

ANALYSIS OF RISK FACTORS FOR PROSTATE CANCER: A CROSS-SECTIONAL STUDY**ANÁLISE DOS FATORES DE RISCO PARA O CÂNCER DE PRÓSTATA: UM ESTUDO TRANSVERSAL****ANÁLISIS DE LOS FACTORES DE RIESGO DEL CÁNCER DE PRÓSTATA: UN ESTUDIO TRANSVERSAL**

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ABSTRACT

Objective: To analyze the presence of risk factors for prostate cancer in male employees of a higher education institution. **Method:** Cross-sectional study of a descriptive nature and quantitative approach that took place from July to August 2016 in a private Higher Education Institution located in the city of Fortaleza, Ceará. The population consisted of 604 active employees, distributed by areas: academic, operational and administrative. **Results:** Most participants said they had already heard about the pathology and considered that the habit of smoking cigarettes, drinking alcohol and eating fatty foods could increase the chances of the occurrence of cancer. **Conclusion:** There is relevance in the presence of risk factors in the research participants, especially with regard to the lifestyle adopted by them, where men since young already have unhealthy lifestyle habits, and the presence of a family history of the disease.

Descriptors: Prostate neoplasms; Risk factors; Nursing.

RESUMO

Objetivo: Analisar a presença de fatores de risco para o câncer de próstata em homens colaboradores de uma instituição de ensino superior. **Método:** Estudo transversal de natureza descritiva e abordagem quantitativa que ocorreu no período de julho a agosto de 2016 numa Instituição privada de Ensino Superior localizada no município de Fortaleza, Ceará. A população foi composta por 604 colaboradores ativos, distribuídos por áreas: acadêmica, operacional e administrativa. **Resultados:** A maioria dos participantes afirmou já ter ouvido falar sobre a patologia e consideraram que o hábito de fumar cigarros, ingerir bebidas alcoólicas e comer alimentos gordurosos poderia aumentar as chances da ocorrência do câncer. **Conclusão:** Há relevância na presença de fatores de risco nos integrantes da pesquisa, principalmente no que concerne ao estilo de vida adotado por eles, onde homens desde jovens já possuem hábitos de vida não saudáveis, e a presença de histórico familiar para doença.

Descritores: Neoplasias da próstata; Fatores de risco; Enfermagem.

RESUMEN

Objetivo: Analizar la presencia de factores de riesgo para cáncer de próstata en trabajadores del sexo masculino de una institución de educación superior. **Método:** Estudio transversal de naturaleza descriptiva y abordaje cuantitativo que tuvo lugar de julio a agosto de 2016 en una Institución de Enseñanza Superior privada ubicada en la ciudad de Fortaleza, Ceará. La población estuvo conformada por 604 empleados activos, distribuidos por áreas: académica, operativa y administrativa. **Resultados:** La mayoría de los participantes dijo que ya había oído hablar de la patología y consideró que el hábito de fumar cigarrillos, beber alcohol y comer alimentos grasos podría aumentar las posibilidades de aparición de cáncer. **Conclusión:** Existe relevancia en la presencia de factores de riesgo en los participantes de la investigación, especialmente en lo que se refiere al estilo de vida adoptado por ellos, donde los hombres desde jóvenes ya tienen hábitos de vida poco saludables, y la presencia de antecedentes familiares de la enfermedad.

Descriptores: Neoplasias de próstata; Factores de riesgo; Enfermería.

INTRODUCTION

The prostate is located in the lower abdomen, below the bladder and in front of the rectum, at the end of the large intestine. It is a single gland responsible for part of the production of semen in men. It is usually about 3 centimeters long, 4 centimeters wide and 2 centimeters deep anteroposteriorly, where it grows by 0.4g/year from the age of 30.¹

Prostate cancer (PCa) can therefore be characterized as a dysfunction in the multiplication of the cells that make up the gland, as well as their mutation.² In Brazil, it is the second most common cancer among men, accounting for around 29.2% of all tumors in this group. The number of deaths from this neoplasm in 2020 alone was 15,841, with an incidence of 65,840.³

This health problem is more prevalent in the elderly, with an average age of 68, but there is an increase in incidence and mortality from the age of 50. In addition to genetics, there are other risk factors such as environment, lifestyle, diet, race (blacks are 1.6 times more likely to develop the neoplasm), excess body fat, family history of PCa before the age of 50; exposure to aromatic amines, arsenic, petroleum products and soot, among others.^{1,3}

In its early stages, this cancer progresses silently and can be asymptomatic, but in the advanced stages there is difficulty

urinating, bone pain, kidney failure and generalized infection in more serious cases, for example.⁴ According to the Brazilian Society of Urology, clinical and laboratory tests such as rectal examination and the Prostate Specific Antigen (PSA) blood test, used for screening and diagnosis, should be carried out on patients from the age of 40 and up to 75 who are at high risk of PCa and symptomatic patients.⁵

Thus, for diseases like this, whose causes are multifactorial and not very obvious, secondary prevention, characterized by early diagnosis and an appropriate therapeutic approach, is the most appropriate. According to a national survey⁶, early diagnosis and the use of tumor markers such as PSA are of paramount importance for the screening and clinical management of prostate cancer.

In addition, it is important to understand the factors involved in men's behavior, beliefs, culture and taboos in relation to the proposed screening, since they can become obstacles to the development of preventive strategies. In the meantime, among the main actions, identifying risk factors is essential for understanding the health-disease process and possible prevention.

In view of the above, the following question arises: "Are the risk factors for developing prostate cancer present in male employees of a higher education institution

(HEI)?" and "If so, what is the prevalence of these factors?". The aim is to analyze the presence of risk factors for prostate cancer in male employees of a HEI.

METHOD

This is a cross-sectional study of a descriptive nature and quantitative approach, which took place between July and August 2016 at a private HEI located in Fortaleza - CE. Although the institution had 604 active employees over the age of 18, divided into academic, operational and administrative areas, only 204 were male.

To calculate the sample, we used the proportional stratified sampling method, which follows the steps: (1) identify the significant subgroups (strata), in this case the sectors (academic, operational and administrative) which include the employees, (2) calculate the relative weight (%) of each of the strata in the population and (3) use, in each of the strata, a simple random sampling procedure to choose (in the same proportion as they are represented in the population) the subjects from each stratum who will make up the sample. The equation $n = (Z_{\alpha/2} * \sigma / E)^2$. Where: n = Number of individuals in the sample; $Z_{\alpha/2}$ = Critical value corresponding to the desired degree of confidence; σ = Population standard deviation of the variable studied; and E = Margin of error. The sample resulted in $n = 130$.

The inclusion criteria were: employees working at the institution and aged 18 or over, and the exclusion criteria were: employees on vacation, on sick leave and working at night. A total of 130 men took part, regardless of whether they were over 50 years of age, because although the prevalence of prostate cancer is higher in this age group, the inclusion of younger individuals is justified by the fact that age is only one of the risk factors for prostate cancer among the multiple factors that this research aimed to investigate.

The data collection process took place between July and August 2016 and was divided into three stages: 1) the institution's HR department scheduled the day, place and sector available 2) after scheduling, employees were invited to collaborate with the research 3) after explaining the objectives of the research and signing the informed consent form (ICF), the data collection instrument was applied. All the records were made using a structured instrument/questionnaire, adapted from Paiva, Motta and Griep's⁷ with: sociodemographic data; risk factors for prostate cancer; and knowledge about the pathology as well as their attitudes towards early detection.

The data collection instrument also investigated the following aspects: age; marital status; existence and number of children; schooling; family income; self-

declared race or color; smoking; alcohol consumption; physical activity; intake of foods containing animal fats; family and personal history of prostate cancer.

In order to investigate knowledge about prostate cancer, the following variables were assessed: whether they had ever heard of prostate cancer; from what age it was recommended to have a prostate cancer test; the existence of situations and/or behaviors that increase the chances of developing this type of cancer, such as eating foods rich in animal fat, smoking, alcoholism and/or hereditary factors; whether prostate testing affects masculinity; how often this test should be carried out, whether they had ever had this test and/or the PSA test.

The Statistical Package for the Social Sciences (SPSS), version 23.0, was used to organize and process the data. The data obtained was grouped into separate databases, one with general data encompassing all the participants, and the other only with risk factors and knowledge about PCa. The analysis was divided into two stages: univariate, which analyzed the frequency of each question, making a comparison of the sample's characteristics, and bivariate analysis, where cross-tabulations were made, making it possible to calculate the different measures of association between the variables.⁸ Pearson's correlation test was also carried

out.

All ethical and legal principles were respected during the research, especially those contained in national resolutions regulating research involving human beings. In addition, the study was approved by the Research Ethics Committee (CEP) of the Instituto de Saúde e Gestão Hospitalar (ISGH), with opinion no. 1,587,500.

RESULTS

The results were presented on the basis of the proposal to analyze the data using the data collection instrument, based on the answers given by the 130 participants in the study. According to the data presented in Table 1, the participants were heterogeneous in terms of age, ranging from 18 to 67. Therefore, after organizing and distributing them into age groups every five years, it was found that within the sample, the 18 to 25 age group prevailed (23.8%). Other prevalences were: self-declared color/brown race (50%), single (52.3%), no children (64.6%), complete university degree or more (53.8%) and earning more than four minimum wages (53.1%).

With regard to risk factors related to the individual, age as a risk factor for PCa, 16.9% of the sample was in the age group with the highest incidence of this type of cancer (≥ 41 years). As for self-declared color/race as a predisposing factor for

prostate cancer, only 10% of the participants were in the risk group, i.e. black men.

As for heredity, 23.1% reported having a family history of prostate cancer, with the following family members: father (5.4%), brother (0.8%), grandfather (9.2%), uncle (1.5%) and 10% other relatives (cousin and godfather). Another relevant finding is that 3.8% of the participants reported having more than one family history. In addition, two participants (1.5%) said they had already had some kind of

prostate problem, one reported hyperplasia and the other prostate cancer. They reported that they were undergoing treatment.

As for lifestyle-related risk factors for developing prostate cancer, the following stood out: active smoking (8.5) and a percentage of ex-smokers (16.1%), with an average of two cigarette packs a day; alcohol consumption (37.7%); a sedentary lifestyle (42.3%); and eating habits with a high fat content (60%).

Table 1. Sociodemographic description of the sample (n=130). Fortaleza, Ceará, Brazil, 2022.

Sociodemographic variables	N	%
Age (years)		
Between 18-25	31	23,8
26-30	28	21,5
31-35	23	17,7
36-40	26	20,0
41-45	5	3,8
46-50	9	6,9
More than 50	8	6,2
Race/color		
White	46	35,4
Brown	65	50,0
Black	13	10,0
Yellow	4	3,1
Do not know	2	1,5
Marital status		
Single	68	52,3
Married/stable union	56	43,1
Divorced	5	3,8
Widowed	1	0,8
Children		
Yes	46	35,4
No	84	64,6
Level of Education		
Incomplete primary school	8	6,2
Complete high school	23	17,7
Incomplete university degree	29	22,3
University degree or more	70	53,8
Family Income (Reais)		
From 1 to 2 minimum wages*	29	22,3
3 to 4 minimum wages*	28	21,5
More than 4 minimum wages*	69	53,1
Do not know	4	3,1

*Minimum wage (2016) = R\$ 880.00 (eight hundred and eighty reais).

Source: Prepared by the authors.

As for the correlation between lifestyle and marital status, Table 2 shows that there was a correlation of $P \leq 0.05$ and

$P \leq 0.01$. It is therefore possible to see that marital status is positively related to lifestyle.

Table 2. Correlation of variables between lifestyle and marital status. Fortaleza, Ceará, Brazil, 2022.

		Marital status	Smoking	Alcoholism	Physical Activity	Fatty foods
Marital status	Pearson Correlation	1	-,004	,000	-,046	-,010
	Sig. (2-tailed)		,968	,968	,602	,907
	N	130	130	130	130	130
Smoking	Pearson Correlation	-,004	1	-,208*	,145	-,030
	Sig. (2-tailed)	,968		,017	,101	,733
	N	130	130	130	130	130
Alcoholism	Pearson Correlation	,000	-,208*	1	-,023	,078
	Sig. (2-tailed)	,968	,017		,791	,379
	N	130	130	130	130	130
Physical Activity	Pearson Correlation	-,046	,145	-,023	1	,095
	Sig. (2-tailed)	,602	,101	,791		,281
	N	130	130	130	130	130
Fatty foods	Pearson Correlation	-,010	-,030	,078	,095	1
	Sig. (2-tailed)	,907	,733	,379	,281	
	N	130	130	130	130	130

Source: prepared by the authors.

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

In addition, with regard to the participants' knowledge and attitudes towards prostate cancer, most of them said they had heard of the disease (98.5%). It is worth noting that the interviewees identified the health education activities carried out at the institution and television as the main vehicles of information. In addition, more than half of the men (51.5%) referred to the appropriate age for prostate cancer screening

as being between 30 and 40 years old, but their answers were surrounded by "guesswork". When asked about this question, the answer "I think so" was common, often accompanied by the phrase "the sooner the better", which is also important as it suggests that men are becoming more concerned about this issue, as can be seen in Table 3.

Table 3. Knowledge about prostate cancer. Fortaleza, Ceará, Brazil, 2022.

Knowledge about CaP	N	%
Heard about CaP		
Yes	128	98,5
No	2	1,5
Age at which men should be more concerned about getting tested		
From 20 years old	16	12,3
Between 30 and 40 years old	67	51,5
Over 40	47	36,2
The exam can affect masculinity		
Yes	1	0,8
No	125	96,2
I don't know	4	3,1
Prostate cancer can be cured		
Yes	124	95,4
No	1	0,8
I don't know	5	3,8
How often the test should be carried out		
Annually	64	49,2
Every 2 years	21	16,2
Every 3 to 5 years	10	7,7
Every 5 years	7	5,4
Only if you have symptoms	15	11,5
They shouldn't	2	1,5
I don't know	11	8,5

Source: Prepared by the authors.

Table 4 shows knowledge of the risk factors involved in this type of pathology and correlations between schooling and knowledge of prostate cancer. There was a good correlation equal to $P \leq 0.05$ and $P \leq$

0.01. With regard to the respondents' knowledge of certain health practices or factors that could increase the chance of prostate cancer, the majority of respondents considered that smoking cigarettes (64.6%),

drinking alcohol (59.9%) and eating fatty foods (54.6%) could increase the chance of cancer. In addition, 86.2% considered genetic predisposition, since they said that having cases in the family could increase the chances of having the disease. However, the high frequency of those who said they didn't know was noteworthy, ranging from 3.8% to

32.3%.

With regard to prostate cancer screening practices, 96 (73.8%) had not had a PSA test and 114 (87.7%) had not had a touch test. On the other hand, 31 (23.8%) had a PSA test and 16 (12.3%) had a touch test, and 3 (2.3%) couldn't remember if they had ever had a PSA test.

Table 4. Correlation of variables between schooling and knowledge of PCa. Fortaleza, Ceará, Brazil, 2022.

		Educa tion	Heard about CaP	Exam age	CaP is curable	Examination affects masculinity	Frequency of examination
Education	Pearson Correlation	1	,031	,317**	-,074	,065	,101
	Sig. (2-tailed)		,723	,000	,401	,462	,251
	N	130	130	130	130	130	130
Heard about CaP	Pearson Correlation	,031	1	-,050	,018	,024	,033
	Sig. (2-tailed)	,723		,572	,838	,783	,709
	N	130	130	130	130	130	130
Exam age	Pearson Correlation	,317**	-,050	1	-,053	,095	,159
	Sig. (2-tailed)	,000	,572		,551	,285	,070
	N	130	130	130	130	130	130
CaP is curable	Pearson Correlation	-,074	,018	-,053	1	,176*	,163
	Sig. (2-tailed)	,401	,838	,551		,046	,064
	N	130	130	130	130	130	130
Examination affects masculinity	Pearson Correlation	,065	,024	,095	,176*	1	,036
	Sig. (2-tailed)	,462	,783	,285	,046		,684
	N	130	130	130	130	130	130
Frequency of examination	Pearson Correlation	,101	,033	,159	,163	,036	1
	Sig. (2-tailed)	,251	,709	,070	,064	,684	
	N	130	130	130	130	130	130

Source: Own authorship, extracted from SPSS (2016).

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 5 shows that 23.8% of employees had already undergone a PSA

test and that this was present in all the age groups covered in this study. Still on the subject of detection, 12.3% of the participants reported having had a rectal

examination, but this was only seen in the 36-40 age group, which is justified by the recommendation that it be carried out.

Table 5. Correlation between age and exam practice. Fortaleza, Ceará, Brazil, 2022.

	PSA			TOUCH	
	No	Yes	I do not know/ I do not remember	No	Yes
Between 18-25 years old	27	4	0	31	0
26-30 years	26	2	0	28	0
31-35years	20	2	1	23	0
AGE 36-40 years	20	5	1	21	5
41-45 years	2	2	1	3	2
46-50 years	1	8	0	5	4
Over 50 years old	0	8	0	3	5
Total	96	31	3	114	16

Source: Own authorship, extracted from SPSS.

DISCUSSION

Young adults predominated in this study, characterized as a population with little access to health services. The analysis of schooling was favorable. However, considering that many of them reported having an average of 4 members per family, in which they were the breadwinners, this situation was not favorable. This disadvantage has become more evident due to the global health crisis caused by Covid-19, which has had a strong economic impact on the lives of families.⁹ Marital status was significant for lifestyle, because a stable union acts as a protective factor for men,

while women contribute to maintaining health care.¹⁰

With regard to lifestyle habits, there are many men who smoke, drink alcohol and have an inadequate diet, which exposes them more to the risk factors for PCa, which is worrying when you consider that the participants are mostly young adults. Another study, with a majority of elderly people, observed that even though they were aware of the correct habits, there was still a persistence of unhealthy ones, which shows the fragility of this public's relationship with primary care.¹¹

With regard to physical exercise, the majority of the sample (57.7%) reported

doing some physical activity, and this increase in physical exercise can be explained by media pressure in the search for the "perfect body".¹² However, the difference between these and those who reported not practicing any activity is small, and the number of sedentary people (42.3%) is still high, thus completing the characteristics of unhealthy individuals: smokers, drinkers and sedentary people.

Thus, in addition to risk behaviors, sociodemographic and economic factors such as work-related issues, although not modifiable by health workers, must be considered in order to implement actions that improve the health of these men, seeking to ensure that they are resolute.¹³ It is therefore necessary to make men aware of all the issues surrounding healthy habits, since in this study it was possible to identify risk factors directly related to prostate cancer, such as age, race, family history and previous history of prostate problems.¹⁴

Still in this context, one statement that caught the eye when asked about the age at which exams should be carried out was: "I think the earlier the better." This shows that men are more concerned about the issue, and it is up to the professionals to clarify the main aspects of the subject in order to instruct them, since misinformation was perceived in the sample studied.¹⁵

Regarding beliefs about the detection and treatment of PCa, 95.4% of men agreed

that this cancer can be cured if detected early. Other than that, 3.1% reported not knowing whether rectal examination can affect masculinity, and only one individual (0.8%) believes that masculinity can be affected. A survey showed that few men undergo preventive examinations such as rectal examination, which represents a persistent stigma and the main difficulty in adhering to diagnostic methods.¹⁶

Most of the participants in this study (49.2%) correctly indicated that the tests should be carried out annually, but said they were unaware of the ideal frequency of the test, and 1.5% of them thought it wasn't necessary. Of those interviewed, 23.1% reported a family history of prostate cancer, with 15.4% being first-degree relatives, as well as those with more than one family history (3.8%). Although most risk factors are unavoidable, older age and family history should be recognized as important factors in the development of this and other types of cancer.¹⁷

As for having a prostate problem, 02 individuals (1.5%) said they had already had a problem, 01 reported hyperplasia and the other CaP. The employees who reported having a prostate problem said they were undergoing treatment, showing appropriate attitudes to the situation.

Almost all of the sample studied had heard of the disease, which can be explained by their high level of education and the fact

that they are part of an institution with courses in the health area. It is worth noting that the interviewees identified the health education activities carried out at the institution as one of the main sources of information. This reinforces the importance of discussing the implementation of routine activities dealing with PCa in all areas where men are involved.¹⁸

With regard to prostate cancer detection practices, it was observed that many of the employees had already undergone the PSA test, even some who were not even in the recommended age bracket, showing a greater concern and awareness among men in relation to PCa, which reflects the importance of educational actions and campaigns.¹⁸

Still on the subject of detection, 12.3% of the participants reported having had a rectal examination, which was within the average age indicated. Actions should therefore be taken to cover and adjust the scope of the National Policy for Comprehensive Men's Health Care - PNAISH, with the aim of breaking down paradigms and fears that still exist so that more people can adhere to prevention and screening methods.¹⁹

CONCLUSION

In this study, it was found that there

are risk factors among the study participants, especially with regard to the lifestyle they adopt, noting that their lifestyle habits have been unhealthy since they were young, as well as a family history of the disease. Level of schooling was seen as an important contributor to individuals' awareness of PCa, but this was not significantly correlated with attitudes, given that despite being aware of the risks, habits persist.

It was observed that men are becoming more concerned about the issue and are seeking earlier means of detection, given the number of individuals who have already had a PSA test even though they are not yet in the risk age group. Based on the experience analyzed, an observation emerges to reinforce the thesis that prevention and early detection, basic strategies for controlling prostate cancer, have as an essential requirement a set of constant, persistent and dynamic educational activities for men, according to their standard of values, schooling, among other variables.

In this study, limitations related especially to the methodological typology are detailed, as cross-sectional studies do not allow for cause and effect relationships.

Educational activities should prioritize risk factors, changes in habits and the promotion and adoption of preventive measures with an emphasis on preventive examinations. When well planned and

carried out with commitment, these actions can bring good results.

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