EPIDEMIOLOGICAL PROFILE OF PROSTATE CANCER IN BRAZIL: A DECADE PORTRAIT

PERFIL EPIDEMIOLÓGICO DO CÂNCER DE PRÓSTATA NO BRASIL: RETRATO DE UMA DÉCADA

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ABSTRACT

Prostate cancer (PC) is the most common cancer among men and the second type that most evolves to death in these patients. With the increase in life expectancy, diseases such as this one have been detected and treated early, taking on an increasing dimension and becoming a public health problem. This is a descriptive epidemiological study, whose data are available from DATASUS. The study population consisted of all cases of malignant prostatic neoplasm in men of all ages, diagnosed and recorded from 2009 to 2018. The annual growth of new cases of prostate cancer was continuous, decreasing only in 2018, with a fall of 0.34%. Men aged 50 and over comprised the largest number of cases, with ages ranging from 60 to 69 years accounting for 38.21% of cases. In whites and mixed races there were more than 60% rate of this neoplasia. There was a growing trend of increasing mortality rates with the increasing age, with men over 80 showing the highest numbers in this rate. R$ 517,416,212.44 were spent in these 10 years with malignant prostatic neoplasm. It is concluded that, in Brazil, the profile of PC patients is male over 50 years of age, the majority being white and concentrated in the Southeast. The number of hospitalizations and the mortality rate increased over these 10 years and the mortality rate was also higher in the elderly with PC.

Keywords: DATASUS. Epidemiology. Prostate cancer.

RESUMO

O câncer de próstata (CaP) é o câncer mais comum entre os homens e o segundo tipo que mais evolui para óbito nesses pacientes. Com o aumento da expectativa de vida, doenças como esta vêm sendo detectadas e tratadas precocemente, assumindo uma dimensão cada vez maior e se tornando um problema de saúde pública. Trata-se de um estudo epidemiológico descritivo, cujos dados foram disponibilizados pelo DATASUS. A população do estudo foi constituída por todos os casos de neoplasia maligna da próstata em homens de todas as idades, diagnosticados e registrados no período de 2009 a 2018. O crescimento anual dos casos novos dessa doença foi contínuo, decrescendo

somente em 2018, com uma queda de 0,34%. Homens a partir de 50 anos englobaram o maior número dos casos, sendo as idades de 60 a 69 anos responsáveis por 38,21% dos casos. Em brancos e pardos houve mais de 60% de taxa desta neoplasia. Observou-se uma crescente tendência de aumento da taxa de mortalidade com o aumento da idade, com homens acima de 80 anos apresentando os maiores números desse índice. R$517.416.212,44 foram gastos nesses 10 anos com a neoplasia maligna da próstata. Concluiu-se que, no Brasil, o perfil dos pacientes com CaP é de homens acima de 50 anos, sendo que a maioria é da raça branca e se concentra no Sudeste. O número de internações e a taxa de mortalidade cresceram ao decorrer desses 10 anos analisados e a taxa de mortalidade também se mostrou maior nos idosos com CaP.

Palavras-chave: Câncer de próstata. DATASUS. Epidemiologia.

INTRODUCTION

According to the José Alencar Gomes da Silva National Cancer Institute (INCA) (2017), in Brazil, prostate cancer (PC) is the most common among men, excluding nonmelanoma skin cancer, and it is the second type that most evolves to death in these patients. It is considered a cancer of the third age, since about 3/4 of the cases in the world occur after 65 years of age (INCA, 2014). In addition, the population showed an increase in its life expectancy, which made possible a greater detection of PC cases, since it mainly affects the elderly. Thus, this pathological condition has been detected and treated early, becoming a public health problem, because it takes on an increasing dimension (SANTOS; SOUZA, 2017).

Screening for malignant prostatic neoplasm can be performed by rectal touch and prostate specific antigen dosing, but is not recommended by INCA, as both strategies present more risks than possible benefits in screening. It is indicated only in men with early signs and/or symptoms of the disease (INCA, 2014).

However, the search for preventive health care is not common among the male population, which justifies the high rates of the disease. Normally, men's health needs are undervalued by themselves, which means that they are not properly recognized. This makes it possible to understand that male identity is a risk factor for health, since it becomes vulnerable while them accepts, without reflection, the socially and culturally constituted gender patterns. In this bias, it is understood that the need for man's health care actions, such as diagnosis, treatment, rehabilitation, maintenance and protection, represent a challenge to the public health system, mainly if linked to reflection on the influence of cultural values (FERNANDES *et al*., 2014). The objective of this article is to identify the epidemiology of cases of malignant prostatic neoplasm in Brazil over a 10-year period.

MATERIAL AND METHODS

It is a descriptive epidemiological study, whose data were obtained by consulting the following databases: Mortality Information System (SIM) and Hospital Information System (SIH), respectively, made available by the Department of Informatics of the Unified Health System (DATASUS), at the electronic address (http://www.datasus.gov.br), which was accessed on November 20th, 2019. The data processing and analysis were developed through Excel software (Microsoft®).

The study population was composed of all cases of malignant prostatic neoplasm in men of all ages, diagnosed and registered from 2009 to 2018. The variables analyzed were age range, region, color/race, hospitalization, mortality rate and costs of hospital services. In order to avoid late reporting errors, we chose to analyze the data available until 2018, the last year in which the complete data were included. Since it is a public domain database, it was not necessary to submit the project to the Research Ethics Committee.

RESULTS AND DISCUSSION

According to the World Cancer Research Fund International (2018), malignant prostatic neoplasm is on the fourth position in the ranking of the most prevalent cancer in the world, and is the second most common in men, preceded by lung cancer. According to Paiva, Motta and Griep (2010), the incidence of PC is increasing each day more. Numerous factors are associated with this phenomenon, among them are: the increase in life expectancy; frequent campaigns to track the disease, thus increasing the number of men diagnosed with cancer; eating habits, such as high caloric and fatty foods; and environmental influences (PAIVA; MOTTA; GRIEP, 2010).

Currently, numerous national campaigns, such as the Blue November, are promoted by hospitals, medical societies and other organizations in order to stimulate PC tracking, although several foreign institutions and, in Brazil, INCA do not recommend it. The objective of this screening would be to perform the early detection of PC, before the appearance of symptoms, which could, theoretically, increase the probability of treatment success, increasing survival and/or improving the quality of life of the patient. However, it has already been demonstrated that this screening offers more risks than possible benefits (STEFFEN *et al*., 2018). For example, according to Bell *et al*. (2015), what occurs today is an overdiagnosis, in which patients who would never have shown signs and symptoms of this neoplasia are submitted to treatment that can cause side-effects, such as incontinence and impotence.

Table 1 shows the total number of cases of malignant prostatic neoplasm diagnosed from 2009 to 2018, which totaled 265,483 new cases, which 31,527 occurred in 2017, representing 11.88% of the total number of cases recorded over 10 years. The annual growth was continuous, decreasing only in 2018, presenting a decrease of only 9.65% of new cases compared to the previous year.

Table 1 - Total distribution of the number of cases of malignant prostatic neoplasm diagnosed in 10 years, according to the year of hospitalization

Year of hospitalization	Nº	%
2009	19,463	7.33%
2010	21,676	8.16%
2011	23,846	8.98%
2012	25,394	9.57%
2013	26,350	9.93%
2014	27,377	10.31%
2015	29,459	11.10%
2016	29,769	11.21%
2017	31,527	11.88%
2018	30,622	11.53%
Total: 265,483		

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

Table 2 shows that, in relation to the age range, men over 50 years of age encompass the largest number of cases of malignant neoplasia in 10 years, which the ages from 60 to 69 were responsible for the majority, with 101,430 (38.21%).

According to Bell *et al*. (2015), cases of malignant prostatic neoplasm are found in some very young men and the prevalence of this cancer increases in a growing pace with age, suggesting that this cancer is generally a slow developing disease with a long pre-clinical phase. The development of symptoms and clinical diagnosis occur mainly in older men, and many die of other causes long before any symptom is clinically manifest (BELL *et al*., 2015).

Table 2 - Total distribution of the number of cases of malignant prostatic neoplasm diagnosed in 10 years, according to age range

Age range	Nº	%
Below 19 years	368	0.14%
20-29 anos	181	0.07%
30-39 anos	318	0.12%
40-49 anos	4.515	1.70%
50-59 anos	38.501	14.50%
60-69 anos	101.430	38.21%
70-79 anos	84.395	31.79%
Over 80 years	35.775	13.8%

Source: Ministry of Health – SIH/SUS.

Regarding the color/race, according to DATASUS, whites and mixed race reached together more than 70% of cases of malignant prostatic neoplasm in 10 years, with 102,638 (38.66%) and 89,519 (33.72%), respectively (Table 3). However, in opposition to the result presented by DATASUS, according to the Brazilian Society of Urology (2018), PC in black men presents a higher incidence than in whites.

In the North American population, a considerable difference in PC incidence and mortality between black and white men is already well established, being 3 and 2.4 times higher in black men, respectively (PERNAR *et al*., 2018). This discrepancy between races has been correlated with low socioeconomic status and diagnosis at advanced stages due to the difficulty of this population to access health services (BENJAMINS *et al*., 2016). In addition, it was demonstrated in a cohort study conducted in the United States of America, that black men with nonmetastatic PC, when at the same stage of the disease, seemed to have mortality comparable to white men when both had access to health services and standard treatment (DESS *et al*., 2019).

In the epidemiological study conducted by Tourinho-Barbosa, Pompeo and Glina (2016), in which only articles that contemplated the population of Brazil and Latin America were analyzed, the data regarding the prevalence of PC by race were conflicting, with some studies showing a higher prevalence in the black population and others did not obtain a significant difference. A more in-depth study is needed to explain the causes of these disparities.

Table 3 - Total distribution of the number of cases of malignant prostatic neoplasm diagnosed in 10 years, according to color/race

Color/race	Nº	%
White	102,638	38.66%
Black	19,430	7.32%
Mixed race	89,519	33.72%
Yellow	3,104	1.17%
Indigenous	101	0.04%
Without information	50,691	19.09%

Source: Ministry of Health - SIH/SUS.

Regarding the total distribution of the number of cases, according to region (Table 4), the data offered by DATASUS did not present a well established standard. Ideally, DATASUS should present the number of cases per population, in addition to the total distribution of the number of PC cases, for better comparison with data from other sources. According to Santos (2018), the most developed Brazilian regions (South, Southeast and Center-West) predominate, in men, the PC along with colorectal and pulmonary cancers, resembling the most developed countries. In the less developed regions (North and Northeast), the PC is also among the most incidents along with stomach cancer, data similar to those of less developed countries. This profile is a reflection of regional inequalities in Brazil, ranging from differences in life expectancy, socioeconomic conditions, to access to health services for timely diagnosis and appropriate treatment (SANTOS, 2018).

Table 5 shows the total distribution of the mortality rate of cases of malignant prostatic neoplasm diagnosed according to year of hospitalization and age. There is a growing tendency to increase the mortality rate with the increasing age, with men over 80 presenting the highest numbers of this rate in all years. However, the mortality rate does not decrease over the course of 10 years, on the contrary, it showed a slight increase, with the exception of the ages between 20 - 29 and 40 - 49, in which there was a slight decrease.

Table 4 - Total distribution of the number of cases of malignant prostatic neoplasm diagnosed in 10 years, according to region

Region	Nº	%
North	7,448	2.81%
Northeast	58,950	22. 20%
Southeast	138,659	52.23%
South	43,060	16.22%
Center-west	17,366	6.54%

Source: Ministry of Health - SIH/SUS.

As mentioned before, PC usually presents clinical symptoms only in older men, since this neoplasia presents a gradual and progressive growth; therefore, at more advanced ages, it tends to be in a later development phase, justifying the higher mortality rates above 80 years. And as regards the increase in mortality rate, it seems to be related to the increase in life expectancy, to the greater access to health care, as well as to the increase in case documentation, and, finally, to the fact that life style changes, including physical inactivity, obesity and dietary factors (RAWLA, 2019).

Table 5 - Total distribution of mortality rate of cases of malignant prostatic neoplasm diagnosed in 10 years, according to year of hospitalization and age

Year of hospitalization	Below 19 years	20-29	30-39	40-49	50-59	60-69	70-79	Over 80 years
2009	9.52	25.00	5.00	3.67	3.40	5.59	10.34	17.46
2010	-	15.00	5.88	3.54	4.11	5.00	10.04	17.43
2011	1.17	8.00	2.94	2.12	4.86	5.35	9.75	18.96
2012	11.64	-	8.11	4.75	4.21	5.04	9.92	17.85
2013	7.77	5.88	13.04	4.15	4.58	5.32	10.62	19.12
2014	-	9.52	3.33	4.67	4.41	5.52	11.43	19.70
2015	11.5	15.38	8.00	5.05	4.05	5.19	11.13	21.82
2016	7.57	5.26	12.12	4.13	3.95	6.59	10.69	20.56
2017	10.00	11.76	7.41	4.12	4.84	6.26	10.74	21.85
2018	20.00	-	5.71	2.87	4.45	5.66	11.17	21.81

Source: Ministry of Health - SIH/SUS.

Table 6 shows that in relation to the total costs of hospital services, R$515,650,149.74 were spent in these 10 years, showing the financial burden on the health system that PC causes in Brazil. This fact can be explained by the increase in PC incidence rates over the years and the main factors for this are the increased life expectancy of the population and improperly performed screening, culminating in overdiagnosis and unnecessary treatment of patients

who would never have presented signs and symptoms of this neoplasia in the future (INCA, 2017).

Regarding the study limitations, it is worth pointing out that the use of secondary data does not allow the researcher to control possible errors resulting from typing and registration, as well as possible sub-notifications. Despite this, it is believed that, since it is official national data and mandatory completion in all health services, its results allowed the achievement of the proposed objectives.

Table 6 - Total distribution of the total costs of hospital services of malignant prostatic neoplasm diagnosed in 10 years, according to hospital regime

	Costs of hospital services	
Regime	**Nº**	**%**
Public	72,756,092.10	14.11%
Private	211,669,436.12	41.05%
Ignored	231,224,621.52	44.84%
Total: 515,650,149.74		

Source: Ministry of Health - SIH/SUS.

CONCLUSION

Through this study, we can conclude that in Brazil, the profile of patients with PC is male over 50 years of age, between 60 and 69 years, mainly, the majority being white. More than 50% of these men are concentrated in the Southeast region and both the number of hospitalizations and the mortality rate have increased during these 10 years analyzed. The mortality rate also showed a higher mortality rate in the elderly with PC. R$517,416,212.44 were spent in these 10 years.

This data provided by DATASUS can be a useful tool for health professionals to rethink their practice and direct investments in this area of knowledge, in addition to providing public managers with the opportunity to plan specific preventive strategies for this population. Thus, knowing the epidemiology of this disease is essential to direct actions of promotion, prevention and rehabilitation.

REFERENCES

BRASIL. Ministério da Saúde. **Departamento de Informática do Sistema Único de Saúde (DATASUS)**. Brasília. 2008. Disponível em: http:// www.datasus.gov.br. Acesso em: 20 de nov. de 2019.

BELL, K. J. L. *et al*. Prevalence of incidental prostate cancer: A systematic review of autopsy studies. **International Journal of Cancer**, v. 137, n. 7, p. 1749-1757, 2015.

BENJAMINS, M. R. *et al*. Racial Disparities in Prostate Cancer Mortality in the 50 Largest US Cities. **Cancer Epidemiology**, v. 44, p. 125-131, 2016.

DESS, R. T. *et al*. Association of Black Race with Prostate Cancer-Specific and Other-Cause Mortality. **JAMA Oncology**, v. 5, n. 7, p. 975-983, 2019.

FERNANDES, M. V. *et al*. P. Perfil epidemiológico do homem com câncer de próstata atendido em um hospital universitário. **Revista Cogitare Enfermagem**, v. 19, n. 2, p. 333-340, 2014.

INSTITUTO NACIONAL DE CÂNCER JOSÉ ALENCAR GOMES DA SILVA. **Monitoramento das ações de controle do Câncer de Próstata**. Rio de Janeiro, RJ, 2014.

INSTITUTO NACIONAL DE CÂNCER JOSÉ ALENCAR GOMES DA SILVA. **Monitoramento das ações de controle do Câncer de Próstata**. Rio de Janeiro, RJ, 2017.

INSTITUTO NACIONAL DE CÂNCER JOSÉ ALENCAR GOMES DA SILVA. **Estimativa 2020:** Incidência de Câncer no Brasil. Rio de Janeiro, RJ, 2019.

SOCIEDADE BRASILEIRA DE UROLOGIA. **Novembro Azul orienta sobre o câncer de próstata.** 11 de out. de 2018. Disponível em: <https://portaldaurologia.org.br/novembro-azul/novembro-azul-orienta-sobre-o-cancer-de-prostata/# >. Acesso em: 07 de ago. de 2020.

PAIVA, E. P.; MOTTA, M. C. S.; GRIEP, R. H. Conhecimentos, atitudes e práticas acerca da detecção do câncer de próstata. **Acta Paulista de Enfermagem**, v. 23, n. 1, p. 88-93, 2010.

PERNAR, C. H., *et al*. The Epidemiology of Prostate Cancer. **Cold Spring Harbor Laboratory Press**, v. 8, n. 12, a030361, 2018.

RAWLA, P. Epidemiology of Prostate Cancer. **World Journal of Oncology**, v. 10, n. 2, p. 63-89, 2019.

SANTOS, J. P.; SOUZA, A. P. Considerações sobre o Câncer de Próstata: Revisão de Literatura. **Revista Multidisciplinar e de Psicologia**, v. 10, n. 33, p. 100-115, 2017.

SANTOS, M. O. Estimate 2018: Cancer Incidence in Brazil. **Revista Brasileira de Cancerologia**, v. 66, n. 1, p. 119-120, 2018.

STEFFEN, R. E., *et al*. Rastreamento populacional para o câncer de próstata: mais riscos que benefícios. **Revista de Saúde Coletiva**, v. 28, n. 2, e280209, 2018.

TOURINHO-BARBOSA, R. R.; POMPEO, A. C. L.; GLINA, S. Prostate cancer in Brazil and Latin America: epidemiology and screening. **International Brazilian Journal of Urology**, v. 42, n. 6, p. 1081-1090, 2016.

WORLD CANCER RESEARCH FUND. **Prostate cancer statistics.** 2018. Disponível em: < https://www.wcrf.org/dietandcancer/cancer-trends/prostate-cancer-statistics >. Acesso em: 07 de ago. de 2020.