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ORIGINAL PAPER

Fall risk and avoidance behavior due to fear of falling in elderly nursing home residents

Sevda Turen [1], Cennet Kara Ozcalik [2], Gülisan Yildiz [2], Meryem Irem Tekir [2]

[1] Department of Nursing, Faculty of Health Sciences, Istanbul Arel University, Istanbul, Türkiye
[2] Department of Nursing, Faculty of Health Sciences, Istanbul Kültür University, Istanbul, Türkiye

ABSTRACT

Introduction and aim. Falls in the elderly affect their daily activities, causing a decrease in their quality of life and may even lead to death. This study aims to examine the risk of falling and the relationship between fear of falling and avoidance behaviors in elderly nursing home residents.

Material and methods. Data were obtained using the "Fall Risk Assessment Scale (FRAS)" and the "Fear of Falling Avoidance Behavior Questionnaire (FFABQ)".

Results. The average age of the participants was 70.70±5.23 years. Total mean scores of FRAS and FFABQ were significantly higher in participants who could partially meet their daily needs on their own, had chronic diseases, used continuous medication, had problems with walking or balance, had vision or hearing problems, used walking aids, had fear of falling, and had experienced falls in the last three months. It was found that their average was significantly higher. It was determined that there was a strong and significant positive relationship between the FRAS and FFABQ total score averages.

Conclusion. It was determined that elderly residents of nursing homes have a high risk of falling and that increased risk is associated with an increase in avoidance behaviors due to fear of falling.

Keywords. elderly, fall risk, fear of falling

Introduction

The increase in the elderly population worldwide and the accompanying increasing health problems have led scientists to pay increasing attention to aging and the elderly population.[1,2] The World Health Organization reports that the number of people aged 60 and over will increase day by day and reach approximately 2.1 billion in 2050.[3]

With aging, a decrease in physical and cognitive functions and a decline in muscle strength, coordination, and balance may occur. This situation makes individuals prone to falls.[4] Around 30% of people over 65 experience falls annually, and approximately half of these cases repeat.[5]

Falls in the elderly cause problems such as fractures, permanent disabilities, head injuries, disability, decreased mobility, chronic pain, and loss of independence. It is a public health problem that requires long-term and expensive treatments and early hospitalization.[2,6,7] The severity of injuries resulting from falls varies significantly, from minor skin injuries to major fractures and, in some cases, fatal trauma.[2] In addition to physical health problems, although falls do not result in serious injuries, they cause elderly people to experience fear of falling.[6]

Fear of falling causes elderly people to feel unsafe performing daily life activities and leads to an inactive

Corresponding author: Sevda Turen, e-mail: sevdamercanhm@hotmail.com

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lifestyle.[8] In addition, unnoticed fear of falling significantly affects the individual's life.[6] Fear of falling causes negative effects in the elderly, such as fear, anxiety, avoidance of activities, not leaving the house, social isolation, depression, and a decrease in quality of life.[6] A study found that 84.4% of community dwelling elderly individuals have a fear of falling and 31.9% have a high risk of falling.[9] In another study, it was observed that 71.8% of the elderly living in nursing homes experienced fear of falling, and as the fear of falling increased, individuals' independence levels in daily life activities decreased.[10]

It is seen that the assessment of fall risk is strongly recommended in the clinical practice guideline, which includes a total of 79 randomized controlled trials on fall prevention.[11] Considering the negative health consequences experienced by elderly people due to falling and fear of falling, it is very important to examine the risk of falling and fear of falling in these individuals. When the literature was examined, to our knowledge, no study was found that examined the risk of falling and avoidance behaviors due to fear of falling in elderly people living in nursing homes.

Research questions:

Elderly staying in nursing home;

- What are the fall risk levels and affecting factors?
- What are the avoidance behaviors due to fear of falling and the influencing factors?
- Is there a relationship between the risk of falling and avoidance behaviors due to fear of falling?

Aim

This study aimed to examine the risk of falling and avoidance behaviors due to fear of falling of elderly people living in nursing home.

Material and methods

Study population and procedure

This study is a cross-sectional descriptive study. The study was conducted as a single center study. The research was carried out in the nursing home with the largest number of residents in Türkiye, located in Istanbul, between October and November 2023. The appropriate permissions were obtained from the institution where the study was conducted. Ethic Committee approval was obtained from the University Institutional Review Board (IRB date and number: 12.10.2023/2023.122). The study conforms to the ethical principles outlined in the Declaration of Helsinki. Both verbal and written informed consent approval was obtained from participants who met the study criteria. Participants were assured that their responses would remain anonymous and confidential. Surveys were conducted face-to-face with individuals and took an average of 10 to 15 minutes.

Participant selection

The population consisted of individuals 65 and over living in a nursing home during the study period. The study was completed with 220 volunteer participants who met the inclusion criteria of the study (65 years and older, no communication problems, no cognitive impairment such as dementia, Alzheimer's, etc.) and agreed to participate in the study. Individuals with a diagnosed psychiatric disease (schizophrenia, depression, etc.), bedridden, cognitive impairment, and individuals who did not agree to participate in the study were excluded from the study. In the posthoc power analysis performed using the G-Power 3.1.9.4 program to determine that the sample size was sufficient, it was determined that the effect size of the study was 0.67 and the power was 1.00 at a 95% confidence interval, 0.05 significance level.

Measures

Data gathering form

The form includes 15 questions describing the sociodemographic and fall-related characteristics (age, sex, marital status, education level, income level, chronic diseases, continuous use of medications, history of falls, and the presence of situations that can cause a fall).

Fall Risk Assessment Scale (FRAS)

The validity and reliability of the Turkish form of the Fall Risk Assessment Scale (FRAS), prepared by the Delmarva Foundation and adapted by CIMRO of Nebraska in collaboration with the Centers for Medicare & Medicaid Services (CMS), were evaluated by Tekin et al. It was carried out in 2013.[12] The scale evaluates the fall risk of patients with nine different parameters (subdimensions), and when the scores obtained as a result of the evaluation are added, the patient's fall risk score is obtained. Total score received by the patient: a score between 0 and 5 indicates a low risk of falling; a score between 6 and 9 indicates a medium risk; and a score of 10 and above indicates a high risk of falling.

Fear of Falling Avoidance Behavior Questionnaire (FFABQ)

Fear of falling avoidance behavior questionnaire (FFABQ) was developed by Landers et al.[13] (2011) to evaluate the avoidance behavior of elderly individuals living in the community. The validity and reliability of the scale in Turkish were determined by Açaröz-Candan et al.[14] (2020). The scale is calculated with a five-point Likert-type scoring system and consists of 14 items and two subscales ("challenging balance demands in daily life" and "instrumental activities of daily life and socialization"). The minimum score on the scale is 0, and the maximum score is 56. A high score indicates limitation of activity and participation restriction due to fear of falling.

Statistical analysis

Continuous variables were expressed as mean±SD, and categorical variables were expressed as percentages. The suitability of the data for a normal distribution was checked with the Kolmogorov-Smirnov test. Data were evaluated with chi-square, student t test, one-way variance (ANOVA), and Pearson correlation analyzes. For all tests, two-sided *P* values <0.05 were considered significant. Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 20.0 for Windows (SPSS Inc., Chicago, Illinois, USA).

Table 1. Sociodemographic and descriptive characteristics of participants (n = 201)*

		Mean±SD	Min.–max. (Median)
Age (year)		70.7±5.23	65–91
Number of falls		0.25±0.5	0–3
		n	%
Gender	Female	85	38.6
	Male	135	61.4
Marital status	Single	100	100
Education status	Illiterate	12	5.5
	Literate	28	12.7
	Primary education	117	53.2
	High school	54	24.5
	University	9	4.1
Regular exercise	Yes	117	53.2
	No	103	46.8
Meeting daily needs on one's own	Yes	108	49.1
	Partially	102	50.9
Has a chronic illness	Yes	160	72.7
	No	60	27.3
Chronic illness[a]	Hypertension	122	55.5
	Diabetes Mellitus	64	29.1
	COPD	30	13.6
	CAD	9	4.1
Constantly use medication	Yes	170	77.3
	No	50	27.2
Have walking or balance problems	Yes	137	62.3
	No	83	37.7
Have vision or hearing problems	Yes	135	61.4
	No	85	38.6
Use assistive devices for walking	Yes	94	42.7
	No	126	57.3
Fear of falling	Yes	144	65.5
	No	76	34.5
Does fear of falling affect daily living?	Yes	122	84.7
	No	22	15.3
Fall in the last three months	Yes	49	22.3
	No	171	77.7

* [a] – more than one option has been selected, CAD – coronary artery disease, COPD – chronic obstructive pulmonary disease

Results

The average age of the participants was 70.70 years, and the majority of the participants were men (61.4%), single (100%), and high school graduates (53.2%). Furthermore, 53.2% of the participants exercise regularly, 50.9% can partially meet their daily needs, 72.7% have a chronic disease, 77.3% use medication, 62.3% had walking or balance problems, 61.4% had vision or hearing problems, 65.5% had a fear of falling, 84.7% had an existing fear of falling that affected their daily activities, and 77.7% had a fear of falling. It was determined that none of them had a fall in the last three months (Table 1).

When the of the participants on the FRAS scale responses were examined, it was determined that the lowest mean score was taken from the "level of consciousness/mental state" parameter, while the highest mean score was taken from the "gait and balance" parameter. When the FRAS risk classification was evaluated, it was determined that the majority of participants (39.5%) were in the high-risk group (Table 2).

Table 2. FRAS and FFABQ scores of participants

	Mean±SD	Min.-Max. (Median)
FRAS		
Consciousness level	0±0	0–0
History of falling (last three months)	0.45±0.86	0–4
Ambulation / toileting	0.03±0.3	0–4
Vision	0.94±1	0–2
Walking and balance	2.27±2.11	0–6
Orthostatic hypotension	0.27±0.69	0–2
Medication	2.09±1.54	0–5
Illness	0.98±1.11	0–4
Use of assistive device	0.48±0.53	0–2
Total score	7.51±4.78	0–18
FFABQ		
Walking	1.77±1.66	0–4
Lifting and carrying objects (eg, cup, child)	1.84±1.69	0–4
Going up and downstairs	2.18±1.66	0–4
Walking on different surfaces (eg, grass, uneven ground)	1.93±1.71	0–4
Walking in crowded places	1.86±1.72	0–4
Walking in dimly lit, unfamiliar places	1.97±1.67	0–4
Leaving home	1.52±1.68	0–4
Getting in and out of a chair	1.68±1.69	0–4
Showering or bathing	2.18±1.66	0–4
Exercise	1.95±1.76	0–4
Preparing meals (eg, planning, cooking, serving)	1.72±1.69	0–4
Doing housework (eg, cleaning, washing clothes)	1.69±1.66	0–4
Work or volunteer work	1.64±1.68	0–4
Recreational and leisure activities (eg, play, sports, arts and culture, crafts, hobbies, socializing, traveling)	1.74±1.71	0–4
	n	%
FRAS degree of risk		
Low risk	80	36.4
Medium risk	53	24.1
High risk	87	39.5
FFABQ		
Challenging balance demands in daily life	16.70±14.28	0–36
Instrumental activities of daily living and socialization	8.96±7.98	0–20
Total score	25.66±22.03	0 - 56

When the participants' responses on the FFABQ scale were examined, it was determined that the lowest mean score was taken from the parameter "leaving

Table 3. Comparison of the sociodemographic and clinical characteristics with the FRAS and FFABQ scores*

	FRAS						FFABQ					
	Low risk n (%)	Medium risk n (%)	High risk n (%)	Z; p	Total	t/F; p	Challenging balance demands in daily life	t/F; p	Instrumental activities of daily living and socialization	t/F; p	Total	t/F; p
Gender												
Female	33 (41.2)	19 (35.8)	33 (37.9)	0.42;	7.50±4.90	-.019;	17.62±13.56	0.764;	9.40±7.21	0.667;	27.02±20.43	0.748;
Male	47 (58.8)	34 (64.2)	54 (62.1)	0.81	7.52±4.71	0.98	16.11±14.74	0.44	8.69±8.43	0.52	24.80±23.02	0.46
Education status												
< High school	54 (67.5)	37 (69.8)	66 (75.9)	0.08;	7.73±4.73	1.073;	17.44±14.00	1.221;	9.41±7.81	1.326;	26.85±21.56	1.271;
≥ High school	26 (32.5)	16 (30.2)	21 (24.1)	0.47	6.97±4.88	0.70	14.84±14.92	0.22	7.84±8.31	0.18	22.68±23.07	0.20
Regular exercise												
Yes	45 (56.2)	20 (62.3)	39 (44.8)	4.49;	7.09±4.63	-1.392;	15.36±14.80	-1.483;	7.95±8.25	-2.040;	23.31±22.83	-1.694;
No	35 (43.8)	33 (37.7)	48 (55.2)	0.10	7.99±4.91	0.16	18.21±13.59	0.13	10.12±7.51	0.04	28.33±20.88	0.09
Meeting daily needs on one's own												
Yes	62 (77.5)	25 (47.2)	21 (24.1)	47.58;	5.13±4.34	-8.326;	8.37±10.93	-10.340;	4.39±6.08	-10.111;	12.76±16.62	-10.410;
Partially	18 (22.5)	28 (52.8)	66 (75.9)	<0.001	9.81±4.00	<0.001	24.72±12.45	<0.001	13.37±7.04	<0.001	38.10±19.32	<0.001
Chronic illness												
Yes	39 (48.8)	38 (71.7)	83 (95.4)	47.76;	8.94±4.36	8.252;	18.18±14.09	2.551;	9.84±7.79	2.714;	20.02±21.67	2.636;
No	41 (51.2)	15 (28.3)	4 (4.6)	<0.001	3.72±3.65	<0.001	12.73±14.14	0.01	6.62±8.01	0.007	19.35±21.92	0.009
Constantly use medication												
Yes	41 (51.2)	43 (81.1)	86 (98.9)	54.36;	8.90±4.27	11.135;	18.63±14.00	3.828;	10.10±7.76	4.034;	28.73±21.55	3.943;
No	39 (48.8)	10 (18.9)	1 (1.1)	<0.001	2.80±3.10	<0.001	10.10±13.35	<0.001	5.10±7.48	<0.001	15.20±20.58	<0.001
Have walking or balance problems												
Yes	17 (21.2)	37 (69.8)	83 (95.4)	99.23;	10.09±3.59	14.227;	24.47±11.43	15.912;	13.15±6.66	13.538;	37.62±17.76	14.434;
No	63 (78.8)	16 (30.2)	4 (4.6)	<0.001	3.26±3.20	<0.001	3.85±7.76	<0.001	2.06±4.31	<0.001	5.91±11.83	<0.001
Have vision or hearing problems												
Yes	24 (30.0)	34 (64.2)	77 (88.5)	60.39;	9.55±4.13	9.472;	20.34±14.06	5.145;	10.96±7.90	5.065;	31.30±21.70	5.172;
No	56 (70.0)	19 (35.8)	10 (11.5)	<0.001	4.27±3.85	<0.001	10.90±12.70	<0.001	5.79±7.03	<0.001	16.69±19.54	<0.001
Use assistive devices for walking												
Yes	16 (20.0)	19 (35.8)	59 (67.8)	40.29;	10.16±4.02	8.157;	22.48±12.23	5.648;	12.53±6.78	6.333;	35.01±18.72	5.963;
No	64 (80.0)	34 (64.2)	28 (32.2)	<0.001	5.54±4.33	<0.001	12.38±14.22	<0.001	6.30±7.77	<0.001	18.68±21.79	<0.001
Fear of falling												
Yes	26 (32.5)	39 (73.6)	79 (90.8)	64.70;	9.43±4.02	9.816;	24.87±10.65	25.150;	13.38±6.29	23.538;	38.26±16.53	25.237;
No	54 (67.5)	14 (26.4)	8 (9.2)	<0.001	3.88±3.92	<0.001	1.20±2.73	<0.001	0.59±1.27	<0.001	1.79±3.80	<0.001
Fall in the last three months												
Yes	3 (3.8)	12 (22.6)	34 (39.1)	30.05;	10.69±3.40	6.750;	22.47±10.03	4.058;	12.28±6.31	3.900;	34.75±15.87	4.086;
No	77 (96.2)	41 (77.4)	53 (60.9)	<0.001	6.60±4.73	<0.001	15.04±14.90	<0.001	8.01±8.15	<0.001	23.05±22.88	<0.001

* Z – chi square, T – students t test, F – ANOVA

the house," while the highest mean score was taken from the parameters "going up and down stairs" and shower and/or bath." When looking at the participants' average FFABQ subscale scores, it is seen that he received 16.70±14.28 points from the "challenging balance demands in daily life" subdimension and 8.96±7.98 points from the "instrumental activities of daily life and socialization" sub-dimension. The total FFABQ score was determined to be 25.66±22.03 (Table 2).

Both the FRAS and the FFABQ total scores of participants who can partially meet their daily needs on their own, have a chronic disease, constantly use medication, have walking or balance problems, have vision or hearing problems, use an assistive device for walking, have fear of falling, and have experienced a fall in the last three months. Their average scores were significantly higher compared to the average scores of other participants ($p<0.05$) (Table 3).

A significant positive and strong relationship was found between the FFABQ subscales "challenging balance demands in daily life" and "instrumental activities of daily living and socialization" and the FRAS total score. Furthermore, a significant positive and strong relationship was detected between FFABQ and FRAS total scores (Table 4).

Table 4. Correlation analysis between DENN and FFABQ scores*

			FRAS Scale
FFABQ Scale	Challenging balance demands in daily life	r	0.674
		p	<0.001
	Instrumental activities of daily living and socialization	r	0.648
		p	<0.001
	Total score	r	0.671
		p	<0.001

* r – correlation coefficient, using Pearson's correlation analyses

Discussion

Falls are the most common type of accident among the elderly, and most of them are preventable. Additionally, older adults have several risk factors that may lead to

avoidance behaviors resulting from fear of falling.[15] For this reason, it is very important to evaluate the risk of falling, fear of falling, and related avoidance behaviors of people. In this study, it was determined that elderly residents of nursing homes had a high risk of falling and that increased risk was associated with increased avoidance behaviors due to fear of falling.

Gender is stated among fall risk factors for the elderly.[16] When the literature is examined, different results are found regarding the relationship between gender and fall risk. In the Shao et al. meta-analysis study, which included 18 prospectively designed studies, it is emphasized that the gender is associated with falls.[17] In the Smith et al. study (n = 240), female gender of women was mentioned among the factors that increase the risk of falling.[18] In different studies conducted in Turkey, the presence of women has been reported as one of the factors that increase the risk of falling.[10,19-20] Gürler et al. state in their study that there is no difference between the genders in terms of fall risk.[21] In this study, it was found that there was no difference between the genders in terms of fall risk. It is thought that the variability in the results may be due to the number of genders in the population.

In the study, the average FFABQ score was found to be 25.66±22.03. According to this result, it can be said that the participants' fear of falling avoidance behavior was at a moderate level. While Öztürk and Özer found in their study that the fear of falling avoidance behavior of the elderly was low,[22] similar studies also stated that the fear of falling avoidance behavior levels of the elderly were low.[23-25] These results made us think that, in relation to the fact that the study took place in a nursing home, this emerged as a result of the fact that nursing homes impose different restrictions on the elderly than the environment they are used to and the sedentary lifestyle in the nursing home. The fact that the most frequently stated avoidance behaviors by the participants were "going up and downstairs" and "showering or bathing" activities confirms this idea.

The most important preventable risk factors in the elderly are psychiatric drug use, polypharmacy, environmental hazards, decreased vision, lower extremity strength, impairment of balance, and daily living activities.[26] Fall history, chronic diseases, gait and balance disorders, visual impairment, and cognitive disorders are some of the risk factors for falls.[16] In Shao et al.'s meta-analysis study, history of falls, impaired daily living activity performance, use of assistive devices, polypharmacy, unbalanced gait, and hearing problems were found to be associated with falls.[17] Lee et al. in a study, age-related decreases in vision and the resulting fear of falling and avoidance behaviors were found to be associated with an increase in the potential risk of falling.[23] In parallel with the literature, this study also included patients who constantly use medication, have walking or balance problems, have vision or hearing problems, and have walking aids. The fall risk of participants who were driving was found to be significantly higher.

Fear of falling can be considered protective to some extent in individuals with a high risk of falling.[27] Studies have stated that the fear of falling increases with age, that women experience more fear of falling than men, and that fear of falling is greater in elderly people who use assistive devices.[10,28] In the study by Chen et al. (n=5599), falls experienced by older adults in the previous month or the previous year were significantly associated with fear of falling.[29] In addition to physical consequences, falls also have psychological and social consequences. Fear of falling, the most common psychological consequence, leads to a reduction in physical and social activities.[30] When avoiding daily activities due to fear of falling is excessive, this can lead to deconditioning and a decrease in physical functions in individuals.[31] In this study, it is seen that the increase in the risk of falling increases in direct proportion to the increase in avoidance behaviors. Therefore, it is quite likely that elderly people who have avoidance behaviors due to fear of falling will also experience limitations in their daily activities.

Study limitation

It should be taken into consideration that the data obtained in the study based on the statements of the participants may be subjective and open to reporting errors. Furthermore, the generalizability of the results is limited by the characteristics of the study sample. In addition, the study was conducted in a single center and the study sample was relatively small, which constitutes the limitations of the study.

Conclusion

In this study, it was determined that elderly people living in a nursing home had a high risk of falling and that the increase in risk was associated with an increase in avoidance behaviors due to fear of falling. Total score on both FRAS and FFABQ for participants who can partially meet their daily needs on their own, have a chronic disease, constantly use medications, have walking or balance problems, have vision or hearing problems, use assistive devices for walking, have fear of falling, and have experienced falls in the last three months.

There are multiple risk factors in the elderly, which can lead to avoidance behaviors related to fear of falling. In addition to creating programs to prevent falls, it is recommended to identify avoidance behaviors related to the fear of falling in performing daily life activities and plan appropriate interventions. Rehabilitation and technological rehabilitation can help prevent falls. Fur-

thermore, it should not be forgotten that avoidance behaviors related to fear of falling may lead to restrictions on movement and activities for a long time and thus have harmful effects on the musculoskeletal system.

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Author contributions
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Conflicts of interest
The authors declare that there are no conflicts of interest.

Data availability
The data sets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval
Istanbul Kültür University Institutional Review Board approved this study (IRB date and number: 12.10.2023/2023.122).

References
1. Kılıc D, Ata G, Hendekci A. One of the ımportant health problems of the aging period:falling and factors affecting falling. *Acıbadem University Health Sciences Journal*. 2021;12:517-523. doi: 10.31067/acusaglik.850925
2. Papalia GF, Papalia R, Diaz Balzani LA, et al. The effects of physical exercise on balance and prevention of falls in older people: A systematic review and meta-analysis. *J Clin Med*. 2020;9:2595. doi: 10.3390/jcm9082595
3. World Health Organization. Aging. 2024. https://www.who.int/health-topics/ageing#tab=tab_1. Accessed May 5, 2024.
4. Thomas E, Battaglia G, Patti A, et al. Physical activity programs for balance and fall prevention in elderly: A systematic review. *Medicine*. 2019;98:e16218. doi: 10.1097/MD.0000000000016218
5. Appeadu MK, Bordoni B. Falls and fall prevention in older adults. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK560761/. Accessed May 5, 2024.
6. Ang GC, Low SL, How CH. Approach to falls among the elderly in the community. *Singapore Medical Journal*. 2020;61:116-121. doi: 10.11622/smedj.2020029
7. Gülhan Güner S, Ural N. Fall in the elderly people: Determining the status within the context of dissertations conducted in Turkey. *Izmir Katip Celebi University Faculty of Health Sciences Journal*. 2017;2:9-15.
8. Cınarlı T, Koc Z. Effect of risk and fear of falling on quality of life and daily living activities in elderly over 65. *Gümüşhane University Journal of Health Sciences*. 2015;4:660-679.
9. Caner S, Aydin Avci I. Investigation of home care needs and falling with risk, fear and falling behaviors in elderly. *Ondokuz Mayıs University Journal of Health Sciences*. 2022;7:193-208. doi: 10.47115/jshs.1036750
10. Soyuer F, Cankurtaran F, Akın S, Elmalı F. Fear of falling in elderly people living in rest home and related factors. *Gaziantep Medical Journal* 2015;21:172-177. doi: 10.5455/GMJ-30-178074
11. Schoberer D, Breimaier HE, Zuschnegg J, Findling T, Schaffer S, Archan T. Fall prevention in hospitals and nursing homes: Clinical practice guideline. *Worldviews Evid Based Nurs*. 2022;19(2):86-93. doi: 10.1111/wvn.12571
12. Tekin DE, Kara N, Utlu Tan N, Arkuran F. The Turkish adaptation of the fall risk assessment scale developed by the Delmarva Foundation: A reliability and validity study. *HEAD*. 2013;10:45-50.
13. Landers MR, Durand C, Powell DS, Dibble LE, Young DL. Development of a scale to assess avoidance behavior due to a fear of falling: the Fear of Falling Avoidance Behavior Questionnaire. *Phys Ther*. 2011;91:1253-1265. doi: 10.2522/ptj.20100304
14. Acaröz-Candan S, Demircioğlu A, Şahin ÜK. Cross-cultural adaptation and psychometric properties of The Fear of Falling Avoidance Behavior Questionnaire in Turkish community-dwelling Older Adults. *Disability and Rehabilitation*. 2020;1-8. doi:10.1080/09638288.2020.1734674_
15. Giovannini S, Brau F, Galluzzo V, et al. Falls among Older Adults: Screening, Identification, Rehabilitation, and Management. *Applied Sciences*. 2022;12(15):7934. doi:10.3390/app12157934
16. World Health Organization. Integrated care for older people: guidelines on community-level interventions to manage declines in intrinsic capacity. Evidence profile: risk of falls. Geneva. https://iris.who.int/bitstream/handle/10665/342248/WHO-MCA-17.06.04-eng.pdf?sequence=1. Accessed May 15, 2024.
17. Shao L, Shi Y, Xie XY, Wang Z, Wang ZA, Zhang JE. Incidence and risk factors of falls among older people in nursing homes: Systematic review and meta-analysis.

J Am Med Dir Assoc. 2023;24:1708-1717. doi: 10.1016/j.jamda.2023.06.002

18. Smith AA, Silva AO, Rodrigues RA, Moreira MA, Nogueira JA, Tura LF. Assessment of risk of falls in elderly living at home. *Rev Lat Am Enfermagem*. 2017;25:e2754. doi: 10.1590/1518-8345.0671.2754
19. Akgul A, Arman N, Tarakci E, et al. Determination falling prevalence and the risks of falls in elders living in the district of Bahcelievler, İstanbul. *Turkiye Klinikleri J Med Sci*. 2018;38:107-11. doi: 10.5336/MEDSCI.2018-59776.
20. Kibar E, Aslan D, Karakoç Y, Gokce Kutsal F. Frequency, risk factors and preventive approach to fall among aged population living in a nursing home in Ankara. *TSK Preventive Medicine Bulletin*. 2015;14:23-32.
21. Gürler, H, Özkan Tuncay F, Kars Fertelli T. The determination of perceived risk factors and the level of knowledge for falls in elderly ındividuals who lives in a nursing home. *Van Tıp Derg*. 2019;26:315-323. doi: 10.5505/vtd.2019.38233
22. Öztürk D, Özer Z. The mediator role of frailty in the effect of fear of falling avoidance behavior on quality of life in older adults admitted to hospital. *Geriatr Nurs*. 2022;48:132-138. doi: 0.1016/j.gerinurse.2022.09.010
23. Lee SP, Hsu YW, Andrew L, Davis T, Johnson C. Fear of falling avoidance behavior affects the inter-relationship between vision impairment and diminished mobility in community-dwelling older adults. *Physiother Theory Pract*. 2022;38:686-694. doi: 10.1080/09593985.2020.1780656
24. Choi K, Ko Y. Characteristics Associated With Fear of Falling and Activity Restriction in South Korean Older Adults. *J Aging Health*. 2015;27:1066-1083. doi: 10.1177/0898264315573519
25. Scarlett L, Baikie E, Chan SWY. Fear of falling and emotional regulation in older adults. *Aging Ment Health*. 2019;23:1684-1690. doi: 10.1080/13607863.2018.1506749
26. Püllüm E, Sökmen ÜN, Akyıl RÇ, Ongun G, Cihangir HÖ. determination of the falling risk of elderly residents in aydın nursing home: A descriptive study. *Izmir Katip Celebi University Faculty of Health Sciences Journal*. 2018;3:9-14.
27. Rider JV, Longhurst JK, Lekhak N, Young DL, Landers MR. Fear of falling avoidance behavior assessment and intervention in Parkinson's disease: A Scoping Review. *Research and Reviews in Parkinsonism*. 2022;12:1-17. doi: 10.2147/JPRLS.S350890_
28. Akkaya Kozak D, Bahar NT, Ay F, Kılıc B, Basibuyuk GÖ. Falling situations of older adults in Turkey. *Antropoloji*. 2021;41:11-20. doi: 10.33613/antropolojidergisi.810773
29. Chen WC, Li YT, Tung TH, Chen C, Tsai CY. The relationship between falling and fear of falling among community-dwelling elderly. *Medicine (Baltimore)*. 2021;100(26):e26492. doi: 10.1097/MD.0000000000026492
30. 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(3):e0194967. doi: 10.1371/journal.pone.0194967
31. Landers MR, Lopker M, Newman M, Gourlie R, Sorensen S, Vong RA. Cross-sectional analysis of the characteristics of ındividuals with parkinson disease who avoid activities and participation due to fear of falling. *J Neurol Phys Ther*. 2017;41:31-42. doi: 10.1097/NPT.0000000000000162