

# FEAR OF FALLING AMONG THE ELDERLY IN THE COMMUNITY FROM THE VIEWPOINT OF FALL HISTORY

**Dr. Nikoleta Poliaková, PhD<sup>1</sup>**

**MSN. Michaela Bobkowska, PhD<sup>2</sup>**

**Assoc. Prof. Dr. Iveta Matišáková, PhD<sup>3</sup>**

**Dr. Vladimír Meluš, PhD MPH<sup>4</sup>**

<sup>1,2,3,4</sup>Alexander Dubcek University in Trencin, Faculty of Healthcare,  
Slovakia

## ABSTRACT

Fear of falling in the elderly can be determined by a variety of factors. Several studies confirm that female gender, depression, comorbidities and worse physical performance are significant predictors of fear of falling. Research studies do not give a definitive answer to the relationship between fear of falling and past history of falling. The objective of our study was to determine if there was a significant association between a history of falls in the past 12 months and fear of falling in the elderly. Data were collected by Slovak version of Fear of Falling Scale among community dwelling elderly. At the same time, self-constructed questions were used to ascertain the history of falls in the previous year, the frequency of falls and their impact on health. A cross-sectional study was conducted on a sample of 292 seniors. Non-parametric tests were used to explore relation between Fear of Falling, the history of falls in the previous year and frequency of falling. There was a significant difference between the history of falls in the last year and the fear of falling ( $p < 0.001$ ). A low positive correlation ( $R = 0.36$ ) was found between fall frequency and fear of falling. Assessment of fear of falling should be part of the nursing assessment of seniors, especially when a history of falls is identified. The Fall Efficacy Scale is a valid measurement tool for measuring fear of falling.

**Keywords:** *Fear of falling, older adults, fall history*

## INTRODUCTION

Falls in the elderly represent one of the serious risk factors threatening their health and quality of life. The occurrence of falls increases during ageing and in old age. The overall number of recorded falls in Slovakia in 2020 was 42,048. For this reason, the highest accident rate was recorded in people over 65 years of age. The number of hospitalizations of seniors due to a fall was 17,528. Fall incidence was higher among women (67.21%) than in men (32.78%). Falls most frequently resulted in fractures of femurs (34.8%), endocranial injuries (12.6%), followed by fractures of the spine, shoulder and arms, ribs, fibulas, forearms and wrists [1].

Falls in seniors are associated with frailty syndrome [2]. As a result of a fall, seniors tend to suffer from physical and psychical discomfort. Chronic pain and a decrease of functional level are the main symptoms of physical discomfort. At the same time, seniors feel increasing psychic disconcertment, anxiety, fear and even panic of motion, especially when there is necessity to overcome irregularities or barriers in the environment. A decrease of self-confidence and avoiding activities which the individual is even capable of performing are associated with development of a permanent fear of falling, the premature necessity of institutional care and higher economic costs [3].

Fear of falling started being seen as a specific health problem when Murphy and Isaacs described a “Post-Fall Syndrome” and defined fear of falling as a primary sign of this syndrome. There is a significant variability ranging from 21% to 85% in the reported rate of fear of falling [4]. Apart from a fall in the anamnesis, the occurrence of fear of falling is also related to several variables, including female gender, weak physical condition, use of walking aid, use of medication or psychotropic substances, depression and anxiety. Later studies explored the environmental and psycho-social factors on a larger scale. Environmental factors in the aetiology of fear of falling predominantly include uneven pavements, slippery floors, sloping and unpaved surfaces and low light. When it comes to psycho-social factors, the detected variables associated with fear of falling include a lack of social interaction with family and friends and bad neighbourly relations [5]. At the same time, fear of falling is considered to be a risk factor of falling; therefore, it is necessary to understand it as multifactorial and multidimensional phenomenon.

The objective of our study was to determine if there was a significant association between a history of falls in the past 12 months and fear of falling in the elderly.

## **METHODS**

The data represent part of a bigger validation of a cross-sectional study aimed at researching the fear of falling in community-dwelling seniors and its psycho-social impact. The following research tools were used for data collection:

- The Fall Efficacy Scale (FES I) – Slovak version, translated and validated in Slovakia in 2021 by Bobkowska, Poliaková and Králová. The FES I is a specific tool for measuring the fear of falling among seniors over 65 years of age. The scale consists of 16 items – activities of daily life – which are assessed by elderly people according to a four-point Likert scale that ranges from 1 – I feel no fear... to 4 – I feel big fear. The resulting score ranges from 16 to 64 points (min-max), where a higher score means a higher level of concern related to a fall. A score between 16 – 19 points indicates a

low level of fear, 20 – 27 a medium level of fear and 28 – 64 points a high level of fear [6]. Cronbach's alpha was 0.785.

- Self-constructed questions aimed at obtaining demographic data – age, gender, residence (town/countryside), way of living (alone/with a partner/children/in a social facility),
- Self-constructed questions were used to ascertain the history of falls in the previous year, the frequency of falls and their impact on health.

Collection of the relevant data was completed in years 2021 – 2022. The questionnaires for the seniors were filled in by trained nurses and students of nursing directly in the households of seniors and social care institutions.

The statistical analysis included a descriptive analysis of the baseline characteristics of the sample. Differences between pairs of sets with numerical values derived from the ordinal scale of the questionnaire were verified by a non-parametric two-sample Mann-Whitney test. We considered a difference between data distributions to be statistically significant if the p-value of the test criterion was less than 0.05. For the relationship between pairs of variables, we used the nonparametric R – Spearman correlation coefficient.

## **RESEARCH SAMPLE**

The research sample consisted of 292 Slovak seniors with an average age of 75.85 years, while the minimum age was 65 years and the maximum 95 years. There were 83 (28.42%) men and 209 (71.57%) women. The study group consisted of seniors living in their own households alone, with partners or children, as well as seniors living in social facilities capable of walking independently with or without compensation tools. Participation criteria included age over 65 years, willingness to cooperate, health condition not requiring acute treatment or hospitalization and the ability to walk with or without a compensation tool. Exclusion criteria included hospitalization, cognitive deficit and the use of a wheelchair.

## **RESULTS**

### **Fall anamnesis and demographic characteristics**

In the last year, a fall was recorded in 97 seniors (33.22%) from our sample. The average number of falls per one senior who fell in the last year was 1.89. Injury due to fall was suffered by 72.16% of respondents, and hospitalization as a result of injury was necessary in 27.14% of respondents. The average fear of falling score was 32.88, which means a high level of fear regardless of the history of a fall (Table 1).

**Table 1. Demographic data and anamnesis of falls in the last year**

	Demographic data		Fall in the last year		Average number of falls	Injury as a result of fall	Hospitalization as a result of fall	Fear of falling
	n	%	n	%	$\bar{x}$	%	%	$\bar{x}$
N	292	100.00	97	33.22	1.89	72.16	27.14	32.88
Gender								
Male	83	28.42	28	33.94	2.16	75.00	23.81	28.45
Female	209	71.57	69	33.17	1.81	71.01	28.57	34.64
Living								
Alone	39	13.40	12	30.77	1.67	41.67	20.00	29.51
Partner	103	35.39	33	32.04	1.70	75.76	8.00	27.77
Children	55	18.90	18	32.73	1.89	66.67	16.67	30.20
Social facility	95	32.65	34	35.79	2.44	82.35	50.00	41.36

From the point of view of gender (Table 1), we recorded a slightly higher frequency of falls in men (33.94%) than in women (33.17%). The average number of falls per one person was 2.16 in men and 1.81 in women, while the fear of falling was more noticeable in women ( $\bar{x}$  =34.64) than in men ( $\bar{x}$  =28.45).

In regard to the variable of living (Table 1), we detected falls in the last year in 35.79% of seniors dwelling in a social facility, 32.73% of seniors living in a common household with children, 32.04% of seniors living in a common household with a partner and 30.77% of seniors living alone. Injury as a result of falling was recorded in 82.35% of seniors dwelling in a social facility, and hospitalization was necessary in 50.00% of them. Falls in a household environment were more rarely a reason for injuries requiring hospitalization. Fear of falling reached the highest score among the seniors who live in social facilities ( $\bar{x}$  = 41.36). The lowest fear of falling score was recorded among seniors living with a partner (27.77).

**Table 2. Type of injury as a result of a fall**

	n	%
Minor injuries of soft tissues	34	48.57
Fractures	29	41.43
Head injuries	7	10.00
Total	70	100.00

Among those who fell in the past 12 months ( $N = 97$ ), an injury as a result of falling was recorded in 70 seniors. As a result of falling, minor injuries to soft tissues were recorded in 48.57% of seniors, fractures in 41.43% of seniors and head injuries in 10.00% of seniors (Table 2). The average fear of falling score in seniors who suffered injury as a result of falling was 38.37 (a high level of fear).

**Table 3.** Differences between categories of the history of fall in the last year and the Fear of falling

Fall in the last year	$n^*$	$\bar{x}$	$sd$	$x_m$	$min.$	$max.$	$p$
No	194	30.9	12.4	<b>27.0</b>	16	64	<b>&lt;0.001</b>
Yes	97	37.5	12.9	<b>35.0</b>	16	64	

Legend:  $n$  – number of patients,  $\bar{x}$  – arithmetic average,  $sd$  – standard deviation,  $x_m$  – median,  $min.$  – minimum value,  $max.$  – maximum value,  $p$  –  $p$ -value of Mann-Whitney testing criterion\* - one respondent did not answer

The average fear of falling score in seniors with positive anamnesis of a fall was 37.5, while in seniors with negative anamnesis of a fall it was 30.9 (Table 3). A significant difference was detected between the level of fear of falling in seniors with positive anamnesis of a fall in the last year compared with seniors without positive anamnesis of a fall, which confirms that seniors with positive anamnesis of a fall feel a significantly higher level of concern associated with falling.

**Table 4.** Correlation between frequency of falling and the FES

Correlation	$n$	$R$	Interval of reliability		$p$
Number of falls vs.:			-95%	+95%	
FES:	97	<b>0.36</b>	0.16	0.53	<b>&lt;0.001</b>

Legend:  $n$  – number of patients,  $R$  – Spearman correlation coefficient,  $p$  – value of testing criterion of the difference of value of correlation coefficient from zero.

A weak positive correlation was detected between the number of falls and the level of fear. The level of concern associated with falling increases along with a growing number of falls (Table 4).

## DISCUSSION

The prevalence of falls in the last year among the seniors in our study was 33.22%. Similar values of the prevalence of falls also appear in other studies. The prevalence of falls resulting from longitudinal studies ranges from 20 to 60% [4]. At least one fall in the course of one year was suffered by 16.44% of seniors, while two or more falls occurred in 16.78% of seniors. One fall was recorded in 49.48% out of an overall number of 97 seniors with positive anamnesis of a fall, while two or more falls were recorded in 50.52% seniors belonging to this group. The average number of falls per person was 1.89. The maximum number of falls in one senior was six. It is worth noting that according to the records, seniors tend to fall repeatedly.

The aim of our study was to find out what the connection is between the anamnesis of a fall and the fear of falling. The average fear of falling score on the FES I scale (range of 16 – 64 points) was 32.88 in all the monitored seniors, which means a high level of fear of falling. The average score among seniors with a positive anamnesis of a fall was significantly higher (37.5) than in seniors without a history of falls (30.9). As many as 88.5% of studies declare that seniors with positive fall anamnesis had higher level of fear of falling than seniors who did not have any history of falls in the last year [7, 8]. Our study revealed a weak positive correlation between the number of falls and the level of fear of falling ( $R=0.36$ ). A survey on a sample of Czech seniors proved that the level of fear of falling was significantly higher in seniors who fell repeatedly in the previous year [9].

A more marked fear of falling in our sample was recorded in women than in men. Female gender has been associated with a higher level of fear of falling in several research studies [10]. Women demonstrate a higher level of fear despite the fact, that the prevalence of falling in our sample was higher among men. This finding indicates that fear of falling does not necessarily have to be associated with previous falls [11]. The phenomenon of fear of falling must be seen in a certain dichotomy. On the one hand, it has a protective character, because it forces seniors to be more careful and to avoid risk while performing routine activities. On the other hand, the fear of falling limits seniors to the extent of avoiding even activities that they are capable of performing, which results in lowering their quality of life [12]. A higher risk of falling and an overall worsening of physical condition, cognitive functions and a deterioration of mental condition was paradoxically detected in seniors who suffered a higher level of fear of falling [13]. Persons who are more afraid of falling are more likely to limit their activity and reduce their social interactions, and they thus have higher risk of developing depression [14]. The level of experienced fear of falling significantly influences quality of life. The strongest impact was proven in the area of physical functioning. Quality of life in the area of subjectively perceived health and functioning in roles was less affected but was still lowered with statistical significance [15]. The stated results explain why the highest fear of falling score was observed in seniors living in social facilities and the lowest fear of falling score was found among seniors living with a partner, where mutual support and help is presupposed.

## CONCLUSION

Fear of falling is a problem that significantly affects Slovak seniors. It occurs among community dwelling seniors and even more strongly in seniors living in institutional care. From the point of view of preventability, it is crucial to know the relationship between fear of falling and its potential predictors. Our study confirmed that seniors who fell in the previous year suffer from a significantly higher level of fear of falling. The number of falls positively correlates with the level of fear of falling. Fear of falling may have a protective character, because it prevents risky behaviour by a senior. However, if it significantly limits seniors'

physical activity, prevents the maintaining of their social contacts and worsens their mental condition, seniors may enter a vicious circle which ultimately leads to physical and mental decay, the emergence of a frailty syndrome and the necessity of institutional care. Information regarding the occurrence of falls in the anamnesis represent a reason for use of the FES I scale aimed at detecting the level of falling during concrete daily activities and early implementation of effective interventions to lower the level of fear of falling and support of self-confidence while performing common daily activities. Given that the high level of fear of falling was also detected in seniors without a positive fall anamnesis, it is important that screening for fear of falling becomes a common part of preventive examinations and nursing assessment.

## **ETHICAL ASPECTS AND CONFLICT OF INTERESTS**

The authors have no conflict of interests to declare. The study was conducted with the approval of the Ethics Committee of the TnUAD in Trencin, No. 2/2021.

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