

EPIDEMIOLOGICAL PROFILE OF DEATHS FROM MALIGNANT NEOPLASM OF THE PANCREAS IN BRAZIL BETWEEN 2000 AND 2019

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Abstract: Goal: To know the profile of deaths from malignant neoplasm of the pancreas in Brazil between 2000 and 2019. **Methods:** This study has data from the Department of Informatics of the Ministry of Health (DATASUS), from 2000 to 2019. **Results:** There was an increase in the number of deaths from pancreatic cancer in Brazil, with 0.47% of the total deaths recorded in the country in 2000 and 0.87% in 2019. Among the Brazilian states, São Paulo was the state with the highest number of diagnoses of the disease, representing 29.19%. The largest number of deaths from pancreatic cancer is in the age group of 80 years or older (20.35%). **Conclusion:** Through this study, there is a relevant annual growth rate of deaths from malignant pancreas neoplasm. Therefore, tracing the epidemiological profile of these patients results in greater attention in medical management and in the direction of preventive campaigns.

Keywords: Epidemiology, Neoplasms, Pancreas Neoplasms

INTRODUCTION

According to the Ministry of Health (2016), cancer is a disease responsible for the main causes of death worldwide, thus becoming a public health problem. The impact of cancer in the coming decades is likely to reach 80% of the more than 20 million new cases estimated for 2005, according to the National Cancer Institute (2021).

Pancreas Cancer (PC) has a high mortality rate, with late diagnosis, difficult to detect, it represents 2% of all types of cancer diagnosed, as well as 4% of all cancer deaths in Brazil. The American Cancer Society (2021) already states that PC is responsible for approximately 3% of all cancers in the United States, and for about 7% of cancer deaths in this country. The involvement of exocrine glandular tissue - adenocarcinoma

- is part of the most common type among pancreatic cancers, with the capacity to affect 90% of the total cases diagnosed in Brazil, according to the National Cancer Institute (BRASIL, 2021). And, according to the American Cancer Society (2019), despite its aggressive behavior, not all tumors in the pancreas are cancers, and may present as serous cystic neoplasm, mucinous cystic neoplasm, intraductal papillary mucinous neoplasm or solid pseudopapillary neoplasm - tumors that are generally benign, of cystic composition filled with liquid, slow growing mucin and solids, respectively.

According to the International Union for Cancer Control, cancer of the pancreas increases with advancing age, commonly affects people over 60 years of age, and is rare in people under 30 years of age. It has a ratio of 10/100,000 inhabitants between 40-50 years and 116/100,000 inhabitants between 80-85 years, with a prevalence among males (BRASIL, 2021). There are risk factors related to heredity in PC and risk factors that do not have such a relationship. The National Cancer Institute reports that only 10 to 15% of cases stand out with a genetic predisposition to Pancreas Cancer, being breast and ovarian cancer (BRCA1, BRCA2 and PALB2 genes), Peutz-Jeg Syndrome and of hereditary pancreatitis hereditary risk factors. In relation to non-hereditary risk factors that can be modified, smoking, obesity, physical inactivity, diabetes mellitus and non-hereditary chronic pancreatitis are mentioned (BRASIL, 2021). Given this scenario, the possibility of greater chances of treatment is directly related to the early detection of cancer, either through laboratory or radiological tests of cases suggestive of the disease or routine tests in people with a greater chance of developing the disease.

METHODOLOGY

The present work consists of a cross-sectional study (time series) of aggregated observational data, based on data collected from the Mortality Information System (SIM) available on the platform of the Department of Informatics of the Unified Health System (DATASUS) and corresponding to the information from Brazil in the period from 2000 to 2019. The studied population consists of patients who died due to pancreatic cancer in the aforementioned period. The variables used were: year of death, number of diagnosed cases, number of deaths, federation units, age group, sex and race. The International Classification of Diseases (ICD-10) was considered for inclusion in the category Malignant neoplasm of the pancreas (C25). Microsoft Office Excel® 2019 was used to calculate mortality rates and prepare the evaluated graphs. The research followed all ethical principles, since, as it is secondary data to the SIM, there was no obligation to submit it to the Research Ethics Committee.

RESULTS AND DISCUSSION

According to DATASUS data, in absolute numbers, the lowest incidence was in the year 2000, with 4410 deaths (equivalent to 2.93%). The highest incidence was in 2019, with 11801 deaths (equivalent to 7.84%). The average annual rate of increase corresponds to 5.34% (Figure 1). As for the general mortality rate, calculated based on the population estimated by the IBGE for the period, in 2000 it was 2.65 deaths per 100,000 inhabitants. In 2019, this value rose to 5.61. Therefore, it appears that there was not only a homogeneous increase in deaths, but also in the mortality rate in the aforementioned period.

The likely most accepted hypothesis for this growing increase in deaths over the last few years is the increase in cases of pancreatic

neoplasia precipitated by the growth of risk factors that lead to this condition such as: smoking, obesity, diabetes, sedentary lifestyle, consumption of red meat and genetic alterations (SOLDAN M, et al. 2017). Of these factors, the most observed was the use of tobacco as the main risk factor, since people who smoke are 5 times more likely to develop this neoplasm, as well as diabetes was shown in 80% of patients with pancreatic neoplasm (NOBESCHI et al. 2012).

In relation to deaths per unit of the federation, in absolute numbers, the Southeast region was the one with the most deaths from malignant pancreatic neoplasia (77,524), equivalent to 51.56%. The North region was the one with the least number of deaths (5039), registering 3.35% of the total (Figure 2).

The most accepted hypothesis for this disparity in the Southeast region is due to the higher population rate, in addition to a higher prevalence of risk behaviors, such as smoking and alcoholism (SOLDAN M, et al. 2017). As for the age group, there is an exponential increase in the number of deaths with advancing age. In the age groups involving 7 days of life to 49 years, 12142 deaths were recorded, which is equivalent to 0.8% of the total. On the other hand, the deaths recorded only in the age group over 80 years old are 30,608, which corresponds to 20.35% of the total (Figure 2).

Allied to this data, the mortality rate registers a progressive increase the higher the age group, especially after the age of 50. The rate for both sexes, from 0 to 4 years old, is 0.01; from 05 to 09 years is 0; from 10 to 14 years is 0.01; from 15 to 19 years old is 0.02; from 20 to 29 years is 0.07; from 30 to 39 years is 0.37; from 40 to 49 years old is 1.93; from 50 to 59 years old is 7.09; from 60 to 69 years is 18.1; from 70 to 79 years old is 36.05; over 80 years is 58.25 (Figure 3).

One reason for this rate to increase with advancing age is the adoption of unhealthy lifestyle habits during the younger phase of life, combined with failures to correct mutations and other oncogenic processes during aging (SILVA, et al. 2005; INCA, 2018). In an analysis of the World Health Organization (WHO) database on temporal trends in pancreatic cancer mortality, similar epidemiological patterns between men and women were observed in Brazil between 1996 and 2008 (DA FONSECA AA, et al. 2016).

In the present study, deaths by sex showed little difference, corroborating the aforementioned research, with 50.23% being male. One of the hypotheses is the increased exposure to preventable risk factors such as chronic pancreatitis due to alcoholism and obesity in men. On the other hand, females corresponded to 49.75%, noting that when comparing the previous study, the discrepancy of deaths by sex is not high. The number of ignored cases was also taken into account in this study, which represented 21 deaths.

Referring to the same analysis mentioned above, it was also observed that between 1980 and 2009, among the Brazilian states, in the male sex, Rio Grande do Sul led in the mortality rate (6.39/100,000), while Bahia obtained the 18th place in the same parameters analyzed. Accordingly, in females, the state that had the highest mortality rate was also Rio Grande do Sul (4.66/100,000), with Bahia in 22nd position (1.39/100,000) (DA FONSECA AA, et al. 2016). Regarding race, white was the one with the most deaths, with 96,779 (64.36%).

The one that registered the least was the indigenous, with 134 deaths (0.08%). The literature demonstrates that the black race is more likely to develop the disease, explained by the greater relationship to some risk factors such as SAH, DM and smoking. However, the data show a higher mortality

on the part of the white color. One of the hypotheses for this is a higher success rate in the treatment of black individuals (TOLEDO MH, et al. 2021). The mortality rate of pancreatic cancer increases annually, since this type of neoplasm has a high fatality rate, with incidence rates practically equal to the mortality rates (TOLEDO MH, et al. 2021). In line with this question, it was possible to observe, in the adjusted proportional mortality, a single drop between the years 2002 and 2003, corresponding to the percentage of deaths from pancreatic cancer in the total number of deaths in the country. It is possible to perceive an increasing variation in this situation, with no negative variation over the analyzed period, according to the data exposed in the SIM. In the year 2000, deaths from malignant pancreatic neoplasia corresponded to 0.47% of the total number of deaths in Brazil. At the end of the analyzed period, in 2019, the number corresponded to 0.87%. (figure 4). The greatest variation was between the years 2003 and 2004, with an increase of 12.95%. The smallest variation was between the years 2002 and 2003, with an increase of 0.22% (figure 5).

CONCLUSION

In view of the observed aspects, it is concluded that there was a homogeneous and significant increase in deaths and in the mortality rate between the years 2000 and 2019. The present work reaffirms the hypothesis that pancreas neoplasia is precipitated by risk factors and, among those mentioned above, tobacco use and diabetes were the most observed. With regard to the main age group of the public affected by this neoplasm, it is clear that there was an exponential increase in the number of deaths with advancing age. In view of what has been mentioned, there is a need for public policies aimed at prevention to be implemented so

that it becomes general knowledge which factors increase the probability of triggering pancreatic cancer.

REFERENCES

1. AMERICAN CANCER SOCIETY, 2019. Em: O que é câncer de pâncreas: Crescimentos benignos e pré-cancerosos no pâncreas. American Cancer Society, 11 fev. 2019. Disponível em: <https://www.cancer.org/cancer/pancreatic-cancer/about/what-is-pancreatic-cancer.html#references>. Acesso em: 22 maio 2021.
2. AMERICAN CANCER SOCIETY, 2021. Em: Principais estatísticas para câncer de pâncreas. 21 jan. 2021. Disponível em: <https://www.cancer.org/cancer/pancreatic-cancer/about/keystatistics.html#references>. Acesso em: 22 maio 2021.
3. BRASIL, 2016. Em: Instituto Nacional de Câncer José Alencar Gomes da Silva. Estimativa 2016 Incidência de Câncer no Brasil. 2016. Disponível em: < <http://www.inca.gov.br/estimativa/2016/index.asp?ID=1>>. Acesso em: 18 mai. 2021.
4. BRASIL, 2021. Em: Instituto Nacional de Câncer. Câncer de pâncreas. [S. l.], 4 mar. 2021. Disponível em: <https://www.inca.gov.br/tipos-de-cancer/cancer-de-pancreas>. Acesso em: 24 maio 2021.
5. DA FONSECA, Anderson Amaral; RÊGO, Marco Antônio Vasconcelos. Tendência da mortalidade por câncer de pâncreas em Salvador-Brasil, 1980 a 2012. *Revista Brasileira de Cancerologia*, v. 62, n. 1, p. 9-16, 2016.
6. DA SILVA, Marcos Mendes; DA SILVA Valquíria Helena. Envelhecimento: importante fator de risco para o câncer. *Arq. Med. ABC* v. 30 no 1 Jan/Jun 2005
7. INCA, 2018. Em: Câncer de pâncreas - versão para Profissionais de Saúde. Disponível em: <https://www.inca.gov.br/tipos-de-cancer/cancer-de-pancreas/profissional-de-saude> Acesso em: 02 jun 2021.
8. NOBESCHI, Leandro; BERNARDES, Wilson; FAVERO, Nilze. Diagnóstico e prevenção do câncer de pâncreas. *Ensaio e Ciência: Ciências Biológicas, Agrárias e da Saúde*, v. 16, n. 1, p. 167-175, 2012.
9. SOLDAN, Mônica. Rastreamento do câncer de pâncreas. *Revista do Colégio Brasileiro de Cirurgiões*, v. 44, n. 2, p. 109-111, 2017.
10. TOLEDO, Milena Hamano; ROSA, Amanda. Papel dos fatores de risco na identificação de indivíduos ao rastreamento do câncer de pâncreas: revisão sistemática. 2021.



Figure 1 - Number of deaths from malignant neoplasm of the pancreas (2000 to 2019).

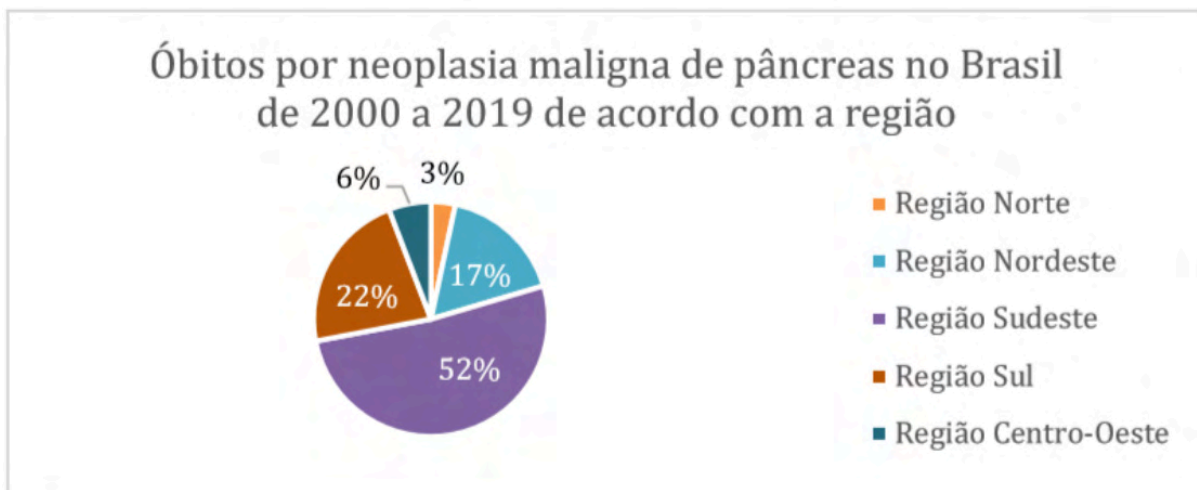


Figure 2 - Number of deaths from malignant neoplasm of the pancreas by region

Óbitos por neoplasia maligna de pâncreas no Brasil de 2000 a 2019 de acordo com a faixa etária

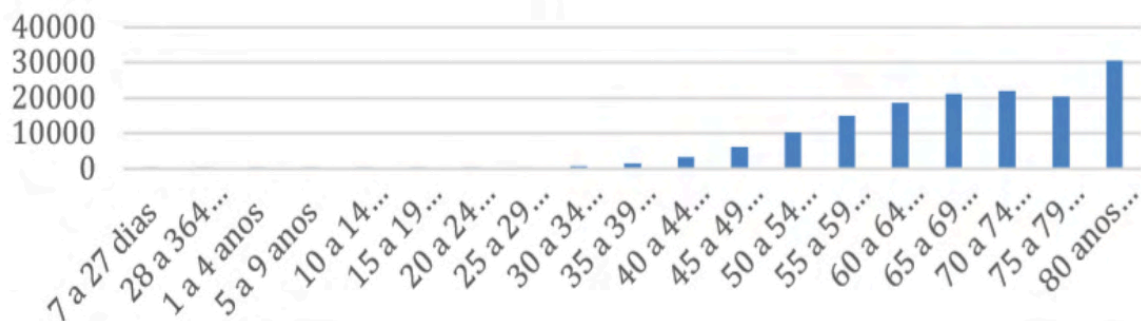


Figure 3 - Number of deaths from malignant pancreatic neoplasm by age

Taxa de mortalidade por câncer de pâncreas no Brasil de acordo com a idade em ambos os sexos de 2000 a 2019

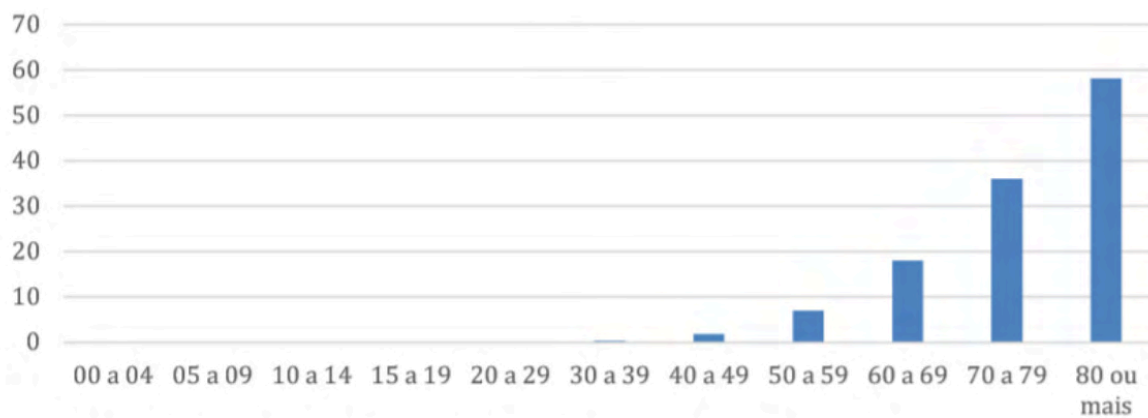


Figure 4 - Mortality rate by age (2000 to 2019)

MORTALIDADE PROPORCIONAL AJUSTADA POR CÂNCER DE PÂNCREAS NO BRASIL DE 2000 A 2019

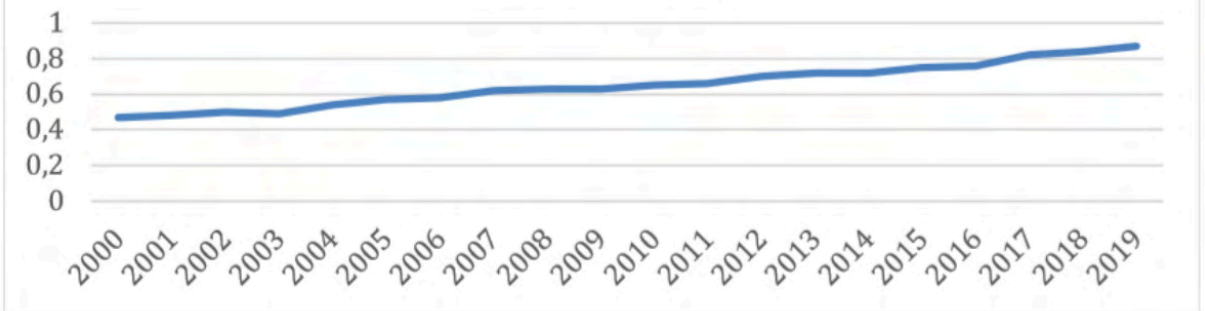


Figure 5 - Proportional mortality adjusted according to the total number of deaths in Brazil (2000 to 2019)