



FALL IN THE ELDERLY: ASSOCIATION WITH MORBIDITY AND FUNCTIONAL CAPACITY

QUEDA EM IDOSOS: ASSOCIAÇÃO COM MORBIDADE E CAPACIDADE FUNCIONAL CAÍDA EN LA TERCERA EDAD: ASOCIACIÓN CON LA MORBILIDAD Y CAPACIDAD FUNCIONAL

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ABSTRACT

Objective: to identify the clinical characteristics and functional capacity among elderly patients who suffered falls. **Method:** epidemiological, cross. The sample was selected by convenience, 120 elderly patients in geriatric outpatient clinic of a university hospital in the clinic, in the period October-December 2011. For data collection, we used instrument for clinical issues and *Brazilian Older American Resources and Services Multidimensional Functional Assessment Questionnaire* (BOMFAQ). Data were analyzed using descriptive statistics and chi-square Person, with 5% significance. The research project was approved by the Ethics Committee under Protocol N ° 240/11 and CAAE 0129.0.126.000 -11. **Results:** regarding the occurrence of falls, this was observed in 84.2% of participants, 35.3% of these had mild dependence in basic and instrumental activities of daily living. **Conclusion:** no need for special attention to the health and functioning of the elderly. **Descriptors:** Elderly; Accidental Falls; Activities of Daily Living.

RESUMO

Objetivo: identificar as características clínicas e a capacidade funcional entre os idosos que sofreram quedas. **Método:** estudo epidemiológico, transversal. A amostra foi selecionada por conveniência, de 120 idosos atendidos no ambulatório de geriatria de um hospital universitário no ambulatório, no período de outubro a dezembro de 2011. Para coleta de dados, utilizou-se instrumento com questões para avaliação clínica e o *Brazilian Older American Resources and Services Multidimensional Functional Assessment Questionnaire* (BOMFAQ). Os dados foram analisados pela estatística descritiva e o teste Qui-quadrado de Person, com significância de 5%. O projeto de pesquisa foi aprovado pelo Comitê de Ética sob o Protocolo nº 240/11 e CAAE 0129.0.126.000 -11. **Resultados:** quanto à ocorrência de quedas, esta foi evidenciada em 84,2% dos idosos, destes 35,3% possuíam dependência leve nas atividades básicas e instrumentais da vida diária. **Conclusão:** há necessidade de atenção especial à saúde e funcionalidade do idoso. **Descritores:** Idoso; Acidentes por Quedas; Atividades Cotidianas.

RESUMEN

Objetivo: identificar las características clínicas y la capacidad funcional en los pacientes de edad avanzada que han sufrido caídas. **Método:** estudio epidemiológico, transversal. La muestra fue seleccionada por conveniencia, 120 pacientes de edad avanzada en la clínica geriátrica ambulatoria de un hospital universitario en la clínica, en el período octubre-diciembre de 2011. Para la recolección de los datos, se utilizaron instrumentos para asuntos clínicos y *Brazilian Older American Resources and Services Multidimensional Functional Assessment Questionnaire* (BOMFAQ). Los datos fueron analizados utilizando estadística descriptiva y persona de chi-cuadrado, con un 5% de significación. El proyecto de investigación fue aprobado por el Comité de Ética en virtud del Protocolo N ° 240/11 y CAAE 0129.0.126.000 -11. **Resultados:** en relación con la ocurrencia de caídas, esto se observó en el 84,2% de los participantes, el 35,3% de ellos tenían dependencia leve en las actividades básicas e instrumentales de la vida diaria. **Conclusión:** no hay necesidad de prestar especial atención a la salud y el funcionamiento de los ancianos. **Descriptor:** Ancianos; Caídas Accidentales; Actividades de la Vida Diaria.

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INTRODUCTION

Population aging is a worldwide phenomenon due to the improvement of health care and the reduction of birth rates and mortality, causing important changes in social scenarios and health given the demographic and epidemiological transition. Considering the Brazilian context, the elderly population has been growing rapidly and tends to increase in the coming decades.¹

The demographic transition refers to the gradual process in which a society moves from a situation of high birth rates to a situation of low rates of this indicator. Already epidemiological transition is defined by changes in morbidity and mortality, with an increase in the prevalence of non-communicable diseases, which already reach 75.5% of elderly Brazilians, especially the older ones.²

The increasing proportion of elderly in the population, as well as the higher prevalence of diseases progressive in nature among the elderly, raises discussion on disabling events common in this age group, among which stand out the falls, which can be defined as an unintentional displacement of the body to a level below the initial position with inability to fix in a timely manner, the circumstances determined by multifactorial, compromising stability.³

The falls are the result of a complex interaction between intrinsic and extrinsic factors. Among the former are the physiological changes resulting from the aging process, pathological conditions, concomitant use of drugs and their adverse effects. Among the extrinsic factors highlight the environmental hazards, inappropriate footwear and clothing excessively long.

The process of falling is accompanied by numerous consequences, the elderly may present serious fractures and the risk of mortality from injury. Data from the Department of the Unified Health System (DATASUL) shows that, in 2008, there were 5,142 deaths in the elderly due to falls, ranking second in mortality from external causes.⁴ In addition to increasing the risk for death, falls bring other consequences to the health of the elderly as a limitation in physical activity, decreased mobility, fear of suffering further falls, social isolation, loss of autonomy and loss of functional ability.⁵

Considering particularly functional capacity, this can be defined as the ability to maintain physical and mental skills necessary for independent and autonomous living.⁶ Functional performance in basic activities

(ADL) and instrumental (IADL) of daily life, a parameter has been widely accepted and recognized for assessment of functional capacity.⁷ It should be noted that in order to understand the health care demands of the elderly, it is necessary to the assessment of functional capacity, the analysis of their sociodemographic conditions, their health problems and risk factors to which they are susceptible.

Considering the above, given the debilitating nature of the falls and the need for careful evaluation of the elderly so that they identified the main risk factors for the occurrence of this event, as well as the purpose that results of field surveys can provide information for planning and the implementation of interventions that impact positively on the quality of life of the elderly, particularly in their autonomy and performance of basic and instrumental activities of daily living, the question is: what is the incidence of falls among elderly patients in a geriatric outpatient university hospital located in João Pessoa, Paraíba? Which sociodemographic, clinical and functional these seniors?

In order to obtain answers to these questions were limited to the study the following objectives:

- ♦ To identify the clinical and functional characteristics among the elderly who have suffered falls.
- ♦ To investigate the association between history of falls in the last year with self-reported morbidity and functional capacity.

METHODOLOGY

Epidemiological, cross-sectional, involving elderly treated in tertiary health care. Cross-sectional study is an epidemiological study based on research results that reproduce "snapshots" of the health status of a group or community, observing factor and effect in the same temporal dimension. Using representative samples of the reference population precisely delimited, producing measures prevalence of diseases.⁸

The research was conducted in a geriatric outpatient clinic of a university hospital in the city of João Pessoa/PB/Northeastern Brazil. The sample was selected by convenience, all seniors enrolled in the clinic during the period October to December 2011, constituting 120 patients who met the following criteria: get score on the Mini-Mental State Examination - MMSE than 13 (illiterate) and 17 (literate)⁹ without severe impairment of speech and / or hearing that prevent them from responding to

the questionnaire. The study excluded those who had cognitive moderate / severe, those who had amputations and / or use of prosthetic limbs, those who showed sequelae arising from stroke, Parkinson's disease, fractures of the lower limbs and / or spine as well as those who used a wheelchair.

The data were collected through interviews, being subsidized by a structured instrument that included sociodemographic data of the elderly, as well as related to self-reported morbidity. The second part of the instrument seized information related to history of falls, being operated through the measurement of variables related to the characterization of the event: the crash site, the frequency, the intrinsic and behavioral conditions expressed by the elderly during the event and environmental factors involved.

The third part refers to the assessment of functional capacity, for this, we used the scale *Brazilian Older American Resources and Services Multidimensional Functional Assessment Questionnaire* (BOMFAQ), multidimensional questionnaire designed in the United States, validated and adapted to Portuguese.¹⁰ This instrument assesses self-reported difficulty in performing activities of daily living fifteen, eight basic activities of daily living (ADL) and seven instrumental activities of daily living (IADL). Regarding the classification of dependence for ADL and IADL performance, we considered the following points cohort: mild dependence (difficulty in performing one to three activities), moderate

dependence (difficulty in performing four to six activities) and severe dependence (difficulty carry seven or more activities) .⁷

Data analysis was carried out on a quantitative approach for using descriptive statistics, using computer system Statistical Package for the Social Sciences - SPSS version 15.0, which is adequate to achieve the objectives of the study and allow the precision and generalization of their results. To compare the dependence relationship among groups of nominal variables we used the Chi-square test, and a significance level of 5%.

The research project was evaluated and approved by the Ethics Committee of the University Hospital Lauro Wanderley (HULW), Case No. 240/11 and CAAE 0129.0.126.000-11. Complied with the guidelines and regulatory standards for research involving human subjects, Resolution No. 196 of the National Health Council, of October 10, 1996.¹¹

RESULTS

Of the total 120 patients, 102 (84.2%) reported at least one episode of falls after completing 60 years. Among these, 49 (84.2%) subjects reported having suffered falls in the last year preceding the interview. The fall event presented more frequent among women (73.47%), with the predominant age group between 60-69 years (53.06%).

Table 1. Occurrence of falls in elderly patients in a geriatric outpatient clinic of a university hospital. João Pessoa - PB, 2011. (n = 120)

Variable	Categories	n	%	IC 95%
History of falls	Yes	102	84,2%	(77,5% - 90,8%)
	No	18	15,8%	(9,2% - 22,5%)
	Total	120	100%	-
Falls in the last year	Yes	49	40,8%	(32,5% - 50%)
	No	71	59,2%	(50% - 67,5%)
	Total	120	100%	-

With regard to the characteristics of envisioned falls in Table 2, it was found that 27 (55.1%) were wandering old at the time of drop, and 22 (44.9%) engaged as the main

cause for the fall slippery. The occurrence of this event had become more common in the household (57.1%) and in the morning (38.8%).

Table 2. Characterization of the falls occurred in the last year among the elderly. João Pessoa - PB, 2011. (n = 49).

Variable	Category	n	%	IC 95%
Activity	Walking	27	55,1%	(40,8% - 69,4%)
	Climbing ladder	8	16,3%	(6,1% - 28,6%)
	Getting up	7	14,2%	(0% - 16,3%)
	Running	5	10,2%	(2% - 20,4%)
	Other	2	4,08%	(2% - 16,3%)
	Total	49	100%	
Cause	Slippery slope	22	44,9%	(30,6% - 59,2%)
	Stumble	15	30,6%	(18,4% - 44,9%)
	Steps	7	14,3%	(4,1% - 26,5%)
	Other	5	10,2%	(0% - 14,2%)
	Total	49	100%	
Local	House	28	57,1%	(44,9% - 71,4%)
	Street	18	36,7%	(24,5% - 49,8%)
	Family houses	3	6,1%	(0% - 14,3%)
	Total	49	100%	
Period	Morning	19	38,8%	(26,5% - 53,1%)
	Afternoon	17	34,7%	(22,4% - 46,9%)
	Night	13	26,5%	(16,3% - 38,8%)
	Total	49	100%	-

* There were seniors who reported more than one result.

Table 3 includes about the association between the elderly who experienced falls in the last year and the main self-reported morbidity, highlighting the following health problems with statistical significance: depression (0,022) and hearing impaired (0,004). It should be remembered that each

senior could mention more than one health problem.

Table 3 - Distribution of association among the elderly who reported falls in the previous year and the main self-reported morbidity by Chi Square test. João Pessoa - PB, 2011. (n = 49).

Morbidity	Fall event				Total		p
	Yes		No				
	n	%	n	%	n	%	
Spinal problems	41	43,6	53	56,4	94	16,66	0,238
Hypertension	31	37,3	52	62,7	83	14,71	0,245
Vision injured	33	45,2	40	54,8	73	12,98	0,225
Rheumatism/Arthrosis	29	44,6	36	55,4	65	11,52	0,359
Varicose Veins	23	37,7	38	62,3	61	10,81	0,478
Labyrinthitis	26	46,4	30	53,6	56	9,92	0,243
Osteoporosis	20	48,8	21	51,2	41	7,26	0,202
Depression	19	57,6	14	42,4	33	5,85	0,022
Diabetes	11	36,7	19	63,3	30	5,31	0,592
Hearing impaired	18	64,3	10	35,7	28	4,96	0,004
Total of answers	251	100	313	100	564	100	-

*There were seniors who reported more than one morbidity.

Regarding the classification of functional capacity, the present study found that 36 (35.3%) reported that elderly episode falls in the last year had mild addiction, followed by 32 (31.4%) who had severe dependence to complete activities basic and instrumental activities of daily living. With regard to the activities that had functional decline, it was found that the main basic activity of daily

living that required outside help to run was cut nails (85.7%), followed by difficulty walking up and down stairs (63.3%) and lie down or get out of bed (49%). In relation to instrumental activities of daily living, 32 (65.3%) elderly reported having difficulty taking care of the house cleaning, followed by using public transportation (55.1%), as shown in Table 4.

Table 4. Distribution of elderly victims of falls in the last year according to functional performance. João Pessoa - PB, 2011. (n = 49).

Activity	Without difficulty		With difficulty		
	n	%	n	%	p
ABVD					
Cut nails	7	14,3%	42	85,7%	0,024
Climbing stairs	18	36,7%	31	63,3%	0,741
Go to/out of bed	25	51,0%	24	49,0%	0,300
Dress up	31	63,3%	18	36,7%	<0,001
Bathing	34	69,4%	18	36,7%	0,016
Moving	32	65,3%	17	34,7%	0,004
Go to the bathroom on time	32	65,3%	17	34,7%	0,025
Comb the hair	36	73,5%	13	26,5%	0,003
Walk close to home	39	79,6%	10	20,4%	0,058
Eat	40	81,6%	09	18,4%	0,273
AIVD					
Clean house	17	34,7%	32	65,3%	0,598
Collective transport	22	44,9%	27	55,1%	0,218
Shop	30	61,2%	19	38,8%	0,081
Medicate yourself	34	36,7%	15	30,6%	0,714
Prepare meals	35	71,4%	14	28,6%	0,016

DISCUSSION

Considering the data shown in Table 1, it was found that the occurrence of falls in the last year among the population studied was 40.8%. Corroborating this finding, a study of 105 elderly individuals from Catanduva, São Paulo, showed that 40% of subjects reported at least one episode of falling in the last year prior to the survey.¹²

With regard to the demographic profile, the present study found a significant percentage of women reported episodes of falls, representing 73.47%. National literature confirms this finding, such as the study of 105 institutionalized elderly, in which the 42 seniors who fell, 71.4% were female.¹¹ No conclusive explanation of this fact, but the greatest chance of falls among elderly women is due to greater fragility in relation to men, a higher prevalence of chronic diseases, as well as a stronger connection to domestic activities, in addition to the increased likelihood of sex women become more brittle than males due to lower quality muscle mass and strength.¹³

The literature shows that the advancing age there is an increased incidence of falls, since age is closely related to other factors exhibit fall related to the event.⁵ However, this study did not include this relationship, where 53.06% of the elderly who fell were aged 60-69 years old. Similarly, a study of 243 institutionalized elderly showed that 37.8% of the elderly who fell were aged just referred.¹² The reason for this fact may be the least walking the elderly with higher age, probably because they do not have enough strength in the lower limbs. It is demonstrated that muscle strength declines with age, and especially with older, since there is a gradual loss of 10% per decade after 50 years.¹³

Regarding the characterization of the falls, the data on the circumstances of the event showed that 55.1% of the elderly who fell were grumbling at the time of the fall. This is corroborated by similar studies, the sample survey of institutionalized elderly in which it was found that 43.9% of these were dropped when ambulating.⁵ Information about the condition of the fall can direct the medical evaluation for cause of the event, eg fall after rise from a lower position may be associated with orthostatic hypotension, falls after tripping or slipping indicate the presence of environmental factors or problems gait, balance and vision.⁵ The main problems related to the environment according to the literature are slippery, objects on the ground, get high objects, getting up from bed and problems with steps. With respect to this study, there was a higher incidence of falls occurred due to slippery, representing 44.9%. Given similar to that found in a study conducted in five hospitals in the city of Rio de Janeiro, where 21.6% of seniors reported slippery as the main causal factor of the falls.¹⁴

It was evident that, in this study, 57.1% of falls occurred at home. Consistent with this finding, research conducted with hospitalized elderly found that 65.7% of falls occurred at his residence.¹⁴ The literature shows that older people tend to suffer more falls in their homes and in the rooms used most, mainly caused during everyday activities such as, for example, up and down stairs, go to the bathroom or work in the kitchen.¹⁵ In relation to the shift to more frequent falls, some authors attribute the prevalence of falls in the morning because their greatest potential for the event due to the activities to start the day, such as getting up and dressing up.¹⁴ The present study verified this finding in that identified that 38.8% of them occurred on the morning shift, confirming similar studies.^{5, 12-3}

The presence of diseases in aging deteriorates the process and, therefore, increases the probability of older people become more dependent, contributing to falls. Regarding comorbidities was found statistically positive association between hearing impairment and the event under study, in which 64.3% of the elderly who have fallen in the last year reported introduce changes regarding the hearing. The information derived from sensory receptors in the vestibular system interact with visual information and somatossensorials to produce body alignment and proper posture control. Thus, the decrease in hearing sensitivity results in dizziness and impairs postural control, especially in sudden movements and changes of direction, and may be an important cause for falls.¹²

In the present study the occurrence of depression was associated significantly with the occurrence of falls observed in 57.6% of the elderly who have fallen in the last year. Consistent with this finding, survey of 121 institutionalized elderly showed the presence of depression in 40% of the elderly fell.⁶ The presence of depressive symptoms is an important predictor for two or more falls, due to the effect of antidepressant medications and sedative in addition to the loss of functional ability, low self-confidence, indifference to the environment, seclusion and inactivity inherent disease.⁵

Considering particularly functional capacity, it was found that in this study, 35.6% of seniors who reported episodes of falls had mild dependence in performing basic and instrumental activities of daily living, limitations in presenting one to three activities. In addition to problems with balance, gait, mobility and muscle strength, functional decline in the elderly increases the risk for falls due to low self-confidence to perform BADL and IADL, directly affecting their ability functional.⁵ As a result, the group of partially dependent needs more attention, since they exhibit a discrete functional decline, but not crucial to complete immobility and is exposed to risks related to extrinsic falls. Thus, early identification of functional decline is essential when the goal is to prevent falling episodes.^{5,16}

Among the subjects of the present study, it was found that cutting toenails (85.7%), climbing stairs (63.3%) and lie down or get out of bed (49%) were the most affected after ABVD episodes falls. Similarly, research conducted with elderly patients in a public hospital in Ribeirão Preto, São Paulo, showed that the main activities were limited to

cutting toenails (49%), or throw out of bed (36%) and climbing stairs (28%). As regards the AIVD, identified in this study are significant limitations in performing house cleaning (65.3%) and use public transportation (55.1%), given this study corroborates similar.¹⁷ The fact fail to perform these activities or even need help so can cause immobility and consequent muscle atrophy facilitating the fall. When older adults fall, there is a tendency to decrease their daily activities, either for fear of exposing themselves to the risk of falling as a protective attitudes of society and family / caregivers. People may come to see that the elderly falls as weak, often withdrawing him from such activities, which may bring the long-term consequences not only for the elderly but also for their families, they need to mobilize to treatment and recovery the elderly, and health services.^{17- 20}

CONCLUSION

The results show that the occurrence of this event is high among elderly people surveyed, is more frequent in women aged 60-69 years. Regarding the characterization of the event, found that falls were more frequent while the old wandered, presenting the main cause slippery, occurring predominantly in the home environment and in the morning shift. When checking the functional capacity of the elderly, showed they had mild dependence and limitations on a three ABVD and IADL.

From these results, it is recommended to skilled care by health services, mainly due to the importance of not overlooking the falls, since they are markers of frailty and loss of functional capacity, with physical and psychological consequences. The characterization of the elderly with a history of falls is very important so that we can trace preventive methods, to detect and monitor early disability installed, as well as preventing falls and hence the physical damage, hospitalization and institutionalization. With the sharp growth of the elderly population and the difficulties faced by it in relation to health conditions, it emphasizes the need to discuss and implement interventions aimed at improving their quality of life.

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