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Brief Communications

Intrinsic factors for the risk of fall of the elderly at home: a descriptive study

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ABSTRACT

Goal: to associate the intrinsic factors for risk of fall with the occurrence of falls in the home environment in elderly people with chronic diseases. **Method**: a descriptive study with a quantitative approach, conducted between June and July 2015 with 36 octogenarian elderly, participants of a multidisciplinary chronic disease monitoring program in the state of Rio de Janeiro. We applied the Downton Scale for data collection. **Results**: all the elderly underwent the Mini Mental State Examination and presented a 27 point average score; 86.1% presented high intrinsic risk for falls, although sensorial handicap (P = 0.09), previous falls (p = 0.35), drug use (p = 1) and ambulation (p = 1) did not present any significant association with the occurrence of the fall during the six months of follow-up. **Conclusion**: There was a high intrinsic risk of falling in the elderly population studied. Among the most prevalent factors were the previous falls and use of medications, especially hypotensive drugs.

Keywords: Nursing; Elderly; Accidents by Falls; Patient safety.

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What is known?	Falling is a morbidity factor in the elderly.
Contributions to what is known?	Previous falls and use of hypotensives are the most prevalent risk factors among octogenarians.

GOAL

To associate the intrinsic risk factors for falls with the occurrence of falls in the home environment in the elderly with chronic diseases.

METHOD

It is a descriptive study with a quantitative approach, conducted in the Northern Zone of the state of Rio de Janeiro, with elderly individuals of 80 years of age or older, participating in a monitoring program for patients with chronic noncommunicable diseases, through home visits of Health care supplementary operator. This scenario consisted of a total of 120 elderly people.

We included as study participants/subjects elderly patients of 80 years of age or older, with no auditory and consciousness handicap, who had score higher than 24 points (the questionnaire ranged from 0 to 30 points) in the Mental State Mini Exam (MMSE). Bedridden elders were excluded.

After application of the eligibility criteria, 37 elderly people were enrolled in the program (30% of the total elderly), and one of these refused to participate in the study, totaling a non-probabilistic sample of 36 elderly.

We collected the data using the Downton Scale[1] and a socio-demographic questionnaire in the home environment of each elderly patient, between June 30 and July 31, 2015. A nurse experienced in monitoring of the elderly at home was in charge of applying the data collection instruments.

The Downton Scale[1] quantifies the risk of falling according to five items and their subitems (Figure 1, below). A total score greater than 2 means a high risk of falling.

We tabulated the data in spreadsheet, exported it to statistical package, organized this in Microsoft Excel® spreadsheets, and later treated it using descriptive statistics through the software Statistical Package for the Social Sciences version 20. In addition to the exploratory analysis that included the averages, Standard deviation, and sector graphs, we also made use of Pearson's chi-square association test or Fisher's exact test. We determined the choice for one test over the other by meeting the statistical assumption of no more than 20% of the expected range of answers below 5. In cases of violation of this assumption, we conducted the analysis using Fisher's exact test.

Table 1. Downton Scale

Items Assessed		Score
Previous falls	No	0
	Yes	1
Medication	None	0
	Sedatives	1
	Hypotensors (non--diuretic)	1
	Antiparkinsonians	1
	Antidepressants	1
	Other drugs	1
Sensory deficit	None	0
	Visual	1
	Hearing	1
	Tactile (extremities)	1
Mental state	Lucid	0
	Confuse	1

Ambulation	Normal	0
	Safe with help	1
	Not safe with or without help	1
	Not possible	1

Source: Downton, 1993

In order to authorize data collection, this study was submitted to the Research Ethics Committee of the Medical School at the Antônio Pedro University Hospital, of the Fluminense Federal University (UFF), meeting the requirements of Resolution 466/12 of the National Health Council (CNS) which regulates research involving human beings. Each research participant read and signed the Informed Consent Term (TCLE).

RESULTS

We obtained a sample composed of 36 elderly participants of a multidisciplinary chronic disease monitoring program in the state of Rio de Janeiro. This group presented an average of 86.42 years of age (± 4.3), mostly composed of women (72.2%, n = 26).

Regarding participants' economic activity, a large part of the sample is retired by age 47.2% (n = 17). Approximately half (44.4%) of the sample presents completed primary level of education. The average score obtained in the MMSE was 27.2 points.

We applied the Downton Scale for the evaluation of the risk of fall intrinsic factors (related to the individuals), as presented in **table 2** below.

A significant portion of the sample (n = 31; 86%) already had at least one fall before the application of this scale. There was no significant association between previous falls and a six-month follow-up of these patients.

With regard to the use of drugs, almost all the elderly (n = 35; 97%) reported the use of some medication. Tranquillizers and sedatives (47%) were the most used reports, as well and hypotension agents (81%). The analysis did not indicate a significant association between the occurrence of falls and the use of drugs, in general, nor between the use of drugs according to their type.

The evaluation of visual, hearing and extremities deficits by the Downton scale indicated that: 30.6% (n = 11) of the sample had visual alterations, 47% (n = 17) had auditory alterations and no elderly presented alterations in extremities. Four elderly patients presented more than one type of sensory deficit. The presence of some sensorial deficit was not associated with the occurrence of the fall. All the elderly of this sample presented lucid mental state, as reinforced by MMSE average score of approximately 27 points.

Table 2. Intrinsic risk factors in Downton scale for elderly participants in a home-based follow-up program (n = 36). Rio de Janeiro, 2015

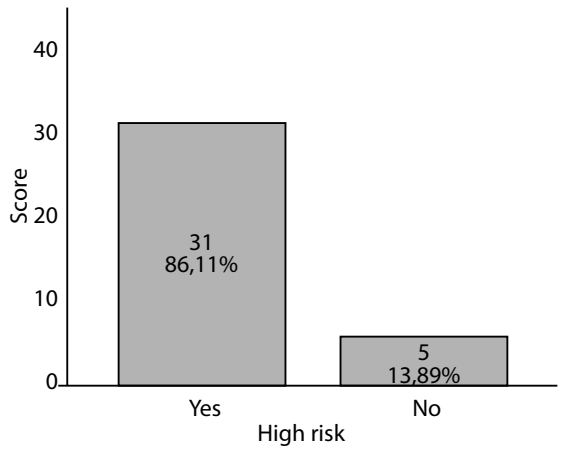
	Yes	(%)	No	(%)	p-value
PREVIOUS FALLS	31	86	5	14	0.35*
USE OF MEDICATION	35	97	1	3	1*
Tranquilizers and sedatives	17	47	19	53	0.29ł
Hypotension agents	29	81	7	19	0.67ł
Antiparkinson agents	1	3	35	97	1ł
Antidepressants	8	22	28	78	0.7ł
Other drugs	3	8	33	92	0.23ł
SENSORY DEFICIT	24	66.7	12	33.3	0.09 ł
Visual	11	30.6	25	69.4	0.15*
Hearing	17	47.2	19	52.8	1*
Extremities	0	0	36	100	-
More than one type	4	11.1	32	88.9	1*

MENTAL STATE (LUCIDITY)	36	100	0	0	-
NORMAL AMBULATION	27	75	9	25	1 Ɨ
Safe with help	9	25	27	75	0.23*
Not safe with or without help	0	0	36	100	*
Not possible	0	0	36	100	

** Prueba exacta de Fisher*
Ɨ Chi-Cuadrado de Pearson

Regarding the characterization of ambulation, 75% (n = 27) of the sample presented normal ambulation. Only 9 (25%) patients presented safe ambulation with help and no elderly were restricted to the bed.

Figure 1. Prevalence of high risk of falls in elderly participants in a home-based follow-up program (n = 36). Rio de Janeiro, 2016



According to the interpretation of the Downton Scale, a score greater than or equal to 3 indicates a high risk for fall. **Figure 1** above indicates that 86.1% of the sample presented a high intrinsic risk for fall.

DISCUSSION

Falls are a major public health problem around the world. Studies estimate that 24,000 fatal falls occur each year, which characterizes it as the second leading cause of death from unintentional injury, followed only by injuries caused by traffic accidents. Falls are the predominant cause of injuries among the elderly (over 65 years of age). Across the world, the highest mortality rates for this cause are related to people older than 60 years of age[2].

In Brazil in 2010, the falls ranked the first place among the more than 23 thousand deaths of elderly people related to external causes. In 2011, this event was the cause of more than 84 thousand cases of hospitalizations of this same population[3].

Different analyzes of the circumstances in which falls occur and, consequently, the identification of the risk factors involved led to the development of instruments to assess the risk of falls, including the Downton Scale for assessing intrinsic factors[4]. The intrinsic factors are those resulting from physiological changes related to aging, diseases and effects caused by drug use. In the present population, 86% of octogenarians presented a high intrinsic risk of falling.

The most prevalent risk factors were history of previous falls (86%) and use of medications (97%), especially hypotension agents (81%).

We observed that 86% of the elderly in this sample presented falls previous to the participation in the study. The literature suggests that after a fall, the elderly become less confident in performing their daily activities, either for fear of new falls events or due to physical or psychosocial factors. There may also be a progressive impairment of the functional capacity of these elderly people over time, which may make them more prone to recurrent falls[5].

The functional impairment of the elderly can be related to balance, which is the result

of the harmonious interaction of various systems of the human body: vestibular, visual, somatosensory and musculoskeletal. Each system has components that, with the aging process, may suffer functional losses that hamper the functioning and the execution of the motor response responsible for maintaining the control of posture and body balance, which, in turn, can generate functional damages to The elderly due to falls and increase levels of morbidity and mortality in this population, as a consequence of fractures[6].

Adverse drug effects, as well as hypertension, have been reported in articles as important intrinsic factors in the occurrence of falls in the elderly[5]. In this sample, almost all octogenarians used some medication, and 81% used hypotensives. It is important for health professionals to be aware of the desirable and undesirable pharmacological effects that may arise from the excessive or abusive use of medicinal products between the prescribed periods[7].

Other relevant intrinsic factors presented in the literature but not analyzed in this research are alterations in patients' feet, impaired balance and proprioceptive deficit[8]. It is also worth mentioning that falls can have serious physical and psychological consequences, such as injuries, hospitalizations, loss of mobility, restriction of activities, reduction of functional capability, moving in to nursing homes, and fear of falling again.

As a limitation, this research presented a small sample, which possibly contributed to the non-statistical association of the factors analyzed with the occurrence of falls during the six months of follow-up period.

CONCLUSION

The present study identified a relevant prevalence of the high intrinsic risk of falls among octogenarians. Among the most prevalent factors were the previous falls and use of medication, especially hypotensive drugs.

PRACTICE IMPLICATIONS

The data from this study showed that the elderly population studied is exposed to a high risk of falls. Aiming to reducing falls among octogenarians, we suggest discussing issues related to the aging and safety of the elderly, targeting emphatically the guidelines on the use of medication.

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