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Lifestyle among former cancer patients in Brazil in 2013

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Abstract *People who have been diagnosed with cancer tend to adopt healthier lifestyles. This study analyzes the prevalence of smoking, eating fruits and vegetables, exercise and the use of alcoholic beverages among individuals who reported to have been diagnosed with cancer in the PNS (Pesquisa Nacional de Saúde or National Health Survey). The prevalence and corresponding 95% confidence intervals were calculated for consuming fruits and vegetables, sedentary lifestyle (no exercise), use of alcoholic beverages, being overweight and tobacco use. The associa-tion between having received a diagnosis of cancer and the risk and protection factors was analyzed using a Poisson regression, adjusted by sociodemographic variables and other chronic comorbidities. The analyses were stratified by time since the diagnosis and the type of cancer related to the factors analyzed. The types of cancer most often reported were breast and cervix in women, and prostate and stomach in men. Among those who had cancer diagnoses, there was a higher consumption of fruits and vegetables, higher proportion of ex-smokers, however, increased use of alcohol. There was no difference in the frequency of exercise or incidence of being overweight between the two groups. Measures to promote health and prevent chronic diseases should be implemented in the follow-up of people who have had cancer, in an effort to ensure integrated healthcare.*

Key words *Population surveys, Malignant neoplasms, Risk factors*

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Introduction

The diminished lethality of some types of cancer has allowed a growing number of individuals to survive a diagnosis of cancer.

In high-income countries, one observes that for the less lethal cancers, such as breast, prostate and colorectal, mortality has dropped significantly, despite the fact that for some types the incidence has remained flat or even increased. However, the more lethal forms of cancer such as lung, stomach and pancreas still have very low survival rates[1]. The situation in Brazil as a whole is unclear, although this trend is emerging among those living in state capitals in the South and Southeast with diagnoses of cancer of the breast or prostate[2].

A diagnosis of cancer can motivate people to adopt healthier lifestyles. Recommendations made to people who have survived cancer treatment focus primarily on weight control, regular exercise and healthy eating habits[3,4]. There is evidence that cancer survivors who are no longer undergoing active treatment also benefit from the disease prevention recommendations geared towards the general population[5], reducing their risk of death[6].

For the first time, the joint IBGE and Ministry of Health PNS (National Health Survey)[7] conducted between 2013 and 2014 collected nationally representative data on people who received the medical diagnosis of cancer. The survey also provided data on the sociodemographic characteristics and variables indicative of lifestyle that enable looking at distinctions between adults who at some point in life were diagnosed with cancer, and those who were not. The goal of this study was to analyze factors related to lifestyle (tobacco use, eating fruits and vegetables, regular exercise and the use of alcoholic beverages) among people who have been diagnosed with cancer.

Methods

Study population, sampling and data collection

Data collected by the PNS National Health Survey was used. This is a household survey conducted by the Ministry of Health and the IBGE to assess the health, lifestyles and attention to health among adults in Brazil[7].

The PNS sample plan used clusters in three stages. The primary units were the census sectors, the secondary units were the households, and the tertiary units household members 18 years or older. Census sectors were stratified according to four criteria: administrative (state capital, remainder of the metropolitan region or integrated economic development region (RIDE) and other cities in the State), geography (sub-divides state capitals and other large cities), status (rural or urban) and statistical.

69,954 households were selected, with one person in each chosen for a one-on-one interview. 60,202 individuals were willing to participate in the survey (final response rate of 86%)[7,8].

PNS data was collected using trained interviewers carrying hand-held computers (PDAs). A questionnaire was applied to the adult selected in each household. The questionnaire included questions about sociodemographics, self-assessed health status, lifestyle, morbidity, accidents and violence, women's health, the health of children under 2 oral health, elderly health and performance of the healthcare system. We also conducted anthropometric and blood pressure measurements, and collected biological material. Additional information describing PNS sampling and data collection has been described by Souza-Junior et al.[8].

Sociodemographics and referred morbidities

The variables selected for analyses were gender, age (18-29, 30-39, 40-49, 50-59, 60-69, 70-79, ≥ 80), race/color (white, black, yellow, brown, native Indian), marital status (married, separated/divorced, widowed, single), education (no education or incomplete primary school, complete primary school or incomplete secondary school, complete secondary school or incomplete university and university graduate).

Also included were questions about the diagnosis of other chronic, non-transmissible morbidities (hypertension, diabetes, coronary disease, stroke, depression, other mental health issues, asthma, rheumatism, backache, chronic obstructive pulmonary disease or other lunch diseases, chronic renal failure or other chronic non-transmissible diseases).

Cancer diagnosis

Participants were asked if they had even been diagnosed with cancer by a physician, its primary location and age at first diagnosis. To classify individuals with a diagnosis of cancer, we used the following primary locations: lung, intestine, stomach, breast, cervix, prostate and other. Individuals who reported a history of cancer were grouped by years since the first cancer diagnosis into less than ten years or ten years or more. As most skin cancers are non-melanocytic, and most of these tumors evolve satisfactorily, reports of skin cancer were not considered[9], which excluded 182 subjects from this analysis.

Finally, respondents were grouped by type of cancer based on the etiological relationship with the risk and protection factors analyzed in this study, and related to food (lung, intestines and stomach)[5,6,10-15], exercise (intestine, breast and prostate)[16-18], use of alcohol and excess weight (intestine, stomach and breast)[19,20] and tobacco use (lung, stomach and cervix)[21-23].

Risk and protection factors

Eating cooked or raw fruits and vegetables was analyzed based on the weekly frequency (0 to 7 days), and the number of portions a day (0 to 3 or more a day). Eating 12 or more portions a week, as recommended by the World Health Organization (WHO) was considered a protection factor[24].

Activities were assessed based on time spent and weekly frequency for leisure, work, household chores, going to and from work or regular activities reported in the past three months. We used two indicators for this: exercise as leisure (no/yes) and level of physical activity according to WHO recommendations[24] (less than or more than 150 minutes a week).

The use of alcoholic beverages was assessed based on weekly frequency as follows: alcoholic beverages consumed in lifetime (does not drink or > once a week) and abusive use of ethanol (less than or more than 5 times a week).

Tobacco use was described as the use of any tobacco product as the share of daily smokers (smokes daily or does not smoke/smokes less than one cigarette a day) and former smokers (yes or no).

Nutritional status was assessed by calculating Body Mass Index (BMI) using self-referred weight and height data. Individuals with BMI ≥ 25 kg/m^2 were considered overweight.

Treatment of missing data

Simply deleting observations with missing data is one of the most inefficient ways of treating missing data[25,26], and damages the structural information of the survey sample design, decreasing the precision of the estimates. This is why we decided to impute the relevant missing data.

Of the 60,202 respondents, 15.6% (n = 9,412) were missing weight, 27.3% were missing height (n = 16,408) and 10.9% were missing both weight and height (n = 6,559), either because the individual did not fill in this information or refused to answer. Imputation of these variables used a modeling of the sub-set of data available and auxiliary variables predictive of the missing data, specifically gender and age, added to the residuals of the adjusted model[27]. There were no instances of missing data for the two auxiliary variables. Data was inputted using the Box-Cox transformation of the data available to achieve normalcy, followed by an estimate of the parameters of the normal multivariate model, adjusted to the data based on a robust version of the EM (Expectation-Maximization) variable developed by Little & Smith[28]. Finally, the missing data was imputed using a regression with the available data used as predictors, and adding residuals from the adjusted model[27].

We also found instances of missing information regarding the diagnosis of hypertension (3%, n = 1,787) and diabetes (11.6%, n = 6,986. As these variables might also influence the outcome and therefore had to be included in the models to avoid confounding, they were both imputed. As these losses were distributed randomly, the missing data was imputed using decision trees, a multivariate, non-parametric classification technique that enables identifying the variables to be imputed based on the predictive variables available for the entire set of individuals[29,30]. In this case, in addition to gender and age we also used the date of the last blood glucose assay for diabetes, and the date of the most recent blood pressure measurement for hypertension, as auxiliary variables to predict the missing diagnostic data.

Statistical Analysis

The relative frequency of outcomes related to food consumption (high consumption of fruits and vegetables), exercise (sedentary, failure to achieve 150 minutes/week of physical activity), drinking (alcoholic beverages ≥ 5 days a week and ≥ 1 day a week) and tobacco use (daily smok-

er and former smokers) were also calculated for adults with and without a diagnosis of cancer.

Poisson regressions were used to estimate prevalence ratios and their 95% confidence intervals for the association between a diagnosis of cancer and the risk and protection factors, using as a reference the population without a cancer diagnosis. Model 1 was adjusted using sociodemographic variables (age, gender, race/color and education), while model 2 used sociodemographic variables and other morbidities (hypertension, diabetes, coronary disease, stroke, depression, chronic obstructive pulmonary disease). We then ran analyses stratified by time since the cancer diagnosis (< 10 years or ≥10 years), adjusted by sociodemographic variables and other morbidities. We finally calculated the prevalence of the risk and protection factors for the types of cancer related to nutrition (lung, intestine and stomach), physical activity (intestine, breast and prostate) and tobacco use (lung, stomach and cervix). As the PNS describes only the more frequent types of cancer and consigns al others to the "other cancer" category, the tumors related to obesity we were able to study were limited to the same tumors that are related to the use of alcoholic beverages (stomach, intestine and breast). All analyses used Stata 12.1 and considered the sample design. Statistical significance was considered for $p < 0.05$.

Ethical Aspects

The PNS was approved by the Brazilian National Research Ethics (CONEP), and complies with National Health Board (CNS) Resolution n. 466 of December 12 2012.

Results

This study analyzed data from 59,179 individuals who had not been diagnosed with cancer and 841 who had (1,023 less 182 with a diagnosis of non-melanoma skin cancer and thus excluded from the analysis). The population diagnosed with cancer included more women and elderly, whites (Caucasians) and people with a university degree than the population that had never been diagnosed with cancer (Table 1).

The relative frequency of individuals with a diagnosis of cancer in Brazil was 1.5%, with little difference between genders (1.3% among men and 1.7% among women). The types of cancer most often reported by women were breast (0.79%, cervix (0.23%), intestine (0.16%), stomach (0.03%) and lung (0.02%). Among men, the most frequent diagnoses were prostate (0.59%), intestine (0.16%), stomach (0.08%) and lung (0.02%). The largest percentage of the cancer diagnoses (34%) had been received within the past 2 years.

Adults who had been diagnosed with cancer ate fruits and vegetables more often (PR = 1,37; CI 95% 1,11 a 1,67), and also exercised more frequently (PR = 0.90; CI 95% 0.83 - 0.98). When adjusted for other morbidities, exercise was not statistically significant. On the other hand, drinking an alcoholic beverage five or more days a week was almost twice as prevalent (PR = 2.03; IC 95% 1.23 - 3.35) among those who had been diagnosed with cancer than among those who had not. The number of former smokers was also higher in the population who had been diagnosed with cancer (PR = 1.29; IC 95% 1.08 - 1.55) (Table 2).

The frequency of eating fruits and vegetables was higher among individuals who had been diagnosed with cancer less than 10 years previously than in the population who had never been diagnosed with cancer (PR = 1,45; CI 95% 1,12 - 1,89). The proportion of former smokers in the population who had received a cancer diagnosis was only larger than in the population without a cancer diagnosis in those who had been diagnosed less than 10 years previously (RP = 1,41; IC 95% 1,16 - 1,72). On the other hand, drinking an alcoholic beverage five or more days a week was more than double (PR = 2.37; CI 95% 1.03 - 5.44), and smoking daily was almost half (PR = 0.52; CI95% 0.29 - 0.93) among those who had been diagnosed with cancer 10 years prior or more (Table 3).

The prevalence of eating fruits and vegetables among those reporting to have had any type of cancer was always higher than among those who were never diagnosed with cancer. Among those reporting having been diagnosed with cancers related to obesity or the use of ethanol, we found a diminished use of alcoholic beverages. Among those claiming to have been diagnosed with cancers related to tobacco use, the proportion of former smokers was larger. On the other hand, the percentage of people not reaching 150 minutes of exercise a week was larger among those with a diagnosis of cancer related to inactivity than among those never diagnosed with cancer (Table 4).

Table 1. Sociodemographic characteristics of individuals who have and have not been diagnosed with cancer, National Health Survey (PNS) Brazil, 2013.

Variables	Individuals who have not been diagnosed with cancer (n = 59,179)		Individuals who have been diagnosed with cancer* (n = 841)	
	%	(CI 95%)	%	(CI 95%)
Gender				
Male	47.2	(47.1 - 47.3)	40.0	(34.6 – 45.6)
Female	52.8	(52.7 - 52.9)	60.0	(54.4 – 65.4)
Age				
18-29	26.5	(26.1 - 26.8)	5.4	(1.8 – 8.9)
30-39	21.9	(21.5 - 22.2)	5.7	(3.5 – 7.9)
40-49	18.2	(17.8 - 18.6)	12.3	(0.8 – 16.2)
50-59	16.1	(15.6 - 16.5)	21.0	(16.8 – 25.2)
60-69	9.9	(9.6 - 10.2)	30.1	(24.1 – 36.0)
70-79	5.2	(5.0 - 5.5)	16.3	(12.5 – 20.2)
≥ 80	2.3	(2.1 - 2.5)	9.2	(6.1 – 12.2)
Race/Color				
White (Caucasian)	47.1	(46.3 - 47.9)	64.8	(59.6 – 70.0)
Black	9.2	(8.8 - 9.7)	7.5	(4.9 – 10.1)
Yellow (Oriental)	0.9	(0.8 - 1.0)	1.2	(0.0 – 2.7)
Brown	42.3	(41.5 - 43.0)	26.4	(21.9 – 30.9)
Native Indian	0.4	(0.3 - 0.5)	0.1	(0.0 – 0.2)
Marital Status				
Married	44.0	(43.4 - 44.8)	58.2	(52.6 – 63.8)
Separated/Divorced	6.5	(6.1 - 6.8)	9.3	(6.7 - 12.0)
Widow/Widower	6.5	(6.2 - 6.8)	16.7	(12.7 – 20.7)
Single	43.0	(42.3 - 43.6)	15.7	(11.4 – 19.9)
Education				
None or incomplete primary	21.5	(20.9 - 22.1)	38.7	(32.8 – 44.5)
Complete primary or incomplete secondary	27.5	(26.8 - 28.2)	14.8	(11.6 – 18.1)
Complete secondary or incomplete university	38.4	(37.7 - 39.0)	24.5	(20.0 – 28.9)
University Graduate	12.6	(11.9 - 13.3)	22.0	(16.6 – 27.5)
Other Morbidities				
Hypertension	21.3	(20.7 - 21.8)	44.6	(39.5 – 49.7)
Diabetes	6.5	(6.1 - 6.8)	13.9	(9.9 – 17.9)
Coronary diseases	4.0	(3.7 - 4.3)	12.1	(8.8 – 15.6)
Stroke	1.5	(1.3 - 1.6)	3.5	(1.8 – 5.3)
Depression	7.5	(7.1 - 7.9)	14.2	(10.7 – 17.8)
Asthma	4.4	(4.1 - 4.6)	6.6	(3.9 – 9.4)
Rheumatism	6.3	(5.9 - 6.6)	14.6	(11.0 – 18.2)
Back ache	18.1	(17.6 - 18.8)	33.0	(27.6 – 38.3)
Chronic obstructive pulmonary disease	1.7	(1.5 - 1.9)	5.7	(3.2 – 8.3)
Chronic renal failure	1.4	(1.2 - 1.5)	3.5	(1.5 – 5.5)
Other NTCD	5.4	(5.0 - 5.8)	8.5	(5.5 – 1.1)

* Types of cancer included: lung, intestine, stomach, breast, prostate, cervix and other not specified.

Discussion

The results of this study show that people who have had cancer seem to adopt, in part, healthier lifestyles, tending to eat fruits and vegetables more frequently and stop smoking. However, we found no difference in terms of exercise or obesity, and the use of alcoholic beverages was almost twice as frequent among this population.

A number of studies have shown that following a diagnosis of cancer people eat more healthy foods such as fruits and vegetables, and more of

them stop smoking[31,32]. Wang et al.[31] looked at over 16,000 cancer survivors and concluded that they eat more fruits and vegetables and smoke less than the general population. At the same

Table 2. Behavioral risk factors in individuals with and without a diagnosis of cancer. National Health Survey. Brazil. 2013.

	Individuals who have not been diagnosed with cancer (n = 59,179)		Individuals who have been diagnosed with cancer* (n = 841)					
					Model 1** PR	CI 95%	Model 2*** PR	CI 95%
	%	(CI 95%)	%	(CI 95%)				
Frequency of eating fruits and vegetables								
≥ 12 times a week	56.5	(55.7 – 57.3)	75.5	(70.9 - 80.0)	**1.41**	**1.16 - 1.69**	**1.37**	**1.11 - 1.67**
Exercise								
No exercise as leisure	68.5	(67.7 – 69.2)	66.4	(60.5 - 72.3)	**0.90**	**0.83 - 0.98**	0.91	0.83 - 1.00
Does not achieve recommended levels (≤ 150/week)	45.1	(44.4 – 45.9)	54.6	(49.2 - 59.9)	1.01	0.91 - 1.11	1.01	0.91 - 1.12
Drinking (alcohol)								
Drinks 5 or more days a week	2.6	(2.4 – 2.8)	7.0	(3.6 - 10.4)	**1.90**	**1.19 - 3.05**	**2.03**	**1.23 - 3.35**
Drinks 1 or more days a week	24.0	(23.8 – 24.7)	18.2	(13.7 - 22.7)	0.98	0.77- 1.24	1.00	0.77 - 1.29
Tobacco use								
Former smoker	17.3	(16.6 – 17.7)	34.8	(29.0 - 40.1)	**1.38**	**1.17 - 1.63**	**1.32**	**1.11 - 1.56**
Smokes daily	12.8	(12.3 – 13.2)	9.6	(5.4 - 13.8)	0.74	0.48 - 1.13	0.74	0.46 - 1.19
Overweight/obese								
BMI ≥ 25 kg/m^2	51.9	(51.2 – 52.6)	61.9	(57.0 - 66.8)	1.05	0.96 - 1.14	1.02	0.94 - 1.12

* Types of cancer included: lung, intestine, stomach, breast, prostate, cervix and other not specified. **Adjusted by gender, age, race/color and education.
**Adjusted by gender, age, race/color, education, hypertension, diabetes, coronary disease, stroke, depression and chronic obstructive pulmonary disease.

Table 3. Behavioral risk factors in the general population (reference) and individuals who have been diagnosed with cancer, by time since diagnosis. National Health Survey. Brazil. 2013.

	Individuals diagnosed with cancer < 10 years before survey* (n = 562)		Individuals diagnosed with cancer ≥ 10 years before survey* (n = 279)	
	PR**	CI 95%	PR**	CI 95%
Frequency of eating fruits and vegetables				
≥ 12 times a week	**1.45**	**1.12 - 1.89**	1.19	0.84 - 1.69
Exercise				
No exercise as leisure	0.92	0.82 - 1.03	0.90	0.78 - 1.03
Does not achieve recommended levels ≤ 150/week)	1.06	0.93 -1.21	0.90	0.75 - 1.08
Drinking (alcohol)				
Drinks 5 or more days a week	1.89	1.00 - 3.56	**2.37**	**1.03 - 5.44**
Drinks 1 or more days a week	1.04	0.76 - 1.42	0.89	0.55 - 1.44
Tobacco use				
Former smoker	**1.41**	**1.16 - 1.72**	1.12	0.83 - 1.51
Smokes daily	0.85	0.47 - 1.54	**0.52**	**0.29 - 0.93**
Overweight/obese				
BMI ≥ 25 kg/m^2	0.99	0.89 - 1.12	1.08	0.95 - 1.23

* Types of cancer included: lung, intestine, stomach, breast, prostate, cervix and other not specified. ** Adjusted by gender, age, race/color, education, hypertension, diabetes, coronary disease, stroke, depression and chronic obstructive pulmonary disease.

time, other studies show that for patients treated for colorectal cancer, exercise is inversely associated with the risk of death, while watching TV as leisure increases this risk[6].

Changes in lifestyle following a diagnosis of cancer have been shown to be related to improved health, both physical as well as psychological (specifically regarding tobacco and alcohol use), and to a decrease in the probability of cancer recurrence and other comorbidities[33,34].

This study shows that the relationship between exercise and a diagnosis of cancer disappears after adjusting for other chronic diseases, which may indicate that exercising is recognized

Table 4. Behavioral risk factors in the general population (reference) and individuals who have been diagnosed with cancer by type of cancer. National Health Survey. Brazil. 2013.

	Individuals who have not been diagnosed with cancer (n = 59,179)		Individuals who have been diagnosed with cancer			
			Related to nutrition* (n = 126)		Related to sedentary lifestyle** (n = 430)	
	%	(CI 95%)	%	(CI 95%)	%	(CI 95%)
Frequency of eating fruits and vegetables						
≥ 12 times a week	**56.5**	**(55.7 - 57.3)**	**75.0**	**(62.8 - 87.2)**	79.6	(73.6 - 85.7)
Exercise						
Des not exercise as leisure (≤ once a day)	**68.5**	**(67.7 - 69.2)**	59.1	(41.5 - 76.7)	**64.2**	**(55.9 - 72.6)**
Does not achieve recommended levels (≤ 150/week)	**45.1**	**(44.4 - 45.9)**	54.2	(37.4 - 70.9)	**53.8**	**(45.7 - 61.8)**
Drinking alcoholic beverages						
Drinks 5 or more days a week	**2.6**	**(2.4 - 2.8)**	6.4	(0.0 - 13.7)	7.6	(3.4 - 11.8)
Drinks 1 or more days a week	**24.1**	**(23.8 - 24.7)**	17.8	(7.3 - 28.3)	17.4	(11.6 - 23.2)
Tobacco use						
Former smoker	**17.2**	**(16.6 - 17.7)**	38.6	(23.3 - 53.8)	37.3	(29.5 - 45.1)
Smokes daily	**12.8**	**(12.3 - 13.2)**	17.1	(1.5 - 32.6)	7.0	(2.0 - 11.9)
BMI						
Overweight	51.9	(51.2 - 52.6)	52.7	(36.1 - 69.3)	64.7	(58.0 - 71.4)

	Individuals who have been diagnosed with cancer			
	Related to alcohol use and obesity*** (n = 332)		Related to tobacco use**** (n = 142)	
	%	(CI 95%)	%	(CI 95%)
Frequency of eating fruits and vegetables				
≥ 12 times a week	**80.5**	**(73.4 - 87.6)**	77.6	(68.5 - 86.8)
Exercise				
Des not exercise as leisure (≤ once a day)	57.4	(47.2 - 67.6)	65.5	(51.4 - 79.6)
Does not achieve recommended levels (≤ 150/week)	50.1	(40.2 - 60.1)	53.4	(39.5 - 67.3)
Drinking alcoholic beverages				
Drinks 5 or more days a week	**2.8**	**(0.0 - 5.8)**	0.1	(0.0 - 0.2)
Drinks 1 or more days a week	**12.6**	**(7.1 - 18.1)**	15.8	(4.6 - 27.0)
Tobacco use				
Former smoker	27.5	(19.5 - 35.5)	**38.9**	**(24.9 - 52.9)**
Smokes daily	7.4	(0.8 - 14.0)	**12.2**	**(4.7 - 19.7)**
BMI				
Overweight	65.9	(57.3 - 74.5)	60.1	(47.2 - 73.0)

* Types of cancer included: lung, intestine, stomach. ** Types of cancer included: intestine, breast and prostate. *** Types of cancer included: intestine, stomach and breast. **** Types of cancer included: lung, stomach and cervix.

as an important factor for preventing other chronic diseases such as diabetes and cardiovascular disease, but not so much for cancer prevention. We found no difference in the prevalence of obesity between those with and without a cancer diagnosis, a fact that caught our attention.

Although eating more fruits and vegetables is recognized as an important cancer prevention factor, weight control requires reducing the consumption of energy-dense foods and sugary drinks[5].

In Brazil, the rapid increase in the prevalence of excess weight and obesity is a nation-wide phenomenon[35]. Exposure to advertising and other forms of marketing for these products is not well regulated, and their use is viewed as natural, with the penetration of advertising for these products facing off against the recommendations of the health authorities[36,37] making it difficult for the population to follow health authority guidelines. Furthermore, it takes more time to detect changes in excess weight due to the accumulation of body fat over our lifetimes, sometimes since early childhood.

Using the data collected in the PNS we were able to show difference in lifestyle among those who have had a cancer diagnosis. However, we must expand and adjust prevention strategies for risk factors of chronic diseases for those who have had cancer. Prospective studies to assess what happens to cancer survivors in Brazil, not only in terms of the effectiveness of the clinical treatment, but also including a broader assessment to promote health should be encouraged.

Collaborations

GA Silva, LFM Rezende, FS Gomes, PRB Souza Júnior, CL Szwarcwald, DC Malta and J Eluf-Neto contributed to the paper, read, and approved the final version.

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