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Prevalence of indicative symptoms of cognitive alterations in hospitalized elderly and associated factors

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***Abstract*—** *Aging causes both physical, psychological and social changes that, when added to situations which do not favor healthy aging, can lead to complications such as cognitive impairment. The objective was to evaluate the prevalence of symptoms indicative of cognitive alterations in hospitalized elderly and associated demographic factors. This is a cross-sectional, quantitative study carried out with 673 elderly people hospitalized in the 2020-2021 period. A demographic questionnaire and questions that investigated the cognitive condition were applied. Absolute and relative frequency and chi-square test were performed, considering the variable "Set of symptoms indicative of cognitive alteration" as dependent. It was found that 50.2% of the elderly have forgetfulness observed by family and friends; 29.7% reported that this forgetfulness has worsened in recent months and 30.0% have difficulty maintaining attention and a connected conversation. In relation to the elderly who presented a set of symptoms indicative of cognitive alteration, a prevalence of 17.5% was found. It was found that elderly people aged among 70 and 79 years and 80 years or more had a risk ratio of 1.11 and 1.31, respectively, of having symptoms indicative of cognitive impairment compared to elderly people aged among 60 and 69 years. ($p<0.001$) and widowers had a risk ratio of 1.19 for having symptoms indicative of cognitive impairment, to the detriment of married or in a stable relationship ($p<0.001$). It is concluded that the prevalence of a set of symptoms indicative of cognitive impairment in hospitalized elderly was high and associated to the oldest and widowed.*

I. INTRODUCTION

Cognition is defined by the mental capacity to understand and be able to solve everyday problems. That is, involving skills of feeling, thinking, perceiving, also involving the areas of reasoning, memory, thought formation and its ability to respond to stimuli (Paixão et al., 2019).

Cognitive functions comprise memory, executive function, language, apraxia, gnosia/perception, visuospatial function. These are fundamental in maintaining autonomy (Moraes, Moraes, 2016). Memory comprises the ability to store information, executive

function (ability to plan, anticipate, sequence and monitor complex tasks), language (ability to understand and express oral and written language), praxis (ability to perform a motor act) , gnosia (ability to recognize visual, auditory and tactile stimuli) and visuospatial function (ability to locate in space and perceive the relationships of objects among themselves) (Moraes, Marino, Santos, 2010).

When talking about the biological aging process, it is clear that there are changes throughout the body, affecting its functioning, especially in the Central System in which they undergo changes over the years, also in the neurotransmitter system and hypotrophy. changes that act especially on cognitive functions, so it is common to find in the elderly, leading to impairments in different degrees in these areas (Andrade et al., 2017).

Mild Cognitive Impairment (MCI) is considered a pre-dementia stage, when there is a cognitive reduction, but still with the preservation of daily life activities (Godinho et al., 2012). Among the indicative symptoms within this context are forgetfulness and its gradual worsening, disconnected conversations. Furthermore, the patient demonstrates difficulties in performing tasks that were previously common for him, such as shopping, paying his bills, preparing meals (Frota et al., 2011) and managing his finances, despite the parameters showing that preservation occurs. functional (Pereira et al., 2010).

Thus, it is of fundamental importance that health professionals know the correct way to assess patients who show signs of reduced cognitive ability. In particular, the nurse, who should carry out the evaluation of the elderly patient during hospital admission about the main risk conditions that need to be included in the therapeutic plan, favoring safe, effective, fair and centered care on the demands of each patient, understanding about the aging process and mechanisms to improve quality of life.

In view of the above, the present study aims to evaluate the prevalence of symptoms indicative of cognitive alterations in hospitalized elderly and associated demographic factors.

II. METHODS

This is a cross-sectional, quantitative study with a sample of elderly people admitted to a teaching hospital in a medium-sized city in the state of Paraná, between 2020 and 2021. During the period evaluated, the institution was a reference for the treatment of COVID-19 and provided medium and high complexity medical-hospital care for other medical specialties, such as orthopedics, neurology, general surgery and internal medicine.

Sampling was by convenience, using the following inclusion criteria for the elderly: a) being 60 years of age or older (both sexes); b) be hospitalized in the clinic sector of the referred hospital, regardless of origin (home, ICU or hospital transfer); c) or be a family member or companion of the hospitalized patient who has fully followed the hospitalization process (when the individual himself was not able to answer the questionnaires); d) having attended the gerontological care of the hospital institution during the data collection period. The following were excluded: a) patients who did not have responsive conditions to answer the questionnaires, and who did not have companions or refused to participate; b) individuals who had incomplete information in the electronic medical record of gerontological care that meet the scope of the study (n=39). During the study period, 714 elderly people were evaluated, of which 673 met the eligibility criteria of the present study, making up the final sample.

Data collection was performed at the bedside within the first 48 hours of patient admission to the clinic sector, using the Google Online Form, filled in by the researcher. Those responsible for collecting data were residents in the health of the elderly, nurses, physiotherapists, pharmacists, dental surgeons and social workers, members of the gerontological care team. The data are part of the evaluations carried out during the gerontological consultation carried out by the team with a view to planning care during hospitalization and after hospital discharge. It is worth emphasizing that, in order to gather information, the entire team was duly trained and all ethical aspects related to research with human beings were preserved.

For the present study, the following instruments were considered: demographic questionnaire covering the variables: sex, age group, education and marital status; and the Clinical Functional Vulnerability Index – IVCF-20, a validated questionnaire that assesses the functional condition of the elderly (Moraes, Moraes, 2016). Two questions from the IVCF-20 that investigated the cognitive condition were used, namely: “Has any family member or friend said that you are getting forgotten?” And "this forgetfulness is getting worse in recent months." The questions had a yes and no answer pattern. Still, one more question was elaborated by the gerontological care team based on clinical practice: “In the last few days, do you have difficulty maintaining attention and a connected conversation?” also with a yes and no answer pattern.

The data were tabulated in an Excel® spreadsheet, treated and categorized, as recommended in the literature, and this step was carried out by double checking. The variable “set of symptoms indicative of cognitive impairment” was created considering the positive responses to the 3 reported symptoms of cognitive impairment, being stratified into yes, when they had all 3

symptoms and no when they had none, one or two symptoms.

Subsequently, the data underwent descriptive analysis, using absolute and relative frequency; and analytical analysis by the chi-square test, risk ratio (RR) and confidence interval at the 95% level (95%CI) (Taylor series) by the OpenEpi program, Version 3, open source calculator. The "set of symptoms indicative of cognitive impairment" was considered as a dependent variable and demographic characteristics as independent.

The present study is the result of research approved by the Ethics Committee in Research with Human Beings of UEPG, entitled "Epidemiological studies with the elderly in different scenarios and levels of health care", under CAAE opinion nº 21585019.3.0000.0105.

III. RESULTS

A total of 673 hospitalized elderly participated in the study, of which 50.2% described that they had forgetfulness observed by family members and friends, 29.7% reported that this forgetfulness had worsened in recent months and 30.0% had difficulty maintaining attention and a connected conversation in recent days. In relation to the elderly who presented a set of symptoms indicative of cognitive alteration, a prevalence of 17.5% was found (Table 01).

Table 01. Symptoms suggestive of cognitive impairment in elderly patients admitted to a teaching hospital in Paraná. Paraná, Brazil, 2020-2021. (N=673)

Indicative symptoms of cognitive alterations	**No n(%)**	**Yes n(%)**
Forgetfulness reported by family or friends	335(49,8)	338(50,2)
Worse into oblivion in recent months	473(70,3)	200(29,7)
Difficulty on maintaining attention and connected conversation in recent days	471(70,0)	202(30,0)
Set of indicative symptoms of cognitive change	555(82,5)	118(17,5)

Most of the elderly were male, aged among 60 and 69 years, with low education and married or in a stable relationship. It was found that elderly people aged among 70 and 79 years and 80 years or older, respectively, had a risk ratio of 1.11 and 1.31 for having symptoms indicative of cognitive impairment compared to elderly people aged among 60 and 69 years. (p<0.001). Also, widowers had a risk ratio of 1.19 for having symptoms indicative of cognitive alterations to the detriment of married or in a stable relationship (p<0.001). Gender and education were not associated to symptoms indicative of cognitive impairment (Table 02).

Table 02. Demographic characteristics of elderly people admitted to a teaching hospital, according to a set of symptoms indicative of cognitive impairment. Paraná, Brazil, 2020-2021. (N=673)

	Set of indicative symptoms of cognitive change				
	No n(%)	**Yes n(%)**	**Total n(%)**	**Risk (95%CI)**	**P value**
Gender					0,728
Female	263 (47,4)	58 (49,2)	321 (47,7)	1,00	
Male	292 (52,6)	60 (50,8)	352 (52,3)	0,98 (0,92-1,06)	
Age					**<0,001**
60 to 69	296 (53,3)	36 (30,5)	332 (49,3)	1,00	
70 to 79	175 (31,5)	43 (36,4)	218 (32,4)	**1,11 (1,03- 1,12)**	**0,004**
80 or more	84 (15,1)	39 (33,1)	123 (18,3)	**1,31 (1,15-1,48)**	**<0,001**
Education					0,135

≥9 years	36 (6,5)	9 (7,6)	45 (6,7)		
5 - 8 years	88 (15,9)	16 (13,6)	104 (15,5)	0,94 (0,80-1,12)	0,495
1- 4 years	100 (18,0)	9 (7,6)	109 (16,2)	0,87 (0,746-1,02)	0,052
Analfabet	67 (12,1)	15 (12,7)	82 (12,2)	0,98 (0,82-1,17)	0,810
Not informed	264 (47,6)	69 (58,5)	333 (49,5)		
Marital status					**<0,001**
Married	284 (51,2)	41 (34,7)	325 (48,3)	1,00	
Widower	165 (29,7)	59 (50,0)	224 (33,3)	**1,19 (1,09-1,30)**	**<0,001**
Others	106 (19,1)	18 (15,3)	124 (18,4)	1,02 (0,94-1,11)	0,590

IV. DISCUSSION

The present study that discusses the factors indicative of cognitive impairment in hospitalized elderly and associated demographic factors found a high prevalence of symptoms such as forgetfulness reported by family members, worsening in this forgetfulness and difficulty in maintaining attention and a connected conversation. These three factors together were present in more than 1/6 of the investigated population. Being more evident in long-lived and widowed elderly.

The literature points out that one of the main causes of morbidity and mortality in the elderly is cognitive impairment, especially dementia (Machado et al., 2011). When it comes to hospitalized elderly, the focus on cognitive functions must be intensified. Since hospitalized elderly people have greater cognitive impairment to the detriment of those who are not hospitalized (Nazario et al, 2018).

Authors claim that hospitalization is an important marker for cognitive decline or dementia, and can generate or potentiate cognitive decline, mainly because they are more exposed to complications such as immobility, polypharmacy, infections, multiple comorbidities and deprivation of sensory stimuli (Dos Santos, Poltronieri , Hamdan, 2018), sleep deprivation and pain (Santos et al, 2022).

The study by Pereira et al. (2020), carried out in hospitalized elderly with the application of the Mini Mental State Examination (MMSE) found results similar to the present study, in which 65.9% of the hospitalized elderly evaluated have cognitive deficit, being even greater in elderly people aged 70 years or older. most. Study carried out by Santos et al. (2022), who also used the MMSE in hospitalized elderly people, found a prevalence of 51.5%. However, a study indicates that the deficit may be transient (Chen et al., 2010). When leaving the hospital, the elderly can recover their cognitive condition, as indicated by a study in Taiwan, which showed that 31% of the elderly with in-hospital cognitive impairment recovered after discharge (Chen et al., 2010).

Increasing age is related to cognitive impairment in several studies, considering it as a risk factor for moderate and severe cognitive impairment (Melguizo et al., 2017; Andrade et al., 2017; Gondim et al, 2017; Kagawa, 2017; Corrente, 2015; Santos et al, 2022), corroborating the findings of the present study.

The relationship between age and cognitive impairment can be explained by the biological, psychological and social changes that the elderly suffer, which can lead to impairments in the mechanisms of learning, memory and cognition, especially in tasks that require speed, attention, concentration and inductive reasoning, which may appear as a result of degenerations in brain functions and capacities, so that plasticity, encoding, storage and retrieval of information become less efficient or are interrupted due to reduced attention and short-term memory (Horacio, Avelar, Danielewicz , 2021). Another important factor is menopause, which involves hormonal changes that can affect brain functioning and cognition,

due to the change in circulating estrogen levels in the body (Dumas, 2017).

Also, in the present study, widowed elderly people showed greater cognitive impairment to the detriment of married elderly people, corroborating the findings of Glidden et al, 2019. This can be justified by the fact that when the elderly person has a spouse with them, support is built for the adversities caused due to cognitive incapacity and also encourages them to seek the care they need to maintain their health (Nunes et al, 2016). This shows the importance of the family as a center of social support for people who are in old age.

According to the research by Glidden et al, 2019, the elderly who lived with family members and their spouses are more satisfied with social support, thus having optimistic attitudes, in relation to facing adverse situations in a healthier way, thus cooperating for better rates of resilience, promoting better quality of life and mental health for the elderly, as well as cognitive stimulation.

Still, a study pointed out that widowed elderly people had a higher prevalence of disability in basic activities, with regard to the negative impact of the loss of a partner on the daily life of the elderly, pointing to the decrease in affective bonds and the support network, and the resulting damage to the individual's health, with negative consequences for their functional capacity (Nunes et al, 2017) and, consequently, cognitive.

In view of the above, it is important for nurses to know how to identify possible cognitive changes in patients, in order to be able to present health indicators and develop personalized care plans for the elderly for the prevention and/or treatment of cognitive impairment.

A limitation of the study is the use of questions that were from a validated instrument, in addition to the question developed by the researchers themselves, which makes comparisons with other studies in the literature difficult. Furthermore, these are screening issues, which are only indicative that require further investigation, which cannot be generalized for clinical diagnosis. Still, there are intrinsic limitations to cross-sectional studies. However, these biases do not minimize the importance of the findings discussed here for reflection on clinical practice in the elderly, especially in hospital settings.

V. CONCLUSION

It is concluded that the prevalence of indicative symptoms of cognitive impairment in hospitalized elderly was high and associated to the oldest and widowed.

The findings refer to the importance of the professional nurse, when performing the clinical evaluation of hospitalized elderly people, considering the functional assessment, including the signs of cognitive disability. Appropriate gerontological care and assessment provides more assertive care and promotion of maintenance actions for health recovery, thus preventing injuries and readmissions, as well as promoting health.

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