

## Epidemiological aspects and health costs due dementia in Brazil

### *Aspectos epidemiológicos e gastos em saúde por demências no Brasil*

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**ABSTRACT:** Aging in our country occurs progressively. Dementia is a syndrome that is characterized by cognitive decline. The objective of the study was to outline the epidemiological aspects and to describe health costs due to dementia in Brazil. This is a cross-sectional, descriptive study of a quantitative approach that used 2018 data on dementia from a secondary source from the Ministry of Health. Data concerning days of hospitalization, number of deaths, and mortality rate were collected. Data were tabulated in Microsoft Excel 2010 and shown using descriptive statistics. There were 8,663 hospital admissions for dementia in Brazil, under the Unified Health System. Most were male, 52.4%. The total amount paid for care from all these hospitalizations was R\$ 14,762,523.68 and the amount spent for total hospital service was R\$ 13,619,466.40. Deaths due to dementia in Brazil was 275 and the mortality rate was 9.51. The hospitalization costs shown in the study reflect the high financial amount available for dementia syndromes, both in hospitalizations and in attendance expenses. The costs, although expressive, partially reflect the reality, since not all cases are reported by professionals and institutions. Thus, it is evident the need for funding to public programs concerning dementia syndrome, aiming at a proper diagnosis, treatment, and care and the search for cost reduction.

**Keywords:** Dementia; Aged; Diagnosis; Health promotion; Costs.

**RESUMO:** O envelhecimento em nosso país ocorre de forma progressiva. A demência é uma síndrome que se caracteriza pelo declínio cognitivo. O objetivo do estudo foi traçar os aspectos epidemiológicos e descrever os gastos em saúde por demências no Brasil. Trata-se de um estudo transversal, descritivo de abordagem quantitativa que utilizou dados sobre demência em 2018 a partir de fonte secundária do Ministério da Saúde. Os dados coletados foram sexo, idade, registros do número de autorização de internação hospitalar, valores por internamento, dias de internação, número de óbitos e taxa de mortalidade. Os dados foram tabulados no *Microsoft Excel* 2010 e apresentados por meio da estatística descritiva. Ocorreram 8.663 internações hospitalares por demências no Brasil, no âmbito do Sistema Único de Saúde. A maioria era do sexo masculino, 52,4%. A soma dos valores pagos por atendimentos de todas essas internações hospitalares foi de R\$ 14.762.523,68 e o valor gasto por serviço hospitalar total foi de R\$ 13.619.466,40. Quanto aos óbitos devidos à demência no Brasil, foi de 275 e a taxa de mortalidade foi de 9,51. Os valores de internação descritos no estudo refletem o montante elevado financeiro disposto para síndromes demenciais, tanto em internações, quanto em gastos com atendimentos. Os valores apesar de expressivos refletem parcialmente a realidade, uma vez que nem todos os casos são notificados pelos profissionais e instituições. Fica assim evidente a necessidade de incentivos à programas públicos com referência à síndrome demencial, objetivando o diagnóstico adequado, tratamento e cuidados e a busca por redução de custos.

**Palavras-chave:** Demência; Idosos; Diagnóstico; Promoção da saúde; Gastos.

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## INTRODUCTION

Aging in Brazil is a source of constant concern, as it does not always happen with quality of life. Aging accompanies many different neurocognitive aspects, including cognitive decline and dementia. In the case of the brain, morphological changes occur<sup>1,2,3</sup>.

The elderly's brain shows physiological atrophy related to advancing age, and a decrease in the number of neurons and synapses is observed, changes that can accelerate dementia neurodegenerative diseases, corresponding to cognitive brain deficiencies that negatively interfere in the quality-of-life context, functionality, and activities of daily living<sup>2,4</sup>.

Dementia is a syndrome that is characterized by cognitive decline, mostly compromising memory. Other areas may be affected in dementia syndromes such as: language, gnosis, praxis, and management functions. Cognitive losses due to dementia are more prevalent in females, among individuals with low education who do not practice physical activity, people with low economic status, old age, and frailty. Other risk factors associated with dementia are hypertension, diabetes mellitus, depression, and low levels of vitamin D, the last one being a modifiable factor<sup>4</sup>.

In 2012, WHO published the document "Dementia: A Public Health Priority", outlining the magnitude of the theme, especially in developing countries. In 2010, 35.6 million people were diagnosed with dementia and WHO estimates 65.7 million people with the disease for 2030. In 2050 the estimated number is even more remarkable, 115.4 million. The incidence of dementia each year in the world is about 7.7 million cases<sup>1,2</sup>.

The organization Alzheimer's Disease International (ADI) estimates that, worldwide, 50 million people have dementia. The document states that it may be very likely that this number will reach the level of 152 million people in 2050. Alzheimer's disease (AD) according to this organization, replaced cancer and became the most feared diagnosis in North America and perhaps the world<sup>5</sup>.

The disease affects more people in the United States of America (USA) than breast cancer and prostate cancer. This document also highlights the need to expand the studies, since in research in the PubMed database, there are about millions of articles on cancer, however, only about 250 thousand articles can be found on dementia and neurodegeneration. It is estimated that every 3 seconds a new case of dementia is diagnosed worldwide<sup>5</sup>.

Dementia is a major cause of disability and can generate a need for care from others. Sometimes, the condition can cause expenses and the need for help with basic activities of daily living<sup>6-7</sup>. Epidemiological data on

dementia in Brazil lack research and publications, however, old studies sought to find the prevalence of dementia syndrome in Latin America and considered the available data as superficial and of poor quality<sup>8</sup>.

Dementia syndromes are a great challenge for public health, concerning care and the financial impact that these diseases cause<sup>9</sup>. The multifactorial type contributes even more to the diagnostic and therapeutic difficulties. Brazil lacks practices that discuss aging and its diseases, including dementia syndromes. The study aims to debate and highlight the need to encourage public policy practices aimed at the elderly with dementia and their caregivers in our country. In this sense, the objective of the present study was to outline the epidemiological aspects and to describe health costs due to dementia in Brazil.

## METHOD

This is a cross-sectional, descriptive study with a quantitative approach that used data retrieved from a secondary source in the *Sistema de Informações Hospitalares do Sistema Único de Saúde (SIH/SUS)* (Hospital Information System of the Unified Health System) from the *Departamento de Informática do SUS (DATASUS)* (SUS Informatics Department), of the Ministry of Health. According to the *Comissão Nacional de Ética em Pesquisa (CONEP)* (National Research Ethics Commission) and *Conselho Nacional de Saúde (CNS)* (National Health Council) research that involves only public domain data that does not allow the identification of participants does not require approval by the CEP-CONEP System (<http://conselho.saude.gov.br/>).

Data on dementia were obtained in Brazil, which occurred from January 1<sup>st</sup> to December 31<sup>st</sup>, 2018, through the ICD-10 chapter. The collection was carried out from 08/06/2019 to 08/07/2019. The study variables were sex, age, records of the number of hospital admission (AIH) authorization, costs for hospitalization, the amount spent for hospital service, days of hospitalization, number of deaths and mortality rate. Data were tabulated in Microsoft Excel 2010 and presented using descriptive statistics (absolute and relative frequency, graphs, and tables).

## RESULTS

In the period under study, a total of 8,663 hospital admissions due to dementia were identified in Brazil, within the scope of the Unified Health System, and the region of Brazil with the highest number of admissions was the Southeast (79.5%) (Table 1).

**Table 1.** Hospitalization due to dementia according to the region of Brazil in 2018

REGION	HOSPITALIZATIONS	
	N	%
North region	30	05
Northeast Region	528	6
Southeast region	6,888	79.5
South region	671	8
Midwest region	546	6
<b>TOTAL</b>	<b>8,663</b>	<b>100%</b>

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS)

Of this total, 52.4% (n=4,543) are male. Hospitalizations as a direct result of dementia have important data. Most hospitalizations did not occur because of dementia itself, but because of associated conditions, such as infections, cardio, and cerebrovascular conditions, among others. Table 2 shows hospitalizations due to dementia according to the age group in Brazil in 2018.

**Table 2.** Hospitalizations due to dementia according to age group in Brazil in 2018

AGE GROUP	HOSPITALIZATIONS	
	N	%
0 to 19 years	158	2
20 to 59 years	4,335	50
60 to 69 years	1,308	15
70 to 79 years	1,301	15
80 years and over	1,561	18
<b>TOTAL</b>	<b>8,663</b>	<b>100%</b>

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS)

The average number of hospitalization days for dementia under the Unified Health System was 71.9 days. The sum of the amounts paid for care to all these hospital admissions for dementia in Brazil was R\$14,762,523.68 *reais*. The highest cost per hospitalization was in June (Table 3).

**Table 3.** Amounts paid for dementia care in Brazil in 2018

MONTH	AMOUNT	
	N	%
January	1,263,583.71	8.6
February	1,159,260.65	7.9
March	1,270,521.47	8.6
April	1,203,695.44	8.2
May	1,249,406.57	8.5
June	1,301,332.25	8.8
July	1,218,539.61	8.3
August	1,236,989.54	8.4
September	1,185,233.13	8.0
October	1,233,872.04	8.4
November	1,217,525.02	8.2
December	1,222,564.25	8.3
<b>TOTAL</b>	<b>14,762,523.68</b>	<b>100%</b>

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS). Note: The minimum wage for the year 2018 was R\$ 954.00 *reais*.

The amount spent on hospital services for dementias in Brazil was R \$ 13,619,466.40 (Table 4). As for deaths due to dementia in Brazil, it was 275 in 2018. Also, the mortality rate was 9.51.

**Table 4.** Amounts spent on hospital care due to dementia in Brazil in 2018

MONTH	AMOUNT	
	N	%
January	1,164,731.15	8.6
February	1,066,951.84	7.8
March	1,170,700.03	8.6
April	1,110,624.19	8.2
May	1,154,107.77	8.5
June	1,200,015.19	8.8
July	1,123,593.61	8.3
August	1,142,716.36	8.4
September	1,094,040.48	8.0
October	1,139,255.34	8.4
November	1,124,407.96	8.3
December	1,128,322.48	8.3
<b>TOTAL</b>	<b>13,619,466.40</b>	<b>100%</b>

Source: Ministry of Health - SUS Hospital Information System (SIH/SUS).

Note: The minimum wage for the year 2018 was R\$ 954.00 *reais*.

## DISCUSSION

In the study period, there were 8,663 hospital admissions due to dementia in Brazil, within the scope of the Unified Health System. Most patients were male, 52.4% (n=4,543). Men may have higher risk factors, considering the higher prevalence of hypertension, diabetes, cardio, and cerebrovascular diseases, observed in the male population<sup>10</sup>.

Women have longer longevity and may soon switch these numbers. Confirming this information, in 2017 the organization ALZ.org set women at the center of discussion on dementias, addressing that the female population is the one that most ages and needs care, knowledge, maintenance of cognitive activities, control of risk factors. Often women end up taking care of sick family members, including patients with dementia<sup>11</sup>.

The costs for care for all these hospital admissions was R\$ 14,762,523.68 and the amount spent for total hospital service was R\$ 13,619,466.40. In Brazil deaths due to dementia were 275 in 2018. Moreover, the mortality rate was 9.51. The hospitalization costs described in the study reveal the budget available for dementia syndromes, both in hospitalizations and in expenses with care. The costs of dementia are high when we consider the expenses with medications, food supplements, psychological care, physiotherapy, and supplies. Caregivers also have a high cost. The income tax exemptions and benefits/insurances further increase expenses<sup>7,9</sup>.

The elements addressed by the study are far below

the estimates made by Dementia World Organizations. This contributes to the fact that in our country, the numbers shown do not match reality, partly because of the absence of an automated system integrated with the Unified Health System, which allows the inclusion of the International Classification of Diseases (ICD) and with that we find the precise number of patients seen in the health system who are diagnosed. Part of this misinformation is since medical reporting of dementia is not routine, and the data presented emphasize that the type of early dementia is more prevalent, and this can be supported by the fact that they call attention and be reported by health professionals<sup>7</sup>.

Part of this lack of data may be due to the indifference and frustration of the health system in committing their staff to the diagnosis and treatment of patients with cognitive impairment, the deficiency of specialized professionals, such as: neurologists, geriatricians, neuropsychologists, besides the difficulty of performing image exams and follow-up of patients. The lack of public policies to guide the population is evident in terms of dementia and memory. Moreover, part of the population believes that forgetfulness is normal with aging, postponing the search for health services.

The dementia condition is poorly analyzed in terms of direct and indirect costs, including medications, absenteeism, social security, medical certificates, and health supplies, such as diapers, dressings, probes, physiotherapy, hospitalizations, medications, caregivers.

Another factor to be stressed is the fact that dementia

diseases often do not directly lead to hospitalization and even death, since the underlying disease often exposes the patient's health, thus causing infectious conditions, for example. Dementia syndrome often takes time to be detected and diagnosed, thus producing even greater expenses due to the severity progression of the disease<sup>3,7,9,11</sup>. It is thus evident the need for funding to public programs for the dementia syndrome, aiming at the proper diagnosis, treatment and care and the search for cost reduction.

Brazil, as it is a continental territory and with disparities among States in terms of mortality, education, aging rate, background, among many others, can show a significant variation in the incidence and prevalence of dementia. The lack of these studies allows the lack of funding for public policies, encouraging the population to seek specialized care when they observe cognitive deficits and thus contribute to the quality of life.

## CONCLUSION

The hospitalization costs portrayed in the study reflect the great funding available for dementia syndromes, both in hospitalizations and in expenses with care. The values, although expressive, partially reflect the reality since not all cases are reported by professionals and institutions. In this sense, it is thus evident the need for financial support to public programs concerning the dementia syndrome, aiming at the proper diagnosis, treatment, and care and, efficiently, the search for cost reduction.

**Participação dos autores:** *Zalli M e Farah HO* - participaram ativamente da concepção, realizaram a análise e interpretação dos dados, redigiram o manuscrito e participaram na aprovação final da versão publicada. *Antunes MD* - realizou a análise e interpretação dos dados, participou da revisão do manuscrito e na aprovação final da versão publicada.

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