



## EPIDEMIOLOGICAL PROFILE OF PATIENTS HOSPITALIZED FOR MALIGNANT BREAST NEOPLASM IN MALES IN THE STATE OF MINAS GERAIS, BRAZIL, FROM 2008 TO 2017.

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**Abstract: Objective:** To characterize the hospitalization and death rates due to **malignant breast neoplasm in men**, in Minas Gerais, between 2008 and 2017, through data collected from the Hospital Information System of the Unified Health System (SIH/SUS). Such knowledge can enrich the epidemiological data and strengthen prevention and diagnostic actions. **Methodology:** This is a cross-sectional, retrospective, descriptive, and quantitative study. Data related to hospitalizations and deaths due to malignant neoplasm of breast in men, in the state of Minas Gerais, Brazil, between 2008 and 2017, were obtained from the Hospital Information System of the Unified Health System. The variables used were: number of hospitalizations according to age, race, elective or emergency care, public or private facilities, region of the state, and number of deaths. **Results:** A total of 696 hospitalization cases were identified, with predominance in the Center (28.88%) and Southeast (25.43%) regions of Brazil. Regarding the institution of attendance, 66.96% occurred in private facilities. About race, 38.36% declared themselves to be brown. The number of deaths was 42, corresponding to 6.03% of the hospitalizations. The highest mortality rate (10.22%) was observed in patients from 70 and 79 years old. **Conclusion:** The highest number of admissions, deaths, and mortality rates was observed around 60 years old. Most of the hospitalizations and the highest medical expenses occurred in private institutions. The Central and Southeastern regions of Brazil presented the highest number of admissions, which might be explained by the higher concentration of reference centers for cancer treatment in these areas.

**Keywords:** Male Breast Neoplasm; Epidemiological Profile; Indicators of Morbidity and Mortality; Public health.

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## INTRODUCTION

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Brazilian morbidity and mortality patterns have experienced an important epidemiological change, from a predominance of infectious and parasitic diseases to chronic degenerative diseases, in which neoplasms have been assuming a great importance.<sup>1</sup> The main justification are the changes in the life habits and epidemiological profile of the population.<sup>2</sup>

Male breast cancer is a rare disease that represents less than 1% of all the cancers in men, with a ratio of male/female of approximately 1:1.000 people.<sup>3,4,5,6,7</sup> Similarly to what happens in most neoplasms, the etiology of male breast cancer is unknown, with some factors associated to a higher risk. Some of them are similar to female risk factor while others are different.<sup>8</sup> Little is reported about this neoplasm in men, although the epidemiological literature about female breast cancer is extensive. This difference is mainly due to its low incidence in men.<sup>4</sup>

However, there is a rising trend in the occurrence of male breast cancer as a result of the factors related to low life quality and by the difficulty in performing and early diagnostic. The

incidence has increased significantly from 0.86 to 1.06 cases per 100,000 men along the last 26 years.<sup>4</sup> Besides that, the incidence increases with age, the average age at the moment of the diagnostic being 67 years for men (5 years above the average age for women), and reaching a plateau at 80 years.<sup>9</sup> Therefore, the precise prevention and diagnostic are the best strategies to improve the quality of life and survival of the patient with this neoplasm.<sup>10</sup>

Since male breast cancer is a rare disease its etiology is poorly described although some risk factors are similar to those observed in females.<sup>11</sup> The main risk factors identified are: positive family history in first-degree relatives, present in 20% of the cases;<sup>12,13</sup> hepatic failure for different causes, including endemic diseases and alcoholism (the association of alcohol consumption and male breast cancer is still controversial, although a multicentric European study has shown a positive correlation),<sup>14</sup> long term hormonal treatments, testicle tumors, orchitis, testicular trauma, prostate tumors, obesity, karyotype alterations (Klinefelter Syndrome), as well as the presence of gynecomastia. This latter, despite not being considered singly as a risk factor for male breast cancer, is

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frequently associated with it.<sup>12</sup> Mutations in the BRCA1 gene are associated to some cancer cases while the link between mutations in the BRCA2 gene and male breast cancer is even stronger.<sup>14,15,16</sup>

It is well known that breast cancer in men presents the worst rates of overall survival compared to women, probably due to their old age at the time of diagnostic.<sup>10</sup> This delay results in the detection of advanced cases of the disease due to the unawareness about the problem by the patient and, sometimes, by the physician.<sup>5,12,17</sup> Mammography is an recommended exam for men above 50 years with mammary lesions, showing a sensitivity of 92% and a specificity of 90%,<sup>18</sup> but its use is limited due to technical difficulties and also by the anatomical condition of the male breast.<sup>9,12,19,20</sup> In order to confirm the diagnostic, the biopsy with histological confirmation is the chosen method.<sup>4</sup>

The same treatment of female breast cancer is indicated for men, which consists in surgical treatment after being submitted or not to radiotherapy, chemotherapy, and

hormone therapy.<sup>12</sup> In the case of metastases, chemotherapy and hormone therapy are considered first and second line treatments, respectively.<sup>7</sup>

In short, due to the low frequency of male breast cancer, the expertise of oncologists or even academic centers is limited. In the same way, most of the information related to the natural history and management of neoplasm was obtained from studies with a small number of patients or by projection of the results of the studies and experiences with female breast cancer.<sup>21</sup> However, all the male cases have exhibited immunohistochemical specificities, for which the studies are insufficient to assess the impact of this characteristic for the prognostic and treatment of this neoplasm.<sup>8</sup>

Therefore, this study aimed to characterize admission and death rates by malignant breast neoplasm in men, in the state of Minas Gerais, between 2008 and 2017, after information collected from the **Hospital Information System of the Unified Health System (SIH/SUS)**. Such knowledge might improve the epidemiological data, therefore strengthening the actions of prevention

and diagnostic.

## METHODOLOGY

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This is a transversal, retrospective, descriptive, and quantitative study. The data related to the hospitalizations by male breast neoplasm, occurred in the state of Minas Gerais, Brazil, from 2008 to 2017, were collected from the **Hospital Information System of the Unified Health System (SIH/SUS)** made available by the Informatics Department of the Unified Health System (DATASUS) through the site <http://tabnet.datasus.gov.br/>.

The chosen variables were: number of hospitalizations according to

## RESULTS

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Accorded to the data collected from the **Hospital Information System of the Unified Health System (SIH/SUS)**, from January, 2008 to December, 2017, in the state of Minas

the age group, race/color, elective or emergency care, public or private attendance facilities, region of the state, and number of deaths. Such variables were analyzed through the crossing of data from male patients hospitalized due to male breast neoplasm during the aforementioned period and place, compared with the percentage of hospitalizations and deaths. The software Excel 12.0 (Office 2007) was used to analyze and manage the data.

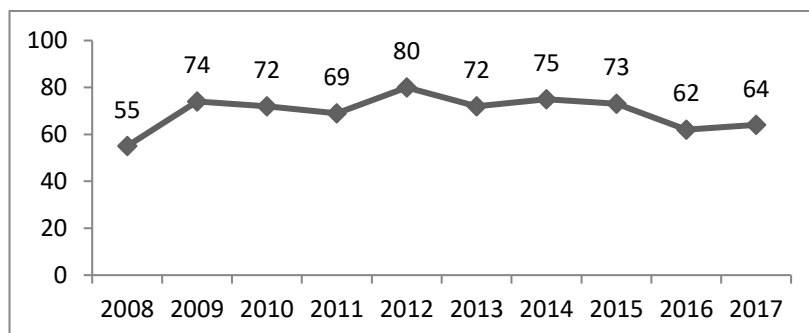
Since the databank used in this work is public domain, the submission of this work the Committee on Ethics and Research was not required.

Gerais, 696 cases of hospitalization by malignant male neoplasm were recorded. The average rate was 69.6 hospitalizations per year, with a variation of 55 (2008) to 80 (2012) admissions in the studied period (**Figure 1**).

**Figure 1 – Number of hospitalizations of men with malignant breast**

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### neoplasm, in Minas Gerais, from 2008 to 2017.



Regarding the demographic and hospitalization data, this study analyzed age group, color/race, type of medical facility (public or private), and nature of the attendance (elective or urgent care). The highest number of hospitalizations was observed group of 60 to 69 years, in a total of 155 (22.27%). Regarding color/race, 267 (38.36%) declared themselves as brown, followed by 237

(34.05%) who declared to be whites. Regarding the type of facility, 466 (66.96%) attendances were carried out in private and 93 (13.36%) in public facilities. The remaining cases were ignored (19.68%). About the nature of the healthcare services, 369 (53.02%) attendances were identified as elective, compared to 327 (46.98%) that were urgent (**Table 1**).

**Table 1 – Sociodemographic data and hospitalizations for malignant breast neoplasm in men, in Minas Gerais, from 2008 to 2017.**

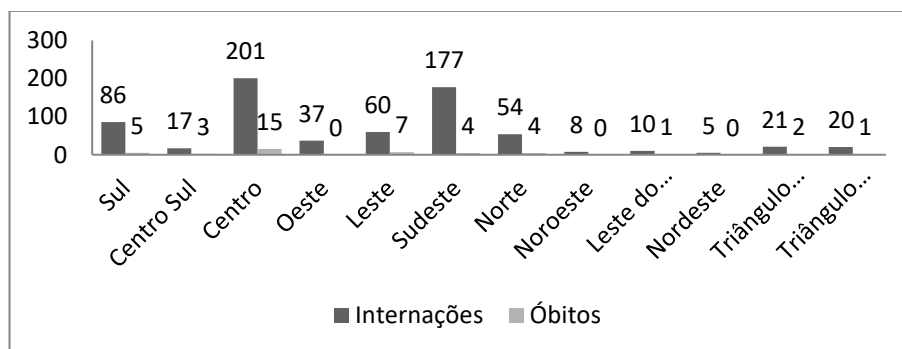
Variable	n	%
Age Group		
Less than 1 year	2	0.29
1 to 4 years	3	0.43
10 to 14 years	12	1.72
15 to 19 years	21	3.02
20 to 29 years	26	3.74
30 to 39 years	50	7.18
40 to 49 years	100	14.37
50 to 59 years	133	19.11
60 to 69 years	155	22.27

70 to 79 years	136	19.54
80 years and more	58	8.33
Color/race		
White	237	34.05
Black	54	7.76
Brown	267	38.36
Yellow	2	0.29
No information	136	19.54
Regime		
Public	93	13.36
Private	466	66.96
Ignored	137	19.68
Nature of the service		
Elective	369	53.02
Urgent	327	46.98

Analyzing the hospital admissions according to the different regions of the state of Minas Gerais, there is a clear prevalence in the Center and Southeast regions of Brazil, with 201 (28.88%) and 177 (25.43%) admissions by male breast neoplasm,

respectively. The other regions presented lower numbers, probably because they have a smaller number of oncological reference centers, and because they comprise small municipalities (Figure 2).

**Figure 2 – Number of hospitalizations and deaths by malignant breast neoplasm in males, according to the regions of Minas Gerais, from 2008 to 2017.**



South  
 Center-South  
 Center  
 West  
 East  
 Southeast

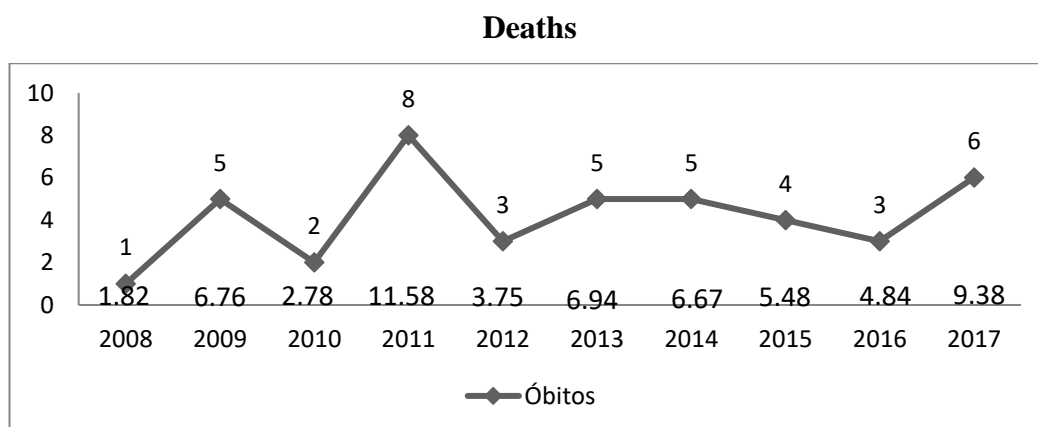
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North  
Northwest  
East of...  
Northeast  
Triangle...  
Triangle...  
Hospitalizations  
Deaths

The total number of deaths in the studied period was of 42, with 696 being the total number of hospitalizations, which represents 6.03% of deaths. An average of 4.2

deaths per year was recorded. The highest death rate was observed in 2011 (11.58%), followed by 2017 (9.38%) (**Figure 3**).

**Figure 3 – Number of deaths and rate mortality by malignant breast neoplasm in men, in Minas Gerais, from 2008 to 2017.**



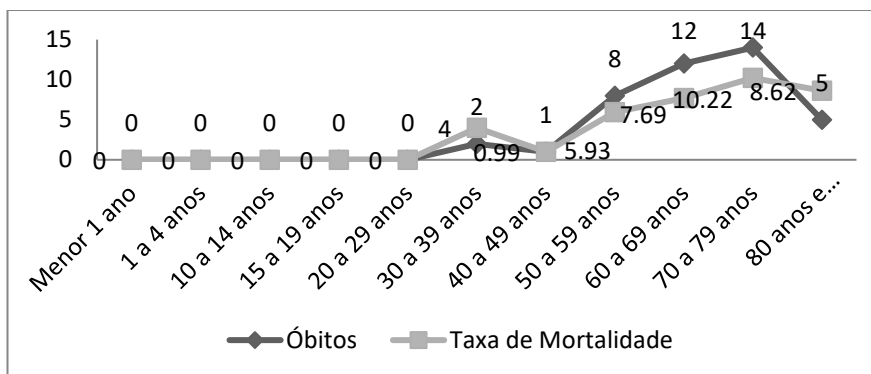
With reference to age group, the highest number of deaths occurred in patients from 70 to 79 years, as well as the highest mortality (n=14 / 10.22%). Next, regarding only the number of

deaths, is the age group between 60 to 69 years (n= 12 / 7.69%). However, based on the death rate, the second place was represented by patients with at least 80 years (n=5, 8.62%) (**Figure**



4).

**Figure 4 – Deaths and death rate by malignant breast neoplasm in men in Minas Gerais, by age group, from 2008 to 2017.**



Less than 1 year

1 to 4 years

10 to 14 years

15 to 19 years

20 to 29 years

30 to 39 years

40 to 49 years

50 to 59 years

60 to 69 years

70 to 79 years

80 years and...

Deaths

Death Rate

## DISCUSSION

Male breast cancer is an uncommon disease. It represents about 1% of all the breast cancers and less than 1% of all the male cancers.<sup>22,23</sup> However, despite its low incidence,

male breast cancer demands attention, since its numbers are starting to rise.<sup>24</sup>

In this study, the number of hospitalizations, deaths, and the death rate were higher from 60 years on. In accordance with Giordano *et al.* (2004)<sup>23</sup>, Park *et al.* (2008)<sup>25</sup> and Ioka *et al.* (2006)<sup>26</sup> have noted that most of the

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patients had at least 60 years at the time of the diagnostic of male breast cancer, as well as a more advanced presentation stage, and a higher number of deaths.

About race, there was a small prevalence of the disease in brown patients, followed by white ones. Similar results were found in an epidemiological study performed by Gonçalves *et al.* (2017)<sup>27</sup> in Minas Gerais, about women with breast cancer, in which the most prevalent patients were brown. In contrast, Rosimery *et al.* (2015)<sup>24</sup> carried out a study in the whole Brazilian territory about male breast neoplasm that record a higher incidence of this disease among the white patients compared to the brown ones, with differences between the regions of the country, with only the Northeast presenting a higher number of hospitalizations of brown people. Such fact might be the result of the predominance of a certain ethnicity in a region, considering the racial diversity of the country, which represents a factor of confusion.

Regarding the nature of the attendances, most of them occurred in private institutions. This possibly happened due to the faster access of the

private system to diagnostic and treatment, in the face of clinical alterations, with the shortest time between the moment of the diagnostic and the beginning of the treatment.<sup>27,28</sup>

The central and southeastern regions of the state of Minas Gerais were the areas with highest number of admissions. This might be explained because these regions are more advanced technologically, concentrating the highest number oncological treatment reference centers. Regarding the nature of the attendance, there was no significant difference between the number of elective and urgent healthcare attendances.

Many recent remarks about male breast cancer have summarized the epidemiology, clinic, pathology, genetics, molecular markers, and treatments of this disease. Such comments highlight that although there are similarities between female and male breast cancers, there are also differences<sup>21</sup>.

According to Dimitrov *et al.* (2007)<sup>21</sup>, male breast cancer, due to its yet low incidence, limits the expertise of oncologists and even academic centers. Most of the information about the

natural history and management of this neoplasm was obtained from small studies, with few patients, or through the projection of experiences with female breast cancer.

A study held by Souza, *et al.* (2017)<sup>29</sup>, in a higher education institution in an inner-state town of the state of São Paulo showed that when 134 men were questioned about the existence of male breast cancer 69.4% answered affirmatively about the possibility of men presenting breast cancer and 30.6% answered negatively, an alarming percentage. Due to the

## FINAL REMARKS

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The number of admissions, deaths, and the rate mortality by male breast cancer was higher in patients from 60 years on, with the highest number of hospitalizations in the age group of 60 to 69 years, while the highest number of deaths and the highest death rate was found in individuals between 70 and 79 years. There was a discrete predominance of brown patients. Private institutions were

## CONFLICT OF INTEREST

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unawareness of the disease among male population, these patients take longer to look for medical assistance, resulting in a delay of the diagnostic and in the presentation with more advance stages clinical stages, affecting negatively the survival rate.<sup>30</sup>

Therefore, the guidance about this disease is extremely important, since information is a determinant factor for the patient to look for medical assistance whenever the disease is suspected, allowing the early diagnostic of the disease and the increase of the survival rate and chances of cure.<sup>8,31</sup>

responsible for most of the admissions and expenses and the central and southern regions were the places with the highest number of admissions, which might be explained by the highest number of oncological treatment reference centers in these regions.

The need for more information and guidance about male breast neoplasm through political policies is vital, allowing the diagnostic of the cancer in an early stage, which might result in a better prognostic and a higher survival rate.

The authors declare the absence of conflict interest related to this paper.

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Further, no information about funding and/or institutions that might be

relevant to the data herein discussed was omitted.

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