



Fear of falling, quality of life, and daily functional activity of elderly women with and without a history of falling: a cross-sectional study

Sahar Miri, MSc^a, Ali Asghar Norasteh, PhD, PT^{b,*}

Background: This study aimed to evaluate the fear of falling, quality of life, and daily functional activity of older women aged 60 years or older with or without a history of falling.

Materials and methods: Two hundred older adult women were recruited for the cross-sectional study in Iran. This cross-sectional study collected data from July to August 2023 through convenience sampling. The researchers collected data using a five-part questionnaire, that collected information that included demographic characteristics, the Fall Efficacy Scale in the Elderly-International Version (FES-I), 12-item Quality of Life assessment (SF-12), Instrumental Activities of Daily Living (IADL) and Activities of Daily Living (ADL).

Results: FES-I score in older women with a history of falls was significantly higher than those without a history of falls [median: 38.0, interquartile range (IQR): 31.5–44.0 versus median: 22.0, IQR: 20.0–30.0; $P < 0.001$]. The median quality-of-life score using the SF-12 was significantly lower in women with a history of falls than in those without a history of falls (median: 25.0, IQR: 21.0–30.0 versus median: 35.0, IQR: 31.0–39.0; $P < 0.001$). The ADL scores were significantly lower among women with a history of falls than those without ($P < 0.001$). A similar result was obtained for IADL scores ($P < 0.001$).

Conclusion: Overall, this study's findings highlight the adverse impact of a history of falls on three key factors: fear of falling, quality of life, and daily functional activity (including both basic and instrumental activities). The findings delineate that, ultimately, the history of falls can serve as a valuable indicator for better understanding trends in elderly care and addressing the associated challenges.

Keywords: Activities of daily living, elderly, fear of falling, history of fall, quality of life

Introduction

The rising phenomenon of global population ageing is viewed as a significant healthcare system challenge^[1–7]. By the year 2050, the number of individuals aged 60 and older will be projected to surpass two billion worldwide, comprising 22% of the total population^[1,6]. Within Iran, statistical data reveals a notable uptick in the elderly population and its swift expansion. In 2016, ~10% of the population was aged 60 and above, with forecasts indicating an escalation to 20–25% by 2030. This trajectory suggests a significant surge in the elderly demographic within the country^[8].

^aDepartment of Corrective Exercise and Sport Injury, Faculty of Sport Sciences, University of Guilan, Rasht, Iran and ^bDepartment of Physiotherapy, Faculty of Medicine, Guilan University of Medical Sciences, Rasht, Iran

Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

*Corresponding author. Address: Department of Physiotherapy, Faculty of Medicine, Guilan University of Medical Sciences, Rasht, Iran. Tel.: +98 13 335 52088. fax: +98 13 335 50097; 41469 39841. E-mail: asghamnorasteh@yahoo.com (A.A. Norasteh).

Copyright © 2024 The Author(s). Published by Wolters Kluwer Health, Inc. This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial License 4.0 (CCBY-NC), where it is permissible to download, share, remix, transform, and buildup the work provided it is properly cited. The work cannot be used commercially without permission from the journal.

Annals of Medicine & Surgery (2024) 86:2619–2625

Received 13 October 2023; Accepted 6 March 2024

Published online 19 March 2024

<http://dx.doi.org/10.1097/MS9.0000000000001977>

HIGHLIGHTS

- Fall Efficacy Scale in the Elderly-International Version (FES-I) score in older women with a history of falls was significantly higher than those without a history of falls [median: 38.0, interquartile range (IQR): 31.5–44.0 versus median: 22.0, IQR: 20.0–30.0; $P < 0.001$].
- The median quality-of-life score using the 12-item Quality of Life assessment (SF-12) was significantly lower in women with a history of falls than in those without a history of falls (median: 25.0, IQR: 21.0–30.0 versus median: 35.0, IQR: 31.0–39.0; $P < 0.001$).
- The Activities of Daily Living (ADL) scores were significantly lower among women with a history of falls than those without ($P < 0.001$). A similar result was obtained for Instrumental Activities of Daily Living (IADL) scores ($P < 0.001$).
- This study's findings highlight the adverse impact of a history of falls on three key factors: fear of falling, quality of life, and daily functional activity (including both basic and instrumental activities).
- The findings delineate that, ultimately, the history of falls can serve as a valuable indicator for better understanding trends in elderly care and addressing the associated challenges.

The primary issue linked to advancing age is the significant decline in functional capabilities and the loss of independence among older adults^[9]. Older adults with higher levels of physical

fitness tend to maintain greater self-sufficiency daily, alleviating economic burdens on a nation's healthcare system^[10]. Enhancing physical fitness and sustaining appropriate health-related physical factors can reduce the risk of cardiovascular diseases, diabetes, hypertension, and osteoporosis^[11]. Conversely, neglecting the safety of the older adult can lead to irreparable physical and emotional harm, potential post-injury complications, and substantial financial burdens on both healthcare systems and families^[12].

Ageing comes with challenges related to proprioceptive balance and changes in vision and hearing. These alterations collectively render older adults more susceptible to falls and increasing fear of falling^[13]. Fear of falling is characterized as a mental state that forces older adults to restrict physical activities to prevent falls. The degree of fear experienced by the older adult can result in excessive caution, limitations in movement, and a decline in their independence, ultimately leading to reduced physical performance^[14]. Consequently, fear of falling represents a psychological factor contributing to increased physical frailty and decreased physical activity among elderly individuals residing in communities^[15]. Frailty is a geriatric syndrome that includes a multi-system reduction in reserves, reduced ability to adapt to stressful conditions, and increased risk of infection and falls^[16]. Fried *et al.*^[17] recommend that at least three of the following five items can be used as criteria for diagnosing frailty syndrome: (1) unintentional weight loss of greater than or equal to 10 pounds in the prior year or, at follow-up, of greater than or equal to 5% of body weight in the previous year (by direct measurement of weight); (2) grip strength in the lowest 20% at baseline, adjusted for sex and BMI; (3) low energy; (4) slowed walking speed; and (5) low physical activity. In Europe, frailty syndrome has a prevalence rate of 7.7% in people over 50 years of age^[18] and is reported to be higher in women than in men^[19]. The significance of regular physical activity in preserving independence in older adults has been emphasized because physical activities are recognized^[15] as a crucial health-enhancing behaviour for older adults, preventing and delaying the onset of chronic illnesses and premature mortality.

Numerous studies have explored the connection between the fear of falling and variables such as the quality of life and daily functional abilities among older adults^[13,20,21]. Notably, the fear of falling and actual incidents of falls can directly impact both the quality of life and disrupt fundamental and functional daily activities for elderly individuals^[21]. Fundamental daily functional activities encompass personal hygiene and self-care tasks^[22]. In contrast, instrumental functional activities pertain to activities involving various tools utilized by older adults in their homes^[23]. Furthermore, it has been observed that a prior history of falling can be linked to the fear of falling^[24]. Falls in older women pose substantial challenges, impacting both personal well-being and straining healthcare systems^[25]. These incidents can result in a range of physical and psychological consequences, such as fractures, decreased mobility, heightened fear of falling, and a compromised quality of life^[26]. To tackle this issue, gaining insight into the origins, elements of risk, and preventative strategies related to falls in older women is paramount.

It is imperative to separately assess older adults with and without a fear of falling. There is currently no study examining

the quality of life and basic and functional activities in both groups—those with a fear of falling and those without one. Hence, this study investigates the fear of falling, quality of life, and daily functional activities among older adult women with or without a history of falls.

Methods

Study design and subjects

Two hundred older adult women were included in the cross-sectional study. Data were collected through convenience sampling from July to August 2023 in Iran. The study's eligibility criteria encompassed several factors, including the patient's willingness to participate in the research, an age of 60 years or older, no history of substance abuse, the capacity to communicate effectively through vision and hearing, the absence of evident memory and cognitive impairments, the absence of acute and chronic medical conditions, no prior surgical procedures that could interfere with testing, the lack of abnormalities in the lower limbs, the absence of lumbar region abnormalities, and not relying on mobility aids. The research was approved by the Ethics Research Committees Sport Sciences Research Institute (IR.SSRC.REC.1402.098). All study participants were assured that all reporting and publication of results would be done anonymously. The present study was reported per the STROCCS criteria^[27].

Data collection

Convenience sampling was used to recruit participants for this study. Participants were informed of the study's goals and objectives and allowed to consent to participate freely. Then, those willing to participate were invited to sign a written consent. The researchers collected data using a five-part questionnaire, including demographic characteristics, the Fall Efficacy Scale in the Elderly-International Version (FES-I), 12-item Quality of Life assessment (SF-12), Instrumental Activities of Daily Living (IADL) and Activities of Daily Living (ADL). The initial section of the questionnaire focuses on gathering demographic details from the elderly participants, encompassing factors such as age, family status, place of residence, educational attainment, occupation, underlying health conditions, economic well-being, level of physical activity, and any history of fear of falling.

Questionnaires

Fall Efficacy Scale in the Elderly-International Version

This questionnaire consists of 16 questions and aims to assess the extent of concern individuals have about falling while engaging in various daily activities. Respondents provide their responses using a 4-point Likert scale, with options ranging from "very much" (4 points) to "very little" (1 point). Higher scores on this questionnaire indicate a more significant worry about falling, while lower scores suggest less concern. The possible score range is from 16 to 64. Khajovi and colleagues did a factor analysis to establish the construct validity of this scale, and the results confirmed the scale's validity. The scale's reliability was also highly favourable, with Cronbach's alpha coefficient reaching 0.98^[28].

12-item Quality of Life assessment

The 12-item quality-of-life questionnaire is a condensed version of the widely utilized 36-item quality-of-life questionnaire originally developed by Weir, Kasinski, and Keller in 1996. This abbreviated questionnaire allows for a quicker assessment of an individual's quality of life. It incorporates a scoring system where responses vary and includes both "yes" and "no," as well as Likert-type scaling. Notably, questions 1, 8, 10, and 11 are scored in a reversed manner. The total score for this questionnaire can range from a minimum of 12 to a maximum of 48^[29]. In Iran, the validity and reliability of this questionnaire were examined by Arabi and colleagues. Their findings indicated a high level of reliability, with a Cronbach's alpha coefficient for the entire instrument measuring 0.95. Furthermore, the reliability upon retesting was reported to be exceptionally strong at 0.99^[30].

Instrumental Activities of Daily Living and Activities of Daily Living

Daily life activities encompass essential tasks such as eating, dressing, walking, grooming, bathing, bedtime routines, going outdoors, and using the restroom. Instrumental daily life activities encompass a set of 9 questions that assess more complex physical tasks, including using the telephone, travelling longer distances via vehicles, shopping for food and clothing, meal preparation, housekeeping, laundry, minor home repairs, medication management, and financial budgeting. Respondents indicate their level of assistance needed for each task by selecting from three options: "no help," "some help," and "I am not able to do it." Scoring is assigned as follows: "No help" receives a score of 2, "Some help" is scored as 1, and "I am not able to do it" is scored as 0. The daily life activities questionnaire yields scores ranging from 0 to 14, while the instrumental life activities questionnaire generates scores ranging from 0 to 18. Habibi and colleagues assessed the validity of this tool using the content validity method. The tool's reliability was determined through a retest method, yielding a high-reliability coefficient 0.9^[31].

Statistical analysis

In the present study, categorical variables are presented as frequency (percentage) and continuous variables as mean (SD) and median [interquartile range (IQR)]. The distribution of the study variables was assessed using the Kolmogorov–Smirnov test. Because of the non-normal distribution of the data, a comparison between the two groups was done using the Mann–Whitney test. Data were analyzed using SPSS for Windows, version 16.0 (SPSS Inc.). Box plots were depicted using GraphPad Prism, Version 8.0.1 (GraphPad Prism Software Inc.). A *P* value less than 0.05 was considered statistically significant.

Results

Participants' characteristics

Demographic characteristics of the older women are presented in Table 1. The mean age of the participants was 73.42 (SD = 6.43) years, and the mean physical activity was 11.10 (SD = 7.39) hours per week. Of the women, 51.5% were single, 25.5% were residents in rural areas, 16.0% had an academic education,

Table 1

Demographic characteristics of the participants (n = 200).

	Mean (SD) or n (%)
Age (years)	73.42 (6.43)
Marital status	
Single	103 (51.5)
Married	97 (48.5)
Level of education	
Illiterate	36 (18.0)
Under diploma	78 (39.0)
Diploma	54 (27.0)
Academic education	32 (16.0)
No. children	
≤ 2	87 (43.5)
3–4	63 (31.5)
≥ 5	50 (25.0)
Place of residence	
Village	51 (25.5)
City	149 (74.5)
Physical activity	11.10 (7.39)
Economic status	
Low	58 (29.0)
Medium	113 (56.5)
High	29 (14.5)
History of fall	
Yes	113 (56.5)
No	87 (43.5)

25.0% had 5 children or more, and 56.5% reported a history of falls.

Normality assumption

As presented in Table 2, the Kolmogorov–Smirnov test indicated that the normality assumption was not met for the study variables in both groups; therefore, the Mann–Whitney test was used to examine the difference between the two groups.

Comparison of study variables by history of falls

The Mann–Whitney test showed that the FES-I score in women with a history of falls was significantly higher than those without a history of falls (median: 38.0, IQR: 31.5–44.0 versus median: 22.0, IQR: 20.0–30.0; *P* < 0.001). The median quality-of-life score using the SF-12 was significantly lower in women with a history of falls than in women without a history of falls (median: 25.0, IQR: 21.0–30.0 versus median: 35.0, IQR: 31.0–39.0; *P* < 0.001). The ADL scores were significantly lower among

Table 2

Evaluating the assumption of normality for study variables.

	Without history of falls		With history of falls	
	Statistic	<i>P</i>	Statistic	<i>P</i>
FES-I score	0.192	< 0.001	0.055	> 0.200
SF-12 score	0.110	0.011	0.080	0.070
ADL score	0.468	< 0.001	0.215	< 0.001
IADL score	0.192	< 0.001	0.101	< 0.001

The *P* values are based on the Kolmogorov–Smirnov test. ADL, Activities of Daily Living; FES-I, Falls Efficacy Scale-International; IADL, Instrumental Activities of Daily Living; SF-12, 12-Item Short-Form Health Survey.

Table 3**Comparison of the study variables between women with and without history of falls.**

	Mean (SD)	Median [IQR]	P
FES-I score			
Without history of falls	25.4 (7.9)	22 [20–30]	<0.001
With history of falls	37.4 (8.7)	38 [31.5–44]	
SF-12 score			
Without history of falls	34.5 (6.0)	35 [31–39]	<0.001
With history of falls	25.8 (5.9)	25 [21–30]	
ADL score			
Without history of falls	13.6 (1.0)	14 [14–14]	<0.001
With history of falls	12.1 (2.4)	13 [11–14]	
IADL score			
Without history of falls	14.9 (2.3)	16 [13–17]	<0.001
With history of falls	11.6 (4.2)	12 [9–15]	

The P values are based on the Mann–Whitney test.

ADL, Activities of Daily Living; FES-I, Falls Efficacy Scale-International; IADL, Instrumental Activities of Daily Living; IQR, interquartile range; SF-12, 12-Item Short-Form Health Survey.

women with a history of falls than those without ($P < 0.001$). A similar result was obtained for IADL scores ($P < 0.001$) (Table 3 and Fig. 1).

Discussion

The findings from this study indicate a direct link between a previous history of falling and a fear of falling. This aligns with the research conducted by Lopes *et al.*^[26] in 2009, where 91% of participants reported experiencing a fear of falling during at least one activity, and 54.42% had a prior history of falls, demonstrating a significant association between the fear of falling and a history of falling. Similarly, in 2022, Park *et al.*^[32] observed that a history of falling correlated with reduced physical activity and increased fear of falling. However, unlike our study, Oh *et al.*^[33] did not uncover a significant relationship between a history of falling and the fear of falling.

Additionally, Sitdhiraksa *et al.*^[34] in 2021 found no connection between the fear of falling and a history of falls, contrasting with our findings. This correlation can likely be attributed to the psychological impact of experiencing a fall on an individual's perception of their safety and stability^[35]. Those who have previously fallen may develop an increased sense of vulnerability, leading to a heightened fear of future falls^[36]. In light of these findings, it becomes evident that targeted interventions are necessary, particularly for older adults and individuals with a history of falling. These interventions should address both the physical and psychological aspects of fall prevention. By

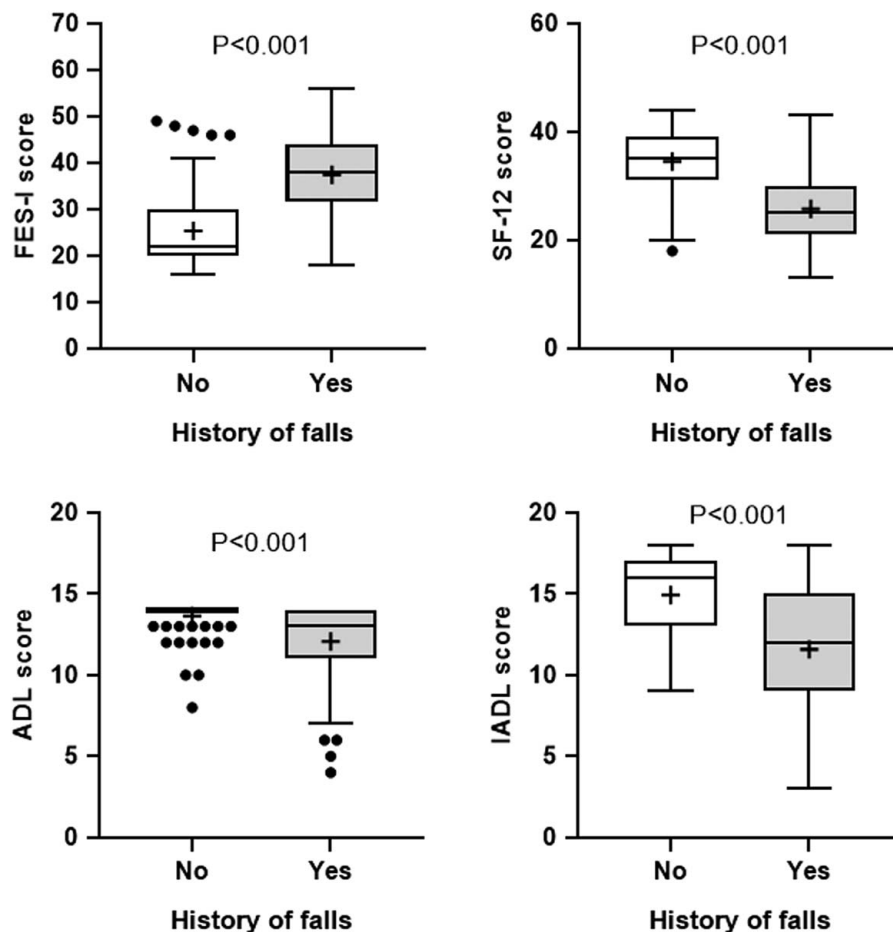


Figure 1. Comparison of study variables between women with and without history of falls. Box plot shows minimum, first quartile (Q_1), median, third quartile (Q_3), and maximum values. The outliers are shown by the black dots (\bullet). The plus sign (+) represents the mean. ADL, Activities of Daily Living; FES-I, Falls Efficacy Scale-International; IADL, Instrumental Activities of Daily Living; SF-12: 12-Item Short-Form Health Survey. The P values are based on the Mann–Whitney test.

recognizing the relationship between a history of falls and the fear of falling, healthcare professionals can formulate appropriate strategies to mitigate fear, boost self-confidence, and enhance safety during daily activities for this vulnerable demographic.

The results of the current study underscore a significant reduction in the quality of life among older women with a history of falls. A study by Braz *et al.*^[37] in 2022 similarly demonstrated that older women who had experienced falls had a higher prevalence of osteoporosis due to reduced physical activity, ultimately negatively impacting their quality of life. In 2019, Labens *et al.*^[38] found that among older adults, a history of falling had the most substantial adverse effect on their quality of life. In 2020, Nur *et al.*^[39] reported a connection between a history of falling and diminished quality of life in the elderly. This body of evidence indicates that falls can result in physical and psychological harm, eroding an individual's self-confidence and intensifying the fear of falling, subsequently diminishing the overall quality of life^[40]. These findings underscore the pressing need for comprehensive fall prevention programs that focus on reducing the incidence of falls and addressing the psychological and emotional aftermath of such incidents. Healthcare interventions should encompass not only the physical rehabilitation of elderly individuals but also the restoration of their self-confidence and independence. By addressing the multifaceted consequences of falls, healthcare providers can more effectively enhance the well-being and quality of life of older adult women, especially those with a history of falls.

In our study, the average scores on the ADL test revealed that, despite a history of falls, daily functional activity levels in older women declined. A study conducted by Malmgren *et al.*^[41] in 2021, with a similar objective of assessing the impact of a history of falls on daily functional activity, echoed our findings, suggesting that such a history can overshadow an individual's daily functional activity. Matsufuji *et al.*^[42], in 2021, noted that among elderly individuals on haemodialysis, a history of falls was independently associated with a higher score, indicating difficulty performing basic daily activities. In 2016, Kader *et al.*^[43] also demonstrated that a history of falls correlated with avoidance behaviour and fear of engaging in everyday activities, potentially leading to a decline in functional activity among older adults. The statistically significant disparities in ADL scores between the two groups underscore the necessity for comprehensive fall prevention strategies that encompass both physical rehabilitation and psychological support. Older women with a history of falls may require tailored interventions that address not only their physical injuries but also their emotional well-being and confidence in participating in daily activities. Prioritizing their functional independence and overall quality of life should be a central focus in managing and caring for this vulnerable demographic.

Our findings indicate a clear association between a history of falling and diminished instrumental performance ability. In line with our results, Dormond *et al.*^[44] also identified a link between a history of falls and reduced instrumental daily functional activity in older adults. Furthermore, Alexandre *et al.*^[45] revealed that a history of falls accompanied by fractures in distal regions can have a dual impact, leading to a decrease in daily instrumental functional activity among elderly individuals. However, it is worth noting that Mat *et al.*^[46] in 2020 reported contrasting findings, indicating that a history of falls had no discernible effect on older individuals' instrumental daily functional activity. Generally, when an individual experiences a fall, it often results in

physical injuries, pain, and decreased mobility, which can hinder their ability to carry out essential tasks^[46] effectively. Additionally, the psychological consequences of falls, including heightened fear of falling, can lead to self-imposed limitations in activities, further reducing a person's capacity to engage in instrumental activities of daily living^[47].

Consequently, healthcare providers and caregivers should be attuned to the potential challenges individuals with a history of falls face in maintaining their independence. Tailored interventions and support systems should be developed to help older women regain self-confidence, enhance physical functioning, and boost their capacity to perform instrumental activities of daily living. Addressing these multifaceted aspects can significantly enhance the well-being and overall quality of life of older adults who have experienced falls.

Limitations

Similar to many other research endeavours, this study is not without its limitations. One noteworthy limitation concerns the reliability of self-reported data, particularly when recalling past experiences related to falls, fear of falling, or daily functional activity. The potential for recall bias exists, as participants may not consistently recall or accurately report these experiences, which could introduce variability into the study's outcomes. Furthermore, it is essential to recognize that the study employs a cross-sectional approach, which cannot establish causality. While the research can identify associations between different variables, it cannot definitively establish whether a history of falling directly leads to alterations in fear of falling, quality of life, or daily functional activity. In addition, using the convenience sampling method may negatively impact the generalizability of the findings. Understanding and acknowledging these limitations is critical for correctly interpreting the study's findings and framing its potential implications for future research and clinical practice.

Recommendations for future research

The researchers recommend longitudinal studies to track changes in fear of falling, quality of life, and daily functional activity among older women. Such studies would provide more insights into causality, relationships, and the trajectories of these variables. Also, intervention studies should be designed and implemented to investigate the quality of life and daily functional activity of older women with a history of falling. Then, evaluate the effectiveness of different interventions, such as physical therapy, psychological support, or multifaceted programs. Furthermore, it may be worthwhile to explore the potential of technology-based solutions, such as wearable devices or telehealth, in monitoring and addressing the fear of falling and daily functional activity in older women.

Conclusion

This study's findings highlight the adverse impact of a history of falling on three key factors: fear of falling, quality of life, and daily functional activity (including both basic and instrumental activities). Furthermore, a comparison with existing research suggests that this impact is primarily attributed to the creation of negative memories and a resulting sense of helplessness that often follows a fall. A history of falling, directly and indirectly,

influences these three indicators by exacerbating the fear of falling. Ultimately, the history of falls can serve as a valuable indicator for better understanding trends in elderly care and addressing the associated challenges.

Ethical approval

The research was approved by the Ethics Research Committees Sport Sciences Research Institute (IR.SSRC.REC.1402.098). All study participants were assured that all reporting and publication of results would be done anonymously.

Consent

Written informed consent was obtained from the patient for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Source of funding

None.

Author contribution

Study concept and design by all authors; Data acquisition by all authors; Data interpretation by all authors; drafting the manuscript by all authors; Revision of the manuscript by all authors; all authors approve the final version of the manuscript.

Conflicts of interest disclosure

The authors declare no conflicts of interest.

Research registration unique identifying number (UIN)

We do not receive any funding for our research and we cannot pay for our research. Please excuse us from registering this manuscript in the Research Registry UIN: www.researchregistry.com/https://ethics.ssrc.ac.ir/article_3889.html?lang=en Ethics Code: IR.SSRC.REC.1402.098 Ethics Research Committees Sport Sciences Research Institute.

Guarantor

Ali Asghar Norasteh.

Data availability

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

References

- [1] Pereira C, Bravo J, Raimundo A, *et al.* Risk for physical dependence in community-dwelling older adults: the role of fear of falling, falls and fall-related injuries. In *J Older People Nursing* 2020;15:e12310.
- [2] Latifi N, Roohi G, Mahmoodi-Shan GR, *et al.* Nurses' clinical decision-making models in the care of older adults: a cross-sectional study. *J Nursing Rep Clin Pract* 2023;1–6. <https://doi.org/10.32598/JNRC.P.23.10>
- [3] Sadeh Tabarian M, Siavoshi M, Hamed A, *et al.* Sleep quality and related factors in older adults: a cross-sectional study. *J Nursing Rep Clin Pract* 2023;1:59–63.
- [4] Curtis A, Brown L, Sagong H. Nursing students' perceptions of older adults, confidence, and anxiety level changes with their first clinical rotation: a descriptive pilot study. *J Nursing Rep Clin Pract* 2023. <https://doi.org/10.32598/JNRC.P.23.102>
- [5] Zare-Kaseb A, Ghazanfari MJ, Gholampour MH, *et al.* Prevention of delirium as a key nursing care in the older adults hospitalized in intensive care units: an important yet challenging issue. *J Nursing Rep Clin Pract* 2024;2:112–113.
- [6] Osuji J. Building global capacity for better health through increased gerontology content in undergraduate nursing education curriculum: a commentary. *Indian J Gerontol* 2014;28:482–93.
- [7] Faraji E, Abedi Z, Yaghobi Y, *et al.* Factors associated with drug addiction relapse in elderly adults in Iran: A cross-sectional study. *J Nurs Rep Clin Pract* 2024. doi: 10.32598/jnrcp.2312.1005.
- [8] Enayatrad M, Yavari P, Etemad K, *et al.* Determining the levels of urbanization in Iran using hierarchical clustering. *Iran J Public Health* 2019;48:1082.
- [9] Quamar AH, Schmeler MR, Collins DM, *et al.* Information communication technology-enabled instrumental activities of daily living: a paradigm shift in functional assessment. *Disabil Rehabil Assist Technol* 2020;15:746–53.
- [10] Warburton DE, Nicol CW, Bredin SS. Health benefits of physical activity: the evidence. *CMAJ* 2006;174:801–9.
- [11] Andre MB, Dumavibhat N, Ngatu NIR, *et al.* Mini Nutritional Assessment and functional capacity in community-dwelling elderly in Rural Luozi, Democratic Republic of Congo. *Geriatr Gerontol Int* 2013; 13:35–42.
- [12] Brustio PR, Magistro D, Zecca M, *et al.* Fear of falling and activities of daily living function: mediation effect of dual-task ability. *Aging Ment Health* 2018;22:856–61.
- [13] Bjerk M, Brovold T, Skelton DA, *et al.* Associations between health-related quality of life, physical function and fear of falling in older fallers receiving home care. *BMC Geriatr* 2018;18:1–8.
- [14] Lavedán A, Viladrosa M, Jürschik P, *et al.* Fear of falling in community-dwelling older adults: a cause of falls, a consequence, or both? *PLoS ONE* 2018;13:e0194967.
- [15] Rivasi G, Kenny RA, Ungar A, *et al.* Predictors of incident fear of falling in community-dwelling older adults. *J Am Med Dir Assoc* 2020;21: 615–20.
- [16] Jakubiak GK, Pawlas N, Cieślak G, *et al.* Chronic lower extremity ischemia and its association with the frailty syndrome in patients with diabetes. *Int J Environ Res Public Health* 2020;17:9339.
- [17] Fried LP, Tangen CM, Walston J, *et al.* Frailty in older adults: evidence for a phenotype. *J Gerontol A Biol Sci Med Sci* 2001;56:M146–56.
- [18] Manfredi G, Midão L, Paúl C, *et al.* Prevalence of frailty status among the European elderly population: findings from the Survey of Health, Aging and Retirement in Europe. *Geriatr Gerontol Int* 2019;19:723–9.
- [19] Ahrenfeldt LJ, Möller S, Thinggaard M, *et al.* Sex differences in comorbidity and frailty in Europe. *Int J Public Health* 2019;64:1025–36.
- [20] Schoene D, Heller C, Aung YN, *et al.* A systematic review on the influence of fear of falling on quality of life in older people: is there a role for falls? *Clin Interv Aging* 2019;14:701–19. doi:10.2147/CIA.S197857
- [21] Merchant RA, Chen MZ, Wong BLL, *et al.* Relationship between fear of falling, fear-related activity restriction, frailty, and sarcopenia. *J Am Geriatr Soc* 2020;68:2602–8.
- [22] Belo LF, Rodrigues A, Paes T, *et al.* Functional status of patients with COPD assessed by London Chest Activity of Daily Living Scale: gender association and validity of a cutoff point. *Lung* 2019;197:509–16.
- [23] Guo HJ, Sapra A. Instrumental activity of daily living. *StatPearls Publishing*. 2020.
- [24] Whipple MO, Hamel AV, Talley KM. Fear of falling among community-dwelling older adults: a scoping review to identify effective evidence-based interventions. *Geriatr Nurs (Minneapolis)* 2018;39:170–7.

- [25] Fragala MS, Cadore EL, Dorgo S, *et al.* Resistance training for older adults: position statement from the national strength and conditioning association. *J Strength Condition Res* 2019;33:2019–52.
- [26] Lopes K, Costa D, Santos L, *et al.* Prevalence of fear of falling among a population of older adults and its correlation with mobility, dynamic balance, risk and history of falls. *Braz J Phys Ther* 2009;13:223–9.
- [27] Mathew G, Agha R, Albrecht J, *et al.* STROCCS 2021: Strengthening the reporting of cohort, cross-sectional and case-control studies in surgery. *Int J Surg* 2021;96:106165.
- [28] Khajavi D. Validation and reliability of Persian version of fall efficacy scale-international (FES-I) in community-dwelling older adults. *Iranian J Ageing* 2013;8:39–47.
- [29] Ware JE Jr, Kosinski M, Keller SD. A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Med Care* 1996;34:220–33.
- [30] Arabi S, Rezaee M, Sahaf R, *et al.* Validity and reliability of the Persian version of measurement of the quality of life of people with disabilities. *Pajoohandeh J* 2014;19:91–8.
- [31] Habibi A, Nikpour S, Seiedoshohadaei M, *et al.* Quality of life and status of physical functioning among elderly people in west region of Tehran: a cross-sectional survey. *Iran J Nursing* 2008;21:29–39.
- [32] Park C, Atique MMU, Mishra R, *et al.* Association between fall history and gait, balance, physical activity, depression, fear of falling, and motor capacity: a 6-month follow-up study. *Int J Environ Res Public Health* 2022;19:10785.
- [33] Oh J, Choi CK, Kim SA, *et al.* Association of falls and fear of falling with mortality in Korean adults: the Dong-gu Study. *Chonnam Med J* 2019;55:104–8.
- [34] Sitdhiraksa N, Piyamongkol P, Chaiyawat P, *et al.* Prevalence and factors associated with fear of falling in community-dwelling Thai elderly. *Gerontology* 2021;67:276–80.
- [35] Restauri N, Sheridan AD. Burnout and posttraumatic stress disorder in the coronavirus disease 2019 (COVID-19) pandemic: intersection, impact, and interventions. *J Am College Radiol* 2020;17:921–6.
- [36] Chee SY, Dasgupta A, Ragavan NA. Senior-friendly accommodations: a phenomenological study of the lived experiences of older adults with functional limitations in senior living facilities. *Int J Hospital Manag* 2023;112:103402.
- [37] Souto Braz RR, Campos SL, Villela DW, *et al.* Effectiveness of whole-body vibration combined with multicomponent training on the risk of falls and quality of life in elderly women with osteoporosis: Study protocol for a randomized controlled clinical trial. *Biology* 2022;11:266.
- [38] Labenz C, Toenges G, Schattenberg JM, *et al.* Health-related quality of life in patients with compensated and decompensated liver cirrhosis. *Eur J Intern Med* 2019;70:54–9.
- [39] Nur R, Mallongi A, Sridani NW, *et al.* Factors related to quality of life of elderly victims of natural disasters in Palu City. *Enfermería Clíin* 2020;30:178–81.
- [40] Harris DJ, Wilkinson S, Ellmers TJ. From fear of falling to choking under pressure: a predictive processing perspective of disrupted motor control under anxiety. *Neurosci Biobehav Rev* 2023;148:105115.
- [41] Malmgren Fänge A, Chiatti C, Axmon A. One-year changes in activities of daily living, usability, falls and concerns about falling, and self-rated health for different housing adaptation client profiles. *Int J Environ Res Public Health* 2021;18:9704.
- [42] Matsufuji S, Shoji T, Yano Y, *et al.* Difficulty in activities of daily living and falls in patients undergoing hemodialysis: a cross-sectional study with nondialysis controls. *Hemodial Int* 2021;25:338–47.
- [43] Kader M, Iwarsson S, Odin P, *et al.* Fall-related activity avoidance in relation to a history of falls or near falls, fear of falling and disease severity in people with Parkinson’s disease. *BMC Neurol* 2016;16:1–8.
- [44] Drummond FMM, Lourenço RA, Lopes CS. Association between fear of falling and spatial and temporal parameters of gait in older adults: the FIBRA-RJ study. *Eur Geriatr Med* 2022;13:407–13.
- [45] Alexandre TdS, Corona LP, Nunes DP, *et al.* Disability in instrumental activities of daily living among older adults: gender differences. *Rev Saude Publica* 2014;48:379–89.
- [46] Mat S, Kamaruzzaman SB, Chin A-V, *et al.* Impact of knee pain on fear of falling, changes in instrumental activities of daily living, and falls among Malaysians age 55 years and above. *Front Public Health* 2020;8:571196.
- [47] Petrella RJ, Payne M, Myers A, *et al.* Physical function and fear of falling after hip fracture rehabilitation in the elderly. *Am J Phys Med Rehabil* 2000;79:154–60.