



## PROFILE OF MORBIMORTALITY BY MALIGNANT NEOPLASIA OF ESÔFAGO AMONG THE BRAZILIAN REGIONS IN THE PERIOD 2008-2017

*Perfil de morbimortalidade por neoplasia maligna de esôfago entre as regiões brasileiras no período de 2008-2017*

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**Abstract: Objective:** to analyze the epidemiological, socioeconomic and sociodemographic profiles for better effectiveness of interventionist actions and health policies for malignant esophageal neoplasia. **Methods:** descriptive, retrospective and quantitative research. The population had malignant esophageal neoplasia, hospitalized by region, from 2008 to 2017. Data were obtained from the Hospital Information System of SUS (SIH / SUS). **Results:** The largest number of cases of the disease were registered in the age 50 to 69 years (60.28%) (n = 96.315), males 76.45% (n = 122.162), white color 41.10% (66089). The Southeast region presented the highest number of hospitalizations 58.86% (n = 81269) and the North region the lowest 1.97% (n = 3157). The prevalence of deaths was 16.52% (n = 13429) in the Southeast region. The North region had the lowest prevalence of hospitalizations (2 cases / 100,000), the lowest number of deaths, but the highest mortality rate was 19.16% (n = 605). , 4/100 thousand), but the lowest mortality rate was 14.91% (n = 6220). **Conclusion:** There was an increase in hospitalizations in all Brazilian regions (47 to 124%). The number of hospitalizations and deaths due to esophageal neoplasia was higher in the South and Southeast regions. The private sector has shown a much higher outlay than the public. The man and the age group in 50-69 years concentrate the largest numbers of hospitalization and occur more frequently in the character of urgency. This fact can be attributed to the inefficacy of health policies regarding information and control of this disease.

**Keywords:** Esophagus Neoplasms; Health Profile; Public health.

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**Resumo: Objetivo:** analisar os perfis epidemiológicos, socioeconômico e sociodemográfico para melhor efetividade de ações intervencionistas e políticas em saúde por neoplasia maligna de esôfago. **Métodos:** investigação de caráter descritivo, retrospectivo e quantitativo. A população foi portadores de neoplasia maligna do esôfago, internados por região, no período de 2008 a 2017. Os dados foram obtidos do Sistema de Informações Hospitalares do SUS (SIH/SUS). **Resultados:** Registraram-se um maior número de casos da doença na faixa etária de 50 a 69 anos 60,28% (n=96.315), homens 76,45% (n=122.162), cor branca 41,10% (n=66089). A região Sudeste apresentou o maior número de internações 58,86% (n=81269) e a região Norte o menor 1,97% (n=3157). Verificou-se a predominância de óbitos 16,52% (n=13429) na região Sudeste. A região Norte apresentou a menor prevalência de internações (2 casos/100mil), menor número de óbitos, mas a maior taxa de mortalidade 19,16% (n=605), em contrapartida a região Sul apresentou a maior prevalência da doença (14,4/100 mil), mas a menor taxa de mortalidade 14,91% (n=6220). **Conclusão:** Verificou-se um aumento no número de internações, em todas as regiões brasileiras (47 a 124%). O número de internações e óbitos por neoplasia de esôfago foi maior na região Sul e Sudeste. O setor privado demonstrou um gasto muito superior em relação ao público. O sexo masculino e a faixa etária em 50-69 anos, concentram os maiores números de internação e ocorrem com mais frequência no caráter de urgência. Tal fato pode ser atribuído a ineficácia de políticas de saúde acerca de informação e controle dessa doença.

**Palavras-chave:** Neoplasias Esofágicas; Perfil de saúde; Saúde pública.

## INTRODUCTION

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Cancer is a group of diseases caused by the presence of alterations in the control of differentiation leading to a disorderly growth of cells that can affect several organs in an aggressive way, determining the malignancy of the disease<sup>1</sup>. The disease imposes great emotional impact to the patient and their relatives, especially when it progresses to an advanced stage, without any prospect of healing<sup>2</sup>.

The national scenario and the world have been undergoing demographic and epidemiological transition signaling to an increase in the incidence of the disease in the coming years<sup>3</sup>. The explanation for this fact is at greater exposure to risk factors favorable to the development of cancer triggered by the industrialization process<sup>1</sup>.

The esophageal cancer (EC) is the sixth leading cause of cancer death in the world. It presents a high incidence rate, in countries, such as: China, Japan, Singapore and Puerto Rico and frequent in low-income countries<sup>4</sup>. For Brazil, it is estimated 8,240 new cases of esophageal cancer in men and 2,550 in women for each year of the biennium 2018-2019. These values correspond to an estimated risk of 7.99 new cases per 100 thousand men and 2.38 for every 100 thousand women<sup>5</sup>.

In relation to the clinical characteristics of EC, one of the first symptoms to appear is the dysphagia, which occurs due to the tumor growth, which can lead to the obstructive processes making it difficult to swallow, and consequently the weight loss<sup>4</sup>.

EC is an aggressive neoplasia, and, despite recent advances, it still has a low rate of cure. The improvement in the diagnosis and treatment represents a challenge to the current oncology,

particularly when it presents itself in the form of locally advanced disease<sup>6</sup>.

Given this scenario, this study aimed to analyze the epidemiological, demographic and socioeconomic profiles for better effectiveness of interventionist actions and policies on health for the esophagus malignant neoplasias.

## METHODOLOGY

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An investigation study was conducted of descriptive, retrospective nature and quantitative design. The study population consisted of patients with esophagus malignant neoplasia, admitted under public or private regime in the Brazilian regions, in the period from January 2008 to December 2017.

Data were obtained from the Hospital Information System of SUS (SIH/SUS) available at (<http://www.datasus.gov.br>).

The variables evaluated were: number of hospitalizations in accordance with the regions of Brazil; age; race/color; character of elective or emergency care; public or private care service; public spending by regions of Brazil and deaths.

Excel software 12.0 (Office 2007) was used for management and analysis of data. As it was a database of public domain, it was not necessary to submit the job to the Research Ethics Committee.

## RESULTS

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According to the analyzed data from SIH/SUS, in the period from January 2008 to December 2017, it was verified regarding the sociodemographic and clinical data, in all regions a greater number of diseases in males.

Regarding the age range, the frequency of cases of hospitalized patients with esophagus malignant neoplasia was concentrated mainly in the age ranges between 50 to 69 years, 60.28% (n = 96,315). The younger population, from 0 to 39 years old, has a prevalence of 4.05% (n=6,483) of the total number of cases, demonstrating that babies, children, adolescents and young adults have a low rate of hospitalization for this cancer.

Concerning the color/race, there is a predominance of white patients (n=66083; 41.10%), followed by the brown color 32.22% (n=51,808), being that 18.33% (n=29,474) of the cases there was no information about this fact. Concerning the individuality of each region, it is realized that in the South region there is a greater prevalence of hospitalizations in white people

20.32% (n=32,679) in relation to the brown ones 1.55% (n=2498) corroborated by the fact that this population is predominant in this region of the country. This profile was not evidenced in other states, being that the brown color has a larger number of hospitalizations.

The character of elective admission or urgency, the greatest number of hospitalizations was by urgency 58.0% (n=61,350). Regarding the regime of hospitalization, public or private, the highest frequency was the private system 55.7% (n = 89,001) followed of cases ignored 23.87% (n=38,142) and finally the public 20.42% (n = 32,630). The financial expenditures with the hospitalized patients with esophageal cancer were higher in the private hospital (TABLE 1).

**Table 1 - Sociodemographic and clinical data of the patients hospitalized for the esophagus malignant neoplasms in different regions of Brazil, 2008 to 2017.**

Variables	Regions of Brazil				
	North	Northeast	Midwest	Southeast	South
<b>Sex</b>					
Female	910	7455	1912	17138	10196
Male	2247	17896	6374	64131	31514
<b>Age range</b>					
0-9	83	348	84	240	158
10-19	71	290	35	125	90
20-29	129	579	74	334	193
30-39	156	964	199	1640	691
40-49	379	3272	1268	10774	4804
50-59	793	6533	2474	26365	12715
60-69	844	7064	2464	23976	13087
70-79	520	4606	1263	13405	7572
≥80	174	1695	425	4410	2400
<b>Color/Race</b>					
White	166	2252	1053	29939	32679
Black	74	1108	1181	7792	1939
Brown	1816	14436	2483	30575	2498
Yellow	42	358	53	553	211
Indigenous	06	05	02	55	23
Ignored	1053	7192	4514	12355	4360
<b>Character</b>					
Elective	1053	9976	2026	21259	10109
Urgency	2104	15375	6260	6010	31601
<b>Regime</b>					
Public	2099	4941	2279	17504	5807
Private	185	13982	3935	45050	25849

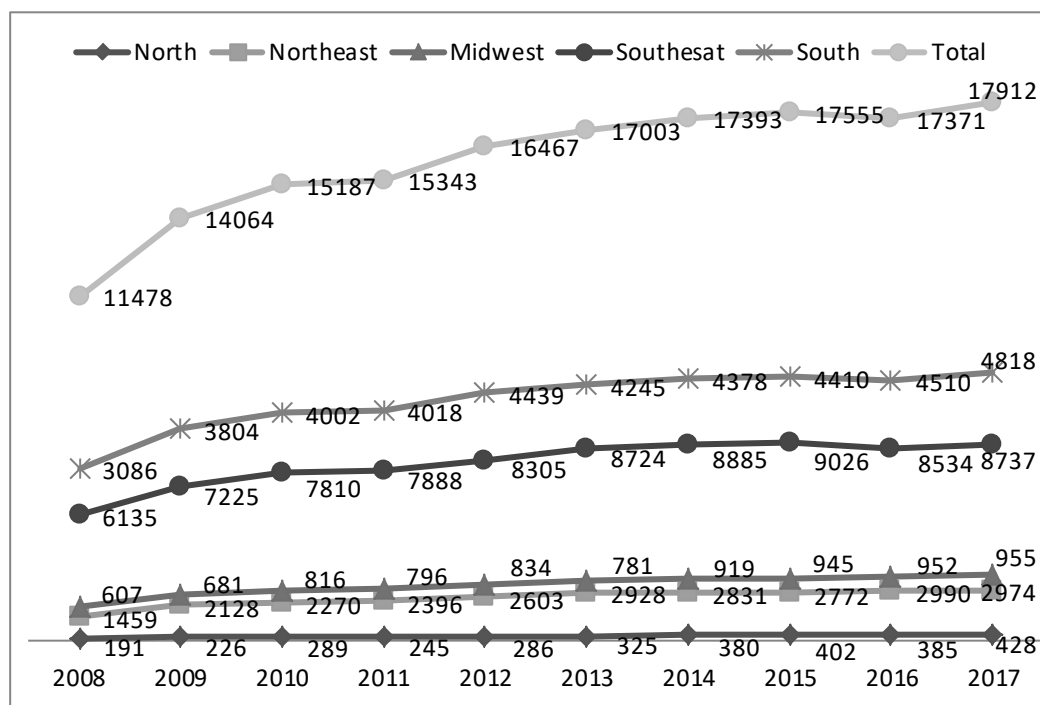
Continuation of Table 1

Variables	Regions of Brazil				
	North	Northeast	Midwest	Southeast	South
Ignored	873	6428	2072	18715	10054
<b>Expenditures</b>					
Public	3,032,889.06	8,170,166.37	2,543,709.15	25,875,835.88	10,829,811.24
Private	189,811.60	23,081,773.44	5,646,222.93	62,630,604.51	39,862,052.36
Ignored	1,259,064.25	11,297,995.41	3,061,614.73	29,111,014.14	18,028,743.75

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

The total number of hospitalizations due to esophagus malignant neoplasms in Brazil, in the period analyzed was 159,773 cases, ranging from 11,478 to 17,912, with an average of 15977 cases per year. The region that presented the greatest number of hospitalizations was the Southeast region (n = 81,269) and the lowest was the North region (n=3,157). There was an increase in the number of hospitalizations between 2008 and 2017, in all the Brazilian regions. The regions with smaller numbers of hospitalizations (North and Northeast), showed a more significant increase in the number of hospitalizations among the ten years of study, 124% and 103%, respectively. However, the increase in the number of cases in Brazil and in the South region was 56% in the Center-West of 57% and 47% in Southeast (FIGURE 1).

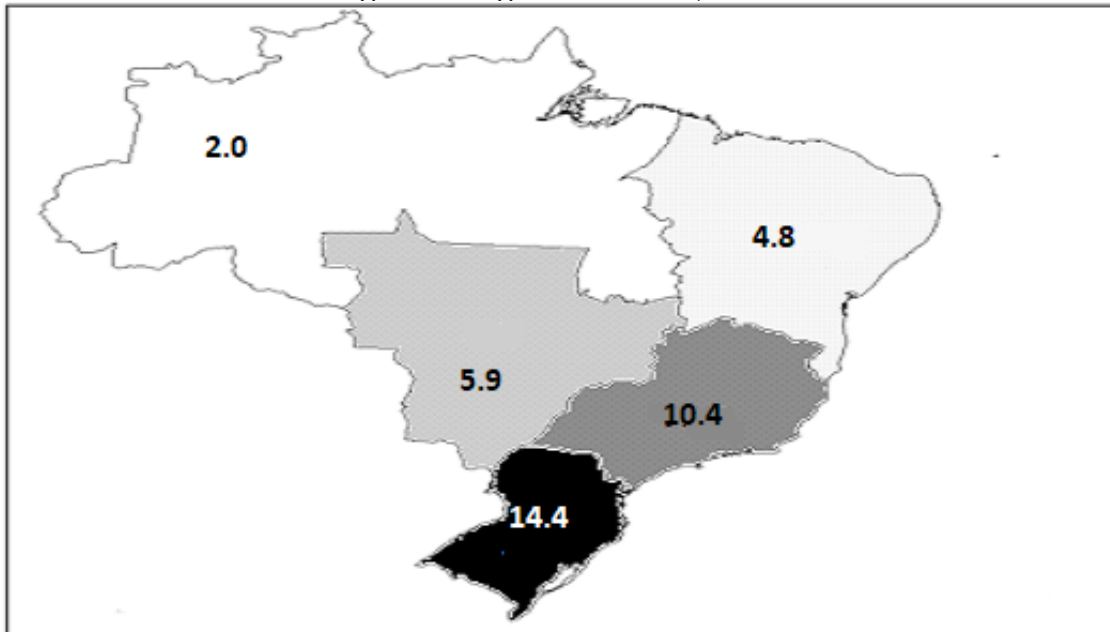
Figure 1 - Number of hospitalizations due to esophagus malignant neoplasms according to regions of Brazil, 2008-2017.



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

Analyzing the prevalence of hospitalizations due to the esophagus malignant neoplasias in the Brazilian regions in the period from 2008 to 2017, the South region presented the highest (14.4%) and the lowest prevalence occurred in the northern region (2.0%) (FIGURE 2).

**Figure 2 - Map of the prevalence of hospitalizations due to esophagus malignant neoplasia according to the regions of Brazil, 2008 to 2017.**

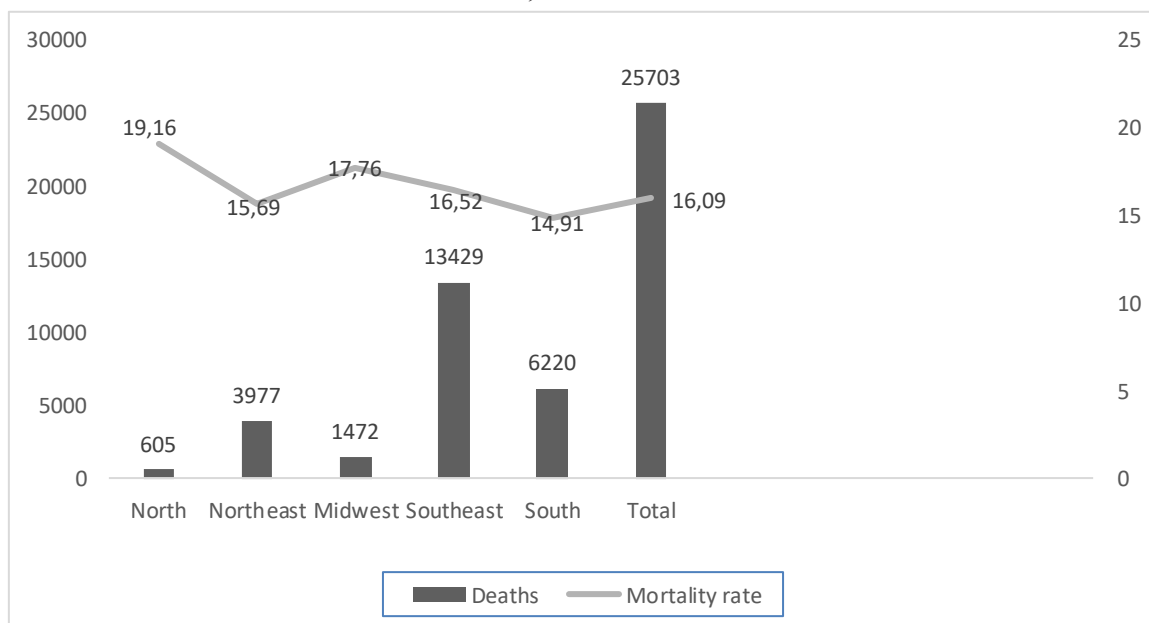


Prevalence / 100 thousand inhabitants

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

Analyzing the data regarding deaths and the mortality rate from the esophagus malignant neoplasms in accordance with the regions of Brazil, shown in figure 3, there was a predominance of deaths in the Southeast region (n=13429; 16.52%), in relation to the Northern region that presented the lowest number (n=605). However, in relation to mortality rate, the North region presented the highest rate (19.16), and the Southern region the lowest (14.91) (Figure 3).

**Figure 3 - Deaths and mortality rate of esophagus malignant neoplasia in different regions of Brazil, 2008 to 2017.**



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

## DISCUSSION

The cancer prevalence has grown considerably in recent years, becoming a serious public health problem, affecting various aspects of cancer patients health, such as, for example: physical, nutritional and psychological<sup>7</sup>.

From 2008 to 2017 there was a growing increase in the number of hospitalizations for esophagus neoplasia in all regions of Brazil (47 to 124%). A possible reason for this increase would be a better access to diagnostic methods with the greatest number of endoscopies and lifestyle changes regarding diet rich in carcinogenic substances, use of tobacco and alcohol and consumption of the drink “mate”, which is part of the culture in Southern Brazil.<sup>8</sup>

One of the theories that justifies the association of that drink as one of the risk factors for the development of EC, more specifically the squamous cell carcinoma is the way it is consumed through a metal tube and at very high temperature, causing inflammatory processes in the esophagus<sup>9</sup>.

In this study the prevalence of esophagus neoplasia was more prevalent in the south of the country, being also demonstrated in a study carried out in the period from 1993 to 1997<sup>10</sup>.

It was observed a predominance of the disease in male patients, and at more advanced ages introducing a peak incidence in the age range from 50-69 years, being uncommon in the age groups before the age of 40 years. Such data may be ratified by other authors<sup>5,11,12,13</sup>. This fact can be justified by the smallest presence of comorbidities associated with this age group.

Concerning race, there is a significant prevalence of the disease in Caucasians, similar to the study performed in the city of São José do Rio

Preto, São Paulo<sup>11</sup>. This situation can be explained by the fact that in Brazil the highest prevalence is in the South region, where the population is mostly white.

In relation to mortality rates, this study showed that the Northern region showed the highest rates, on the other hand, the number of cases of deaths was the lowest. Between 1980 to 2009 it was found that the mortality rates for esophagus cancer, standardized by the world population of 1960, were higher in the states belonging to the southern region<sup>13</sup>.

A discrepancy in the number of deaths recorded in the southeastern region in relation to other regions is observed. This situation can be explained by the fact that the Southeastern region has the largest contingent of people.

The number of hospitalizations per geographical region in the period from 2008 to 2017 showed that the South and Southeast regions concentrate 77% of the occurrence of hospitalizations, similar to the estimates presented by INCA<sup>5</sup> which showed 70%. This situation can be due to the high prevalence of the disease in the state of Rio Grande do Sul, which has a large number of cases of the disease.

It was observed in this study that the greatest number of hospitalizations occurred in character of urgency. This fact can be due to the person's clinical conditions, the disease can be in more advanced stages.

Regarding the regime of hospitalizations, when comparing the public with the private sector, it was realized that the private sector has the largest number of hospitalizations, due to their greater rapidity and resources for diagnosis and treatment<sup>14</sup>.

Regarding the expenditures, it was verified higher costs in the private service. This can be

related to the time of diagnosis, in late stages since there is not much to do. Usually the patients of the public service have delay of diagnosis. The majority of patients is inoperable, i.e. they already have such a bad general condition that they cannot be taken to surgery<sup>8</sup>.

This analysis showed some limitations, since the study of raw data through the Hospital Information System of the Unified Health System does not allow you to make more detailed analyzes of the investigated variables, limiting only the description of the same, without investigation of other risk factors and their influence on the diagnosis and prognosis of the disease.

## CONCLUSION

The number of hospitalizations due to esophagus malignant neoplasms by regions in the studied period has increased over the years, being higher in southern and southeastern Brazil. The number of deaths per year did not follow this outcome, having been higher in the southeastern region than in other regions. Regarding the character of expenditures, the private sector has shown a much higher expenditure in relation to the public, what can be concluded that the patients from the public sector, or even death before being effectively treated, or the demand in the care sector tends to be smaller, this being a bias for studies. In addition, it was noted that the male sex and age group 50-69 years, concentrate the greatest numbers of hospitalizations, which occur more frequently in the character of urgency of private health system. This situation can be explained by the lower demand of medical visits by men, and more predisposed age range to the development and death due to malignant disease.

It is concluded that the esophagus cancer is a neoplasia with a high mortality rate, being,

therefore, considered a serious public health problem. It is essential that the knowledge of this disease so that the diagnosis is carried out in the initial phase, promoting a better effect in the treatment in order to reduce the number of deaths and hospitalizations and also minimize the patient's suffering. It becomes necessary a greater attention from the public and private sectors in supporting the implementation of the cancer prevention and control actions.

## DECLARATION OF CONFLICT OF INTEREST

The authors participated in all stages of preparation of this study and declare no conflict of interest. There was no financial support.

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