







Cognitive profile and associations among very old adults in an outpatient setting in the Federal

Perfil cognitivo e associações entre idosos longevos em contexto ambulatorial no Distrito Federal

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ABSTRACT

The aim was to investigate associations between the cognitive decline of very old adults in outpatient settings and sociodemographic variables, functional performance, chronic diseases, number of hospitalizations and access to health services. Very old adults (80 years and over) residing in the Federal District were interviewed, evaluated in an outpatient setting by means of standardized questionnaires and the Mini-Mental State Examination (MMSE). In bivariate analyzes, cognitive decline was associated with the age group (85 years and over), having one or more limitations in basic activities of daily living (BADL), living in bi and tri-generational household arrangements and having a higher number of hospitalizations in the prior year. In the multiple logistic model, BADL and hospitalizations in the prior year remained associated with cognitive decline in very old adults. As it is a population with a greater demand for health care, it is necessary to outline measures of preventive and promotion of long-term care.

Descriptors: Aged, 80 and over; Cognition; Comprehensive Health Care; Activities of Daily Living.

RESUMO

Objetivou investigar associações entre o declínio cognitivo de idosos longevos em contexto ambulatorial e variáveis sociodemográficas, desempenho funcional, doenças crônicas, número de hospitalizações e acesso aos serviços de saúde. Foram entrevistados idosos longevos (80 anos e mais) residentes no Distrito Federal, avaliados em contexto ambulatorial por questionários padronizados e pelo Minixame do Estado Mental (MEEM). Nas análises bivariadas, o declínio cognitivo esteve associado à faixa etária (85 anos e mais), possuir uma ou mais limitações nas atividades básicas de vida diária (ABVD), residir em arranjos domiciliares bi e trigeracionais e ter maior número de hospitalizações no último ano. No modelo logístico múltiplo, permaneceram associados ao declínio cognitivo em longevos as ABVD e as hospitalizações no último ano. Por tratar-se de uma população com maior demanda assistencial de saúde, torna-se necessário delinear medidas de prevenção e a promoção de cuidados de longa duração.

Descritores: Idoso de 80 anos ou mais; Cognição; Assistência Integral à Saúde; Atividades Cotidianas.

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How to cite this article: Silva HS, Chariglione IPFS, Oliveira MLC, Gomes LO, Alves VP. Perfil cognitivo e associações entre idosos longevos em contexto ambulatorial no Distrito Federal. Rev. Eletr. Enferm. [Internet]. 2020 [cited on: _____];22:61878. Available at: <https://doi.org/10.5216/ree.v22.61878>.

Received on: 12/28/2019. Approved on: 10/01/2020. Available on: 12/21/2020.

INTRODUCTION

Population aging and the needs of very old adults are becoming an increasing concern for managers, professionals and academics⁽¹⁻³⁾. If, on the one hand, very old adults form an increasing number of successful survivors, on the other hand, there is also an increasing number of those who reach advanced old age in a state of illness and dependency⁽¹⁾. Investigating the aging profiles of this population reflects the importance of offering possibilities for attention and care, so that advanced old age is a guided and well-oriented process. Dementia syndromes and cognitive decline are the greatest challenging demands of this age group, as they require prolonged and specific care⁽²⁻³⁾.

It is estimated that 50 million people are suffering from dementia, a projection that will reach 75 million people in 2030 and 132 million in 2050, when focusing mainly on developing countries and the population of very old adults⁽³⁻⁴⁾. The costs associated with care orbit around 800 billion dollars a year and, in 2030, will represent about two trillion dollars⁽⁴⁾, indicating the need to invest in strategies for prevention, care and support of older adults and their family caregivers for the promotion of their wellbeing and quality of life.

In addition to dementia implying care overload⁽²⁾ and increased dependency for activities of daily living, studies suggest that patients with dementia use health services more often, including medical consultations and hospitalizations, compared to cognitively healthy older adults⁽⁵⁾. One of the reasons for the higher number of hospitalizations in this group may be the higher prevalence of associated chronic diseases, greater care complexity⁽⁶⁾ and the possible mismatch between demands and support received⁽⁷⁾.

In Brazil, it is becoming increasingly necessary to know the needs and living and health conditions of very old adults and, in particular, of old adults with cognitive limitations, because they demand a broader network of care and social support, and are associated with caregiver burden and more health expenses^(3,8).

Given the relevance and scarcity of studies on cognitive profiles in Brazilian very old adults⁽⁹⁾, the aim of this study was to investigate the associations between cognitive decline of very old adults in outpatient settings and sociodemographic and health variables such as functional performance, chronic diseases, number of hospitalizations and access to health services.

METHODS

This is a quantitative, cross-sectional, analytical study conducted from the project database "Changes in longevity related to elderly octogenarians in the Federal District in an interdisciplinary approach", linked to the Postgraduate

Program in Gerontology at the Catholic University of Brasilia (UCB). The project was conducted in Brasília/DF, in the Administrative Region of Águas Claras, where the University campus is located. The study was conducted in three locations, namely: UCB University Hospital, for self-reported clinical, cognitive and health assessment; the Laboratory of Physical Evaluation and Training - LAFIT, for functional and physical evaluation; and the Laboratory for clinical analysis. These centers serve the population of Brasília, which is divided into 31 administrative regions with a population of 2,570,160 million inhabitants, 7.69% of whom are older adults⁽¹⁰⁾. The Human Development Index (HDI) is 0.824, ranking first in the country according to the classification of the Brazilian Institute of Geography and Statistics⁽¹⁰⁾.

Sample

In the present study, the sample was obtained by convenience and recruited at the Geriatrics and Internal Medicine outpatient clinic of the UCB University Hospital between years 2016 and 2017, totaling a sample of 227 very old adults. The inclusion criteria were being over 80 years old, residing in the Federal District and surroundings, having availability to undergo different assessments (social, physical and laboratory). Bedridden older adults with severe hearing loss, uncontrolled psychiatric morbidities and advanced stage dementia syndrome were excluded, as these conditions could compromise the assessment and subsequent analysis.

Instruments

The instruments used in data collection were: sociodemographic questionnaire; and instruments for global cognitive assessment and performance in basic and instrumental activities of daily living. Sociodemographic information comprised age - quantified in years; schooling - quantified in years of formal schooling; sex - male or female; marital status - single, widowed, married, divorced; family income - quantified by the sum of the earnings of the whole family per month; and household living arrangement, including older adults who reported living alone, living with spouses and children; children, grandchildren and great-grandchildren, other relatives and family members.

Regarding variables related to functional performance, the following were used: absence or presence of difficulties in Basic Activities of Daily Living (BADL) related to self-care (using the bathroom, eating, getting around, transferring, showering, doing personal hygiene)⁽¹¹⁾; older adults with some limitation in BADL were classified as "with limitation" and those without any limitation as "independent". With regard to chronic diseases, the number of self-reported chronic diseases (0 to 1; 2 or +, such as

heart disease, hypertension, stroke, cancer, rheumatoid arthritis, lung diseases, depression and osteoporosis) was investigated.

The variables related to the use and access to health services were obtained through open questions: “In the previous year, did you need to be hospitalized or admitted to hospital?”, “Did you attend any medical consultation in the previous year? If so, how many?”, “What type of health service are you looking for?”, “Do you have any difficulties in accessing the health service?”. The answers to these questions were categorized and the following were obtained: if hospitalization occurred (yes or no), the number of medical consultations, the type of service (National Health Service [Brazilian SUS], Health Insurance or Private consultations) and the prevalence of difficulties in accessing services (yes or no).

The dependent variable of the present study was obtained through the Mini-Mental State Examination (MMSE), a cognitive screening test composed of 30 questions that assess time and space orientation, episodic memory, immediate repetition, praxis, visuospatial functions and language⁽¹²⁾. The cutoff points used in the present study to define very old adults with cognitive decline were: scores below 17 points for the illiterate, 22 points for older adults with schooling between one and four years; 24 points for schooling between five and eight years; and 26 points for older adults with nine years or more of schooling.

Procedures

The data collection of the research excerpt presented here took place in four steps (screening and recruitment, health assessment, physical evaluation and return). For each moment, a pair of evaluators previously trained within their areas of expertise was indicated. In the screening and recruitment stage, older adults and their companions were invited to participate in the study and guided on the objectives, procedures, guarantee of anonymity and voluntary character of participation, as described and detailed in the informed consent form. Participants who wished to participate in the study signed the informed consent form and were sent for individual interviews in which their sociodemographic data were recorded.

Subsequently, participants were referred to the medical consultation with the geriatrician for clinical and health assessment. At that time, general health information was collected, the inclusion and exclusion criteria were applied, the eligibility of subjects for participation was assessed, and at the end of the consultation, participants received a voucher for blood collection at the Sabin laboratory unit for clinical analysis measurements. The last step were the physical measurements, where older adults were referred to the physical evaluation laboratory at the university for

measurements of strength, gait, bone densitometry and other anthropometric data. After these steps, participants were invited to return for a medical consultation for evaluation, referrals and feedback regarding their health status. All responses were recorded electronically using the Google form and sent to the database spreadsheet used in the study.

Data analysis

Data were recorded electronically using the Google form, sent to the database spreadsheet used in the study and analyzed quantitatively, through comparisons of means between groups performed by non-parametric tests (Mann Whitney or Kruskal-wallis). The variables with p value below 0.10 in the bivariate associations were hierarchized to compose a multiple logistic regression model. The final model was built using the Forward Stepwise (Wald) method with adjustments for the sociodemographic, functional dependency, use and access to health services variables, which were composed of variables with p value below 0.05. The dependent variable (cognitive profile) was categorized as zero and one, with zero corresponding to older adults without cognitive decline and one to older adults with cognitive decline in the MMSE, according to indications⁽¹²⁾ recommended by the Scientific Department of Cognitive Neurology and Aging of the Brazilian Academy of Neurology for screening for cognitive decline suggestive of dementia. For all analyzes, a significance level of $p \leq 0.05$ was used.

Ethical aspects

The project was approved by the Research Ethics Committee of the UCB under opinion No. 1.290.368 and CAAE No. 50075215.2.0000.0029, according to requirements of Resolution No. 466/2012 of the National Health Council that offers norms and regulatory guidelines for research involving human beings.

RESULTS

Of the 208 older adults evaluated, 106 participants (51% of the sample) showed cognitive decline. As shown in Table 1, in bivariate analyzes, older adults with cognitive decline were those that lived the longest and in household arrangements together with children, grandchildren, great-grandchildren. There were no associations between cognitive profile and sex, schooling, income and marital status.

Regarding health variables, bivariate analyzes indicated that older adults with cognitive decline had more dependency on basic activities of daily living and a higher prevalence of hospitalizations in the prior year (Table 2).

However, there were no differences in the number of chronic diseases, difficulties in accessing health services, number of outpatient consultations with a medical professional and type of health service (Brazilian SUS, health insurance, or private consultation paid directly to the professional).

In the final multiple logistic regression model after using the Forward Stepwise (Wald) method, difficulties in

BADL and having had some hospitalization in the previous year remained associated with cognitive decline in very old adults. The other variables (age and residence in tri-generational households) lost their statistical significance (Table 3).

Table 1. Sociodemographic characterization of very old adults according to the cognitive profile. Brasília, DF, 2016-2017.

		Without decline N=102	With cognitive decline N=106	P value
Age	M (SD)	83.02 (+ 3.95)	84.74 (+4.55)	0.003
Sex	Female	62.7%	67.0%	0.523
Schooling (years)		4.55 (+5.07)	4.12 (+4.53)	0.718
Family income		4.031.91 (+4.354.91)	4.674.36 (+5072.56)	0.479
Household arrangement	Alone	31.4%	20.8%	0.082
	Spouse and child	18.6%	24.5%	0.303
	Spouse, grandchildren and or great-grandchild	1%	3.8%	0.190
	Son, grandchildren and or great-grandchildren	3.9%	14.2%	0.027
	Relatives and other family members	1%	3.8%	0.190
Marital status	Married	8.8%	7.5%	0.397
	Single	40.2%	34%	
	Separated	7.8%	11.3%	
	Widowed	43.1%	47.2%	

Source: Project "Changes in longevity related to elderly octogenarians in the Federal District in an interdisciplinary approach" – Catholic University of Brasilia.

Table 2. Characterization of functional performance, chronic diseases and use and access to health services of very old adults according to the cognitive profile. Brasília, DF, 2016-2017.

		Without decline N=102	With cognitive decline N=106	P valor
Chronic diseases	None	3.6%	4.1%	0.109
	One or two	54.2%	40.8%	
	Three or more	39.3%	55.1%	
BADL (% difficulties)		15.9%	43.7%	0.000
Hospitalization in the previous year (% yes)		13.7%	28.8%	0.008
Difficulty using health services (% yes)		53%	62.7%	0.162
Number of medical consultations in the prior year		4.03 (+3.51)	4.35 (+4.37)	0.933
Type of service	Brazilian SUS	63.7%	59.4%	0.427
	Insurance	25.5%	20.8%	
	Private	10.8%	17.9%	

Source: Project "Changes in longevity related to elderly octogenarians in the Federal District in an interdisciplinary approach" – Catholic University of Brasilia.

Table 3. Final model of multiple logistic regression. Brasília, DF, 2016-2017.

Sociodemographic characteristics, access to health and functional performance*	B (SE)	OR	CI (95%)	p-value
Hospitalization in the previous year (Yes)	0.78 (0.38)	2.18	1.03-4.61	0.041
Household living arrangement: son, grandson and or great-grandson (Yes)	1.04 (0.61)	2.83	0.85-9.38	0.087
BADL (1 or more difficulties)	0.44 (0.15)	1.55	1.14-2.10	0.004
Age	0.48 (0.38)	1.04	0.97-1.13	0.205
Constant (B0)	-4.51 (3.16)			0.011

Source: Project "Changes in longevity related to elderly octogenarians in the Federal District in an interdisciplinary approach" – Catholic University of Brasilia.

Legend: * Final model, Forward Stepwise (Wald): Chi-square of the model of 27.03, degrees of freedom: 4, p.0.000. R²=0.165; B - Beta; SE = Standard Error; CI - Confidence Interval; OR - Odds Ratio; BADL = Basic Activities of Daily Living, Katz Scale. Significance level: p-value<0.05.

The reference condition for "Hospitalization in the previous year" and "Household living arrangement: son, grandson and great-grandson" was the "Yes" category. Age was analyzed continuously and BADL in groups of difficulties (1 or more, comprising categories from one to six difficulties).

DISCUSSION

The cognitive decline in very old adults in the outpatient setting was associated with the variables of performance in BADL and having had some hospitalization in the previous year. Sociodemographic variables, such as household living arrangement (bi and tri generational) and age have lost statistical significance in the multiple logistic regression model. Together, these results indicate that discussions about care and care for very old adults with cognitive decline involve functional performance in basic activities of daily living and hospitalization, which are components described in the literature as predictors of greater care complexity⁽⁵⁻⁷⁾.

With regard to household living arrangements, the predisposing factors leading to the construction of household arrangements should be examined, as well as how they configure support and care devices. In the present study, these factors could not be analyzed. However, in a study that analyzed data on very old adults in Brasília⁽¹³⁾, bigenerational household living arrangements had more associations with social involvement variables, whereas living in tri-generational arrangements was more associated with being female, widowed, having more children and the tendency to lower scores in the MMSE.

Other researchers⁽¹⁴⁾, when investigating older adults in the SABE Study in the city of São Paulo, found that numerous household arrangements were not always characterized as support to the needs of older adults with cognitive decline. They observed that the biggest source of support for BADL was the arrangement formed by the older adult and spouse. In bi- and tri-generational environments, the prevalence of older adults who did not receive help was 45.7% and 84.6%, respectively.

With regard to the association between cognitive decline and age in bivariate analyzes, a higher prevalence of cognitive decline and dementia syndrome was observed in very old adults; 35% in older adults aged 80 and over and about 50% in older adults aged 90 years and over, showing that maintaining cognitive health is a significant challenge in advanced old age⁽³⁾. However, the prevalence of cognitive decline in this study was higher than in studies with very old adults from Campinas/SP (24.9%)⁽⁹⁾, of the community of Pietá⁽¹⁵⁾, with older adults aged 75 and over (22.4% cognitive decline and 31.6% dementia), and from Chile⁽¹⁶⁾ (17.2% in older adults aged 80 to 84 years and 29% in older adults aged 85 and over). One of the reasons for these differences may have been supported by the sample selection. The aforementioned studies, such as the study in Campinas/SP, although using the same cutoff points in the MMSE, were based on a home-based survey, whereas in the present study, the sample was obtained by convenience criteria in an outpatient setting in the Federal District. Despite these differences, age lost statistical significance when a multiple regression model was inserted, which suggests the performance of further studies to evaluate possible differences between populations and the impact of variables, such as income, education and lifestyle, and their relationship with age⁽⁹⁾.

Although the number of chronic diseases was similar among very old adults with and without cognitive decline, the prevalence of hospitalization in the previous year was higher among older adults with decline. Previous studies indicate that the hospitalization of older adults occurs simultaneously with functional and cognitive performance, influencing care complexity in the context of care^(3,17).

The relationship between the cognitive profile of older adults and hospitalization was examined in cross-sectional⁽⁶⁾ and longitudinal studies^(5,18) in order to document the factors associated with greater hospitalization in this group. Hospitalization is frequent in older adults with a decline and was associated with worse functional performance and greater care complexity⁽⁶⁾. In a longitudinal study, older adults health insurance beneficiaries were followed for ten years⁽¹⁸⁾ and a higher risk for hospitalization in older adults with dementia was observed, in addition to their longer length of hospital stay and higher healthcare-related expenses. In a North American study⁽⁵⁾ with 3,019 older adults followed between 1994 and 2007, the odds ratio for hospital admission in older adults with dementia (mild, moderate or advanced), after adjustments for age, sex and other variables was 1.41 (CI: 1.23 – 1.61). In this same study⁽⁵⁾, the major causes of hospitalization in this group were associated with preventable conditions in outpatient care (through proactive care) and included circulatory, genitourinary, infectious, neurological and respiratory causes. Thus, the need to investigate the clinical conditions and those associated with the care networks in this public in order to establish health and hospitalization preventive measures.

In the present study, the higher prevalence of hospitalization and worse functional performance in very old adults with cognitive decline highlight the need to implement health policies aimed at long-term care, focused on the qualification of professionals, development of educational interventions for the family and community, use of evaluation protocols, establishment of clinical guidelines for the care of older adults with dementia and functional performance⁽¹⁹⁾. As functional capacity is a guiding and fundamental measure of health care in old age, the focus on prevention, management and rehabilitation of functional dependency is in line with the World Health Organization (WHO) and Brazilian health policies⁽²⁰⁾.

Thus, rehabilitation services, home care, day centers, hierarchy of chronic health conditions and care management⁽²¹⁻²²⁾ can compose the arsenal of long-term care in the context of advanced old age, which would possibly lead to a lower possibility of older adults with cognitive decline becoming heavy users of hospital care services. These interventions are centered in the family, older adults, professionals and the community in order to provide instruments for qualified and humanized care⁽²³⁻²⁴⁾

According to the data presented, a large portion of older adults classified themselves as users of the Brazilian SUS and the challenge of care to advanced old age becomes even greater in this context. Coordinating the service network and the care demands has been the target of health care policies for older adults through the implementation of

lines of care, qualification of health teams, dialogue with the municipalities and use of the Older Adult Booklet. However, operational challenges have been reported⁽²⁵⁾. More investments are needed and more programs must be developed in order to integrate a network of social services and comprehensive care for older adults.

The data presented in this study contribute to understand the needs and life and health conditions of very old adults with cognitive limitations in order to discuss measures of health prevention and care promotion directed to this public. On the other hand, the limitations of the study were: convenience sample evaluated in an outpatient setting (with more health demands); in some cases, the family member (direct caregiver or informant) may have minimized the dependency situation of the older adult, which may have configured an important response bias regarding data on functional dependency and use and access to health services; and, finally, the research protocol did not foresee questions regarding the quality of the interaction between members of the household living arrangements.

CONCLUSIONS

In the proposed investigation, there was an association between cognitive decline, worse performance in BADL and higher prevalence of hospitalization in the previous year. Based on these results, it is necessary to examine how the health care network characterizes as an instrument of support and care for very old adults, and the possibilities of care and implementation of public policies to improve the health conditions of this clientele. To this end, we recommend the development of new studies in search to foster in the Brazilian culture a more comprehensive literature on very old adults in their different contexts, as well as more Gerontological analyzes on this population. In this sense, is sought the health care for older adult that respects their peculiarities while elderly and heterogeneities as unique subjects.

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