

# Clinical and functional Assessment of the Risks of falling in the adult Community as a Factor of social Isolation and Lack of self-sufficiency in satisfying the Needs

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## Abstract:

**Objectives:** The aim of our study was to highlight the importance of clinical and functional assessment of the risks of falling in the community of adult persons; to use the methods of critical assessment and analysis, to identify risk groups; to determine risk groups requiring preventive interventions and strategies to eliminate lack of self-sufficiency and subsequent social isolation.

**Design:** Cross-sectional study.

**Participants:** The sample consisted of 937 respondents between 50 and 95 years, who underwent a preventive check-up in one general practitioner's clinic for adults in 2021 y.

**Methods:** For the examination of the risk of falling we used a screening test. The clinical assessment was performed using method of content analysis of the person's medical documen-

tation: we searched records of the presence of falling factors defined in the screening test. Functional assessment was performed using the Morse Fall Scale. Using the regression analysis, we identified risk factors that influence the level of fall risk as an increase in points on the MFS point score before and after the fall occurred.

**Results:** The largest group of participants was with a low risk of falling (50.05%). We have found a medium risk of falling in 7.36% and a high risk in 5.66% of respondents. Only 346 persons (36.93%) achieved a score without the risk of falling. The average falling risk score in the entire sample ( $n = 937$ ) was at the level of moderate risk (MFS score  $29.9 \pm 19.8$ ; min. 0, max. 105). The dominant risk factors for falls in the whole group were comorbidities and medications (62.3%), walking, balance and mobility disorders (20.9%), sensory disorders (14.6%), and voiding disorders (9.4%). For 2/3 of the participant, it is necessary to start to the development of intervention programs for the prevention of falls and subsequent social isolation.

**Conclusion:** Preventive examinations should include clinical and functional assessment of falling risk. The assessment results in decisive findings that correct the intervention procedures and preventive strategies of the multidisciplinary team. The results of the assessment can indicate and, if necessary, change the intervention procedures and preventive strategies of the multidisciplinary team. This can reduce the number of falls of patients not yet hospitalized, as well as the number of hospitalizations and surgical procedures due to falls. Doing so, the risks of social isolation and lack of self-sufficiency in adults would be eliminated.

## Introduction

Falls are the leading cause of injury and injury-related mortality in older adults [CDC, 2022; Sepala et al, 2021]. Clinical and functional assessment of the risk of falling in the adult community are essential for initiation of preventive measures in the home, work, and other environments, particularly in elder population (Lusardi et al, 2017; Cuevas - Trisan, 2019). As a part of clinical assessment numerous risk factors were studied- the need for nutrition, psychological status, pharmacotherapy, mobility and balance, vision, hearing, excretion, and daily activities (Matarese, 2015; Pitchai et al, 2019). A comprehensive assessment is a long-term process based on the cooperation of members of a multidisciplinary team. Brabcová et al. [3] demonstrated the importance of complex, interventional assessment of the risk of falls. As part of the intervention program, they achieved a decrease in the risk of falling. The fall risk index within one

year of interventions of the team decreased from 39.12 to 30.90. A functional fall risk assessment and intervention program reduced the fall index in surgical wards from 5.88 to 5.78 and in psychiatry from 14.24 to 7.48. The effectiveness of individualized intervention programs to reduce the number of falls among patients over 65 years was also found during a three-month study by Hart-Hughes et al. [4]. In the community of high-risk patients, the number of falls decreased threefold. The adjustment of pharmacotherapy was also transparent and effective intervention (50%). The second intervention (45%) was modification of the environment in the form of installation of safety aids (handrails) to maintain self-sufficiency in daily activities. Use of aids to support mobility (wheelchairs, walkers). Intervention programs are the prevention of social isolation of adults of different ages. A study by Hunderfund et al. [6], demonstrated the importance of a comprehensive clinical and functional

assessment of the risk of falls through a multidisciplinary approach. The study showed a reduction in the risk of falls per 1000 days from 5.69 to 4.12. Barillová [1] appeals for the need for multidisciplinary fall prevention in her study aimed at identifying risk factors for falls in patients treated as outpatients. The absence of fall risk assessment and intervention programs increase the occurrence of other health risks. They are undesirable events. They accompany adults during preventive health promotion programs implemented in medical spas. Hulkova [5] describes the management of adverse events in the Piešťany Spa in 2015 and 2016. 70% of spa clients were over 65 years of age, and the occurrence of adverse events, especially falls and injuries, was related to this. Falls and injuries were classified into four categories. The impact of deficient management of comprehensive falls risk assessment was fractures. The incidence of falls was clearly higher in women.

## Aim of the research

Our study aimed to identify the risk of falling in the community adults. We performed a comprehensive clinical and functional assessment of fall risk in adults in a general practitioner's office.

## Materials and methods

We conducted the study in a general practitioner's clinic for adults in the period from January 2021 to June 2021. All persons aged 50 years and over who underwent a preventive check-up in general practitioner's clinic for adults from January to June 2021, who agreed to participate were included.

The clinical assessment of the risk of falling was performed with a screening test (ST); the functional assessment was performed with the Morse Fall Scale (MFS). The screening test included six items to examine the state of the person in real-time: movement, voiding, medication, sensory impairment, mental status, and age. The total score of the screening test identified the level of falling risk of the person (table 1). A score greater than 3 indicated the need for fall prevention interventions. The Morse Fall Scale consisted of six items: history of falls, secondary diagnosis, walking, using of walking aids, intravenous therapy, and mental status. The total

score ranged from 0 to 45 points. The higher the score, the higher the risk of falling. Depending on the score, the participants were classified into four groups: no risk (0 points), low risk (< 25 points), medium risk (25-45 points) and high risk (> 45 points) (table 1).

**Table 1** The levels of the fall risk, Screening test and Morse fall scale

Risk levels	Screening test	Morse Fall Scale
1. risk-free level	$\Sigma =$ 0.10 points	$\Sigma =$ 0 points
2 low risks for falls	$\Sigma =$ 1.48 points	$\Sigma =$ 15 points
3 medium risks for falls	$\Sigma =$ 2.86 points	$\Sigma =$ 35 points
4. high risk for falls	$\Sigma =$ 4.05 points	$\Sigma =$ 74 points

## Data Analysis

All data were coded, entered, and analyzed using SPSS version 20 (IBM SPSS, 2020) and Microsoft Office Excel 2010 (Microsoft Corporation, Redmond, WA, USA).

Descriptive results, expressed as frequencies and percentages were analyzed at  $\alpha \leq 0.05$  to determine statistical significance, using Chi-square test ( $\chi^2$ ). Regression analysis, was used to examine the relationship between risk factors and the level of fall risk as an increase in points on the MFS point score before and after the fall occurred.

The study was done in accordance with the ethical standards and with the Helsinki Declaration of 1975, as revised in 2013 (Moris, 2013). It was approved by the ethical committee of the St Elizabeth High school of Bratislava, Slovakia.

## Results and Discussion

The survey was conducted on a sample of a total of 937 participants, with 420 men (44.82%) and 517 (55.18%) women aged 50 and over (n=937) (table 2).

We identified a direct relationship between the outcome of clinical assessment (ST) and functional fall risk assessment (MFS).

The classification of all participants according to the level of fall risk is showed in table 3.

**Table 2** The sex and the age of the participants

Gender	n	%	Average age
man	420	44.82	62.71
woman	517	55.18	65.39
Total No/%, average age	937	100	64.19

There is significant difference between the women and men. ( $\chi^2 11.5974$ ,  $p < .01$ ). A significantly more women are at a higher risk of falling.

For 36.9% of respondents ( $n = 346$ ), we did not have any falls in the last three months (table 3). Their average age was 55.3 years. They are not treated for serious diseases, have no comorbidities and do not even have medical treatment that could affect the risk of falling. They walk without difficulties. They do not need intervention programs to stabilize their walk. They are

not at risk of social isolation. Their movement regime is appropriate for their age and voiding is physiological. Sensory disorders (visual, auditory) were found in only 35 persons (10.25%). The evaluation of the risk of falling in this group shows that there is no need to indicate the preventive measures.

In 50.1% ( $n=469$ ) of respondents, the tests showed a low risk of falling (table 4). The screening test score was 1.48 and on the MFS scale it was 15 points. Their average age was 67.9 years. In this group, the identified risk factors for falling included comorbidities and medication in 99.79% of participants ( $n=468$ ).

In 5.7% ( $n = 53$ ) of the assessed adults with an average age of 74.5 years a comprehensive assessment showed a medium risk of falling (table 5). MFS score was 35 points, ST score was 2.86 points. The tests assessed the presence of risk factors: comorbidity and medication

**Table 3** Classification of all participants according to the level of fall risk

Level of the fall risk	women		men		total	
	n	%	n	%	n	%
No risk	174	33.65	172	40.95	346	36.9
Low level of risk	262	50.67	207	49.28	469	50.05
Medium level of risk	39	7.54	14	3.33	53	5.65
High level of risk	42	8.12	27	6.42	69	7.36
total	517	100	420	100	937	100

**Table 4** Participants with low risk of falling

A group with a low risk of falling					
Count	Women		Men		ST score- 1.48 points MFS - 15 points
$\Sigma 469$ (n)	n	%	n	%	
50.05 (%)	262	55.88	207	44.12	
Average age	67.9 years				
A risk factor for the group			n	%	
Fall in the last three months			0	0	
Disorders of walking, balance and momentum			2	0.43	
Emptying disorders			10	2.13	
Sensory disorders (visual, auditory)			61	13.01	
Comorbidities and medication			468	99.79	

**Table 5** Participants with medium risk of falling (average age 74.49 years)

Risk factors	Women (n= 39/73.6%)		Men (n= 1/26.40%)	
	n	%	n	%
Gait and balance disorders	31	28.4	9	19.56
Momentum disorders	20	18.34	7	15.21
Emptying disorders	15	13.76	6	13.04
Sensory disorders (visual, auditory)	10	9.17	6	13.04
Comorbidities and medication	31	28.41	18	38.13
Impaired mental health	2	1.83	-	-
	109	100.0	46	100.0
St score	ST score - 2.86 points			
MFS	MFS - 35 points			

**Table 6** Participants with high risk of falling (average age 75.72 years)

Risk factors	Women (n= 42/60,89%)		Men (n= 27/39,11%)	
	n	%	n	%
Gait and balance disorders	10	5.88	10	12.35
Momentum disorders	33	19.41	24	29.63
Emptying disorders	34	20	23	28.40
Sensory disorders (visual, auditory)	16	9.41	8	9.88
Comorbidities and medication	44	25.88	23	28.40
Impaired mental health	40	23.53	24	28.63
Total	170	100.00	81	100.00
ST score	ST score - 4.05 points			
MFS	MFS - 74 points			

(92.5%), walking and balance disorders (75.5%), movement disorders (50.1%), voiding disorders (39.6%), sensory disorders (30, 2%). 3.8% of respondents had impaired mental health. Average number of risk factors in women was 2.79, in men 3.78. The difference was not significant (p value .52783. NS).

In 7.4% (n = 69) of the assessed adults with average age of 75.7 years the high risk of falling have been found (table 6). MFS score was 74 points, ST score was 4.05. The main risk factors were comorbidities and medication (97.1%), impaired mental health (92.7%). 82.6% of participants had movement and voiding disorders, 69.6% had gait and balance disorders. Sensory disorders were identified in 36.2% of respondents. Average number of risk factors in women

was 4.04, in men 3.0. The difference was not significant (p value .123243. NS).

Based on this research, we are of the opinion that the fall risk assessment in the community is justified. The assessment tools (MFS) can be the same as in patients hospitalized in internal and neurological departments (Bóriková et al. [2]). The choice of a tool for functional risk assessments (MFS) of falls is in accordance with the recommendation of Poledníková [10] as well as the choice of a screening test for a comprehensive fall risk assessment.

We determined the screening test score from the available medical records of the participants. We are aware of the risk of incompleteness of the record and the tests. However, other tests are, according to the published papers also incomplete.

No single gait, balance or functional mobility assessment in isolation can be used to predict fall risk in older adults with high certainty. Moderate evidence suggests gait speed can be useful in predicting falls and might be included, but only as part of a comprehensive evaluation for older adults (Checa - Lopez et al, 2019, Beck Jepsen et al, 2022). The study of Yasan et al (2020) drew attention to this fact. [13]. The results of the study demonstrated that there is a significant gap between the identification of the patient at high risk of falling and the documentation. This means that not all high-risk patients have been identified. Mikuřáková and Bodnárová [9] also applied the clinical assessment of the risk of falling from medical records. The risk of falling was assessed by the Berg Balance Scale (BBS). They proved statistical significance for individual risk factors in connection with the degree of fall risk. In a community of adults with a high average age (70.07 years, SD ±23), they identified up to 100% high risk of falling. Respondents classified as high-risk in our group had a comparable average age (75.72 years). This is also why we appeal to the need to implement assessment of the risk of falling in outpatient care. Vlková and Gerlichová also draw attention to this need [12]. The results of their study showed that 90% of respondents (n=50) require early assessment of fall risks. The most numerous risk factors for falling in our entire group included comorbidities and medication 62.3%, gait, balance and mobility disorders 20.9%. Sensory disorders 14.6% and voiding disorders 9.4%. The order of risk factors compared to Miertová et.al. [8] differs. They investigated similar risk factors in a community of hospitalized patients (n = 298). The most numerous risk factors were impaired gait, balance and mobility (80.9%), which is the most typical for the department, drug therapy (57.0%), associated diseases (52.7%), and impaired vision (52.3%) . Impairment of balance and gait as a risk factor for falling was demonstrated in a survey by Šulíková et.al. [11] They demonstrated a 30% association between fall risk and balance and gait disorders.

## Conclusion

Falls can happen anytime and anywhere. They arise due to the influence of various currently present risk factors. Based on the results

of our study, we can state that the observed sample of adult patients showed negative health characteristics. Health consequences caused by falls can be long-term. Therefore, the importance of fall risk screening, in-depth clinical and functional examination of a specific risk is increasing. The absence of a comprehensive fall monitoring program, fall prevention program, and multifactor assessment remains an open and unresolved question. There are no training programs, intervention programs, management strategies by a multidisciplinary team, with the aim of reducing the risk of falls to a minimum.

## Limitations

A limitation of the study was the wide age range of the respondents. Age in the range from 50 to 95 years evokes a wide range of fall risks resulting from the work classification, the nature of housing, the performance of the profession, social interaction, etc. The health support of the community of the examined adults can be managed in the process of preventive examinations to a limited extent. Economically passive persons do not show an active approach to promoting health and preventing falls. The limit of the study is the data obtained from the medical documentation. It is debatable to what extent the clinical fall risk assessment record is valid.

## Conflict of interest

The authors declare no conflict of interest.

## References

1. BARILLOVA G (2022) Patient falls as an indicator of safe health care. Thesis. University of Health and Social Work St. Alžbety Bratislava, 81 pp., 2022.
2. BECK JEPSEN D, ROBINSON K, OGLIARI G, MONTERO-ODASSO M, KAMKAR N, RYG J, FREIBERGER E, MASUD T (2022) Predicting falls in older adults: an umbrella review of instruments assessing gait, balance, and functional mobility. In *BMC Geriatr.* 2022 Jul 25;22(1):615. doi: 10.1186/s12877-022-03271-5. Erratum in: *BMC Geriatr.* 2022 Oct 5;22(1):780.
3. BORIKOVA I, TOMAGOVA M, MIERTOVA M (2018) Falls and their prevention in hospitalized patients. Martin: The Enlightenment; 2018.

4. BRABCOVA I., HAJDUCHOVA H, TO-  
THOVA V, BARTLOVA S, DOSEDEL M,  
MALY J, VLCEK J (2019) Prevention of  
patient falls in the hospital environment. In  
Theory, research and education in nursing.  
Proceedings of the 12th International Sci-  
entific Conference. [online]. 2019. p. 29-  
31. [cited 2022-05-05]. Available online: <  
[https://www.jfmed.uniba.sk/fileadmin/jlf/  
Pracoviska/ustav-osetrovatelstva/konferencia2019/ZBORNIK\\_KONFERENCIA\\_MARTIN\\_2019\\_pdf\\_FINAL.pdf](https://www.jfmed.uniba.sk/fileadmin/jlf/Pracoviska/ustav-osetrovatelstva/konferencia2019/ZBORNIK_KONFERENCIA_MARTIN_2019_pdf_FINAL.pdf)>.
5. CENTERS FOR DISEASE CONTROL  
AND PREVENTION & CONTROL (2022)  
Keep on your feet - Preventing Older Adult  
Falls. [https://www.cdc.gov/injury/features/  
older-adult-falls/index.html](https://www.cdc.gov/injury/features/older-adult-falls/index.html). (accessed 28  
March 2022).
6. CHECA-LOPEZ M, OVIEDO-BRIONES  
M, PARDO-GOMEZ A, GONZALES-TU-  
RIN J, GUEVARA-GUEVARA T, CAR-  
NICERO JA, ALAMO-ASCENCIO S,  
LANDI F, CESARI M, GRODZICKI T,  
RODRIGUEZ-MANAS L (2019) FRAIL-  
TOOLS consortium. 2019. FRAILTOOLS  
study protocol: a comprehensive validation  
of frailty assessment tools to screen and di-  
agnose frailty in different clinical and social  
settings and to provide instruments for inte-  
grated care in older adults. In *BMC Geriatr.*  
2019 Mar 18;19(1):86.
7. CUEVAS-TRISAN R (2019) Balance Prob-  
lems and Fall Risks in the Elderly. In *Clin  
Geriatr Med.* May;35(2):173-183.
8. HART-HUGHES S, QUIGLEI P, BULAT  
T, PALACIOS P, SCOTT S (2004) An in-  
terdisciplinary approach to reducing risks  
and falls. In *The Journal by Rehabilitation.*  
2004. [online]. Vol. 70, 4th ed. 46-51 p. [cit-  
ed 2022-09-23]. Available online: <[https://  
www.proquest.com/docview/236324845](https://www.proquest.com/docview/236324845)>.
9. HULKOVA V (2017) Adverse events in  
a spa facility from the nursing aspect. In  
Reviewed collection of scientific works  
“Nursing 2020 - trends, changes and future”.  
Rožňava: University of St. Alžbety,  
no Bratislava, detached workplace bl. Sára  
Salkaháziová in Rožňava, 2017, p. 111-123,  
ISBN 978-80-8132-166-5.
10. HUNDERFUND ANL, SWEENEY CM,  
MANDREKAR JN, JOHNSON LM, BRIT-  
TON JW (2011) Impact of multidisciplinary  
fall risk assessment on falls among neuro-  
logical inpatients. In *Mayo Clinic Proceed-  
ings.* [online]. Frontline Medical Com-  
munications Inc. Volume 86, ed. 1. [cited  
2022-09-22]. Available online: <[https://  
mayoclinicproceedings.com](https://mayoclinicproceedings.com)>.4.
11. LUSARDI MM, FRITZ S, MIDDLETON  
A, ALLISON L, WINGOOD M, PHIL-  
LIPS E, CRISS M, VERMA S, OSBORNE  
J, CHUI KK (2017) Determining Risk of  
Falls in Community Dwelling Older Adults:  
A Systematic Review and Meta-analysis Us-  
ing Posttest Probability. In *J Geriatr Phys  
Ther.* Jan/Mar;40(1):1-36.
12. MATARESE M et al. (2015) A systematic  
review of fall risk screening tools for older  
patients in acute hospitals. 2015. p. 1198-  
1029. [online]. [cited 2022-12-05]. Avail-  
able online: <[https://pubmed.ncbi.nlm.nih.  
gov/25287867/](https://pubmed.ncbi.nlm.nih.gov/25287867/)>.
13. MIERTOVA M, BORIKOVA I, GREN-  
DAR M, MADLENK J, TOMAGOVA  
M, ZIAKOVA K (2019) Significant risk  
factors for falls in the personal history of  
hospitalized patients with neurological dis-  
ease. In *Czech and Slovak neurology and  
neurosurgery.* [online]. no. 6, p. 649-654,  
2019. [cited 2021-05-04]. Available on the  
Internet: <[https://www.csn.eu/casopysy/  
ceska-slovenska-neurologie/2019-6-4/vyzn-  
amne-rizikove-factory-padu-v-osobnej-an-  
amneze-u-hospitalizovanych-pa-cientov  
-with-neurologic-disease-117996/down-  
load?hl=cs](https://www.csn.eu/casopysy/ceska-slovenska-neurologie/2019-6-4/vyznamne-rizikove-factory-padu-v-osobnej-anamneze-u-hospitalizovanych-pacientov-with-neurologic-disease-117996/download?hl=cs)>.
14. MIKULAKOVA W, BODNAROVA M  
(2011) Risk factors associated with falls in  
seniors. In *Medical-nursing letters Šariša.*  
2011, p. 81-84. ISBN 978-80-555-0507-7.
15. MORIS K (2013) Revising the declaration  
of Helsinki. In *Lancet* [online]. Vol 381.  
june 1. cited 2023-23-03]. Available on the  
Internet: [www.thelancet.com](http://www.thelancet.com) Vol 381 June 1,  
2013.
16. PITCHAI P, DEDHIA HB, BHANDARI  
N, KRISHNAN D, D’SOUZA NRJ, BEL-  
LARA JM (2019) Prevalence, risk factors,  
circumstances for falls and level of func-  
tional independence among geriatric popula-  
tion - A descriptive study. In *Indian J Public  
Health.* Jan-Mar;63(1):21-26.

17. POLEDNIKOVA L. et al. (2006) Geriatric and gerontological nursing. Martin: Osveta. 2006. 216 p. ISBN 80-8063-208-1.
18. SEPPALA LJ, PETROVIC M, RYG J, BAHAT G, TOPINKOVA E, SZCZERBIŃSKA K, VAN DER CAMMEN TJM, HARTIKAINEN S, ILHAN B, LANDI F, MORRISSEY Y, MAIR A, GUTIÉRREZ-VALENCIA M, EMMELLOT-VONK MH, MORA MÁC, DENKINGER M, CROME P, JACKSON SHD, CORREA-PÉREZ A, KNOL W, SOULIS G, GUDMUNDSSON A, ZIERE G, WEHLING M, O'MAHONY D, CHERUBINI A, VAN DER VELDE N. STOPPFALL (2021) Screening Tool of Older Persons Prescriptions in older adults with high fall risk: a Delphi study by the EuGMS Task and Finish Group on Fall-Risk-Increasing Drugs. In Age Ageing. 2021 Jun 28;50(4):1189-1199.
19. SULIKOVA A, SANTOVA T, SIMOVA Z, CINOVA J (2016) Falls in seniors with gait and balance disorders. Medical papers of Šariš. [online]. 2016. [cited 2023-01-03]. Available on the Internet: <http://www.unipo.sk/public/media/26685/MOLISA-12-2016.pdf>.
20. VLKOVA L, GERLICOVA K (2019) Prevention of falls in hospitalized patients from the nurse's point of view. In Health Letters. ISSN 2644-4909. year 7, no. 2, p. 55-60.
21. YASAN C, BURTON T, TRACEY M (2020) Nurses' documentation of falls prevention in a patient-centred care plan on a medical ward. In Australian Journal of Advanced Nursing. [online]. year 37, no. 2. [cited 2022-09-23]. with. 19-24. ISSN 1447-4328. Available online: <<http://dx.doi.org/10.37464/2020.372.103>>.