FRAILTY ASSESSMENT OF ELDERLY HOSPITALIZED AT AN EMERGENCY SERVICE OF A UNIVERSITY HOSPITAL*

Juliane de Fátima Santos Antunes[1], Meiry Fernanda Pinto Okuno[2], Maria Carolina Barbosa Teixeira Lopes[3], Cássia Regina Vancini Campanharo[4], Ruth Ester Assayag Batista[5]

[1]RN. Nursing Resident at Escola Paulista de Enfermagem. São Paulo-SP-Brazil.
[2]RN. Ph.D. in Nursing. Universidade Federal de São Paulo. São Paulo-SP-Brazil.
[3]RN. M.Sc. in Nursing. Universidade Federal de São Paulo. São Paulo-SP-Brazil.
[4]RN. Ph.D. in Sciences. Universidade Federal de São Paulo. São Paulo-SP-Brazil.
[5]RN. Ph.D. in Nursing. Universidade Federal de São Paulo. São Paulo-SP-Brazil.

ABSTRACT: The objective in this study was to assess the frailty of elderly hospitalized at the Emergency Service of a university hospital in the State of São Paulo, Brazil. The data were collected between March and June 2014. Cross-sectional study involving 101 elderly, hospitalized for 24 hours or more. To develop the analysis, the Edmonton Frail Scale was applied. The mean age was 75 years, 50.5% female, 58.4% did not finish primary education, 89.1% retired or pensioner and 84.2% accompanied by a caregiver. Frequent antecedents were: arterial hypertension (65.3%), diabetes mellitus (65.3%) and smoking (44.6%). Concerning the frailty, the mean total score was 9.85, indicating moderate frailty. The elderly people with neurological diseases, dementia, more advanced age and who had a caregiver demonstrated higher levels of frailty. Frailty screening favors planning with a view to preventing disability and the worsening of the elderly people's health conditions.
DESCRIPTORS: Frail elderly; Aged; Delivery of health care.

AVALIAÇÃO DA FRAGILIDADE DE IDOSOS INTERNADOS EM SERVIÇO DE EMERGÊNCIA DE UM HOSPITAL UNIVERSITÁRIO

RESUMO: O objetivo do estudo foi avaliar a fragilidade de idosos internados no Serviço de Emergência de um hospital universitário do estado de São Paulo. O período da coleta de dados foi de março a junho de 2014. Estudo transversal com 101 idosos, por período igual ou superior a 24 horas. Análise realizada pela aplicação da Edmonton Frail Scale. A média de idade foi 75 anos, 50,5% sexo feminino, 58,4% não terminou o ensino fundamental, 89,1% aposentados ou pensionistas e 84,2% acompanhados de cuidador. Antecedentes frequentes foram: hipertensão arterial (65,3%), diabetes mellitus (65,3%) e tabagismo (44,6%). Em relação à fragilidade, a média do escore total foi 9,85, indicando fragilidade moderada. Os idosos com doenças neurológicas, demência, idade mais avançada e que tinham cuidador apresentaram maior fragilidade. O rastreamento da fragilidade propicia planejamento com vistas à prevenção de incapacidade e o agravamento das condições de saúde dos idosos.
DESCRITORES: Idoso fragilizado; Idoso; Assistência à saúde.

EVALUACIÓN DE LA FRAGILIDAD DE ANCIANOS INTERNADOS EN SERVICIO DE EMERGENCIA DE UN HOSPITAL UNIVERSITARIO*

RESUMEN: El objetivo del estudio fue evaluar la fragilidad de ancianos internados en el Servicio de Emergencia de un hospital universitario del estado de São Paulo. El periodo en que los datos fueron obtenidos fue de marzo a junio de 2014. Estudio transversal con 101 ancianos, por periodo igual o superior a 24 horas. Análisis realizado por aplicación de la Edmonton Frail Scale. La media de edad fue 75 años, 50,5% sexo femenino, 58,4% no completó la enseñanza fundamental, 89,1% jubilados o pensionistas y 84,2% acompañados de cuidador. Antecedentes frecuentes fueron: hipertensión arterial (65,3%), diabetes mellitus (65,3%) y tabaquismo (44,6%). Acerca de la fragilidad, la media del score total fue 9,85, apuntando fragilidad moderada. Los ancianos con enfermedades neurológicas, demencia, edad más avanzada y que tenían cuidador presentaron más fragilidad. Rastrear la fragilidad propicia planeamiento para prevenir la incapacidad y el agravamiento de las condiciones de salud de los ancianos.
DESCRIPTORES: Anciano fragilizado; Anciano; Asistencia a la salud.

Corresponding author:
Cássia Regina Vancini Campanharo
Universidade Federal de São Paulo
Rua Napoleão de Barros, 754 - 04024-002 - São Paulo-SP-Brasil
E-mail: cvancini@unifesp.br

INTRODUCTION

According to recent data from the United Nations, in the more developed regions, the population over 60 years of age is expected to increase by 45% by 2050, from 287 million people in 2013 to 417 million in 2050. In less developed regions, this population will also grow significantly. It is expected to increase from 554 million in 2013 to 1.6 billion in 2050[1].

In 2010, the Brazilian Institute of Geography and Statistics (IBGE) demonstrated that Brazil is going through a demographic transition, in which the elderly represent approximately 10.8% of the country's total population. It is expected that, in 2050, more elderly than children under 15 years of age will exist[2].

The prevalence of non-transmissible chronic conditions accompanies the increased life expectancy. In addition, chronic illnesses can compromise the elderly's functional ability, accelerating the process of the frailty syndrome[3].

The frailty syndrome is multifactorial, involving biological, physical, cognitive, social, economic and environmental factors, and results from cumulative systems decline. Frailty makes the elderly more dependent for activities of daily living (ADLs), and can cause exhaustion, weakness, urinary incontinence, balance problems, slow walking and decreased physical activities, being a potential cause of falls, hospitalization, institutionalization, functional decline and death[4-5].

Emergency Services (ES) are frequently overcrowded with patients and have insufficient human and physical resources. What the particularities of care is concerned, these services require a specialized team for rapid care delivery to critical patients. In addition, the team is responsible for protecting the patients and relatives' safety and for offering emotional support to both. These locations demand adaptations to the population's new epidemiological profile[6].

In view of difficulties to establish concepts related to the definition of frailty in elderly people, it is fundamental to apply trustworthy tools that can help to identify frail and potentially frail elderly with a view to the individualization of care. In Brazil, health professionals use the Edmonton Frail Scale (EFS) to detect risk factors for frailty, determine the level of frailty in the elderly and the main domains that need intervention, which can prevent its advance, reduce hospitalization times and improve these people's quality of life[7]. In view of the current growth of the Brazilian elderly population, the prevalence of chronic conditions and this population's increased demand for ES, the objective in this study is to assess the frailty of elderly people hospitalized at a service with this characteristic, with a view to the early detection and planning of care for this population's needs.

METHOD

Cross-sectional study, developed at an Emergency Service of a university hospital, located in the city of São Paulo, with approval from the Institutional Review Board at Universidade Federal de São Paulo (CEP: 631956; CAAE: 28238814.8.0000.5505). The participants were included in the study after reading and signing the informed consent form.

The inclusion criteria were individuals as from the age of 60 years[8], hospitalized at the ES during the data collection period, between March and June 2014, totaling a random sample of 101 patients.

One of the researchers assessed the frailty through the application of the EFS. An interview was held with the elderly, relative or caregiver, in the afternoon period, between 14:00 and 17:00h, on alternating days. The following variables were investigated: gender, age, skin color, education, employment, family income, presence of caregivers, comorbidities, habits and medical diagnosis during hospitalization through the interview or search in the patient history.

The EFS consists of nine domains: Cognition (0-2 points); General Health Status (0-4); Functional Independence (0-2); Social Support (0-2); Medication Use (0-2); Nutrition (0-1); Mood (0-1); Continence (0-1) and Functional Performance (0-2)[7]. The scale scores are: 0 to 4 no frailty; 5 to 6 apparent frailty; 7 to 8 mild frailty; 9 to 10 moderate frailty and 11 or more severe frailty. The higher the score on the EFS, the higher the elderly person's frailty level[9].

To compare the EFS domains with the age and the number of dependents, Variance Analysis (ANOVA) was used and, for the categorical variables, the Chi-Square test and, when necessary, the Likelihood Ratio or Fisher's

Exact test. To compare to the total scale score with the age ad number of dependents, Spearman's correlation coefficient was used and, for the categorical variables, Variance Analysis (ANOVA). The significance level adopted was 5% (p-value ≤ 0.05).

RESULTS

The patients' mean age was 75 years, 50.5% (n=51) female, 58.4% did not finish primary education, 89.1% self-declared to be retired or pensioners and 84.2% were accompanied by a caregiver. Arterial hypertension (65.3%), diabetes mellitus (65.3%) and smoking (44.6%) were the most frequent antecedents in this population. The frailty score of the elderly in this study ranged between 2 and 16.

Table 1 displays the total frailty score and the frailty per EFS domain of the patients hospitalized at the Emergency Service.

As demonstrated in Table 2, the elderly people with a caregivers presented a higher percentage of rejection with significant errors on the watch drawing test (Domain Cognition), a higher percentage of hospitalization, functional dependence, weight loss, sadness or depression and took more than 20 seconds to complete the "Get up and walk" test when compared to the elderly without a caregiver.

Patients with a low education level took more than 20 seconds to complete the "Get up and walk" test when compared to those with a higher education level; and employed patients considered their health bad and took up to 10 seconds to complete the "Get up and walk" test when compared to patients who were not employed (Table 2).

Patients with a higher education level demonstrated greater functional independence (p=0.0334) and forgot to take their medication more when compared to patients with a lower education level (p=0.0017).

Patients who considered their health was bad had a larger number of people dependent on their income when compared to people who considered their health was excellent, very good or good (p=0.0471). And incontinent elderly were older (p<0.0001).

Table 1 – Frailty assessment using the Edmonton Frail Scale of elderly hospitalized at an Emergency Service (n=101). São Paulo-SP-Brasil, 2014

Edmonton Frail Scale domains	%
Nutrition (weight loss)	
Yes	77,2
No	22,8
Forgetting to take medication	
Yes	44,6
No	55,4
Social Support	
Always	85,1
Sometimes	13,9
Never	1
Functional Independence	
Up to 1 activity	15,8
Between 2 and 4 activities	22,8
Between 5 and 8 activities	61,4
Cognition	
Approved	4,4
Rejected with small errors	3,3
Rejected with significant errors	92,3
Takes five or more drugs	
Yes	53,5
No	46,5
Incontinence	
Yes	59,4
No	40,6
Mood (sad/depressed)	
Yes	55,4
No	44,6
Functional performance ("get up and walk" test)	
Up to 10 seconds	5,9
Between 11 and 20 seconds	11,9
More than 20 seconds	82,2
General Health Condition (described health)	
Excellent/Very good/Good	14,9
Reasonable	57,4
Bad	27,7
General Health Condition (hospitalization)	
None	40,6
Between 1 and 2 times	38,6
More than 2 times	20,8
Total score	
Mean (SD)	9,85 (3,0)
Median (minimum-maximum)	10 (2-16)

Table 2 – Relation between the variables employment and presence of caregiver and the Edmonton Frail Scale domains in the elderly hospitalized at the Emergency Service (n=101). São Paulo-SP-Brasil, 2014

Domínios da Edmonton Frail Scale	Presença de cuidador (%)		Emprego (%)	
	Sim	Não	Sim	Não
Cognition				
Approved	3,9*	7,1	-***	4,7
Rejected with small errors	-	21,4	-	3,5
Rejected with significant errors	96,1	71,4	100	91,9
General Health Condition (hospitalizations in previous year)				
None	35,3**	68,8	20***	41,7
Between 1 and 2 times	41,2	25	80	36,5
More than 2 times	23,5	6,3	-	21,9
GHC				
Excellent/Very good/Good	8,2*	56,3	40***	14,6
Reasonable	23,5	18,8	-	24
Bad	68,2	25	60	61,5
Functional Independence				
Up to 1 activity	8,2*	56,3	40***	14,6
Between 2 and 4 activities	23,5	18,8	-	24
Between 5 and 8 activities	68,2	25	60	61,5
Social support				
Always	89,4***	62,5	100***	84,4
Sometimes	10,6	31,3	-	14,6
Never	-	6,3	-	1
Takes five or more drugs				
Yes	55,3***	43,8	40***	54,2
No	44,7	56,3	60	45,8
Forgets to take medication				
Yes	44,7	43,8	60***	43,8
No	55,3	56,3	40	56,3
Nutrition				
Yes	82,4*	50	60***	78,1
No	17,6	50	40	21,9
Mood (sad/depressed)				
Yes	61,2*	25	-	57,3
No	38,8	75	80	42,7
Incontinence				
Yes	63,5***	37,5	20***	61,5
No	36,5	62,5	80	38,5
Functional performance ("get up and walk" test)				
Up to 10 seconds	2,4**	25	40**	4,2
Between 11 and 20 seconds	11,8	12,5	-	12,5
More than 20 seconds	85,9	62,5	60	83,3

Chi-square test, when necessary Likelihood Ratio or Fisher's Exact Test. *P-value ≤ 0.01;**P-value ≤ 0.05; *** P-value >0.05; GHC- General Health Condition.

The comorbidities of the elderly that were associated with EFS domains were neurological diseases, dementia, cardiac disease, musculoskeletal disease and diabetes mellitus.

The elderly with neurological diseases considered their health was bad (p=0.0162). Patients with neurological disease (p=0.0421) and dementia (p=0.0001) showed a higher percentage of functional dependence. Demented patients showed greater weight loss (p=0.0141) and mentioned feeling more sad or depressed (p=0.0144), showing a higher percentage of incontinence when compared to patients with other comorbidities (p=0.0014). Patients with dementia (p=0.0249) and musculoskeletal disease (p=0.0317) took between 10 and 20 seconds to complete the functional performance test when compared to patients with other comorbidities. Elderly patients with diabetes mellitus (p=0.0307), cardiac disease (p=0.0250) and musculoskeletal disease (p=0.0151) took five or more drugs, prescribed by their physician.

The elderly with neurological diseases, dementia and who had a caregiver showed a higher frailty level. In addition, elder elderly also presented a higher EFS score (p= 0.0266) (Table 3).

Table 3 - Relation between total Edmonton Frail Scale score and the variables: presence of caregiver, neurological diseases and dementia in the elderly hospitalized at an Emergency Service (n=101). São Paulo-SP-Brasil, 2014

	Total Edmonton Frail Scale score				
	n	Mean (SD)	Median	Minimum-Maximum	p-value*
Presence of Caregiver					
Yes	85	10,3 (2,7)	11	3-16	<0,0001
No	16	7,1 (2,9)	7	2-14	
Neurological diseases					
Yes	16	11,6 (2,2)	12	7-16	0,0071
No	85	9,5 (3)	10	2-15	
Dementia					
Yes	17	12,2 (2,1)	12	8-16	0,0002
No	84	9,3 (2,9)	10	2-14	

*Variance Analysis (ANOVA). Significance level 5% (p-value < 0.05).

DISCUSSION

The frailty score of the elderly in this study was similar to another study undertaken with patients hospitalized at a medical clinic (6 to 16 points)[10]. In addition, the patients in this research presented problems in 7 out of 9 EFS domains, differently from the study undertaken at a Family Health Service, in which only the cognition had been affected[11]. This result can be related to the fact that these elderly are not hospitalized and do not present acute problems.

The higher rejection frequency in the domains cognition, functional dependence and sadness or depression of the elderly with a caregiver probably contributes to further dependence to develop the ADLs and further need for a caregiver[12]. In one study, it was observed that, the higher the elderly patient's functional dependence, that is, the lesser the capacity to accomplish activities of daily living, preserve mental and social activities, the greater the need for a caregiver[13].

Patients with low education level took more than 20 seconds to complete the functional performance test when compared to patients with higher education levels; and employed patients considered their health bad and took up to 10 seconds to complete the functional performance test. The incidence of frailty in elderly people is related to the low socioeconomic level and limited education, which particularly affects their lifestyle and increases their exposure to health risks, besides enhancing the physical frailty condition[9].

Work should be adopted to the workers, their action on the work can further their health but, depending on the organization of the work process, it can represent a risk for their health and cause professional illnesses or aggravate an extra-professional health problem[14]. This can

explain why these employed elderly considered that their health was bad.

Patients with higher education levels showed greater functional independence, similar to the results observed in another study[13], in which elderly people with low education levels had up to five times more chance of moderate to severe dependence. In this study, patients with higher education levels did not remember to take their medication, as opposed to one study in which, although the finding was not statistically significant, individuals with lower education levels showed better treatment compliance[15].

In this study, patients who consider their health as bad have more people dependent on their income when compared to patients who consider their health excellent, very good or good. Many elderly contribute to the family budget, turning retirement into a financial guarantee for unemployed children and grandchildren; and, when this income is insufficient to attend to the elderly people and their families' needs, it can expose the elderly to the risk of illness or even aggravate their existing conditions[16-17].

The elderly with neurological conditions considered that their health was bad. Patients with neurological disease and dementia presented a higher percentage of functional dependence; and demented patients showed greater weight loss, mentioned feeling more sad or depressed and presented a higher percentage of urinary incontinence when compared to patients with other comorbidities. The higher dependence for ADLs and the urinary sphincter control problems of the elderly patients with dementia or neurological conditions were also found in another study[14].

In this study, the patients with urinary incontinence were elder elderly. Although the lower urinary tract undergoes changes associated with aging in men as well as women(18), incontinence can affect people of different ages and be associated with the greater risk of functional decline[19].

Some risk factors for depressive disorders were observed in the interviewed elderly, such as advanced age, anxiety, chronic illnesses and lack of bonds and social support[20]. Depression is a very important clinical condition, as it negatively affects the functional capacity and quality of life,

besides affecting the elderly people's autonomy, contributing to the evolution of their frailty[21].

Patients with dementia and musculoskeletal disease took between 10 and 20 seconds to complement the functional performance test when compared to patients with other comorbidities. Similar to the present results, a study at a long-term institution for the elderly identified that demented elderly had more functional performance problems. Musculoskeletal diseases also caused mobility difficulties, also to accomplish activities like climbing the stairs or bathing[14].

Elderly patients with diabetes mellitus, cardiac disease and musculoskeletal diseases took five or more drugs prescribed by the physician. Multiple drug use also happens thanks to the increase in the number of non-transmissible chronic conditions. In a study that assessed the frailty level of 63 elderly who participated in a community center demonstrated that, the higher the number of drugs, the higher the frailty score[5].

Elderly people with neurological conditions, dementia and people with a caregiver showed a higher total EFS score, that is, a higher level of frailty. Neurological conditions like Alzheimer cause functional ability problems. Hence, the elderly need caregivers to help them with their daily activities. Dementia, on the other hand, is a syndrome, with a gradual decline in the cognitive function, personality changes, problems to accomplish activities of daily living, so that the elderly become increasingly dependent and frail[18].

Older patients showed a higher EFS score, being the most weakened. This suggests that, the higher the age, the greater the trend towards frailty[22].

CONCLUSION

The elderly suffered from moderate frailty. Elderly with a caregiver revealed a higher hospitalization percentage, greater dependence, weight loss, sadness or depression. Patients with low education took more time to complete the functional performance test; and patients with higher education levels presented greater functional independence. Neurological conditions, dementia, cardiac disease, musculoskeletal disease and diabetes mellitus revealed associations with the EFS. Elderly patients with neurological

diseases, dementia, patients with a caregiver and elder elderly showed the highest level of frailty.

These study results can contribute to include frailty screening measures among the elderly, so as to identify and correct these factors early, in order to prevent or minimize the occurrence of unwanted events, such as disability and the worsening of the elderly's health conditions.

The main limitation in this study is the fact that it was developed at a single hospital, which delivers care to patients in the public health system and may not represent other realities.

REFERENCES

1. United Nations, Department of Economic and Social Affairs, Population Division. World population prospects: the 2012 revision, key findings and advance tables. New York, 2013 [acesso em 05 mai 2015]. Disponível: http://esa.un.org/wpp/documentation/pdf/wpp2012_%20key%20findings.pdf

2. Instituto Brasileiro de Geografia e Estatística (IBGE). Sinopse do censo demográfico 2010. Sinopse do censo e resultados preliminares do universo. [acesso em 01 abr 2015]. Disponível: http://www.ibge.gov.br/home/presidencia/noticias/imprensa/ppts/0000000402.pdf

3. Kuchemann BA. Envelhecimento populacional, cuidado e cidadania: velhos dilemas e novos desafios. Soc estado. 2012;27(1):165-80.

4. Nogueira SL, Ribeiro RCL, Rosado LEFPL, Franceschini SCC, Ribeiro AQ, Pereira ET. Fatores determinantes da capacidade funcional em idosos longevos. Rev Bras Fisioterapia. 2010;14(4):322-9.

5. Carmo LV, Drummond LP, Arantes PMM. Avaliação do nível de fragilidade em idosos participantes de um grupo de convivência. Fisioter Pesqui. 2011;18(1):17-22.

6. Ministério da Saúde (BR). Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Envelhecimento e saúde da pessoa idosa. Cadernos de Atenção Básica Nº 19. Brasília (DF), 2006.

7. Fabrício-Wehbe SCC, Shciaveto FV, Vendrusculo TRP, Haas VJ, Dantas RAS, Rodrigues RAP. Adaptação cultural e validade da Edmont Frail Scale – EFS em uma amostra de idosos brasileiros. Rev Latino-Am. Enfermagem. 2009,17(6):1043-9.

8. Brasil. Lei nº. 8.842. Dispõe sobre a política nacional do idoso, cria o Conselho Nacional do Idoso e dá outras providências. [acesso em 01 abr 2015]. Disponível: http://www.planalto.gov.br/ccivil_03/leis/l8842.htm

9. Ferreira PCS, Tavares DMS, Rodrigues RAP. Características sociodemográficas, capacidade funcional e morbidades entre idosos com e sem declínio cognitivo. Acta paul enferm. 2011;24(1):29-35.

10. Storti LB, Fabrício-Whebe SCC, Kusumota L, Rodrigues RAP, Marques S. Fragilidade de idosos internados na clínica médica da unidade de emergência de um hospital geral terciário. Texto contexto enferm. 2013;22(2):452-9.

11. Maeshiro FL, Lopes MC, Okuno MF, Campanharo CR, Batista RE. Capacidade funcional e a gravidade do trauma em idosos. Acta paul enferm. 2013;26(4):389-94.

12. Reis LA, Torres GV, Novaes LKN, Reis LA. Déficit cognitivo como fator de risco para a limitação de atividades cotidianas em idosos institucionalizados. Revista de Psicologia. 2011;2(1):126-36.

13. Talmelli LFS, Gratão ACM, Kusumota L, Rodrigues RAP. Nível de independência funcional e déficit cognitivo em idosos com Doença de Alzheimer. Rev Esc Enferm. USP. 2010;44(4):933-9.

14. Dantas CMHL, Bello FA, Barreto KL, Lima LS. Capacidade funcional de idosos com doenças crônicas residentes em Instituições de Longa Permanência. Rev bras enferm. 2013;66(6):914-20.

15. Schmitt-Júnior AA, Lindner S, Helena ETS. Avaliação da adesão terapêutica em idosos atendidos na atenção primária. Rev. Assoc. Med. Bras. 2013;59(6):614-21.

16. Sá CMS, Souza NVDO, Caldas CP, Lisboa MTL, Tavares KFA. O idoso no mundo do trabalho: configurações atuais. Cogitare enferm. 2011;16(3):536-42.

17. Alvarenga MRM, Oliveira MAC, Domingues MAR, Amendola F, Faccenda O. Rede de suporte social do idoso atendido por equipes de saúde da família. Cienc. saude colet. 2011;16(5):2603-11.

18. Reis RB, Cologna AJ, Martins ACP, Paschoalin EL, Tucci Júnior S, Suaid HJ. Incontinência urinária no Idoso. Acta Cir. Bras. 2003;18(5):47-51.

19. Pavarini SCI, Melo LC, Silva VM, Orlandi FS, Mendiondo MSZ, Filizola CLA, et al. Cuidando de idosos com Alzheimer: a vivência de cuidadores familiares. Rev. Eletr. Enf. 2008;10(3):580-90.

20. Mitchell AJ, de Santiago AI. Prognosis of depression in the eldery in comparison with adult age. Is there a significant clinical difference? Actas Esp Psiquiatr. 2009;37(5):289-96.

21. Paradela EMP. Depressão em Idosos. Rev HUPE. 2011;10(2):31-40.

22. Duarte MCS, Fernandes MGM, Rodrigues RAP, Nóbrega MML. Prevalência e fatores sociodemográficos associados à fragilidade em mulheres idosas. Rev bras enferm. 2013;66(6):901-6.