

SOCIO-DEMOGRAPHIC AND CLINICAL PROFILE OF OLDER PATIENTS ASSISTED IN A PHILANTHROPIC INSTITUTION IN THE INTERIOR MINAS GERAIS

PERFIL SOCIODEMOGRÁFICO E CLÍNICO DOS IDOSOS ATENDIDOS EM UMA INSTITUIÇÃO FILANTRÓPICA NO INTERIOR DE MINAS GERAIS

PERFIL SOCIODEMOGRÁFICO Y CLÍNICO DE ANCIANOS ATENDIDOS EN UNA INSTITUCIÓN FILANTRÓPICA DEL INTERIOR DEL ESTADO DE MINAS GERAIS

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ABSTRACT

Objective: to determine the socio-demographic and clinical profile of the elderly population in a philanthropic institution in the interior of Minas Gerais. **Methods:** this is a documentary, retrospective, descriptive study, in which the medical records of the older adults hospitalized from January to October 2017 were analyzed. The sample calculation was performed by the central limit theorem, resulting in 400. The nonparametric Mann-Whitney statistics were used in the median analysis. For the analysis of categorical variables, Pearson's chi-square test was used. The significance level was set at 5%. Regarding the socio-demographic data, 35% of the elderly participants were older than 80 years old, 52.7% were male, 36% were married, 74.8% had comorbidities, and 70.9% were on medication. **Results:** the association between comorbidities and medication use was significant ($p = 0.0002$). Regarding clinical data, the main hospitalization diagnoses were related to the cardiovascular system (26.8%), and the association between hospitalization diagnosis and significant clinical evolution ($p < 0.001$). The readmission rate was 42.5%. The length of stay prevailed between one and ten days (79%) and clinical evolution to discharge (74.8%) prevailed when compared to death (19.8%). The association between length of stay and clinical evolution was significant ($p = 0.005$). **Conclusion:** this study may have positive implications to improve the quality of care of the elderly population since the socio-demographic and clinical profile of these patients enables the generation of health indicators, essential for reducing length of stay, morbidity and mortality rates and readmissions.

Keywords: Old Age Assistance; Health of Institutionalized Elderly; Retrospective Studies; Nursing.

RESUMO

Objetivo: determinar o perfil sociodemográfico e clínico dos idosos internados em uma instituição filantrópica no interior de Minas Gerais. **Métodos:** estudo documental, retrospectivo, descritivo, em que foram analisados os prontuários dos idosos internados no período de janeiro a outubro de 2017. O cálculo amostral foi realizado pelo teorema central dos limites, resultando em 400. Na análise de mediana utilizou-se a estatística não paramétrica de Mann-Whitney. Para a análise das variáveis categóricas usou-se o teste qui-quadrado de Pearson. Foi adotado de forma fixa o nível de significância 5%. Quanto aos dados sociodemográficos, 35% dos idosos eram maiores de 80 anos, 52,7% do sexo masculino, 36% casados, 74,8% com comorbidades e 70,9% faziam uso de medicamentos. **Resultados:** a associação entre comorbidades e uso de medicamentos foi significativa ($p=0,0002$). Quanto aos dados clínicos, os principais diagnósticos de internação relacionavam-se ao sistema cardiovascular (26,8%), sendo a associação entre o diagnóstico de internação e a evolução clínica significativa ($p<0,001$). A taxa de reinternação foi de 42,5%. O tempo de permanência prevaleceu entre um e 10 dias (79%) e a evolução clínica para a alta (74,8%) prevaleceu quando se comparou ao óbito (19,8%). A associação entre tempo de permanência e a evolução clínica foi significativa ($p=0,005$). **Conclusão:** este estudo pode gerar implicações positivas para a melhora da qualidade do atendimento dos idosos, uma vez que o perfil sociodemográfico e clínico desses pacientes

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possibilita a geração de indicadores de saúde, essenciais para a redução do tempo de internação, taxas de morbimortalidade e reinternações.

Palavras-chave: Assistência a Idosos; Saúde do Idoso Institucionalizado; Estudos Retrospectivos; Enfermagem.

RESUMEN

Objetivo: determinar el perfil sociodemográfico y clínico de los ancianos internados en una institución filantrópica del interior de Minas Gerais. **Método:** estudio documental, retrospectivo, descriptivo en el que se analizaron los registros médicos de los ancianos internados entre enero y octubre de 2017. El cálculo de la muestra se realizó mediante el teorema del límite central, cuyo resultado fue 400. En el análisis de la mediana utilizamos las pruebas estadísticas no paramétricas de Mann-Whitney. Para el análisis de variables categóricas se utilizó la prueba chi-cuadrado de Pearson. El nivel de significancia se estableció en 5%. En cuanto a los datos sociodemográficos el 35% de los ancianos era mayor de 80 años; 57,7% eran varones; 36% casados; el 74,8% con comorbilidades y el 70,9% tomaba medicamentos. **Resultados:** la asociación entre comorbilidades y uso de medicamentos fue significativa ($p=0,0002$). En cuanto a los datos clínicos, los principales diagnósticos de internación se relacionaron con el sistema cardiovascular (26,8%); la asociación entre el diagnóstico de internación y la evolución clínica fue significativa ($p<0,001$). La tasa de readmisión fue del 42,5%. La duración de la estancia en el hospital prevaleció entre uno y 10 días (79%) y prevaleció la evolución clínica para el alta hospitalaria (74,8%) en comparación con el deceso (1,8%). La asociación entre la duración de la estancia en el hospital y la evolución clínica fue significativa ($p=0,005$). **Conclusión:** el presente estudio podría tener implicaciones positivas para mejorar la atención de los ancianos ya que el perfil clínico y sociodemográfico de estos pacientes permite elaborar indicadores de salud esenciales para reducir la duración de la internación, las tasas de morbilidad y mortalidad y los ingresos.

Palabras clave: Asistencia a los Ancianos; Salud del Anciano Institucionalizado; Estudios Retrospectivos; Enfermería.

INTRODUCTION

Population aging is a socio-demographic scenario worldwide that has been growing, especially in developing countries.^{1,2} The elderly person is defined as those aged 60 or older in developing countries and those aged 65 or older in developed countries.³

The aging process can generate economic, social, and epidemiological impacts in the country, once the older adult ends to gradually lose their organic and physiological functions besides losing their professional bond.^{4,5} Such modifications may generate increase in the rate of hospital readmission.³⁻⁵

Also, unplanned readmissions may happen since, after the hospitalization, the older people reduce their activities of daily living and may develop new functional deficits with this hospitalization.²⁻⁵

The high prevalence of hospital readmissions contributes to the reflection on social, health and welfare demands, which implies the incidence of hospitalizations.²

The hospital readmission rate of the elderly population in the United States (USA) was 18.3% in patients with acute myocardial infarctions, 23% in patients with congestive heart failure and 17.6% in patients with pneumonia.⁵ Readmission rates in the USA averaged 18.4%, which could result in overspending of approximately \$ 17 billion per year, and exposing the patient to risks of infection and functional loss.⁵

In Brazil, 31.42% of hospitalization costs are from individuals older than 60 years old.⁶ The elderly Brazilian population went from 9.7% in 2004 to 13.7% in 2014. According to the projection of the population performed by the *Instituto Brasileiro de Geografia e Estatística* of 2013, this increase could reach 18.6% in 2030 and 33.7% in 2060.⁷

The hospitalization rate and bed occupancy rate are much more prevalent and prolonged in elderly people, especially when associated with cardiovascular diseases.^{1,8,9} Epidemiological studies confirm that the main causes of hospitalization in the elderly population are the cardiovascular system.^{1,8,9} Although these three studies have the highest prevalence of cardiovascular disease (32.55%, 44.13%, and 24.8%), the second leading cause varied among them.^{1,8,9} While one study found the diseases related to the respiratory system as a second cause with a rate of 27.9%, and the other two studies reported neoplasms with rates of 24.72% and 13.1%, respectively.^{1,8,9}

The prevalence of chronic non-communicable diseases, especially cardiovascular, respiratory, and neurological diseases, increase considerably in the elderly population, and they are risk factors for hospitalization and mortality.¹⁰ The identification of these factors can generate health indicators, essential for improvement of the surveillance and the quality of care for hospitalized elderly patients.¹⁰

The hospitalization of the older people may not indicate an improvement in their clinical condition of hospitalization; however, it may lead to decreased quality of life and the appearance of complications unrelated to the problem that led to hospital admission.^{11,12} The severity of clinical conditions and pathological disorders in the elderly population and inadequate monitoring can lead to disabling adverse reactions, increasing the incidence of readmissions in elderly people.¹

Understanding the socio-demographic and clinical profile of the elderly population is relevant for both clinical practice and the scientific community, as it enables the development of effective institutional actions that will be specific to each elderly population. Such actions strengthen health services to improve detection and control of chronic diseases, comorbidities and risk factors that they can lead to readmissions and increased morbidity and mortality during hospital stay if not identified.²

Several studies have evaluated the epidemiological profile of hospitalized elderly patients, showing the importance of raising demands and planning differentiated care for these

people.^{1,8,9,12} There is still a gap in scientific knowledge regarding the clinical profile, social and demographic characteristics of the elderly population in regions of the interior of Brazil that still require specific and individualized care demands for better surveillance and positive impact on the care of this population. With this challenge, this study aimed to determine the socio-demographic and clinical profile of the elderly population in a philanthropic institution in the interior of *Minas Gerais*.

METHODOLOGY

This is a descriptive and retrospective study conducted from January to October 2017 in a philanthropic institution in *Diamantina* - MG, Brazil. The city of *Diamantina* is located in a region called *Alto Jequitinhonha*, highlighted by the large discrepancy between the population covered by an expanded health region (1,000,000 inhabitants) and the population of the expanded *Jequitinhonha* health region (374,199 inhabitants).¹³

This study was held in a philanthropic institution of medium size and with 100 hospitalization beds. These beds are distributed in clinics (medical, surgical, neurological, and covenants) and intensive care center.

During the study period, 4,433 patients of all ages were hospitalized, in which 2,058 were aged 60 years old or over, of both genders, in medical, neurological, surgical, and covenants clinics. The sample size calculation was performed based on the central limit theorem, which describes the mean distribution of a random sample from a non-normal population with finite variance, calculated using a 95% confidence interval, resulting in 400 participants. These 400 records were obtained by simple random draw. The sample loss was 28%, due to the lack of information contained in the medical records, so 112 medical records were replaced.

The authors built the data collection instrument according to the parameters studied in the medical record. The choice variables were based on previous studies concerning the profile of elderly inpatients in health institutions.^{4,5,14-16}

The datasheet was composed of the following variables: socio-demographic (gender, age, origin, and marital status) and clinical (medical diagnosis, length of stay, readmissions in the year, clinical evolution - discharge, transfer or death -, comorbidities and factors that extend the length of stay). The medical records were coded to avoid the identification of the individuals.

The inclusion criteria were all the medical records of patients admitted to the medical, neurological, surgical, and covenants clinics of the institution, of both genders, aged 60 years old or older. Those patients who did not have an online medical record were excluded from this study. The elderly admitted to the intensive care unit were also excluded

from the present study to define a specific and characteristic profile of inpatient units. Critically ill older people may have differentiated needs for treatment and clinical involvement that may influence the specificity of the profile of those admitted to the inpatient units.

The collected data were categorized and analyzed in the Statistical Package for the Social® software version 20 (SPSS). The descriptive statistical methods analyzed the variables and, after finding the rejection of the hypothesis of normality of data through the Kolmogorov-Smirnov test, medians and quartiles were used. The median analysis used nonparametric Mann-Whitney statistics. For the analysis of categorical variables, Pearson's chi-square test was used. A significance level of 5% was used for all analyses performed.

The Research Ethics Committee of the *Universidade Federal dos Vales do Jequitinhonha e Mucuri* approved the research under the number 2,468,631 of 2017.

RESULTS

The study found that 2,058 (46.42%) of 4,433 hospitalizations were elderly patients. From these 2,058 older adults, the sample size calculation selected 400 records for data collection, with 134 (33.5%) of them having patients aged 60 to 69 years old, 126 (31.5%) having patients aged 70 to 79 years old and 140 (35%) having patients above 80 years old.

The socio-demographic profile and length of stay of the elderly hospitalized in the study institution are shown in Table 1.

Two hundred and ninety nine (74.8%) records of 400 elderly surveyed had comorbidities such as: 57.5% with systemic arterial hypertension (SAH), 20.5% with diabetes mellitus (DM), 16.3% with dyslipidemia, 18.5% with congestive heart failure (CHF), 4.8% with coronary insufficiency, 8.0% with Chagas disease, 18.5% with chronic obstructive pulmonary disease (COPD), 12.5% with chronic renal failure and/or 2.0% with depression. Also, 212 (70.9%) of them used specific medications regularly for each type of comorbidity.

In this study, the following variables were considered "factors that prolong the length of stay": smoking had 48 (12.0%), alcoholism had 30 (7.5%), mental disorders had 25 (6.3%), dementia had 18 (4.5%), and depression had eight (2.0%) patients. Of the total hospitalized, 77.3% of the medical records did not contain information on these factors.

The hospitalization diagnoses were organized into the following groups: cardiovascular, respiratory, digestive, urinary, neurological, infections, neoplasms, and others. The main causes of hospitalizations found were those related to the cardiovascular system prevailed with 107 patients (26.8%): CHF (10.3%), acute myocardial infarction (2.3%), unstable

Table 1 - Socio-demographic profile and length of stay of hospitalized elderly patients in a philanthropic institution of *Diamantina/MG-Brazil*

SOCIO-DEMOGRAPHIC PROFILE					
Variables (n=400)	(N)	(%)	Q1	Median	Q3
Age group (years old)					
60 to 69	134	33.5	67	75	82
70 to 79	126	31.5			
80 or more	140	35.0			
Gender					
Female	193	48.3	-	-	-
Male	207	51.7			
Marital Status					
Single	94	23.5	-	-	-
Married	144	36.0			
Widower	86	21.5			
Divorced	14	3.5			
Other	61	15.2			
Notinformed (NI)	1	0.3			
Origin					
Urban	295	73.8	-	-	-
Rural	105	26.2			
Days hospitalized					
1 to 10	316	79.0	3	5	9
11 to 20	61	15.2			
21 to 30	17	4.3			
>30	6	1.5			
Total	400	100			

angina (3.8%) and total atrioventricular block (2.5%). The second major cause of hospitalization was the neurological group with 105 patients (26.3%): stroke (14.1%), chronic and acute subdural hematoma (4.6%) and head trauma (1.5%).

The association between the diagnosis of hospitalization and clinical evolution showed a significant result, $p < 0.001$. In the main causes that led the patients to death, 33.3% were related to the respiratory system, 14.9% to the cardiovascular system and 11.4% to the neurological system.

Two hundred and thirty (57.5%) of the 400 hospitalizations were from the elderly patients admitted for the first time in the institution, and 170 (42.5%) were those with at least two hospitalizations in the year.

The associations between length of stay and diagnosis of hospitalization, comorbidities, and clinical evolution of the elderly are shown in Table 2.

The association between readmissions and origin and comorbidities is shown in Table 3.

Table 4 shows the associations between the gender and clinical evolution and marital status of the patients. There is a cross between comorbidities and clinical evolution and regular use of medication at home.

Table 5 shows the associations between age groups and comorbidities, the number of medications used regularly at home, reasons for hospitalization and clinical evolution.

DISCUSSION

The prevalence of elderly inpatients during the study period was 46.42% of the total hospitalizations. A cross-sectional epidemiological study found a prevalence of 33.96% of the elderly patients in the total of hospitalized patients in the state of *Minas Gerais* in a study period similar to this study.⁷

The high rate of hospitalized elderly patients can be by the increasing prevalence of older adults seeking the tertiary care sector because of the possible aggravation of pre-existing diseases.⁷ Also, the lack of systematic control and surveillance measures in primary health care, lead older people to increase the demand for tertiary services.⁹

The highest rate of hospitalized elderly patients was in the age group above 80 years old (35%). A cross-sectional study conducted in *Salvador, Bahia* and another cohort study in the city of *Sete Lagoas, Minas Gerais* on the prevalence of elderly inpatients in health institutions also identified high rates in this age group, with 43.8 and 50.4%, respectively.^{12,14} This prevalence may be associated with the greater number of comorbidities and functional limitations that older people over 80 years old usually have when compared to younger people.¹⁵⁻¹⁷ Prospective observational research conducted in Paris, France, revealed that older people between 80 and 89 years old had a high rate (72%) of comorbidity associated with a history of heart failure and arterial fibrillation, contributing to increasing the length of hospital stay.¹⁷

Most elderly patients in this study were male (52.7%). Descriptive studies conducted in *Niterói, Rio de Janeiro - RJ* and the interior of *São Paulo - SP* obtained a prevalence of 58.1 and 53.8%, respectively, of elderly male inpatients.¹⁹ The low participation of men in preventive actions associated with external factors such as smoking and alcoholism expose men to greater vulnerability and, consequently, tend to have more readmissions compared to women.⁹ Other studies have found that men's increased demand for health institutions usually happens when there is an exacerbation of its clinical and pathological condition.^{9,15}

However, a descriptive epidemiological study conducted in *Fortaleza, Ceará* to define the profile of elderly inpatients found female prevalence (56%) when compared to male.¹¹

Table 2 - Distribution of length of stay with hospitalization diagnoses, comorbidities and clinical evolution of hospitalized elderly patients in a philanthropic institution in *Diamantina/MG-Brazil*

Variables	Length of stay										p-value
	1 to 10		11 to 20		21 to 30		≥ 31		Total		
	N	%	N	%	N	%	N	%	N	%	
Diagnosis											
Respiratory	42	73.7	14	24.6	1	1.7	0	0.0	57	14.2	0.146
Cardiovascular	75	70.1	21	19.6	7	6.6	4	3.7	107	26.8	
Digestive	18	90.0	1	5.0	1	5.0	0	0.0	20	5.0	
Urinary	20	91.0	1	4.5	1	4.5	0	0.0	22	5.5	
Neurological	92	87.7	8	7.6	3	2.8	2	1.9	105	26.3	
Infections	15	78.9	3	15.8	1	5.3	0	0.0	19	4.8	
Neoplasm	13	65.0	5	25.0	2	10.0	0	0.0	20	5.0	
Others	41	82.0	8	16.0	1	2.0	0	0.0	50	12.4	
Comorbidities											
Yes	231	77.3	47	15.7	15	5.0	6	2.0	299	74.8	0.354
No	26	78.8	7	21.2	0	0.0	0	0.0	33	8.2	
NI	59	86.8	7	10.3	2	2.9	0	0.0	68	17.0	
Clinical Evolution											
Discharge	246	82.3	41	13.7	10	3.4	2	0.6	299	74.8	0.005*
Transference	11	64.7	3	17.7	1	5.9	2	11.7	17	4.2	
Death	55	69.6	17	21.5	5	6.4	2	2.5	79	19.8	
NI	4	80.0	0	0.0	1	20.0	0	0.0	5	1.2	
Total	316	79.0	61	15.3	17	4.2	6	1.5	400	100	

*p<0.05

In this study, the most prevalent marital status in the elderly patients of both genders was the married situation (36%). Two descriptive studies conducted in *Rio de Janeiro* and *Fortaleza, Ceará* also assessed the profile of the hospitalized elderly population and identified similar rates of 46.5, 42.6%, respectively.¹¹

In this study, a significant difference ($p<0.05$) was found between marital status and male and female gender. This data was also found in a retrospective observational study to describe the profile of the elderly population in Italy.¹⁶ Married participants were more prevalent in male (64.9%) and widowhood in female (79.1%). This study conducted in Italy corroborates the findings of this investigation with similar rates of 57.6% of married men and 74% of widowed women.¹⁶ This data can be explained by the greater survival of the female population, considering that men more often exposed to life-threatening situations such as motor vehicle incidents, leading to increased mortality rates.¹¹ Also, men are more likely to remarry after widowhood.¹⁴

According to data found in a descriptive study to define the profile of the elderly population in a hospital in *Maceió, Alagoas*, the chronic non-communicable diseases in

hospitalized elderly patients were 79.89%.⁸ This was rate similar to this study with 70.9%.

Such rates may be justified by the demographic transition in the epidemiological profile of the population. The current trend is to reduce the occurrence of infectious and parasitic diseases and to increase the prevalence of chronic degenerative diseases.¹⁵

In this research, the prevalence of the following comorbidities were found: SAH 57.3%, DM 20.5%, COPD 18.5% and CHF 4.8%. Physiological complications from these diseases and inadequate treatment can cause hospitalizations and become a risk factor for death.¹⁰

Such comorbidity rates are dependent on the region and the specific profile of each health institution. Similar results of prioritizing comorbidities in the elderly population were also found in a European prospective multicenter observational study, with a prevalence of 79% of hypertensive patients, 33% diabetic and 43% with CHF.¹⁷ Another cross-sectional study conducted in *Natal, Rio Grande do Norte* found the following order of classification of comorbidities: SAH 50%, DM 25.5%, arthritis/arthrosis 17%, osteoporosis 12.8% and heart disease 8.5%.²

Table 3 - Distribution of the number of readmissions associated with the origin and comorbidities of patients in a philanthropic institution in Diamantina/MG-Brazil

Variables	Readmissions						p-value
	Yes		No		Total		
	N	%	N	%	N	%	
Origin							
Urban	136	46.1	159	53.9	295	73.8	0.015*
Rural	34	32.4	71	67.6	105	26.2	
CHF							
Yes	16	84.2	3	15.8	19	4.8	0.001*
No	129	41.2	184	58.8	313	78.2	
NI	25	36.8	43	63.2	68	17.0	
COPD							
Yes	43	58.1	31	41.9	74	18.5	0.01*
No	102	39.5	156	60.5	258	64.5	
NI	25	36.8	43	63.2	68	17.0	
DM							
Yes	38	46.4	44	53.6	82	20.5	0.492
No	107	42.8	143	57.2	250	62.5	
NI	25	36.8	43	63.2	68	17.0	
SAH							
Yes	94	41.1	135	58.9	229	57.2	0.203
No	51	49.5	52	50.5	103	25.8	
NI	25	36.8	43	63.2	68	17.0	
Total	170	42.5	230	57.5	400	100	

*p<0.05

This study found that 57.5% of the elderly patients were taking specific medications for each type of comorbidity. In a descriptive epidemiological study in *Fortaleza, Ceará*, which also evaluated the regular use of medication reported a similar rate of 53.3%.¹¹ Drug treatment can play a decisive role in the life of the older people with diseases because, in addition to controlling the signs and symptoms, reduce the mortality and prevents future hospitalizations.¹¹

In this research, the association between the use of regular medication specific to each comorbidity and the age group had a significant result, $p = 0.008$. A retrospective study of medical record analysis conducted in a health institution in Italy reported that 63.8% of all elderly patients were regularly using medications such as oral antidiabetic drugs.¹⁶ However, the prevalence of use has decreased with age, since 24.9% of the elderly patients using medication were over 75 years old, 36.2% were between 65 and 75 years old, and 38.9% were under 65 years old.¹⁶

With advancing age, the elderly are more vulnerable to functional losses and comorbidities, such as chronic

cardiac and neurological diseases, and the development of dementia.¹⁶⁻¹⁹ Such comorbidities may influence the regular use of medication. Other factors such as social, educational level, and cognitive impairment may also impact medication use.^{18,19} Although not addressed in this study, current research has shown that education and income are essential social determinants of physical and mental health of the elderly population, which also influences the number of medications used at home.¹⁷⁻¹⁹

A multicenter prospective study of European elderly aged 75 years and over showed that 40% of them had some dementia.¹⁷ However, in this study, only 4.5% of the hospitalized elderly patients had diagnosis and previous treatment for some dementia.

According to the WHO, although affecting mainly the elderly population, dementias are not diseases of aging.¹⁸ This statement may justify the rate found in this study with 4.5% when compared to other diagnoses of hospitalizations. However, age versus dementia in this investigation had a significant value ($p < 0.05$).

In this study, 12% of the hospitalized elderly were smokers. A retrospective European medical analysis research reported that 16% of elderly inpatients were smokers.¹⁶

The main hospitalization diagnoses of this study were related to the cardiovascular (26.8%), neurological (26.3%), and respiratory (14.2%) systems. Quantitative research conducted in *Maceió, Alagoas*, corroborates this finding as the first cause of hospitalization, with 44.13% followed by 24.72% of neoplasms and 5.86% of the digestive system.⁸ However, a cross-sectional study performed in the interior of *São Paulo* resulted in 24.8% of cardiovascular diseases, followed by 13.1% of neoplasms and 11.6% of gastrointestinal diseases.⁹

Another quantitative descriptive study conducted in *Rio de Janeiro - RJ* found a higher prevalence of cardiovascular diseases (32.55%), followed by respiratory tract diseases (27.90%).¹

Besides being the main cause of hospitalizations among the elderly, cardiovascular diseases are also considered the first cause of death in this population.⁹

A study that revised the guidelines of clinical practices for cardiovascular disease prevention revealed that the elderly over 75 years old have an increased risk for cardiovascular diseases.¹⁹ This statement was justified by the accentuated functional losses of the circulatory system, higher number of comorbidities, consequent increased functional losses acquired with advancing age and decreased adherence to treatments.¹⁹ Thus, it can lead to more hospitalizations, readmissions, and deaths associated with the cardiovascular system.¹⁹

A retrospective study conducted in the USA evaluated the rates and predictors for hospitalization and readmission.²⁰

Table 4 - The association between gender, clinical evolution and marital status and the association between comorbidities, clinical evolution and home medication use of hospitalized patients in a philanthropic institution in *Diamantina/MG- Brazil*

Variables	Gender						p-value		
	Female		Male		Total				
	N	%	N	%	N	%			
Clinical evolution									
Discharge	142	73.6	157	75.9	299	74.8	0.911		
Transference	9	4.7	8	3.9	17	4.2			
Death	40	20.7	39	18.8	79	19.8			
NI	2	1.0	3	1.4	5	1.2			
Marital status									
Single	45	47.8	49	52.2	94	23.5	0.001*		
Married	51	35.4	93	64.6	144	36			
Widower	68	79.1	18	20.9	86	21.5			
Divorced	4	28.6	10	71.4	14	3.5			
Other	25	41.0	36	59.0	61	15.2			
NI	0	0.0	1	100.0	1	0.3			
Total	193	48.2	207	51.8	400	100			
Variables	Comorbidities								p-value
	Yes		No		NI		Total		
	N	%	N	%	N	%	N	%	
Clinical evolution									
Discharge	226	75.6	21	63.6	52	76.5	299	74.8	0.043*
Transference	14	4.7	1	3.0	2	2.9	17	4.2	
Death	57	19.1	11	33.4	11	16.2	79	19.8	
NI	2	0.6	0	0.0	3	4.4	5	1.2	
Use of medication									
1 to 4	93	31.2	11	33.3	4	5.9	108	27.0	0.0002*
5 to 9	105	35.1	2	6.1	1	1.5	108	27.0	
>9	14	4.7	0	0.0	0	0.0	14	3.5	
Not using	13	4.3	12	36.3	0	0.0	25	6.3	
NI	74	24.7	8	24.3	63	92.6	145	36.2	
Total	299	74.8	33	8.2	68	17	400	100	

*p<0.05

As a diagnosis of hospitalization, cardiovascular disease was considered as one of the main risk factors for readmissions in the elderly population.²⁰

A cross-sectional study conducted in northeastern Brazil indicated that the association between hospitalization diagnosis and clinical evolution was significant ($p = 0.001$), presenting cardiovascular diseases as the first cause of death.¹⁶ In this study, the association between hospitalization diagnosis and clinical evolution was also significant, $p < 0.001$. However, the first cause that led patients to death was associated with the respiratory system, 33.3%, followed by cardiovascular, 14.9%.

In 230 (57.5%) of the 400 hospitalizations, the elderly patients were admitted for the first time in the institution, and 170 (42.5%) had readmissions in the year. Carrying chronic diseases and taking various medications are known to be risk factors for readmissions in the elderly population.²⁰

A cross-sectional study found a readmission rate of 50.0% of the hospitalized elderly patients in 2015.²² However, a retrospective longitudinal cohort evaluation performed with diabetic elderly people beneficiaries of a health institution found 13.2% of readmission rate among elderly patients with Type 2 DM.²⁰ Reduced readmission rates among patients

Table 5 - The association between age groups, comorbidities and hospitalization data (diagnosis of hospitalization, clinical evolution, and complications) of elderly patients in a philanthropic institution in *Diamantina/MG- Brazil*

N = 400		Age group								p-value
		60 to 69		70 to 79		≥ 80		Total		
		N	%	N	%	N	%	N	%	
Comorbidities	Yes	90	30.1	101	33.8	108	36.1	299	74.8	0.048*
	No	18	54.5	6	18.2	9	27.3	33	8.2	
	NI	26	38.2	19	27.9	23	33.9	68	17.0	
Number of medications used at home	1 to 4	49	45.4	26	24.1	33	30.5	108	27	0.008*
	5 to 9	29	26.9	40	37.0	39	36.1	108	27	
	>9	2	14.3	2	14.3	10	71.4	14	3.5	
	Not using	11	44.0	6	24.0	8	32.0	25	6.3	
	NI	43	29.6	52	35.9	50	34.5	145	36.2	
COPD	Yes	17	23.0	18	24.3	39	52.7	74	18.5	0.008*
	No	91	35.3	89	34.5	78	30.2	258	64.5	
	NI	26	38.2	19	28.0	23	33.8	68	17.0	
CHF	Yes	16	21.6	26	35.1	32	43.3	74	18.5	0.178
	No	92	35.6	81	31.4	85	33.0	258	64.5	
	NI	26	38.2	19	28.0	23	33.8	68	17.0	
Depression	Yes	2	25.0	3	37.5	3	37.5	8	2.0	0.889
	No	106	32.7	104	32.1	114	35.2	324	81.0	
	NI	26	38.2	19	28.0	23	33.8	68	17.0	
Dementia	Yes	0	0.0	5	27.8	13	72.2	18	4.5	0.006*
	No	66	36.7	55	30.5	59	32.8	180	45.0	
	NI	68	33.7	66	32.6	68	33.7	202	50.5	
Diagnosis according to the system	Respiratory	15	26.3	11	19.3	31	54.3	57	14.2	0.002*
	Cardiovascular	30	28.1	36	33.6	41	38.3	107	26.8	
	Digestive	2	10.0	12	60.0	6	30.0	20	5.0	
	Urinary	5	22.7	10	45.5	7	31.8	22	5.5	
	Neurological	44	41.9	32	30.5	29	27.6	105	26.3	
	Infections	5	26.3	6	31.6	8	42.1	19	4.8	
	Neoplasm	10	50.0	6	30.0	4	20.0	20	5.0	
	Others	23	46.0	13	26.0	14	28.0	50	12.4	
Clinical Evolution	Discharge	110	36.8	99	33.1	90	30.1	299	74.8	0.001*
	Transference	10	58.8	4	23.6	3	17.6	17	4.2	
	Death	12	15.2	23	29.1	44	55.7	79	19.8	
	NI	2	40.0	0	0.0	3	60.0	5	1.2	
	Total	134	33.5	126	31.5	140	35.0	400	100	

*p<0.05

with DM in this study can be justified by the management of specific care for diabetics, which is typical of the institution.²⁰ Therefore, knowledge of the profile of patients who are usually readmitted to health facilities enables better institutional and administrative management of health care for the elderly population.

A higher frequency one to 10 days of hospitalized elderly patients was observed, with a median of five. Data found in a cross-sectional study suggested the length of stay of more than seven days, with a median of three.⁹ Care of the multidisciplinary team influences the evolution during the hospitalization period of the elderly patient, promoting recovery and reducing the length of stay of the hospitalized patients.⁹ The shorter the

elderly remain hospitalized, the shorter the time they will use invasive measures, and the less time they will be exposed to the means of transmitting bacteria and medicines, reducing the risk of complications.¹⁵

When considering the clinical evolution of hospitalizations, a higher prevalence of hospital discharge was found (74.8%), followed by deaths (19.8%) and transferences (4.3%). In a cross-sectional study in the interior of *São Paulo*, a similar classification was found, with 88.9% of hospital discharge followed by 10.5% of deaths and 0.6% of transferences.⁹ Although both studies were conducted in different regions, the prevalence of discharge than deaths may indicate good health indicators, as it reduces the risk of functional decline, iatrogenesis, and hospital readmissions.⁹ Advice to the elderly patients before discharge also contributes to avoiding readmissions and possible costly expenses with hospitalizations, because it improves the self-care capacity and the knowledge of their health.²³

The clinical evolution associated with gender was not significant ($p = 0.911$). A cross-sectional study conducted in northeastern Brazil corroborates this data, showing $p = 0.233$ for the same association.²¹

The associations between readmissions and CHF ($p = 0.001$) and between readmissions and COPD ($p = 0.01$) were significant. In a retrospective study conducted in the USA with the same variables associated, the significance was also found with $p < 0.001$ for both readmissions and CHF ($p < 0.001$) and readmissions and COPD ($p < 0.001$).²³

The associations between readmissions and hypertension ($p > 0.05$) and between readmissions and DM ($p > 0.05$) did not show significant results in this research. However, the retrospective study conducted in the USA found significant results for the two associations: between readmissions and SAH ($p < 0.001$) and readmissions and DM ($p < 0.001$).²³

The association between the age and comorbidities was significant, with $p = 0.048$. A cross-sectional study in the municipality of *Bagé, Rio Grande do Sul*, found that 81.3% of the total elderly patients had two or more comorbidities.²⁴ In the age, 83.3% of the elderly aged 75 years old or older had two or more comorbidities.²⁴ This study stated that having more than three comorbidities becomes a predictor of hospitalization, since the greater the number of comorbidities, the greater the likelihood of hospitalizations.²⁴

There was a significant association between clinical evolution and the following variables: age ($p = 0.001$), comorbidities ($p = 0.043$) and length of stay ($p = 0.005$). A cross-sectional study conducted in northeastern Brazil corroborates this data, proposing $p = 0.045$, $p = 0.003$ and $p < 0.001$, respectively for the same associations.²¹ Factors such as age and comorbidities should be quickly identified at the time of hospitalization because age is a risk factor for in-hospital mortality, regardless of other clinical characteristics.¹⁵

In this study, age versus COPD was also significant ($p < 0.05$). This finding is consistent with the senescence process, which causes the lungs to exhibit natural functional losses of aging and the characteristics of this disease, such as changes in lung resistance, elasticity and compliance.^{23,24}

Another significant association found in this study was the age versus hospitalization diagnosis ($p = 0.002$). With this finding, prevalent diagnoses of hospitalization for each age group were found, which can be explained by the aging process that the organism is in progressive losses.

The comorbidities found were significant ($p < 0.01$) when compared to the regular use of home-use medicines. Older people with chronic diseases who tend to make regular use of medications and to avoid hospitalizations prevent future injuries due to possible uncontrolled diseases.

The limitations of this study include the lack of complete information in the medical records, which could influence the rates found. However, the results specify the profile of the elderly population of the institution evaluated, with rates similar to several national and international scientific studies, validating the findings of this work.^{1,8,9,16} Another limitation is that this research was conducted in only one health institution in the interior of *Minas Gerais*, so it did not allow the comparison of various health institutions in Brazil. However, each region has its specificity and particularities that must be identified to enable individualized and specific care for each type of elderly population.

FINAL CONSIDERATIONS

This study found that elderly patients have a high rate of hospitalization (46.42%) and readmission (42.5%). The highest prevalence was cardiovascular disease (26.8%). However, the elderly patients who died had a higher prevalence of respiratory diseases (33.3%) when compared to cardiovascular diseases (14.9%).

In the admitted elderly patients, 70.9% had some comorbidity, including hypertension (57.3%), DM (30.5%) and COPD (18.5%). The association between comorbidities and regular medication use and age was significant ($p < 0.005$). However, it was not significant ($p > 0.05$) when comorbidities were compared to the length of stay.

This study provides empirical evidence on demographic and clinical aspects relevant to older people's health in contemporary societies. The results also suggest that the variables analyzed in the present study may be effective to reduce the risk of readmissions since they allow a different approach for each region of the country when identified early, meeting different health prevention needs. Also, the multidisciplinary approach provides more vigilance and the creation of age-specific care protocols.

Despite the natural deterioration of the organism associated with aging, knowing the institutional profile of the elderly patients contributes to clinical practice regarding planned care and the generation of health indicators that are essential for reducing the length of stay, morbidity and mortality rates and readmissions.

Future work for the scientific community can be developed for clinical and experimental comparison of cardiac, respiratory and endocrine diseases associated with readmissions, infections and physiological and clinical conditions of the elderly population, especially those over 75 years old.

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