes and future directions. Canadian Journal of Kidney Health and Disease. 2019; 6(1): 1-6.

7. Samakoosh MA, Aghaie N, Gholami F, Shirzad M, Yosefi E, Baboli MT. Assessment dialysis adequacy in hemodialysis patients of Qaemshar Razi Hospital in 2012. Journal of Mazandaran University of Medical Sciences. 2013; 23(107): 20-7. [Persian]

8. Matsufuji S, Shoji T, Yano Y, Tamaru A, Tsuchikura S, Miyabe M, et al. Difficulty in activities of daily living and falls in patients undergoing hemodialysis: A cross-sectional study with nondialysis controls. Hemodialysis International. 2021; 25(3): 338-47.

9. Ravindran A, Sunny A, Kunnath RP, Divakaran B. Assessment of quality of life among end-stage renal disease patients undergoing maintenance hemodialysis. Indian Journal of Palliative Care. 2020; 26(1): 47-53.

10. Baneshi R, Saboor M, Haghi M, Bidhendi Yarandi R, Zandieh Z. Fear of falling and its relationship with frailty in older adults. Salmand: Iranian Journal of Ageing. 2023; 18 (2): 204-17. [Persian]

11. de Jesus LA, Pinheiro BV, de Oliveira AC, Suassuna LF, Silva BL, de Paula RB, et al. Association between fear of falling and a history of falls in patients with end-stage renal disease on hemodialysis. Therapeutic Apheresis and Dialysis. 2023; 27(2): 264-9.

12. Dehesh M, Rejeh N, Tadrisi SD, Tayebi A. Fear of falls and related factors in the elderly undergoing dialysis referred to hospitals in Tehran 2021. Qom University of Medical Sciences Journal. 2021; 15(9): 640-9. [Persian]

13. Nabavi SH, Hatami ST, Norouzi F, Gerivani Z, Hatami SE, Monadi Ziarat H, et al. Prevalence of fall and its related factors among older people in Bojnurd in 2015. Salmand: Iranian Journal of Ageing. 2016; 11(3): 466-73. [Persian]

14. Mohammadi B, Ilali E, Taraghi Z, Moosazadeh M. The analysis of relationship between fear of falls with depression in aged diabetic. Journal of Gerontology. 2019; 3(3): 9-20. [Persian]

15. Baneshi R, Saboor M, Haghi M, Bidhendi Yarandi R, Zandieh Z. Fear of falling and its relationship with frailty in older adults. Salmand: Iranian Journal of Ageing 2023; 18 (2): 204-17. [Persian]

16. Khazanin H, Daneshmandi H, Fakoor Rashid H. Effect of selected fall-proof exercises on fear of falling and quality of life in the Elderly. Salmand: Iranian Journal of Ageing. 2022; 16 (4): 564-77. [Persian]

17. Schoene D, Heller C, Aung YN, Sieber CC, Kemmler W, Freiberger E. A systematic review on the influence of fear of falling on quality of life in older people: is there a role for falls? Clinical Interventions in Aging. 2019: 14: 701-19.

18. Ghahfarokhi RJ, Abbaszadeh A. The relationship between quality of life and demographic variables in hemodialysis patients. Pars Journal of Medical Sciences. 2012; 10(3): 1-7. [Persian]

19. Ozcan A, Donat H, Gelecek N, Ozdirenc M, Karadibak D. The relationship between risk factors for falling and the quality of life in older adults. BMC Public Health. 2005; 5(1): 1-6.

[DOI: 10.18502/ehj.v10i1.15959]

20. Yardley L, Beyer N, Hauer K, Kempen G, Piot-Ziegler C, Todd C. Development and initial validation of the falls efficacy scale-international (FES-I). Age and Ageing. 2005; 34(6): 614-9.
21. Delbaere K, Close JC, Mikolaizak AS, Sachdev PS, Brodaty H, Lord SR. The falls efficacy scale international (FES-I): a comprehensive longitudinal validation study. Age and Ageing. 2010; 39(2): 210-6.
22. Khajavi D, Farokhi A, Jaberi Moghadam AA, Kazemnejad A. The impact of a training intervention program on fall-related psychological factors among male older adults in Arak. Salmand: Iranian Journal of Ageing. 2014; 9(1): 32-9. [Persian]
23. De Leo D, Diekstra RF, Lonnqvist J, Lonnqvist J, Cleiren MH, Frisoni GB, et al. LEIPAD, an internationally applicable instrument to assess quality of life in the elderly. Behavioral Medicine. 1998; 24(1): 17-27.
24. Ghasemi H, Harirchi M, Masnavi A, Rahgozar M, Akbarian M. Comparing quality of life between seniors living in families and institutionalized in nursing homes. Social Welfare Quarterly. 2011; 10(39): 177-200. [Persian]
25. Sawa R, Asai T, Doi T, Misu S, Murata S, Ono R. The association between physical activity, including physical activity intensity, and fear of falling differs by fear severity in older adults living in the community. The Journals of Gerontology: Series B. 2020; 75(5): 953-60.
26. Shirai N, Inoue T, Ogawa M, Okamura M, Morishita S, Suguru Y, et al. Relationship between nutrition-related problems and falls in hemodialysis patients: A narrative review. Nutrients. 2022; 14(15): 1-13.

[DOI: 10.18502/ehj.v10i1.15959]