

PROSTATE CANCER: THE IMPACT OF NON-MODIFIABLE RISK FACTORS ON THE EPIDEMIOLOGICAL PROFILE IN THE STATE OF PARÁ, BRAZIL

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Introduction: Prostate cancer (PCa), whether localized, locally advanced, or metastatic, is typically classified as adenocarcinoma due to its predominantly glandular origin. Although its generally slow progression is associated with a lower risk, the aggressive form of the disease significantly contributes to mortality rates worldwide. In Brazil, where annual incidence is high, PCa is the most commonly diagnosed malignancy among males. The disease is strongly associated with non-modifiable risk factors, such as family history, advanced age, and race or ethnicity. In this context, epidemiological studies focused on the State of Pará can help develop targeted preventive strategies aimed at reducing the disease burden in susceptible populations. **Objectives:** To analyze the main non-modifiable risk factors associated with prostate cancer and discuss the impact of this condition on the population of the State of Pará. **Methods:** This ecological, descriptive, and retrospective study used data from the Mortality Information System (SIM), provided by DATASUS. Deaths from PCa in Pará between 2020 and 2024 were evaluated, focusing on non-modifiable variables such as age and race/skin color. **Results:** A total of 77,272 deaths related to PCa were recorded in Pará between 2020 and 2024, with relatively stable annual variation: 15,176 deaths in 2020 and 14,963 in 2024. The age group with the highest number of deaths was 70 to 79 years, with 16,156 recorded cases, reaffirming advanced age as a major risk factor. An unexpected finding was the record of 398 deaths in the 5 to 9 years age group, which likely indicates data entry or classification errors, as PCa is virtually nonexistent in children. This observation reveals an important limitation in the reliability of public health data, which may compromise epidemiological analyses and hinder the development of targeted health policies. Therefore, improving data collection and validation mechanisms is essential. Regarding race/skin color, 73.69% of deaths, corresponding to 56,944 cases, occurred among individuals identified as Brown (pardo). This result may reflect not only the demographic composition of Pará but also the presence of overlapping social, environmental, and biological vulnerabilities. Populations with African ancestry may have a greater predisposition to aggressive forms

of PCa due to genetic mutations in genes such as *BRCA1*, *BRCA2*, *ATM*, *CHEK2*, and *HOXB13*. Furthermore, social determinants such as late diagnosis, limited access to screening and treatment, and the presence of comorbidities contribute to higher mortality rates in these groups. **Conclusion:** This study identified advanced age and race/skin color, particularly among Brown individuals, as relevant non-modifiable risk factors for prostate cancer mortality in the State of Pará. The concentration of deaths among elderly Brown men reflects both biological predispositions and significant social inequities in health care access. These findings reinforce the need for public health strategies that include early detection campaigns, expanded PSA screening in vulnerable populations, genetic counseling, and investment in the quality of health data. By fulfilling its objectives, the study enhances the understanding of PCa epidemiology in Pará and underscores the importance of promoting equitable and evidence-based cancer prevention policies.

Keywords: Prostate cancer; risk factors; epidemiology