







Original research article

Fall history and fall related concerns in community dwelling older Czech adults

Dagmar Nemček^{1,5} , Michaela Bobkowska^{2*} , Petra Kurková³ , Eva Králová⁴ ¹ Comenius University Bratislava, Faculty of Physical Education and Sport, Department of Sports Educology and Sports Humanistic, Bratislava, Slovak Republic² Alexander Dubček University of Trenčín, Faculty of Healthcare, Department of Nursing, Trenčín, Slovak Republic³ Palacký University Olomouc, Faculty of Education, Department of Anthropology and Health Education, Olomouc, Czech Republic⁴ Alexander Dubček University of Trenčín, Faculty of Healthcare, Department of Clinical, Theoretical and Special Disciplines, Trenčín, Slovak Republic⁵ Comenius University Bratislava, Faculty of Education, Department of Special Education, Bratislava, Slovak Republic

Abstract

Falls in the elderly result in injuries of various levels of severity. At present, more attention is devoted to the psychological consequences of the fall, which lead to a reduction in activity and social participation, a reduction in the independence and quality of life, and are collectively referred to as fall-related concerns (FRC). The aim of this study was twofold. First, to study the prevalence of fall-related concern among community dwelling older Czech adults. Second, to describe the impact of fall-related concerns on activities of daily living. The study was designed as a cross-sectional quantitative study that uses the Czech version of the standardized Fall Efficacy Scale-International. The research showed that fall-related concerns are a major health problem among the elderly who live in communities. These concerns are present in the elderly who fell, but also in older women who have not fallen in the last year. The elderly who repeatedly fell in the last year showed a statistically more significant level of concerns associated with the falls in individual activities of daily living, as well as a higher overall score related to falls. A fall is a significant, but at the same time preventable, risk factor for fall-related concerns.

Keywords: Activities of daily living; Community dwelling older adults; Fall history; Fall-related concerns

Introduction

Elderly people falling is currently considered a serious global public health problem. In the Slovak Republic, 42,048 people were hospitalized in 2020 due to falls, which represents up to 63.7% of all injuries that required hospitalization. We assume that the incidence of falls is much higher, as those who fall do not visit the healthcare facility in case of minor injuries. (NCZI, 2022). Each year in the USA, 3 million older people are treated at emergency departments for fall injuries, and over 800,000 patients a year are hospitalized due to a fall injury (CDC, 2022). Falls often cause injuries to the elderly that require long-term, expensive treatment, and even if they do not cause injury, it affects their life due to their fear of further falls. Fear of falling (FOF) is often used as a synonym for the full range of psychological consequences of fall. These consequences form a relatively heterogeneous group, which is collectively referred to as Fall Related Psychological Concerns (FRPC). These concerns are fear of falling, reduced efficiency associated with falls (FE – *Fall Efficacy*), or reduced self-confidence to maintain balance (BC – *Balance Confidence*) (Hughes et al., 2015; Payette et al., 2016).

In the past, FOF was considered the direct result of psychological trauma from falling; the so-called “*post-fall syndrome*” that developed in a person after a fall – despite being able to move independently, the fear of another fall did not allow him or her to move (Murphy and Isaacs, 1982). At present, we know that falling is not the only factor involved in the development of FOF and it occurs in ageing people who have never experienced any falls in the past (Denkinger et al., 2015; Hill, 2019). The elderly experience FOF because they are afraid they will be unable to get up after a fall, of possible hospitalization, embarrassment in social situations, or of complete and permanent dependence on others (Dingová and Králová, 2017). On the other hand, FOF can serve as a protective factor that motivates people to engage in preventive behaviour (Hamed et al., 2021). The highest prevalence of FOF is seen in the elderly who have fallen in the past (Mikušáková et al., 2013). We recorded a higher frequency of falls in the older elderly with ill health, who subjectively perceive their health as worse, have functional limitations, mobility disorders, and cognitive impairment (Bendíková and Bartík, 2015; Kurková et al., 2020). FOF has been associated with potentially serious outcomes, such as curtailment of daily living activities, worsening of quality of life, and an increase in future falls (Bobkowska and Matišá-

* **Corresponding author:** Michaela Bobkowska, Alexander Dubček University of Trenčín, Faculty of Healthcare, Department of Nursing, Študentská 2, 911 50 Trenčín, Slovak Republic; e-mail: michaela.bobkowska@tnuni.sk
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ková, 2020; Bóriková et al., 2018; Dingová and Králová, 2017). Makino et al. (2018) found that FOF is a single independent predictor of disability incidence in community-dwelling older adults.

The aim of this study was twofold. First, to study the prevalence of fall-related concerns, FOF among fallers and non-fallers in community dwelling older adults. Second, to describe the impact of fall-related concerns on activities of daily living.

Materials and methods

FOF is defined as lasting concern about falling that leads to an individual avoiding activities that one remains capable of performing (Hughes et al, 2015).

The study is designed as a cross-sectional quantitative study with the use of the Czech version of the standardized scale FES-I (The Fall Efficacy Scale-International) by Yardley and Smith (2002), translated into Czech by Reguli and Svobodová (2011). It represents a specific instrument to measure FRC in the population over the age of 65 (Yardley et al., 2005) that is operationalized as a measure of fear of falling in individual ADLs. The term “fear” in FES-I means the conscious, rational concern associated with a fall. The scale consists of 16 items – activities of daily living – which the elderly evaluates on a four-point Likert scale (from 1 “I’m not afraid at all” – to 4 “I’m very worried”). The overall score (TS FES-I) can be between 16 to 64 points (min-max), with a higher score indicating a higher level of fall-related concerns (FRC). Delbaere et al. (2010) established cut-off points for low, moderate, and high concerns about falling on the FES-I scores. Scores >23 for the 16-item scale indicated high concern about falling, low concern (16–19 points), moderate concern (20–27 points), and high concern (28–64 points).

In the study, falls were defined as the consequence of an event which resulted in a person inadvertently coming to rest on the ground or other lower surface, excluding intentional change in position to rest on furniture or other objects. The number of previous falls was established via the question: “Did you have any falls last year?” We also registered the number of falls, and this information was subsequently analysed in three different categories (no fall, one fall, more than one fall).

Approval for the study was obtained from the ethics committee of the Faculty of Education, Palacký University in Olomouc, Czech Republic (no. 2/2018). Research participants were recruited from the senior centres in Hradec Králové,

Olomouc, and Ostrava. The selection of respondents was intentional, with the main criteria being aged 65 and over, living in one’s home/community, and mobility without the use of compensatory aids. The data was collected in 2019–2020 via printed questionnaires, with the assistance of trained undergraduate students of Palacký University in Olomouc. The return rate of the questionnaires was 100%, which we attribute to the assisted data collection. Informed consent was sought from participants prior to their participation in the study.

Empirical data were processed in the statistical programme IBM SPSS version 23. For statistical evaluation of the data, we used the summation of points (so-called total score) and average values (so-called average score, \bar{x}) calculated from the respondents’ answers, and the standard deviation (\pm ; SD). To determine the significance of FRC level, we applied a nonparametric Kruskal–Wallis test in the groups of men and women between three independent selections, in terms of the incidence of falls (none, one, more than one fall). We applied a nonparametric Mann–Whitney *U*-test to determine the significance of differences in FRC perception between the two groups (none vs one, one vs more than one, none vs more than one). The internal consistency of the scale was determined by Cronbach’s α .

Results

Characteristics of the sample

The research group consisted of active Czech elderly ($n = 281$) aged 65 and over (with a mean age of 74.12 ± 6.19 years), male ($n = 90$; with a mean age of 74.53 ± 5.99 years), and female ($n = 191$; with a mean age of 73.93 ± 6.29 years), living in their households. We then categorized them into three groups in terms of overcoming falls in the last year. The selected characteristics of the sample are listed in Table 1.

Evaluation of the fall-related concern level during activities of daily living

All three groups of men (who were divided in terms of the incidence of falls) showed the lowest FRC level when they were preparing a simple meal. Men who experienced a fall last year achieved lower FRC values in activities such as dressing or undressing, walking around the home, and visiting friends and relatives. Men with more than one fall in the last year experienced a decreased level of fear of falling when shopping, visiting friends and relatives, and attending social or religious

Table 1. Characteristics of the research sample in terms of age, gender, and health

Characteristics according to gender	Men <i>N</i> = 90	Women <i>N</i> = 191	Total <i>N</i> = 281	
Age in years (mean \pm SD)	74.53 \pm 5.99	73.93 \pm 6.29	74.12 \pm 6.19	
Incidence of diseases		%		M–W <i>U</i> -test*
Not specified / subjective health	36.7	15.7	22.4	<i>U</i> = 7492 <i>p</i> = 0,073
Polymorbidity	23.3	40.3	34.9	
Cardiovascular diseases	18.9	18.8	18.9	
Musculoskeletal diseases	8.9	13.6	12.1	
Gastrointestinal and metabolic diseases	6.7	4.2	5.0	

Note: * Mann–Whitney *U*-test; $p \leq 0.05$.

events. The highest FRC level, expressed as an average score, was experienced by the elderly who had not fallen in the last

year, as well as those who had not fallen repeatedly when walking on a slippery surface (Table 2).

Table 2. Differences in perception of FRC during ADL in older men in terms of fall history

Activities of Daily Living		Occurrence of falling in the last year			Kruskal–Wallis test	
		No N = 44	One N = 33	More than one N = 13	χ	p
		$\bar{x} \pm \text{SD}$ (average score)				
1	Home cleaning	1.20 ± 0.63	1.33 ± 0.54	2.08 ± 1.03	14.54	0.001*
2	Dressing / Undressing	1.11 ± 0.38	1.18 ± 0.39	1.69 ± 0.85	10.32	0.006*
3	Preparing a simple meal	1.02 ± 0.15	1.09 ± 0.52	1.23 ± 0.43	8.56	0.014*
4	Showering / Bathing	1.23 ± 0.56	1.42 ± 0.50	1.92 ± 0.86	11.94	0.003*
5	Regular shopping	1.18 ± 0.44	1.45 ± 0.66	1.54 ± 0.87	4.67	0.097
6	Getting up / sitting off a chair	1.27 ± 0.66	1.45 ± 0.62	1.92 ± 0.86	10.00	0.007*
7	Walking up the stairs (down the stairs)	1.48 ± 0.73	2.94 ± 0.74	2.69 ± 0.85	21.54	0.000*
8	Walking around the home	1.23 ± 0.60	1.18 ± 0.39	1.62 ± 0.65	8.54	0.014*
9	Reaching for things overhead / lifting things off the ground	1.36 ± 0.68	1.82 ± 0.85	2.23 ± 0.72	15.45	0.000*
10	Fast walking to answer ringing phone	1.29 ± 0.70	1.34 ± 0.54	1.92 ± 1.03	6.72	0.035*
11	Walking on a slippery surface	1.80 ± 0.85	2.73 ± 0.84	3.23 ± 1.01	26.68	0.000*
12	Visiting friends / relatives	1.04 ± 0.21	1.24 ± 0.50	1.62 ± 0.76	13.71	0.001*
13	Walking in a crowd of people	1.27 ± 0.62	1.94 ± 0.86	2.15 ± 0.89	20.68	0.000*
14	Walking on an uneven surface	1.59 ± 0.75	2.21 ± 0.82	2.69 ± 0.94	19.01	0.000*
15	Walking uphill / downhill	1.59 ± 0.76	2.24 ± 0.87	2.85 ± 1.14	18.56	0.000*
16	Attending social events	1.16 ± 0.43	1.39 ± 0.65	1.62 ± 0.87	7.11	0.029*
TS FES-I		20.84 ± 7.37	25.97 ± 6.43	33.00 ± 9.84	25.33	0.000*

Note: * $p \leq 0.05$.

As many as 43.3% (39/90) of older men achieved higher FRC values (score ≥ 23 points TS FES-I), and 32.2% (29/90) of the elderly achieved high FRC values (score ≥ 28 points TS FES-I). By analysing the FRC level in the male group, we found that the highest TS FES-I scores were achieved by those who repeatedly overcame a fall in the last year (33.00 ± 9.84 points), and the lowest scores were achieved by those who had not fallen even once in the last year (20.84 ± 7.37 points). In older men who fell in last year, we found significant differences in the FRC level in 15 ADL (93.8%), except for the regular shopping (Table 2). Compared to seniors without a fall in the last year, the elderly who suffered a single fall experienced a significantly higher FRC level at 11 ADLs (68.8%). The most significant differences in the FRC level, up to 15 ADLs, were identified in the group of the elderly who fell repeatedly compared to those who did not fall at all. It was only in “regular shopping” activities that no significant differences in the FRC level between the two groups of the elderly were observed. The elderly who fell repeatedly in the last year, compared to those ones who experienced only one fall, perceived the FRC significantly higher when they were performing 5 ADLs.

These results were also reflected at the level of TS FES-I (Table 3).

Elderly women, regardless of their fall history, showed the lowest level of FRC when they were preparing a simple meal. Conversely, the highest level was perceived when walking on a slippery surface (Table 4).

The highest TS FES-I was achieved by elderly women who repeatedly overcame falls in the last year (32.92 ± 10.30 points). On the contrary, the lowest value was achieved by women who did not fall in the last year (23.55 ± 6.35 points). The average score of women who did not fall last year reached a critical value >23 FES-I points. As many as 50.8% (97/191) of elderly women achieved higher FRC values (score ≥ 23 points TS FES-I), while 28.8% (55/191) achieved high FRC values (score ≥ 28 points TS FES-I) (Table 4).

In comparison to the elderly who had not fallen, those who fell once experienced a significantly higher FRC level of 3 ADLs (18.8%). However, a statistically significant difference at the TS FES-I level (Table 5) was not confirmed. In all 16 ADLs (100%), the elderly who had experienced repeated falls had a statistically significantly higher FRC than those who had not fallen at all in the last year.

Internal consistency of TS of The Czech FES-I was excellent, Cronbach's $\alpha = 0.93$.

Table 3. Fall history and FRC rates in men – pairwise comparison

Activities of Daily Living	Occurrence of falls in the last year					
	No fall vs one fall		One fall vs more than one fall		No fall vs more than one fall	
	<i>U</i>	<i>p</i>	<i>U</i>	<i>p</i>	<i>U</i>	<i>p</i>
Home cleaning	601	0.063*	126	0.013*	143	0.000*
Dressing / Undressing	663	0.226	145	0.028*	177	0.002*
Preparing a simple meal	720	0.823	173	0.038*	226	0.011*
Showering / Bathing	557	0.027*	145	0.059	152	0.001*
Regular shopping	573	0.036*	214	1.000	235	0.158
Getting up / sitting down on a chair	584	0.061	149	0.075	160	0.002*
Walking up the stairs (down the stairs)	463	0.003*	110	0.006*	86	0.000*
Walking around the home	715	0.868	135	0.013*	181	0.008*
Reaching for things overhead / lifting things off the ground	505	0.009*	154	0.120	111	0.000*
Fast walking to answer ringing phone	661	0.373	147	0.054	182	0.013*
Walking on a slippery surface	327	0.000*	144	0.072	89	0.000*
Visiting friends / relatives	604	0.024*	157	0.075	165	0.000*
Walking in a crowd of people	396	0.000*	186	0.470	117	0.000*
Walking on an uneven surface	420	0.001*	154	0.115	108	0.000*
Walking uphill / downhill	420	0.001*	145	0.077	113	0.000*
Attending social events	585	0.044*	184	0.387	192	0.012*
TS FES-I	337	0.000*	121	0.023*	86	0.000*

Note: U (Mann–Whitney U-test); * $p \leq 0.05$.

Table 4. Fall history and differences in the perception of FRC in elderly women

Activities of Daily Living	Occurrence of falling in the last year			Kruskal–Wallis test	
	No <i>N</i> = 122	One <i>N</i> = 42	More than one <i>N</i> = 27	χ	<i>p</i>
	$\bar{x} \pm \text{SD}$ (average score)				
1 Home cleaning	1.22 ± 0.53	1.24 ± 0.53	1.78 ± 0.93	16.10	0.000*
2 Dressing / Undressing	1.11 ± 0.34	1.17 ± 0.43	1.59 ± 0.93	13.15	0.001*
3 Preparing simple meals	1.02 ± 0.18	1.09 ± 0.29	1.37 ± 0.68	29.17	0.000*
4 Showering / Bathing	1.38 ± 0.58	1.45 ± 0.80	1.96 ± 1.05	9.10	0.011*
5 Regular shopping	1.14 ± 0.43	1.26 ± 0.62	1.67 ± 0.92	17.25	0.000*
6 Getting up / sitting down on a chair	1.26 ± 0.59	1.29 ± 0.55	1.85 ± 0.98	15.68	0.000*
7 Walking up the stairs (down the stairs)	1.70 ± 0.79	1.88 ± 0.91	2.52 ± 1.05	14.48	0.001*
8 Walking around the house	1.16 ± 0.43	1.29 ± 0.80	1.67 ± 0.83	17.63	0.000*
9 Reaching for things above head / lifting things off the ground	1.74 ± 0.76	1.81 ± 0.80	2.52 ± 1.12	11.92	0.003*
10 Fast walking to answer ringing phone	1.28 ± 0.55	1.50 ± 0.71	1.89 ± 0.93	15.63	0.000*
11 Walking on a slippery surface	2.56 ± 0.87	2.57 ± 0.88	3.18 ± 0.78	11.36	0.003*
12 Visiting friends / relatives	1.11 ± 0.36	1.19 ± 0.63	1.44 ± 0.80	8.45	0.015*
13 Walking in a crowd of people	1.55 ± 0.77	1.67 ± 0.92	2.33 ± 1.03	15.86	0.000*
14 Walking on an uneven surface	2.13 ± 0.93	2.07 ± 0.83	2.89 ± 0.89	15.64	0.000*
15 Walking uphill / downhill	2.04 ± 0.92	2.00 ± 0.82	2.85 ± 0.86	18.47	0.000*
16 Attending social events	1.11 ± 0.42	1.21 ± 0.47	1.41 ± 0.79	8.96	0.011*
TS FES-I	23.55 ± 6.35	24.69 ± 8.23	32.92 ± 10.30	24.59	0.000*

Note: * $p \leq 0.05$.

Table 5. Fall history and FRC level in women – pairwise comparison

Activities of Daily Living	Occurrence of falls in the last year					
	No vs one		One vs more than one		No vs more than one	
	<i>U</i>	<i>p</i>	<i>U</i>	<i>p</i>	<i>U</i>	<i>p</i>
Home cleaning	2528	0.849	373	0.004*	1058	0.000*
Dressing / Undressing	2465	0.512	430	0.022*	1190	0.000*
Preparing a simple meal	2341	0.005*	451	0.030*	1175	0.000*
Showering / Bathing	2523	0.858	396	0.017*	1137	0.003*
Regular shopping	2362	0.203	419	0.022*	1088	0.000*
Getting up / sitting down on a chair	2468	0.616	374	0.005*	1040	0.000*
Walking up the stairs (down the stairs)	2316	0.317	370	0.012*	927	0.000*
Walking around the home	2532	0.851	387	0.005*	1067	0.000*
Reaching for things overhead / lifting things off the ground	2461	0.678	363	0.008*	1001	0.001*
Fast walking to answer ringing phone	2143	0.046*	433	0.069	1017	0.000*
Walking on a slippery surface	2524	0.880	350	0.005*	1020	0.001*
Visiting friends / relatives	2555	0.959	459	0.044*	1310	0.005*
Walking in a crowd of people	2456	0.652	350	0.004*	912	0.000*
Walking on an uneven surface	2509	0.831	296	0.000*	932	0.000*
Walking uphill / downhill	2547	0.951	277	0.000*	867	0.000*
Attending social events	2271	0.038*	519	0.412	1338	0.005*
TS FES-I	2428	0.614	253	0.000*	650	0.000*

Note: U (Mann–Whitney U-test); * $p \leq 0.05$.

Discussion

Overall, active seniors find themselves less worrying about falling when they prepare a simple meal, regardless of previous history of falling. The elderly who had overcome one or more falls in the last year also perceived a low level of concern during other activities, such as dressing and undressing, visiting friends and relatives, and attending social and religious events. On the other hand, 35.1% of men and up to 50.8% of women declared a higher FRC level (TS FES-I ≥ 23). The highest FRC level was reported by women and men who did not fall or fell repeatedly when walking on a slippery surface. Both men and women who fell more than once in the last year experienced a high level of fear of falling when walking uphill and/or downhill. For men who fell only once last year, the concern of falling dominated when walking up and down stairs, as well as when they were walking on uneven surface. Kwan et al. (2013) claims that the elderly who live in communities have the highest FRC when walking on slippery surface. At the same time, the authors found other activities that the elderly avoided due to FRC, such as “bathing in the bathtub” or “walking around their house”. Paradoxically, “walking around their house/neighborhood” was an activity for which the elderly who fell only once had the lowest FRC level. We assume that a certain level of fear of falling on slippery surfaces or icy sidewalks is natural even at a younger age. It serves as protection by increasing people’s attention and motivating protective or preventive behaviour. From this point of view, FRCs are, under certain conditions, physiological, desirable, and related to rational fall risk assessment and preventive behaviour. For example, shortly after a fall, during the recovery process, human

functions are still so limited that performing certain activities is associated with a high level of probability of another fall. However, the higher level and longer time experienced by the elderly and lead to a significant restriction of activities, represents a maladaptive response. Hamed et al. (2021) report this kind of FRC dichotomy in the elderly who, perceive fear as a positive protective factor, but also as a barrier that limits their activities and impairs their sense of security. The concept was described as a dichotomy, where the fear of falling posed a threat to the sense of security, but on the other hand also provided protection against harm.

Fear of falling among the elderly become more pronounced in the areas demanding strength, balance, endurance, and coordination of activities (more demanding physical activities) (Margues-Vieira et al., 2016). There are research studies that declare only a slight reduction in the elderly’s activities due to their fear of falling but significantly predominate those studies that document a significant decline in the activities that, according to the elderly, seem to increase the risk of falling (Çinarlı and Koç, 2017). Qualitative studies offer greater insight, showing that the elderly not only reduce the frequency of these activities, but also the instrumental aspect of these activities, for example the way the elderly perform them (Dingová and Králová, 2017).

The least significant differences in experiencing fear of falling in individual ADLs were found between the elderly group who fell only once and those who fell repeatedly. In the female sample, the least statistically significant differences were seen in the group of elderly women who did not fall compared to those who fell only once. While in male group the FRC is present after the first fall, in the female group a significant in-

crease in fear of falling is associated with repeated falls in last year. We must emphasize however, that women who did not experience a fall scored statistically significantly higher than men in the same category (20.84 ± 7.37 score vs 23.55 ± 6.35 , $p < 0.01$). As the two groups are very similar in age, we believe that in this case, the FRC level for women is also affected by other factors, not just by their experience of falls.

Most studies document higher FRC level in women. Unfavourable health status, objective as well as subjectively assessed health and reduced functional status, negatively affect how the elderly experience FRC (Margues-Vieira et al., 2016). In our study, a higher proportion of polymorbid women are represented, and although the difference did not reach the level of statistical significance (40% vs 23.3%, $p = 0.073$), the health condition is clearly more unfavourable for women (Table 1). We assume that there are other variables associated with FRC and it would be necessary to verify their impact to the FRC from a gender perspective.

Our study results also revealed a high prevalence of FRC among the active elderly. We emphasize the need for health care professionals to include FRC assessment, because as Whipple et al. (2018) claim, early identification of FRC using an appropriate tool is the most important step in effective care planning. Interventions such as balance and mobility training [i.e., evidence-based fall prevention community programmes such as Stepping on, Ottago exercise program (CDC)], and educational intervention by nurses focused on home environmental risk factors for falls (Tiefenbachová and Zeleníková, 2019) have been shown to reduce FRC and the risk of (recurrent) falls.

Research limitations

The main limitation of this study was the cross-sectional design. Also, causality could not be demonstrated in the association between fall history and FRC. The results regarding the differences between FRC and fall history have been influenced by factors not investigated in this study, for example missing information on social status/social support, mental health, or physical performance. Fall experience for more than one year prior to survey was not considered in our analysis. Other limitations mainly consist of the selection of the research sample and the possibilities of generalizing results.

Conclusions

FRC is a major problem among community dwelling Czech older adults, even those who are active in retirements clubs. As many as 48.39% of the active elderly experience a higher level of fear of falling. Czech active elderly, regardless of their fall history, were least concerned about the possibility of falling when preparing a simple meal. The highest FRC level was reported by women and men who had not fallen, or who fell repeatedly when walking on a slippery surface. For men, the difference indicated a statistically significant higher level of FRC in the categories according to the fall history. For women the fear of falling seems to be influenced by other factors as well, not only by their experience with the fall in the last year. The highest FRC level was experienced by the elderly who fell repeatedly in the last year. From this point of view, we can claim that the fall is a significant but preventable risk factor of FRC. A better understanding of FRC can contribute to the early identification of FRC and more efficient intervention to reduce FRC and its adverse consequences in nursing and other health-related disciplines.

Our study results also revealed a high prevalence of FRC in the active elderly and emphasize the need for healthcare professionals to include FRC assessment when assessing the elderly who have had a fall, as well as screening the elderly who present themselves to health services or home care (by a general practitioner nurse and a community nurse).

Ethical aspects and conflict of interests

The authors have no conflict of interests to declare.

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Obavy spojené s pádom u aktívnych seniorov v komunite z hľadiska pádovej anamnézy

Súhrn

Pády sú u seniorov príčinou poranení s rôznym stupňom závažnosti. V súčasnosti sa čoraz viac pozornosti venuje i psychologickým následkom pádu, ktoré vedú k obmedzeniu aktivity a sociálnej participácie, zníženiu nezávislosti i kvality života seniora a sú súhrnne označované ako obavy spojené s pádom (FRC). Cieľom štúdie bolo zistiť prevalenciu obáv spojených s pádom pri vykonávaní bežných denných aktivít v skupinách aktívnych seniorov, ktorí žijú vo svojich domácnostiach, predovšetkým z hľadiska pádovej anamnézy. Výskum preukázal, že obavy spojené s pádom sú závažným zdravotným problémom seniorov, ktorí žijú v komunite, a to nielen u tých, ktorí majú pozitívnu pádovú anamnézu, ale i u žien bez skúsenosti s pádom v poslednom roku. Miera FRC v jednotlivých ADL i úroveň celkového skóre strachu z pádu bola štatisticky významne vyššia, a v širšom spektre ADL u seniorov, ktorí spadli v poslednom roku opakovane. Pád je tak významným a zároveň preventabilným rizikovým faktorom FRC.

Kľúčové slová: aktivity každodenného života; obavy spojené s pádom; pádová anamnéza; seniori v komunite

References

- Bendíková E, Bartík P (2015). Selected determinants of seniors' lifestyle. *J Hum Sport Exerc* 10(3): 805–814. DOI: 10.14198/jhse.2015.103.06.
- Bobkowska M, Matišíáková I (2020). Strach z pádu a kvalita života seniorov: systematický literárny prehľad. *Zdravotnícke listy* 8(3): 14–22.
- Bóriková I, Žiaková K, Tomagová M, Záhumenská J (2018). The risk of falling among older adults in long-term care: screening by the Morse Fall Scale. *Kontakt* 20(2): e111–e119. DOI: 10.1016/j.kontakt.2017.11.006.
- CDC – Centers for Disease Control and Prevention, National Center for Injury Prevention and Control (2022). Web-based Injury Statistics Query and Reporting System (WISQARS). [online] [cit. 2022-05-20]. Available from: <https://www.cdc.gov/injury/wisqars/>
- Çinarlı T, Koç Z (2017). Fear and risk of falling, activities of daily living, and quality of life: Assessment when older adults receive emergency department care. *Nurs Res* 66(4): 330–335. DOI: 10.1097/NNR.0000000000000227.
- Delbaere K, Close JC, Mikolaizak, AS, Sachdev PS., Brodaty, H, Lord SR (2010). The Falls Efficacy Scale International (FES-I). A comprehensive longitudinal validation study. *Age Ageing* 39(2): 210–216. DOI: 10.1093/ageing/afp225.
- Denkinger MD, Lukas A, Nikolaus T, Hauer K (2015). Factors associated with fear of falling and associated activity restriction in community-dwelling older adults: a systematic review. *Am J Geriatr Psychiatry* 23(1): 72–86. DOI: 10.1016/j.jagp.2014.03.002.
- Dingová M, Králová E (2017). Fear of falling among community dwelling older adults. *Cent Eur J Nurs Midw* 8(1): 580–587. DOI: 10.15452/CEJNM.2017.08.0005.
- Hamed K, Roaldsen KS, Halvarsson A (2021). "Fear of falling serves as protection and signifies potential danger": a qualitative study to conceptualise the phrase "fear of falling" in women with osteoporosis. *Osteoporos Int* 32(12): 2563–2570. DOI: 10.1007/s00198-021-06047-6.
- Hill KD (2019). Fear of falling: a hidden burden with or without a history of falls. *Evid Based Nurs* 22(1): 21. DOI: 10.1136/eb-2018-102978.
- Hughes CC, Kneebone II, Jones F, Brady B (2015). A theoretical and empirical review of psychological factors associated with falls-related psychological concerns in community-dwelling older people. *Int Psychogeriatr* 27(7): 1071–1087. DOI: 10.1017/S1041610214002701.
- Kurková P, Kisvetrová H, Horváthová M, Tomanová J, Bretšnajdrová M, Herzig R (2020). Fear of falling and physical performance among older Czech adults. *Family Medicine and Primary Care Review* 22(1): 32–35. DOI: 10.5114/fmpcr.2020.92503.
- Kwan MM, Tsang WW, Close JC, Lord SR (2013). Development and validation of a Chinese version of the Falls Efficacy Scale International. *Arch Gerontol Geriatr* 56(1): 169–174. DOI: 10.1016/j.archger.2012.10.007.
- Makino K, Makizako H, Doi T, Tsutsumimoto K, Hotta R, Nakakubo S, et al. (2018). Impact of fear of falling and fall history on disability incidence among older adults: Prospective cohort study. *Int J Geriatr Psychiatry* 33(4): 658–662. DOI: 10.1002/gps.4837.
- Margues-Vieira CMA, Sousa LMM, Sousa SS, Caldeira S (2016). Cross-cultural validation of the fall's efficacy scale international in elderly: Systematic literature review. *J Clin Gerontol Geriatr* 7 (3): 72–76. DOI: 10.1016/j.jcgg.2015.12.002.
- Mikušáková, W, Klímová E, Ferťalová T, Ondriová, I (2013). Riziko pádu u pacientov s Alzheimerovou chorobou. *MOLISA 10 – Medicínsko-ošetrovateľské listy Šariša, Prešov: PU v Prešove*, pp. 111–115.
- Murphy J, Isaacs B (1982). The post-fall syndrome. A study of 36 elderly patients. *Gerontology* 28(4): 265–270. DOI: 10.1159/000212543.
- NCZI – Národné centrum zdravotníckych informácií. Hospitalizácie na úrazy a ich príčiny v Slovenskej republike, 2020 (2022). [online] [cit. 2022-05-20]. Available from: http://www.nczisk.sk/Statisticke_vystupy/Tematicke_statisticke_vystupy
- Payette M-C, Bélanger C, Léveillé V, Grenier S (2016). Fall-Related Psychological Concerns and Anxiety among Community-Dwelling Older Adults: Systematic Review and Meta-Analysis. *PLoS One* 11(4): e0152848. DOI: 10.1371/journal.pone.0152848.
- Reguli Z, Svobodová L (2011). Česká verze diagnostiky strachu z pádu u seniorů – FES-I (Falls Efficacy Scale International). *Stud Sport* 5(2): 5. DOI: 10.5817/StS2011-2-1.
- Tiefenbachová P, Zeleníková R (2019). The effect of educational intervention by nurses on home environmental risk factors for falls. *Cent Eur j Nurs Midw* 10(2): 1019–1025. DOI: 10.15452/CEJNM.2019.10.0009.
- Tinetti ME, Richman D, Powell L (1990). Falls efficacy as a measure of fear of falling. *J Gerontol* 45(6): P239–243. DOI: 10.1093/geronj/45.6.
- Whipple MO, Hamel AV, Talley KMC (2018). Fear of falling among community-dwelling older adults: A scoping review to identify effective evidence-based interventions. *Geriatr Nurs* 39(2): 170–177. DOI: 10.1016/j.gerinurse.2017.08.005.
- Yardley L, Smith H (2002). Prospective study of the relationship between feared consequences of falling and avoidance of activity in community-living older people. *Gerontologist* 42(1): 17–23. DOI: 10.1093/geront/42.1.17.
- Yardley L, Beyer N, Hauer K, Kempen G, Piot-Ziegler C, Todd C (2005). Development and initial validation of the Falls Efficacy Scale-International (FES-I). *Age Ageing* 34(6): 614–619. DOI: 10.1093/ageing/afi196.