Prevalence of factors associated with cancer in medical students and sex-related diferences

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ABSTRACT
Introduction: Currently, there is an increase in the prevalence of chronic diseases, such as cancer. At the university, the acquisition of risky habits for this may be worrisome in the future. Thus, the assessment of the susceptibility of medical students can help to elucidate possible points of intervention, since it is a portion of the population oriented and supposedly encouraged to develop a healthy lifestyle. Objective: To evaluate the presence of risk factors associated with cancer in medical students at a public university in Paraíba. Patients and Methods: Cross-sectional and quantitative study was conducted with students from the first to the fourth year of the medical course at a public university. An objective questionnaire was used on the habits of sun and sexual exposure, dietary patterns, physical exercise, alcoholism, smoking, and others. The Chi-square test was used to assess the association between variables. The confidence interval and the level of significance considered were 95% and 5%, respectively. Results: A total of 211 students participated in the study. Of these, 35.5% reported using sunscreen. There was an association between the use of sunscreen and the female gender (p <0.05). The practice of physical exercise was similar between genders. Eating habits showed a preference for red meat and industrialized inputs. Alcoholism and smoking were reported by 62.6% and 31.3% of participants, respectively, associated with the male gender (p <0.05). Of those who reported sexual activity, 82.4% use condoms, most of them men. The presence of two or more risk factors was observed in 41.7% of the sample (p <0.05), with men being the majority. Conclusion: The male gender showed associations with the factor's alcoholism, smoking and less use of sunscreen. The presence of two or more risk factors was observed in 41.7% of the participants.

Keywords: Risk factors, Neoplasms, Students, Medical, Universities.

1 INTRODUCTION

Brazil is experiencing a context of epidemiological transition, with an increase in life expectancy attributed to the decline in infectious, nutritional, maternal and neonatal diseases.

However, there is an increase in chronic non-communicable diseases, such as cancer1. It is estimated that there were 224,712 deaths due to cancer in Brazil in 20182.

The etiology of cancer refers to individual and environmental factors, which are the main ones associated with malignant neoplasms. The number of exposures and the risk factor itself are aspects of variable determination in the onset of neoplasia, differing according to the type of cancer and the stage of life in which it occurred3.

In youth, in addition to the physiological changes inherent to this phase of life, possible sociological and cultural changes related to the beginning of the university, such as leaving the family home, the feeling of freedom and autonomy, and the beginning of the construction of the future can lead the university student to less healthy life habits that are potentially risk factors for the development of neoplasms.

In this sense, the university environment provides both new social relationships, as well as the stimulation or reinforcement of new habits and behaviors, making students vulnerable to exposure to modifiable risk factors, such as smoking, excessive consumption of alcoholic beverages, sedentary lifestyle, inadequate diet, obesity and unprotected sexual intercourse4-7. Such changes directly influence the lifestyle of students, and may remain throughout life or long enough to affect health8.

It is possible to consider that lifestyle is one of the most important determinants of health in the student population4-7. Studies indicate that, in general, university students do not have a healthy lifestyle6-7. Therefore, it is essential to evaluate risk factors for the development of neoplasms, in order to enable prevention and even short- and long-term interventions.

The university, especially the medical course, is an environment conducive to the creation of strategies for health promotion, prevention and control of diseases, influencing students in the search for healthier lifestyle habits.

Thus, the objective of this study was to verify the prevalence of risk factors for neoplasms among medical students of a public university in the Northeast of Brazil, considering that there is a relative scarcity of current studies regarding predisposing lifestyle and the importance of adopting appropriate measures for the prevention of such pathology.

It is assumed that medical students, despite their knowledge about the development of neoplasms, are exposed to risk factors due to lifestyle changes caused by entering university and the demands of an inherently stressful course.

2 MATERIAL AND METHODS

A cross-sectional study was conducted with a sample of students from the 1st to the 4th year of the Medical Course of a public university in the state of Paraíba. For the sample calculation, the Open Epi program (Version 3.01) available on the internet was used. For a total of 429 students

enrolled from the first to the fourth year in 2019, considering the 95% confidence interval, the sample size obtained was 203 students.

Students who were present in the classroom at the time of application of the questionnaires were included in the study. Students under 18 years of age were excluded.

Data collection occurred from August 2019 to February 2020. The questionnaire based on the "Household Survey on Risk Behaviors and Reported Morbidity of Non-Communicable Diseases and Conditions" was used as an instrument. The instrument was previously validated in the study "Prevalence of Risk Factors Associated with Cancer in undergraduate students in Biological Sciences" (2018)[9].

The questionnaire consisted of 23 questions divided into sociodemographic categories and health-related themes. The variables studied were: gender (female and male), age (years), weight (kg), height (m), work or paid activity, tobacco consumption (smoker: at least five packs or 100 cigarettes in a lifetime, former smoker: meets the definition of smoker, but does not make current use), eating habits (frequency of three daily meals, consumption of fruits, vegetables, vegetables, red and processed meat, and knowledge about nutritional values, ingredients, form of preservation and shelf life of food), use of sunscreen; hat wearing, regular search for a doctor/dentist, regular routine examinations, physical activity and alcohol consumption.

For physical activity, the WHO standard was considered, which considers the performance of at least 150 minutes of moderate-intensity exercises throughout the week10. To calculate the Body Mass Index (BMI), the following formula was used: BMI = weight in kilograms/(height in meters)^2. BMIs lower than 18.5 were considered underweight; between 18.5 and 24.9, normal weight; between 25 and 29.9, overweight; and from 30, obesity.

The following variables were used as secondary outcomes: use of sunscreen, cigarette consumption, alcohol consumption, physical exercise, diet, sexual habits and body weight.

At the end of the collection, the data obtained were organized in a Microsoft Excel® spreadsheet. Data analysis was performed using the software R. Descriptive statistics were presented as percentages (%). The Chi-square test, at the level of 5% significance ($p < 0.05$), was used to verify the associations between the dependent and independent variables, with Yates correction, when necessary.

The study was approved by the Ethics Committee of the Lauro Wanderley University Hospital (Certificate of Presentation and Ethical Appreciation No. 11307719.0.0000.5183) and followed the recommendations of Resolution 466/2012 (CNS, MS), which provides for research involving human beings. All participants were informed about the objectives and procedures of the research and signed the Free and Informed Consent Form (ICF).

3 FINDINGS

The study sample consisted of 211 students, 51.2% female and 48.8% male. The median age was 22 years, with a minimum of 20 years and a maximum of 24 years. Regarding the year of the course, 23.7% were in the first year, 14.7% attended the second year, 21.8% were in the third year, and 23.7% attended the fourth year. When assessing BMI, 7.1% were underweight, 61.1% were normal weight, 24.2% were overweight, and 6.2% were obese.

Table 1 presents the results when we consider the risk factor exposure to sunlight: frequency of sunscreen use and hat use. It is suggested that the use of sunscreen be associated with gender, with females using it the most (χ^2; p = 0.00092). It was not possible to observe an association between hat use and gender (χ^2 with Yates correction; p = 0.06729).

Table 1. Distribution of the frequency of sunscreen and hat use among medical students, from August 2019 to February 2020.

Gender						p-value*
	Use of Sunscreen					
	Never	Rarely	Sometimes	Almost always	Always	0,00092
Female	0,94%	9,95%	18,48%	13,27%	8,53%	
Male	4,73%	17,06%	13,27%	11,37%	2,36%	
	Wearing a Hat					
	Never	Rarely	Sometimes	Almost always	All the time	0,06729
	18,95%	17,06%	10,42%	4,73%	0%	
	18,48%	17,06%	9,47%	1,42%	2,36%	
*p-value of the Chi-square test (p<0.05)						

Table 2 presents the results of the dichotomous variables with answers "yes" or "no" only. The variables considered here are: practice of physical activity, consumption of red meat, family history, medical consultations and use of condoms. The practice of physical activity was reported by 51.6%, of which 53.4% are men and 46.6% are women. The consumption of red meat was reported by 90.09% of the students. Among the 9% who do not consume it, women represent the majority (63.2%). Sexual activity was reported by 75.4% of the sample. Of these, 82.4% reported condom use, 32.7% women and 49.7% men. The frequency of use was indicated as always or almost always by 66.7% of the participants. Still, 18.5% claimed never or rarely to use. These variables were not associated with gender when the Chi-square test was applied.

Table 2. Distribution of the frequency of physical activity, red meat consumption, presence of relatives with Cancer, visit to the doctor and condom use among medical students, from August 2019 to February 2020.

	Physical activity	Red meat	Relative with cancer	Visit to the doctor	Condom use
No	48,11%	8,96%	41,98%	46,44%	13,27%
Yes	51,41%	90,09%	56,50%	53,08%	62,08%
Not applicable					24,64%

Table 3 shows the answers when asked about the number of daily meals. Approximately 86% of the participants reported consuming the three meals almost always or always in the week. It was noted, however, that 71% of the participants in this research also consume almost always or always industrialized products. Thus, the joint analysis of such data allows us to infer an overlap of 68.3%, suggesting a high rate of replacement of meals by industrialized inputs.

Table 3. Distribution of the frequency of consumption of industrialized products among medical students from August 2019 to February 2020.

		Consumption of Industrialized Products				
		Never	Rarely	Sometimes	Almost always	All the time
Three meals a day	Never	0	0	0	0,94%	0,47%
	Rarely	0	0	0	3,79%	0,94%
	Sometimes	0	0	1,89%	4,26%	1,42%
	Almost always	0	0	6,16%	14,21%	4,26%
	All the time	0	5,68%	15,16%	24,64%	15,63%

Table 4 shows that the consumption of healthy foods such as vegetables, legumes and fruits presented a percentage of adherence almost always or always higher than 50%

Table 4. Distribution of the frequency of consumption of vegetables, vegetables and fruits among medical students from August 2019 to February 2020.

	Vegetables	Greens	Fruits
Never	2,35%	3,77%	4,24%
Rarely	9,90%	11,32%	11,79%
Sometimes	27,83%	30,18%	29,24%
Almost always	33,96%	31,00%	27,35%
All the time	24,52%	22,64%	26,41%

The habit of reading information about the form of preservation, nutritional value and ingredients of the food consumed was affirmed by 24%, 31% and 32% of the participants, respectively, less than a third of the sample. The exception was the reading of the expiration date, observed in 68% of the interviewees.

Table 5 shows the data on contact with cigarettes and alcohol consumption among the students analyzed. At least one previous smoking episode was reported by 31.3% of the participants, and only 5.7% still smoke. Of the active smokers, 75% are male. The Chi-square test showed a statistically significant association between cigarette consumption and male gender (χ^2; $p = 0.0036$). Only 16.98% of the participants reported contact with other people's smoke on a daily basis.

Alcohol consumption was observed in 62.55% of the participants. Of these, 34.59% were men. There was a statistically significant association between alcohol consumption and male gender (χ^2; p = 0.014).

Table 5. Distribution of frequency of cigarette contact and alcohol consumption among medical students from August 2019 to February 2020.

Gender			p-value*
	Contact with the cigarette		0,0036
	No	Yes	
Female	39,81%	11,37%	
Male	28,90%	19,90%	
	Alcohol Consumption		0,014
	No	Yes	
Female	23,22%	27,96%	
Male	14,21%	34,59%	
*p-value of the Chi-square test (p<0.05)			

At the level of 5% of significance, one can show the dependence of the risk factors: use of sunscreen, contact with cigarettes and alcohol consumption, with the sex of the interviewees. Considering these 3 risk factors for the development of cancer, we identified that 41.7% of the interviewees add up to two or more risk factors for neoplasms. In addition, the association between the number of risk factors as male gender (χ^2; p = 0.00004) can be affirmed, and 67% of those we concluded had two or more factors were male.

4 DISCUSSION

In this sample, 35.5% of the participants used sunscreen, with a statistically significant association with females (p < 0.05). The practice of physical exercise was similar between genders. Eating habits showed a preference for red meat and industrialized inputs. Among the information about the food consumed, only the shelf life is widely sought by the participants (68%); Less than a third of the sample seeks information about the form of conservation, nutritional value and ingredients of the food. Alcoholism and smoking were, respectively, reported by 62.6% and 31.3% of the participants, both associated with the male sex (p < 0.05). In addition, 82.4% of sexually active students use condoms, most of them men.

In this study, it was possible to identify the association between the use of sunscreen and the female gender, that is, women use more sunscreen than men (χ^2; p = 0.00092). This corroborates with other works already published. A 2018 Turkish study of 17,769 students on sun exposure habits identified women as the main users of protection, with sunscreen being the most used. On the other hand, men were the main hat wearers[11]. However, in our study it was not possible to observe a difference between genders and hat use (χ^2 with Yates correction; p = 0.06729).

The mentioned study also included 538 medical students and identified that 80.6% of these future physicians reported "always" or "sometimes" using sunscreen11. A relevant contrast with that observed in our analysis, in which only 67.29% claimed a comparable frequency of use. The hat use rate was 31.2% among Turkish medical students and 28.44% in our sample.

The aspect of greater female self-care, especially the use of sunscreen, possibly responds to a growing trend in the search for aesthetic and dermatological measures, which finds among women its greatest adherents12.

Similar studies have already been conducted in Brazil. One of them evaluated the sun exposure habits of 371 university students in southern Brazil. Of these, 34.3% reported always or almost always using sunscreen. When analyzing the group of pharmacy and medical students, the frequency of sunscreen use was 39.2%[13], whereas in our study it was 35.54%. Also in this same group, the use of hats in the referred frequency (almost always or always) was only 2.7%, in contrast to the 8.53% we identified. In this case, it is possible to suggest that the difference observed is due to the higher incidence of sunlight in the Northeast region, favoring the use of hats.

In the Northeast, a study conducted in Teresina included 398 students, 260 of whom were in the health area14. Of the latter, 44.2% reported using sunscreen in daily exposures, almost 10% more than the percentages identified here (35.54%). Still, the use of hats among them was 21.2%.

The INCA estimates, for 2020, 38,380 new cases of skin cancer in the Northeast, of which 37,380 are Non-Melanoma Neoplasms (NNM). Paraíba is expected to contribute with 3,500 occurrences of NMN, in addition to the second highest crude rate of these cases among men in the region, about 92.16/100,000 (behind only Rio Grande do Norte), and the fifth highest among women, about 74.34/100,000[15].

Regarding the practice of physical activity, we observed that 109 students (51.66%) practice weekly physical activity at the intensity and duration recommended by the World Health Organization10. The distribution between the sexes was similar, with 54 (49.54%) females and 55 (50.46%) males.

An Egyptian study with 519 medical students from the second to the sixth year of the course identified that there was adequate physical activity in 334 cases, about 64.4% of their sample16, approximately 13% more than the one identified by us. Similarly to what was observed in our study, males were the main exercisers, with 57.49% and 42.51% for women. More than 80% of the sample was able to recognize the role of physical activity in the prevention of coronary events and cholesterol changes. Only 32.2% and 16.2% of the participants were able to associate the role of physical activity in the prevention of colon and breast cancer, respectively 16.

A British study, similar to the Egyptian one, included 218 students from all years of seven universities in the United Kingdom, demonstrating that only 10% of the participants correctly associated the impact of physical activity and weight on the occurrence of cancer17.

Thus, it is possible to infer that the limited adherence to the practice of physical activity in our sample is due to the restricted knowledge of the benefits associated with it.

Regarding eating habits, we observed in our sample a high prevalence of red meat consumption (90.9%), associated, in the literature, with the incidence of neoplasms such as gastric and, possibly, bladder neoplasms18-19.

About 86% of the participants reported eating all three meals a day always or almost always a week. However, when this information was associated with the rate of consumption of industrialized foods, we identified that 68.3% of the individuals who consume three meals a day also stated that they always or almost always ingest industrialized products. Thus, it is possible to assume that meals are replaced by processed foods, associated with a higher risk of various types of cancer20.

In 2011, Okami et al. identified that 61.7% of the nursing and medical students interviewed reported daily consumption or weekly episodes of processed foods[21]. Although the percentage observed in the Japanese study is lower than in our study (71%), it is important to know that 35.5% of its sample was composed of students with gastrointestinal disease (irritable bowel syndrome) and, therefore, with possible dietary restrictions. Thus, such a percentage may actually be underestimated.

Papier et al. suggest that stress may be associated with high intake of processed foods. They identified that male and female university students in their sample, when subjected to mild to moderate levels of stress, had a relative risk of processed food consumption of 1.79 and 2.22, respectively[22].

Another possible explanation is the lack of knowledge about the ingested product. As our results indicate, with the exception of the reading of the shelf life, performed by 68% of the students, only 32% or less of our participants claimed to have the habit of reading the information about the food, be it the nutritional value, the ingredients or the form of conservation.

When assessing alcohol and cigarette consumption, a significant association was identified with male gender (χ^2; p = 0.014 and p = 0.0036, respectively). Thus, 62.6% of the interviewees reported alcohol consumption in the last 30 days, being 34.6% male and 28% female. Still, while 31.3% of the sample reported previous contact with cigarettes, 11.4% were women and 19.9% men. Only 5.7% claimed active smoking, with 75% of these being men.

The study by Candido et al. agrees with our findings. This literature review evaluated the use of drugs, licit or illicit, among Brazilian medical students from the evaluation of 16 articles. Alcohol was identified as the most used substance, while several of the included studies mentioned cigarettes in second place. Men also showed a greater tendency to consume both23.

The review also suggests that the use of these and other drugs may be associated with stressors linked to graduation, since consumption increases with the progression of the course. It is also interesting to note that they point out as a protective factor against these habits the situation of living with parents and religious practice23. However, these are artificers that are not always in force in the reality of the university student24,25.

Regarding the evaluation of the use of condoms during sexual intercourse, we found, among the sexually active, that 82.4% use it, with men being the main adherents to the habit.

Caetano et al. obtained similar results when they studied the habits and sexual knowledge of university students in law, medicine, arts and communication courses in São Paulo. For them, the total percentage of condom users in vaginal intercourse was 77.6%, and men were also the majority in their use26.

It is worth noting that 41.7% of the interviewees have two or more risk factors for neoplasms, 67% of whom are male. The INCA expects, in 2020, that men will be the main ones affected by lung, stomach, bladder and laryngeal neoplasms,15 all associated with at least one of the factors studied here. This expectation draws attention and highlights the relevance of the results of our study.

Regarding the limitations of this study, it is pointed out that data collection had to be interrupted early due to the onset of the coronavirus pandemic. Although the number of participants was sufficient to satisfy the confidence interval of the sample calculation and to represent all the years of the course that should be included, not all semesters of the first four years of medical school are represented here. In addition, other factors associated with cancer, such as use of hormonal contraceptives, age of onset of sexual activity, and number of sexual partners in the past year have not been investigated. The study also represents the data of medical students from a single public university in Paraíba. Regarding the use of questionnaires for data collection, it is necessary to consider that the answers may not be reliable to real habits, because some questions, such as about sexual practice, may generate some level of discomfort.

Our findings contribute to the knowledge of the prevalence of risk factors for the development of cancer in medical students of a public university, enabling the creation, implementation and implementation of educational programs aimed at health promotion and disease prevention, from the adoption of a healthy lifestyle that minimizes the exposure of students to risk factors.

5 CONCLUSION

Males were associated with alcoholism, smoking and less use of sunscreen. The presence of two or more risk factors was observed in 41.7% of the participants.

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