

## EPIDEMIOLOGICAL ANALYSIS OF BREAST CANCER IN BRAZIL: 2018 TO 2022

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**Abstract:** Cancer is a chronic disease characterized by abnormal cell growth, which results in changes in the body. Breast cancer is the most common neoplasm among women in Brazil and worldwide, with the exception of non-melanoma skin cancer. The following risk factors stand out among the risk factors: biological, endocrine, and behavioral/environmental factors. The objective of this study is to identify and investigate the clinical-epidemiological profile of patients diagnosed with cancer between 2018 and 2022. The study presents a cross-sectional, descriptive, and quantitative epidemiological study, presenting data made available through DATASUS, in relation to breast cancer cases in the period from 2018 to 2022. Furthermore, during the period of analysis, 354,911 new cases of breast cancer were observed. Thus, it is observed that 98.95% of cases occurred in women while 1.05% in males. Regarding age group, approximately 27.5% of cases occurred within the 50-59 age group, which ultimately demonstrates that the population that is entering old age tends to develop possible breast cancer. In addition, fluctuations in the number of cases can be observed over the years, as this may have occurred due to the Covid-19 pandemic. One. Thus, in order to reduce mortality associated with breast cancer, it is necessary to develop early detection techniques and preventive actions

**Keywords:** Malignant breast neoplasms; Regions of Brazil; Breast cancer in men; Breast cancer risk factors.

## INTRODUCTION

According to the National Cancer Institute (INCA), cancer is the name given to a group of more than 100 diseases that have in common the disordered growth of cells, which invade adjacent tissues and organs. Therefore, it is observed that breast cancer is one of the most common cancers in Brazil, second only to non-melanoma skin cancer (INCA, 2023), since this malignant neoplasm affects both the male and female populations. In this regard, it is noticeable that over the course of an individual's life the chance of this disease manifesting, if preventive measures are not taken, is very high, given that, in Brazil, for every 100 thousand women, 43.74 are affected by this neoplasm (INCA, 2019). In addition, this significant disease goes beyond the field of health and socioeconomic and hereditary issues also end up being discussed.

This huge number of cases can be attributed to numerous factors that contribute to the development of this disease, such as endocrine, biological, environmental factors, obesity, and even reproductive life (INCA, 2019).

Therefore, some of these endocrine and reproductive life factors are related to increased production and exposure to estrogen (MATOS et al., 2021). This way, after menopause, women have a reduction in the production of estradiol by the ovaries and then mesenchymal cells of adipose tissue take on the role in the production of estrogen. This way, as obesity is generally accompanied by a high amount of adipose tissue, women who are obese tend to produce even more estrogen and therefore maintain a high exposure, contributing to the existence of possible breast cancer (SILVA et al., 2017). As for the hereditary issue, about 5 to 10% are associated with it (SBM, 2017).

Furthermore, regarding environmental factors, strong exposure to contaminated air,

excessive alcohol consumption, and smoking also end up being a risk, not only for breast cancer but for the individual's health in general, the lack of physical activity and also the exposure to some ionizing radiation. (ANOTHAISINTAWEE et al., 2013; INUMARU et al., 2011).

With this, as commented on about the factors that end up aggravating malignant breast neoplasia, it is also possible to observe some preventive exams that help in the early detection of the disease, such as self-examination, which can be performed by everyone in the population as long as they are well instructed, and mammography, which must be performed every two years by women between the ages of 50 and 69 (SCHÄFER et al., 2021).

Thus, the main objective of this article is to identify and discuss, through graphs provided by Tabnet, the epidemiological profile of patients diagnosed with breast cancer throughout Brazil, correlating these cases with their respective regions.

## **MATERIAL AND METHODS**

The method developed was through a quantitative exploratory-descriptive research, requiring the use of secondary data on malignant prostate neoplasia presented in all regions of Brazil, made available on the DATASUS platform. Taking into consideration, the quantitative number of prostate cancer cases of the population group affected by age group and sex. Registered throughout the years 2018 and 2022, in which they were evaluated, leading to a total of 345,883 thousand registered individuals.

It is not necessary to have the Ethics Committee evaluate the development of the research resulting in the presentation of public data.

## **RESULTS AND DISCUSSION**

The results show that during the period from 2018 to 2022, Brazil reported, through the DATASUS platform, 352,645 million cases of breast cancer, with this number divided into 1.03% for men and approximately 98.97% for women, data that end up showing that although it is not so common in society, men can also be affected by this disease throughout the country, however, as we know, the main risk group for breast cancer, in particular, will still be women who have bad lifestyle habits and cases of cancer in the family in general (FIGURE 1). Furthermore, it is also observed that the southeast region was the region studied with the highest number of diagnosed cases of breast cancer, with approximately 1,450 men and 173,311 women throughout the region, followed by the northeast and south regions, with cases of 1,034 men and 79,456 women, and 649 men and 65,385 women respectively. These cases per region may be related to population density, as the Southeast, South and Northeast regions have the highest population densities, respectively. (IBGE, 2010); (FIGURE 1).

Furthermore, regarding age group data, it can be observed that in most regions of Brazil, the ages of 50 to 59 were the most affected, with approximately 26.4% of cases, followed by the ages of 40 to 49 and 60 to 69, with their corresponding percentages being 24.8% and 21.6%, respectively.

Thus, these data show that, most likely, over time, the human body begins to store mutations that occur throughout the individual's life, that is, an accumulation of risk factors for cancer begins to occur, and this, added to the factor of reduced cell functionality as we age, which is a natural process of life, may justify the greater number of cancer cases as we age. (COSTA DE MELO et al., 2015)

Thus, it is noticeable that from the age of 20, cases of breast cancer begin to occur more

### HOSPITAL MORBIDITY IN THE UNIFIED HEALTH SYSTEM (S.U.S.) BY GENDER AND PLACE OF RESIDENCE

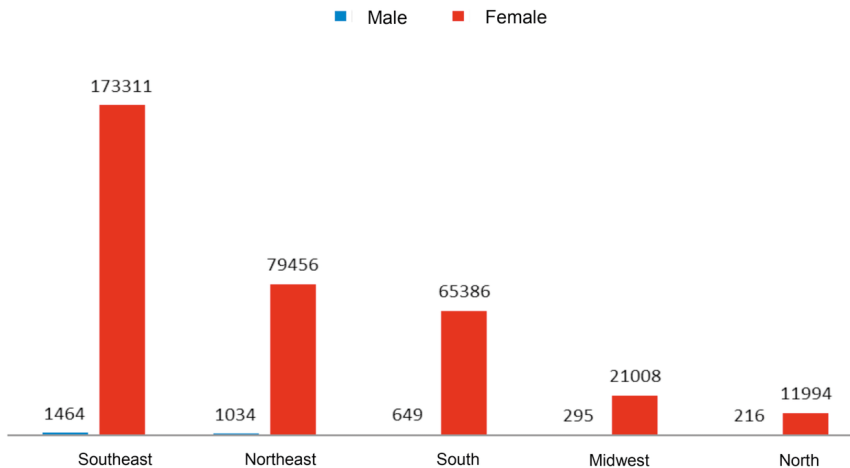


FIGURE 01

### HOSPITAL MORBIDITY IN THE UNIFIED HEALTH SYSTEM (S.U.S.) BY AGE GROUP AND PLACE OF RESIDENCE

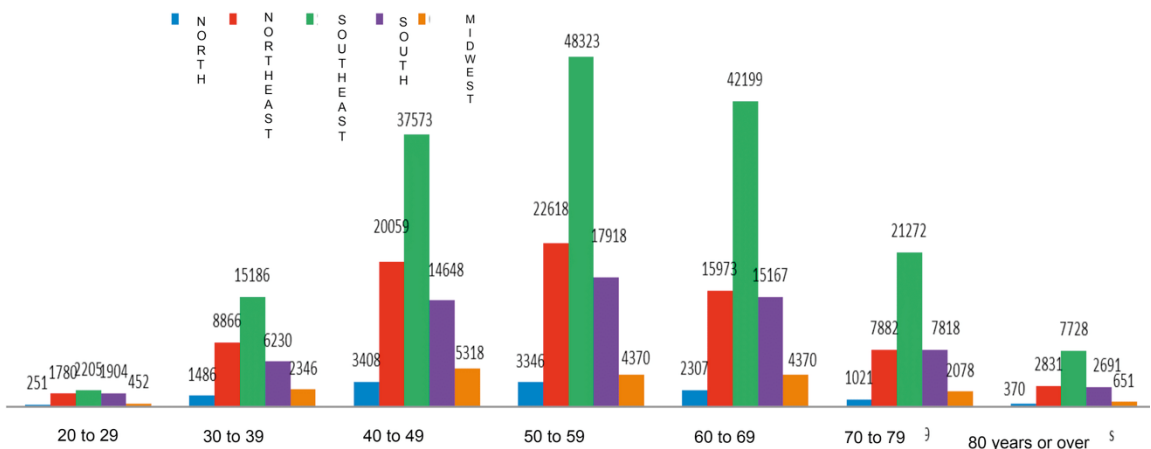


FIGURE 02

significantly in the population, and over time, cases increase until reaching their peak in the age group of 50 to 59 years, which can be seen in FIGURE 02 and after that, cases decrease again, which explains and emphasizes why mammography exams are performed in this age group up to 69 years, and every two years (SCHÄFER et., al, 2021).

Furthermore, it is known that the various risk factors end up playing a fundamental role in the development of this disease, such as smoking, alcoholism and obesity, which end up affecting a large part of the Brazilian

population (ANOTHAISINTAWEE et al., 2013). This occurs both due to the greater production of estrogen by the mesenchymal cells of adipose tissue (SILVA et al., 2017), and due to the harmful stimulus caused by tobacco and alcohol to the body, which end up contributing to the production and development of cancer (Cite something that proves this). Thus, it is observed that among these factors, smoking ends up contributing to around 18.32% of breast cancer cases (PIVETTA et al., 2014).

This way, it can be suspected that factors such as smoking itself are associated with carcinogenesis, due to smoke containing polycyclic hydrocarbons, aromatic amines and nitrosamines, compounds that, in some studies, end up showing that they carry out mutations in the p53 gene, a gene recognized as a natural tumor suppressor of the body itself (JÚNIOR et al., 2002) present in human DNA, favoring the production of malignant breast neoplasia (LOMBARDI et al., 2011). However, it is known that, in addition to smoking, another aggravating factor for cancer is alcoholism. A long-term cross-sectional and observational study from 2019, including 191 patients with an average age of 54 years, showed that 3.1% of the interviewees consumed more than five doses of alcohol per week, triggering an alert to be taken as a measure to end this pessimistic attitude that favors the development of breast cancer in the Brazilian population (TURK et al., 2020). Another very important factor for the development of cancer is heredity.

Recurrently, it ends up triggering mutations in the BRCA1 and BRCA2 genes, accounting for approximately 10% of all cases of breast cancer. The fundamental role of the BRCA1 and BRCA2 genes is to produce tumor repair proteins. They have an important function of organizing and remodeling cells that have been damaged at some point. Any mutation in the gene causes the proteins to not develop their objectives correctly, without repairing the damage to the cells, leading to the development of cancer. (CAMPOS et al., 2022)

Another factor worth highlighting is the socioeconomic issue in Brazil in general, given that several regions have less accessibility, education, and conditions than other regions, which ends up making it difficult to detect and prevent breast cancer (SCHÄFER et. al, 2021).

Thus, it is observed that the North region, the largest region in the country in territorial scope, is a region that corresponds to only 3.5% (FIGURE 03) of breast cancer cases. However, as much as it may seem like a good thing, the lack of accessibility and education in the region may be masking the true number of this disease, given that although there are people in the southeast who do not have excellent living conditions, they have greater accessibility to public health services, which ends up causing a greater number of cases in this region.

## CONCLUSION

Finally, with the increasing number of breast cancer cases in the country, it is clear how necessary all preventive measures are for this disease, since physical activities, good eating habits and complementary exams such as self-examination and mammograms are essential for the early detection of this disease that ends up causing so many people to die. The group with the highest incidence of this disease is women between the ages of 50 and 59, the recommended age for performing a mammogram, which ends up detecting several cases of this malignant breast neoplasm early, saving many lives of both men and women.

In addition, another fact that can be considered is the socioeconomic and geographic conditions in our country, since it is clear that in regions with low accessibility there are most likely fewer conditions to treat this disease or even diagnose it, leading to some data that, although they may seem good and demonstrate an improvement compared to other years, are in fact masking this lack of accessibility and economic conditions of people in all Brazilian regions.

This way, it would be more than interesting to raise awareness among the Brazilian population about these factors, encouraging more and more prevention methods, such

### PERCENTAGE OF TOTAL HOSPITAL MORBIDITY IN THE UNIFIED HEALTH SYSTEM (S.U.S.) OF BRAZIL BY REGION

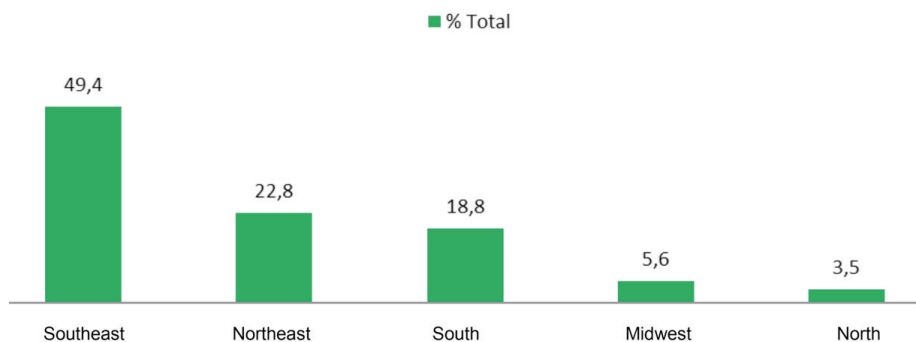


FIGURE 03

as practicing physical activities and eating well, risk factors such as obesity and excessive alcohol consumption, and also exams that seek early detection of this malignant neoplasm, such as mammography, self-examination

and also medical monitoring, and after these measures are taken we will most likely see a significant improvement in both the number of cases and the number of deaths caused by breast cancer throughout Brazil.

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