FRAILTY AND COGNITIVE PERFORMANCE OF ELDERLY PEOPLE IN OUTPATIENT CARE

FRAGILIDADE E DESEMPENHO COGNITIVO DE IDOSOS EM ATENDIMENTO AMBULATORIAL

FRAGILIDAD Y DESEMPEÑO COGNITIVO DE ADULTOS MAYORES EN ATENCIÓN AMBULATORIA

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ABSTRACT

Objective: to investigate the association between frailty syndrome and cognitive performance of elderly patients in outpatient care. **Method:** a cross-sectional study was carried out with a convenience sample of 374 elderly people who were waiting for a specialized consultation in a teaching hospital from November 2015 to November 2016. Data collection included the application of a structured instrument, the Mini-Mental State Examination and the Edmonton Frail Scale. The collected data were organized and analyzed in the Stata 12® software, described through measures of frequency, mean and standard deviation (SD). The association between the variables was verified through the Fisher's F test and the Student's t-test, using the significance level of $p < 0.05$ to evaluate the results. **Results:** there was a predominance, among the elderly, of women (67.4%), aged 67.9 years on average, married (56.4%), with low educational level (55.1%), and living with the family (46%). As for the clinical variables, 97.1% reported having some type of disease, 92.3% used medications, 57% reported no urine loss, 65.8% reported no falls, and 69.8% had not been hospitalized in the last 12 months. Regarding the frailty syndrome, 30.5% were classified as non-fragile, 29.4% apparently vulnerable to frailty, and 40.1% presented some degree of frailty. A significant statistical relationship was identified between the frailty syndrome and cognitive performance ($p < 0.001$). **Conclusion:** the evaluation of frailty syndrome and cognitive performance in the elderly through validated instruments allows nurses and health professionals to plan gerontological care in this age group.
Keywords: Frail Elderly; Geriatric Nursing; Cognition.

RESUMO

*Objetivo: investigar a associação entre a síndrome da fragilidade e desempenho cognitivo de idosos em atendimento ambulatorial. Método: pesquisa transversal, realizada com amostra por conveniência de 374 idosos que aguardavam consulta de especialidade em um hospital de ensino, no período de novembro de 2015 a novembro de 2016. A coleta de dados contemplou a aplicação de instrumento estruturado, Miniexame do Estado Mental e Escala de Fragilidade de Edmonton. Os dados coletados foram organizados e analisados no software Stata 12®, descritos por medidas de frequência, média e desvio-padrão (DP). Verificou-se a associação entre as variáveis por meio dos testes F de Fisher e t de Student, utilizando-se para avaliação dos resultados o nível de significância de p<0,05. Resultados: predomínio de mulheres (67,4%), média de idade de 67,9 anos, casados (56,4%), baixa escolaridade (55,1%), que residem com a família (46%). Para as variáveis clínicas, 97,1% afirmaram possuir algum tipo de doença, 92,3% utilizavam algum medicamento, 57% não relataram perda de urina, 65,8% mencionaram não terem sofrido quedas e 69,8% não haviam sido hospitalizados nos últimos 12 meses. Quanto à síndrome da fragilidade, 30,5% foram classificados como não frágeis, 29,4% aparentemente vulneráveis à fragilidade e 40,1% apresentaram algum grau de fragilidade. Identificou-se relação estatística signi-ficativa entre a síndrome da fragilidade e o desempenho cognitivo (p<0,001). Conclusão: dessa forma, a avaliação da síndrome da fragilidade e desempenho cognitivo em idosos por meio de instrumentos validados possibilita que enfermeiros e profissionais da saúde possam planejar cuidados gerontológicos a esse segmento etário.
Palavras-chave: Idoso Fragilizado; Enfermagem Geriátrica; Cognição.*

RESUMEN

Objetivo: Investigar la asociación entre el síndrome de fragilidad y desempeño cognitivo de adultos mayores en atención ambulatoria. Método: Investigación transversal, con muestra por conveniencia de 374 adultos mayores que aguardaban consulta de especialidad en un hospital de enseñanza, de noviembre de 2015 a noviembre de 2016. La recogida de datos se realizó con el Mini Examen del Estado Mental y la Escala de Fragilidad de Edmonton. Los datos se organizaron y analizaron en el software Stata versión 12°, se describieron por medidas de frecuencia, media y desvío estándar . Se comprobó asociación entre las variables con las pruebas F de Fisher y t de Student. Los resultados se evaluaron por el nivel de significancia p <0,05. Resultados: predominio de mujeres (67,4%), edad promedio 67,9 años, casados (56,4%), baja escolaridad (55, 1%), vivía con la familia (46%). Para las variables clínicas 97,1% afirmó tener alguna enfermedad, 92,3% utilizaba algún medicamento, 57% no mencionó pérdida de orina, 65,8% no se había caído en los últimos 12 meses y 69,8% no había estado internado en los últimos 12 meses. El síndrome de fragilidad fue clasificado como no frágil un 30,5%; aparentemente vulnerable a la fragilidad 29,4% y 40,1% con algún grado de fragilidad. Se identificó la relación estadística significativa entre el síndrome de fragilidad y el desempeño cognitivo (p <0,001). Conclusión: la evaluación del síndrome de fragilidad y desempeño cognitivo con instrumentos validados permite que enfermeros y profesionales de la salud planifiquen los cuidados gerontológicos de los adultos mayores.

Palabras clave: Anciano Frágil; Enfermería Geriátrica; Cognición.

INTRODUCTION

The aging process contributes to the inability of the body to maintain homeostasis with repercussions for the reserve of energy and capacity to resist stressors, increasing the individual's susceptibility to possible aggravations and adverse events,[1,2] with emphasis on the frailty.

In the last decades, the concept of frailty has been widely discussed among researchers in this field. Authors define it as a medical syndrome with multiple causes and associated factors characterized by a set of clinical manifestations such as decreased strength, endurance and physiological function, collaborating to a higher vulnerability to dependence and/or death.[2]

Two international groups of researchers, one from the United States and other from Canada, stand out in this theme. The members of the research titled *Canadian Initiative on Frailty and Aging* (CIF-A),[3] which is the methodological focus of the present study, have sought to broaden the knowledge about frailty syndrome in the elderly through an in-depth investigation of its causes and trajectories in the multidimensional perspective, with emphasis on prevention and treatment. In this context, they accept the model of the North American frailty phenotype, and yet understand that important elements such as cognition, humor and social support should be considered in frailty assessments.

The prevalence of this syndrome can vary between 4.9% and 27.3% in the general population,[4] however, there is a significant variability in the literature, depending on the criteria adopted for screening. Factors related to the onset and worsening of the frailty syndrome include cognitive changes.[5]

A systematic review found that 52.6% of the included studies detected an association between frailty and cognitive domains.[6] Likewise, a cross-sectional study with 654 elderly individuals in Finland revealed that among the fragile elderly, 64% had cognitive impairment.[7]

Authors have explained that frailty and cognitive deficit are predictors of mortality in the elderly, with a cumulative effect.[6,8] However, researches exploring this relationship in Brazil are scarce, indicating the need for studies to increase the knowledge on this syndrome and its determinants in this population.

In this perspective, the objective of the present study was to investigate the association between frailty syndrome and cognitive performance in elderly people in outpatient care.

METHODS

This is a cross-sectional study conducted at the specialized outpatient service of a teaching hospital in the Campos Gerais region, from November 2015 to November 2016. The institution is public and its outpatient service provides an average of 4,900 consultations/month distributed in 30 medical specialties. The assistance is aimed at the users referred from basic health units and the Family Health Strategy, as well as from the Center of Specialties of the city and the region.

The criteria used to select the sample were: a) being aged 60 years or over; b) having obtained a score higher than the cut-off point in the Mini-Mental State Examination (MMSE);[9] c) being waiting for medical consultation on the day of the interview. The exclusion criteria were: a) physical inability to participate and perform the proposed tests (bedridden patients, wheelchair users, patients with amputation of upper or lower limbs); b) chemotherapy treatment; c) lack of a family caregiver present at the moment of the home visit.

In the case of participants with any sort of difficulty in verbal communication or who did not reach the cut-off score in the MMSE, a family caregiver was invited to participate in the interview to answer the questions, with the exception of the physical tests that were performed by the elderly. The inclusion of the caregiver required him to have an age equal to or superior to 18 years; being a family caregiver; and being living with the elderly for at least three months. The criteria for exclusion of caregivers were: presence of significant communication diffi-

culties and to having cognitive deficits or other disabilities that made the structured interview impossible.

The convenience sample comprised 390 elderly individuals who were individually interviewed while awaiting the consultation in the waiting room of the specialized outpatient serevice. A total of 374 individuals were excluded after the exclusion of 16 (4.1%) who did not meet the inclusion criteria, of which three (18.7%) did not respond to the MMSE.

In the initial phase of data collection, a cognitive screening was performed by applying the MMSE. The instrument has 11 items grouped into seven categories, represented by groups of specific cognitive functions: temporal orientation, spatial orientation, immediate memory, attention and calculation, recall memory, language, and visual constructive capacity.[10] Scores ranges from zero to 30, with the following cut-off scores for evaluation: 13 points for illiterates; 18 points for low and medium schooling; and 26 points for high schooling.[9]

The Edmonton Frail Scale (EFS),[3] validated and adapted for Brazil, was used to evaluate frailty. This is an instrument that evaluates nine domains: cognition, health status, functional independence, social support, use of medications, nutrition, humor, urinary continence and functional performance, distributed in 11 items with a maximum score of 17 points. Scores vary as follows: 0-4, no frailty; 5-6, apparently vulnerable; 7-8, mild frailty; 9-10, moderate frailty; 11 or more, severe frailty.[11]

In order to classify and characterize the sample, a sociodemographic and clinical questionnaire was prepared specifically for the study. The variables investigated were: sex, age, marital status, schooling, home arrangement, financial situation, diseases, medication use, urine loss, use of cane, crutch or walker, falls and hospitalizations in the last 12 months.

The data were tabulated and analyzed using the *Stata*® software version 12. (StataCorp LP, CollegeStation, TX, USA). Initially, data were submitted to an exploratory analysis and described by means of absolute frequency and percentage, means and standard deviations (SD). The normality of data was verified through the Kolmogorov-Smirnov test. The association between variables was verified by means of simple linear regression with Fisher's F test and Student's t-test, and the level of significance was $p < 0.05$.

The project was approved by the Ethics Committee of the State University of Ponta Grossa under Opinion nº 792.978 and CAAE nº 34905214.0.0000.0105. The ethical precepts of voluntary and consensual participation of each subject were respected, according to the resolution in force at the time of the research.

RESULTS

There was a predominance of female subjects (n = 252, 67.4%), aged 67.9 years (60 ± 86 years) on average, married (n =

211, 56.4%), with low schooling (1 to less than 4 years of studies, or incomplete primary education) (N = 206, 55.1%), and living with the family (n = 172, 46%). Among the participants, 363 (97.1%) reported having a disease, 345 (92.3%) used medications, 246 (65.8%) reported not having fallen in the last 12 months, and 261 (69.8%) had not been hospitalized in the last 12 months (Table 1).

Table 1 - Distribution of sociodemographic and clinical characteristics of the elderly assisted at the specialized outpatient service. Ponta Grossa – PR, 2016

Characteristics of the elderly	n (%)
Sex	
Female	252 (67.4)
Male	122 (32.6)
Age	
60 to 64 years	133 (35.6)
65 to 69 years	114 (30.5)
70 to 74 years	63 (16.9)
75 to 79 years	45 (12)
> 80 years	19 (5.1)
Marital status	
Married	211 (56.4)
Single	48 (12.8)
Widower	115 (30.8)
Schooling*	
High	31 (8.3)
Medium	84 (22.5)
Low	206 (55.1)
Illiterate	53 (14.2)
Home arrangement	
Alone	65 (17.4)
Family	172 (46)
Spouse	135 (36.1)
Caregiver	2 (0.5)
Financial situation	
Unsatisfactory	166 (45)
Satisfactory	203 (55)
Diseases	
Yes	363 (97.1)
No	11 (2.9)
Medication use	
Yes	345 (92.3)
No	29 (7.8)
Urine loss	
Yes	161 (43)
No	213 (57)

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Table 1 - Distribution of sociodemographic and clinical characteristics of the elderly assisted at the specialized outpatient service. Ponta Grossa – PR. 2016

Characteristics of the elderly	n (%)
Use of cane	
Yes	17 (4.6)
No	357 (95.4)
Use of crutch	
Yes	5 (1.3)
No	369 (98.7)
Use of walker	
Yes	1 (0.3)
No	373 (99.7)
Falls in the last twelve months	
Yes	128 (34.2)
No	246 (65.8)
Hospitalization in the last twelve months	
Yes	113 (30.2)
No	261 (69.8)

*Schooling: high (≥ 8 years of study); medium (4-8 incomplete years of study); low (1-4 incomplete years of study).
Source: authors (2017).

Regarding frailty syndrome, 30.5% of the elderly were classified as non-frail, 29.4% as apparently vulnerable to frailty, 25.7% presented mild frailty, 11.5% moderate frailty, and 2.9% intense frailty (Table 2). Regarding the average performance in the MMSE, elderly patients with light frailty obtained 22.7 points, those with moderate frailty 21.9 points, and those with intense frailty 19.5 points (Table 2).

Table 2 - Distribution of frailty levels in relation to the average result obtained in the MMSE. Ponta Grossa, 2016

Frailty score (EFS)*	n (%)	Average MMSE score† (±SD)‡	p-value§
0 -4	114 (30.5)	25(±3.18)	0.001
5 -6	110 (29.4)	24.1(±3.53)	0.001
7 -8	96 (25.7)	22.7(±3.45)	0.005
9 -10	43 (11.5)	21.9(±4.02)	0.004
>11	11 (2.9)	19.5(±2.94)	0.000

*Edmonton Frail Scale: 0-4: no frailty; 5-6: apparently vulnerable; 7-8: mild frailty; 9-10: moderate frailty; 11 or more, severe frailty.
† Mini Mental State Examination: 13 - illiterate; 18 - low and average schooling; 26 - high schooling.
‡ Standard deviation.
§ Regarding the t-test performed to test the difference between means.
Source: authors (2017).

A significant statistical relationship was identified between frailty syndrome and cognitive score (p = 0.001), as observed by the negative linear trend (R-*squared* = 0.1288). Therefore, the higher the frailty syndrome score, the lower was the cognitive score (Figure 1).
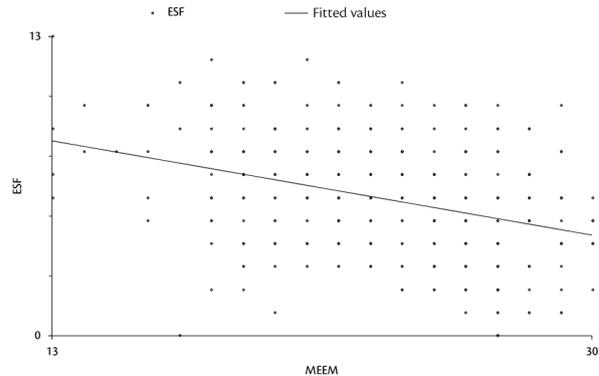

Figure 1 - Negative linear trend between cognitive score and Edmonton Frailty Scale. Ponta Grossa, 2016.
Source: the authors (2017).

DISCUSSION

Regarding the general characterization of the sample, the findings are similar to the results of investigations on frailty among community-dwelling elderly[12] from long-term institutions[13] or under outpatient care.[14]

Among the participants, females predominated and this is consistent with the results of national surveys, regardless of the research scenario.[12,13] One possible explanation is that women live longer,[15] they have a greater number of diseases[16] and seek with more frequently health services.[15] As for the variable age, both the average age and the age group identified are similar to a cross-sectional survey carried out with community-dwelling elders in the southern region of Brazil.[17]

The analysis of marital status revealed a higher proportion of married elderly, as in a longitudinal cohort investigation conducted with elderly adults in their home, which found that 44.3% of the sample was married.[18]

As to schooling, more than half of the sample had low schooling (one to four incomplete years of education). According to the Brazilian Institute of Geography and Statistics, the elderly represent a segment of the population that has a lower educational level (4.7 years of study on average), with variations depending on the region of the country.[15]

Authors emphasize the significant influence of schooling on frailty syndrome and cognitive deficit.[19] Low level of education predisposes the elderly to greater risks of illness and disability because of a more limited access to information on health care and interference in the life style and quality of life, favoring or aggravating frailty.[20]

It was seen that the majority of the elderly patients lived with relatives, which can be explained by the participants' average age, which characterizes them as young elderly who are predominantly married. A cross-sectional study carried out with 462 elderly in the state of Minas Gerais found that 88.3% of the participants

had companions.[21] The family is understood as an organization that is a source of support to the elderly, especially when these people need care, and even more importantly in elderly with the profile of frail conditions and cognitive impairment.

Although the majority of respondents reported to have a satisfactory income, elderly people with low or insufficient income usually have worse health conditions and are more fragile. Income is therefore a variable that as acts as a predictor of frailty.[22]

Regarding diseases, almost all participants reported having a disease, and this might have been linked to the high use of medications for treatment of diverse conditions among the interviewees. Such finding must be associated with the fact that these elderly are in outpatient specialized care, a characteristic of the sample investigated. Diseases increase the risk of frailty in the elderly, with greater chances of dependence and increased vulnerability to negative outcomes.[23]

Regarding urine loss, almost half of people surveyed reported this condition. A recent integrative review of the literature identified urinary incontinence as a factor associated with the syndrome,[24] with repercussions on the performance of in activities of daily living, predisposing the elderly to become less active and contributing to loss of independence.

The use of assisted technologies (cane, crutch and walker) was little mentioned by the interviewees. The findings are similar to a cross-sectional study conducted with 203 elderly users of basic health units, which identified that 5.4% of participants used these devices.[25]

As for the clinical conditions falls and hospitalization in the last 12 months, most of the elderly responded negatively .However, authors recognize that these variables have significantly been associated with frailty[12] and cognitive decline[21].

According to the Edmonton Frail Scale, almost half of the sample presented some level of frailty. A similar result was obtained in a cross-sectional research with 511 non-institutionalized elderly from Minas Gerais in which 41.3% of the participants were frail.[12] However, the incidence was significantly higher in comparison to the study that validated the ESF in Brazil.[11]

Authors identified prevalence rates of frailty of 19.6% among elderly people living in Latin America and the Caribbean, ranging from 7.7 to 42.6%.[16] Methodological selection and evaluation differences, as well as sociodemographic and cultural characteristics of the sample, may contribute to the variations in the percentages of the syndrome.

Regarding the average scores in the MMSE, we observed that the scores reached were above the cut-off line established for illiterates, indicating a good performance in the test, although most of the elderly had a low level of schooling. These results differ from a cross-sectional study conducted with 366 Italian elderly hospitalized patients,[5] which found lower MMSE means among participants.

It is important to take into account that different criteria for interpreting the results of the MMSE according to the schooling of individuals make it difficult to compare them with other investigations, especially those that contemplate elderly adults in outpatient care, because most of the researches approach scenarios such as hospitals and long stay institutions.

A significant statistical relationship between frailty syndrome and cognitive performance was found in the present study. Similar results were found in studies with community-dwelling elderly[17,26] and hospitalized elderly.[5] In a prospective cohort study with 1,751 community-dwelling elderly, mortality was 2.02 in the frail elderly, and 2.17in those with cognitive impairment. Moreover, in the case of elderly patients with both conditions, mortality increased significantly to 3.57.[8]

Thus, we suggest the realization of early screening of frailty syndrome and cognitive decline because such conditions interfere in the quality of life of the elderly and contribute to mortality.[6-8] We suggest that the planning of insertion of the elderly should be elaborated under a multidisciplinary perspective considering the different scenarios (homes, hospitals, Long Stay Institutions).

A limitation of the study that must be highlighted is the use o a convenience sample of elderly individuals who were able to go to the hospital. This may have contributed to the non-inclusion of frail individuals with cognitive deficit. We suggest that investigations be carried out with this age group may also including home visits to collect information, and also as to locate elderly people with lower functional performance and who are unable go to health services.

CONCLUSION

The study identified a significant association between frailty and cognitive scores in elderly patients in outpatient care, with a predominance of non-frail and apparently vulnerable elderly individuals with high cognitive scores.

The evaluation of frailty syndrome and cognitive scores in the elderly through instruments validated for the early identification of risk factors is considered important to enable nurses and health professionals to plan gerontological care for this age group.

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