



Cognitive assessment of elderly people in outpatient care

Avaliação cognitiva de pessoas idosas em atendimento ambulatorial

Evaluación cognitiva de ancianos en atención ambulatoria

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Objective: to evaluate the cognitive state of elderly people under outpatient care; investigate the association between the cognitive state and the socio-demographic variables, health conditions, number of medications and adherence to the treatment. **Methods:** this is a cross-sectional, exploratory, and descriptive study, with a quantitative approach, conducted with 107 elderly people undergoing outpatient care in a university hospital in the south of Brazil. The following variables were used: gender, age, marital status, income, schooling, occupation, preexisting noncommunicable diseases, number and type of prescribed medications, adherence, mini mental state examination and cognitive status. Data were analyzed through inferential and descriptive statistics. **Results:** The prevalence of cognitive deficit was of 42.1% and had a statistically significant connection with schooling, income, marital status, hypertension and cardiopathy. **Conclusion:** nurses can intervene to avoid the increase of cognitive deficit through an assessment of the elderly people, directed to facilitative strategies to soften this deficit.

Descriptors: Aged; Evaluation; Cognition; Drug Utilization; Nursing.

Objetivo: identificar o estado cognitivo de pessoas idosas em atendimento ambulatorial; investigar a associação entre o estado cognitivo e as variáveis sociodemográficas, condições de saúde, número de medicamentos e adesão aos medicamentos.

Método: estudo transversal, exploratório, descritivo, com abordagem quantitativa, realizado com 107 pessoas idosas em atendimento ambulatorial em um hospital universitário do sul do Brasil. Foram utilizadas as variáveis: gênero, idade, condição civil, renda, escolaridade, ocupação, doenças crônicas não transmissíveis preexistentes, número e tipo de medicamentos prescritos, adesão, escore mini mental e status cognitivo. Os dados foram analisados por meio da estatística descritiva e inferencial. **Resultados:** a prevalência de déficit cognitivo foi de 42,1% e teve associação estatisticamente significativa com escolaridade, renda, condição civil, hipertensão e cardiopatia. **Conclusão:** o Enfermeiro pode intervir para evitar o aumento do déficit cognitivo com uma avaliação da pessoa idosa, direcionada às estratégias facilitadoras para o amenizar.

Descritores: Idoso; Avaliação; Cognição; Uso de Medicamentos; Enfermagem.

Objetivo: identificar el estado cognitivo de ancianos en atención ambulatoria; investigar la asociación entre el estado cognitivo y las variables sociodemográficas, condiciones de salud, número y adhesión a medicamentos. **Método:** estudio transversal, exploratorio, descriptivo, cuantitativo, realizado con 107 ancianos en atención ambulatoria en un hospital universitario del sur del Brasil, en noviembre del 2013. Fueron utilizadas las variables género, edad, estado civil, renta, escolaridad, ocupación, enfermedades crónicas no transmisible preexistentes, número y tipo de medicamentos prescritos, adhesión, escore mini mental y status cognitivo. Los datos fueron analizados mediante la estadística descriptiva e inferencial.

Resultados: prevalencia de déficit cognitivo fue de 42,1% y asociación estadística significativa con escolaridad, renta, estado civil, hipertensión y cardiopatia. **Conclusión:** el enfermero puede intervenir para evitar el aumento del déficit cognitivo con evaluación del anciano, direcionada a las estrategias que faciliten para disminuir esto déficit.

Descriptores: Anciano; Evaluación; Cognición; Utilización de Medicamentos; Enfermería.

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Introduction

Population's aging is a global phenomenon. In Brazil, the average life expectancy is increasing annually due to a more effective control of environmental risks and improvement in medical interventions, which has resulted in the growth of the elderly population. Another factor contributing to the increase in the percentage of older people is a decrease in the birth and mortality rates in recent decades⁽¹⁾.

With aging there is a tendency to occur a decrease in the physical and cognitive ability of people and these changes can be driven by genetic and cultural factors, as well as by lifestyle⁽²⁾ and the presence of other diseases. Cognition aims to explain and structure the mental functioning of human beings.

The progressive decline in cognition of an individual is a characteristic of dementia syndromes⁽³⁾. These syndromes interfere with the functionality of the elderly, as well as their emotional state⁽⁴⁾. The indices for the estimation of dementia in the elderly population grow annually. Between 65 and 69 years of age the increase is approximately 0.6% and from 85 years old on, the increase in dementia could reach 8.4%. Thus, one can see that age is a highly relevant factor in relation to cognitive decline and to dementia⁽⁵⁾.

In Brazil, it is estimated that from 5 to 30% of elderly people have dementia. The impairment of mild cognition occurs on average three years before the disease becomes apparent. In mild stage of dementia, episodes of physical and mental dysfunction occur more frequently. However, the symptoms go unnoticed because dementia is hardly diagnosed in the primary phase. Therefore, it is necessary to distinguish first presentations of the disease from the changes that occur in old age⁽⁵⁾.

Anatomical and physiological changes in sleep patterns, in the vestibular system and hearing loss

due to aging can reduce the cognitive capacity of the elderly⁽⁶⁻⁸⁾. In addition, health problems like benign tumors, cancers, infectious diseases, cardiovascular problems and neurological disorders such as Parkinson's disease, multiple sclerosis, Alzheimer's disease and the use of medications can also change the cognitive level⁽⁹⁾.

Cognitive decline is one of the possible conditions of aging and it is relevant for society studies that identify older people with cognitive impairment that may progress to dementia. Thus, it makes sense to proceed to the identification of cognitive impairment in older people as early as possible, in order to provide and implement interventions that prevent them to go into a future state of dementia⁽¹⁰⁾.

So, one presents as research questions of this study: What is the cognitive status of older people in outpatient care? Is there an association among cognitive status, sociodemographic variables, health status, number of medications and adherence to drug therapy? In an attempt to respond to the questions one aimed: to identify the cognitive status of older people in outpatient care; to investigate the association between cognitive status and sociodemographic variables, health status, medication therapy and adherence to the treatment regimen.

Method

Cross-sectional, exploratory and descriptive study with a quantitative nature, held at an outpatient service of a university hospital located in Rio Grande do Sul, Brazil. Data collection was conducted in November 2013, with 107 people aged 60 and over, being attended at the hospital mentioned. The sample was selected by convenience and the inclusion criteria were: being in outpatient care in the hospital and making use of at least one medication for at least 15 days before the day of the interview.

Exclusion criteria were being treated with

chemotherapy or radiotherapy, due to the specific characteristics of these treatments, which can interfere with medication adherence; having undergone surgery in the last 15 days prior to data collection due to a possible motivation of older people to the regular use of prescription drugs for the recovery of the surgical procedure; presenting slurred speech with significant memory loss that prevented the answer to the questions of the research instruments.

To collect the data for the study one used three instruments. The first was produced by the authors, with six parts that aimed to characterize the elderly people as to demographic, socioeconomic and behavioral factors, health conditions and drug therapy. The second was the mini mental state examination to assess the elderly person's cognition according to their schooling.

One applied the version of the mini mental state examination validated in Brazil. The cutoff point used to indicate cognitive impairment was 18 points for illiterate people and 23 points for those with more than one year of education⁽¹¹⁾. The third instrument used was the measure of treatment adherence, constructed and validated in Portugal, in order to verify the compliance of the elderly to the therapeutic regimen. It consists of seven items, whose answers are in the form of Likert scale and the scores range from: always = 1, increasing until never = 6⁽¹²⁾. Authorization was granted for the use of the instrument by its authors.

The answers from each of the items of the measure of treatment adherence are summed up and after that this value is divided by the total number of items. The value obtained is converted in a dichotomous scale, built to indicate the subjects with adherence or not to the medication treatment. One considers as non-adherence to the treatment values of the measure of treatment adherence obtained from 1 to 4 and as adhesion values between 5 and 6⁽¹²⁾.

The following variables were used: gender, age, marital status, income, education, occupation, preexisting chronic non-communicable diseases, number and type of medication prescribed, adhesion, mini mental score and cognitive status (presence or absence of deficit).

The data were organized in a spreadsheet from Microsoft® Excel 2007 containing a dictionary (codebook) and two spreadsheets used for validation by double entry (typing). Data analysis was performed with the aid of the software statistical package for social sciences, version 20.0. One conducted: a descriptive statistical analysis, describing the absolute frequency and relative frequency for categorical variables and use of measures of central tendency (average) and dispersion measures (standard deviation) for numeric variables; an inferential statistical analysis through statistical tests to verify the association between the variables. One calculated the prevalence ratio (PR) for each of the variables with their respective confidence intervals (CI).

The association among the dependent variable (cognition) and other dichotomous variables (gender, income, education, marital status, age, occupation, preexisting chronic non-communicable diseases, polypharmacy, adhesion) used the chi-squared test; for variables with expected frequencies higher than 5, and Fisher's test, for the ones that had expected frequencies lower than 5. As the recruitment process of the study bases did not involve probability sampling, the p values were interpreted considering the hypothesis that the sample consisted of a simple random sample from a population with similar characteristics. The data are presented in tables.

This study was approved by the ethics committee in local research, under N^o 164/2013 and the general certificate of ethics appreciation n^o 22733513.70000.5324. The ethical principles were observed according to Resolution 466/2012.

Results

Regarding the mini mental state examination 62 (57.9%) elderly people had normal results in the evaluation, and 45 (42.1%), suggestive of cognitive impairment. The variables education, income and marital status were significantly associated with cognitive status. According to the PR the prevalence of cognitive impairment was 2.24 times higher in those with 0-4 years of schooling, 93% higher in those with income below the poverty level and 45% lower in those who lived with a partner, as shown in Table 1.

The most prevalent disease was systemic hypertension, present in 85 (79.4%) of the elderly, followed by diabetes mellitus (DM) in 61 (57.0%). The variables hypertension and heart disease were significantly associated with the cognitive status. According to the PR the prevalence of cognitive impairment is 63% lower in those who do not have systemic hypertension and 48% lower in those who do not have heart diseases, according to Table 2, as follows.

Table 1 - Demographic and socioeconomic variables in relation to cognitive state

Variables	Cognitive status		p-value	PR	CI
	Normal n (%)	Deficit n (%)			
Gender					
Female	41 (55.4)	33 (44.6)	0.426*	1	
Male	21 (63.6)	12 (36.4)		1.22	0.73-2.05
Age group (years)					
60-69	45 (63.4)	26 (36.6)	0.110*	1	
≥ 70	17 (47.2)	19 (52.8)		0.69	0.44-1.07
Occupation					
Do not perform any paid activities	50 (46.7)	41 (38.3)	0.134*	1	
Perform paid activity	12 (75.0)	4 (25.0)		1.80	0.74-4.33
Education (years)					
0-4	24 (42.9)	32 (57.1)	0.001*	1	
≥ 5	38 (74.5)	13 (25.5)		2.24	1.33-3.77
Income (minimum wage)					
Up to 1	10 (34.5)	19 (65.5)	0.004*	1	
> 1	47 (66.2)	24 (33.8)		1.93	1.27-2.94
Civil status					
With companion	43 (68.3)	20 (31.7)	0.010*	1	
No companion	19 (43.2)	25 (56.8)		0.55	0.35-0.87

*Chi-Squared; **Fisher's exact test

Table 2 - Health conditions in relation to cognitive state

Diseases	Cognitive status		p-value	PR	CI
	Normal n (%)	Deficit n (%)			
Hypertension					
Yes	44 (51.8)	41 (48.2)	0.011*	0.37	0.15-0.94
No	18 (81.8)	4 (18.2)		1	
Diabetes					
Yes	35 (57.4)	26 (42.6)	0.891*	0.96	0.61-1.52
No	27 (58.7)	19 (41.3)		1	
Chronic obstructive pulmonary disease					
Yes	7 (53.8)	6 (46.2)	0.749*	0.89	0.47-1.69
No	55 (58.5)	39 (41.5)		1	
Heart disease					
Yes	20 (42.6)	27 (57.4)	0.004*	0.52	0.33-0.82
No	42 (70.0)	18 (30.0)		1	
Osteoarthritis					
Yes	20 (54.1)	17 (45.9)	0.553*	0.87	0.55-1.36
No	42 (60.0)	28 (40.0)		1	
Rheumatism					
Yes	12 (54.5)	10 (45.5)	0.717*	0.90	0.53-1.52
No	50 (58.8)	35 (41.2)		1	
Dyslipidemia					
Yes	16 (53.3)	14 (46.7)	0.546*	0.86	0.53-1.38
No	46 (59.7)	31 (40.3)		1	
Thyroid problems					
Yes	9 (64.3)	5 (35.7)	0.606*	1.20	0.57-2.52
No	53 (57.0)	40 (43.0)		1	
Depression					
Yes	8 (72.7)	3 (27.3)	0.294*	1.60	0.59-4.32
No	54 (56.2)	42 (43.8)		1	
Chronic respiratory failure					
Yes	1 (50.0)	1 (50.0)	1.000 **	0.83	0.20-3.41
No	61 (58.1)	44 (41.9)		1	

*Chi-Squared; **Fisher's exact test

Regarding the number of medications used, the average was 4.8 ± 2.6 units (CI = 4.2-5.3). Out of the medications used by the elderly, 193 (37.6%) were for the digestive system and for the metabolism, and 189 (36.8%) for the cardiovascular system, which are the most consumed, according to the results in table 3.

Table 3 - Classes of drugs, by anatomical grouping, used by the elderly in outpatient care

Classification	Nº of medications (%)
Digestive system and metabolism	193 (37.6)
Cardiovascular System	189 (36.8)
Hematopoietic system	41 (8.0)
Central nervous system	37 (7.2)
Systemic use	20 (3.9)
Respiratory system	11 (2.1)
Skeletal system	7 (1.4)
Phytotherapy	1 (0.2)
Others	14 (2.8)
Total	513 (100.0)

The variables polypharmacy and adherence showed no statistically significant association with cognitive status. According to the PR the prevalence of cognitive impairment is 31% lower in those who use 0-4 medications and 19% lower in those who adhere to the medication, according to table 4.

Table 4 - Variables related to the use of medications in relation to cognitive state

Diseases	Cognitive status		p-value	PR	CI
	Normal n(%)	Deficit n(%)			
Polypharmacy					
0-4	36 (65.5)	19 (34.5)	0.106*	1	
5 or more	26 (50.0)	26 (50.0)		0.69	0.43-1.08
Adhesion					
Yes	55 (59.1)	38 (40.9)	0.518*	1	
No	7 (50,0)	7 (50,0)		0.81	0.45-1.45

* Chi-squared

Discussion

The cognitive impairment prevalence was of 42.1%, slightly above the result of a study conducted with some Brazilian communities, which showed 25.4% of older people with deficit, according to the mini mental state examination⁽¹³⁾. In a study conducted in Bagé/Rio Grande do Sul/Brazil with elderly people attended in the primary care coverage area, the prevalence of cognitive impairment was of 34.1%⁽¹⁴⁾.

After the identification of the cognitive impairment, nurses can work with the elderly people with interventions about cognition. The interventions suggested involving families and caregivers in the activities, discussing with them their signs/symptoms and how they influence the family routine, informing them about lifestyles and management of therapeutic regimen, addressing the memory deficits and influences on older people's daily activities, presenting compensation strategies for memory deficits and encouraging the sharing of feelings between the elderly and their family members⁽¹⁵⁾.

Among the elderly people interviewed most were women, confirming results obtained in a study conducted in five cities in Brazil (Belém, Parnaíba, Campina Grande, Campinas and Ivoti) which found that 67.7% of the participants were women, showing its prevalence in relation men. Women tend to have a more regular presence in health research involving health, because of their greater exposure to health treatments throughout their lives⁽¹³⁾.

There was no association between gender and cognitive status, but the prevalence of deficit was 22% higher in women. Similar results were obtained in a study conducted in the city of Bagé/RS/Brazil in which the prevalence of cognitive impairment was 21% higher in females⁽¹⁴⁾. A possible explanation for this finding would be the longer life expectancy of women compared to men. For the male population life

expectancy in 2012 was 71 years and for women was 78.3 years⁽¹⁶⁾.

It was found that older people who lived with a partner had 45% lower prevalence of cognitive impairment. A similar data of a study conducted in Montes Claros, Minas Gerais (MG) which showed that elderly people who had no partners were more dependent on basic and instrumental activities of daily living⁽¹⁷⁾. The fact of living with a partner is to be valued because it allows the partner's involvement in health care⁽¹⁸⁾.

The predominant age group was between 60-69 years. They showed prevalence of cognitive impairment 31% lower than in the age group of 70 years or more. The increase in age shows increased cognitive impairment in the elderly. A study showed that the presence of cognitive deficit is twice as high in those aged 80 than those aged 60⁽¹⁴⁾.

Older people who worked outside their homes showed prevalence of deficit 80% higher than those who were still working. It is important that older people are encouraged to do activities to remain active, even if they are not paid, such as: gardening, taking caring of pets, garden cultivation and domestic activities, reading and social participation⁽¹⁹⁾.

There was a statistically significant association between low education (0-4 years of study) and presence of cognitive impairment ($p=0.001$). Older people with up to four years of study had a prevalence 2.24 times higher of deficit than those with five or more years of study. In Viçosa/MG/Brazil one found out that the lower the educational level of the elderly people the higher the risk of having cognitive impairment⁽⁴⁾. Nurses should assess the ability to understand and interpret written and spoken information about health of older people with low education and then intervene to minimize possible cognitive deficits.

There was a statistically significant association between income and the presence of cognitive impairment ($p=0.004$), as the old people who had

incomes of up to a salary had a prevalence of cognitive impairment 93% higher than those who received more than one minimum wage. The score of the mini mental state examination is related to the income; because the higher the monthly income of the elderly, the higher the score of their mini mental state examination⁽¹³⁾.

Low purchasing power of the elderly may reflect negatively on their quality of life and health status because they need money to buy medicines and to meet their basic needs⁽²⁰⁾. Thus, the health/nursing team when realizing this kind of situation can forward the elderly to social services that can offer them support beyond that which must be provided by the health services.

Among the chronic noncommunicable diseases self-reported by the elderly in an outpatient setting, the most prevalent were: systemic hypertension (79.4%) and diabetes mellitus (57.0%). Studies show that cases of systemic hypertension tend to increase with people's increased age⁽²¹⁾. A way to reduce the long-term risk of cardiovascular diseases and systemic hypertension is the provision of social support, be it from the family, friends and even from the nursing staff, it keeps a high quality of life for the elderly.

Aged people with hypertension and heart diseases had a higher prevalence of deficit than those who do not have. There was a statistically significant association between these conditions and the presence of cognitive impairment ($p=0.011$ and $p=0.004$). It has been found in another study an association between cardiovascular problems and cognitive impairment⁽¹⁴⁾.

Several hypotheses have been proposed to explain the mechanisms underlying the cognitive decline associated with cardiovascular risk factors, but the physiopathologic question of these cognitive changes is not fully clarified yet. In people with heart diseases, the cognitive impairment occurs mainly in the aspects of memory (learning and fixation) and information processing⁽²²⁾. Thus, strategies aimed at compensating for memory deficits as the use of

mnemonic lists, appointment books, alarms and diaries can help minimize the cognitive deficits⁽¹⁵⁾.

Regarding the medications most used by the elderly in an outpatient setting, there was a higher prevalence of drugs for the digestive system (37.6%), followed by the cardiovascular system (36.8%). A study of older people attended in a basic health unit, showed that the most commonly used drugs were for the cardiovascular system (38.2%) and for the digestive system (24.6%)⁽²³⁾.

Among the elderly people interviewed, those using between zero and four medications and who adhered to the medication showed less cognitive impairment. There was no statistically significant association between the presence of cognitive impairment, the polypharmacy and non-adherence to medication, although studies indicate that association⁽²⁴⁻²⁵⁾. Cognitive changes may affect the understanding and commitment of older people with pharmacotherapy, especially when using polypharmacy, which can favor the non-compliance with drug prescriptions⁽²⁵⁾.

Conclusion

The prevalence of cognitive deficit in the elderly of this study was 42.1%. The cognitive deficit was significantly associated with schooling (2.24 times higher in those with 0-4 years of schooling), with income (93% higher in those with income below the poverty level) and civil status (45% lower in those who lived with a partner). This shows that the level of education is a protection factor from the emergence of cognitive decline in old age.

Regarding hypertension and heart diseases, the association with cognitive impairment was also statistically significant, respectively 63% lower in those without hypertension and 43% lower in those without heart diseases.

As a study limitation there is the fact that the sample was convenient and made it difficult the generalization of the findings. From what was identified in this study, it was observed that nurses can intervene to prevent the rise of cognitive impairment and that these interventions should take place along with the elderly's family and caregivers.

The main strategy revolves around the evaluation of the everyday life of the elderly people in order to plan enabling ways to alleviate their cognitive deficit. Thus, one observes the importance that nurses have on health promotion and prevention to minimize risks and slow the advance of dementia in older people.

Collaborations

Zortea B contributed to the conception of the study, data collection, analysis, interpretation of data and writing of the article. Gautério-Abreu DP contributed to the project planning, study design, data collection, analysis, interpretation of data and writing of the article. Santos SSC, Silva BT, Ilha S and Cruz VD participated in the construction of the project, review, writing and critical analysis of the article.

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