Alcohol Consumption and risk of breast cancer in Brazil: A study of secondary database

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INTRODUCTION

In Brazil, cancer is considered an important public health problem, in both developing and developed countries. By the year 2030 are expected 20.3 million of incident cancer cases and a prediction of 13.2 million deaths related to the disease [1]. Among women, breast cancer is the most common type, accounting for most of the deaths in countries of low and middle income [2]. About 1.38 million new cases are diagnosed worldwide each year as well as 400 000 deaths caused by the disease [3].

In Brazil, the estimated number of new cases of female breast cancer to the years 2012/2013 were 52,680, being the most frequent type of cancer in the South, Southeast, Northeast and Center-West region, occupying second place in the Northern region [4].

AIM

To analyze the association between alcohol consumption and the risk of women developing breast cancer in Brazil.

METHOD

This is a case-case study, analyzing the association between the consumption of alcoholic drinks and the risk of developing breast cancer.

Data collection was performed using the Integrator System of the Cancer Hospital Registry (CHR), a web based system that makes the consolidation and dissemination of data available from the CHRs from Brazil [5]. Individuals with information gathered regarding the consumption of alcoholic beverage, diagnosed between 1st of January of 2000 and 31st of December of 2009 aged between 18 and 100 years were included. It was considered as control non-melanoma skin cancer cases due to the lack of association between alcoholic beverage consumption and this type of cancer [6]. Were excluded individuals who reported being former consumers.

The main exposure variable was the report of alcohol consumption, categorized as consumer and non-consumer. We also analyzed the following variables: age, race, education, marital status, smoking, region of residence and year of diagnosis.

A descriptive analysis was performed by means of the distribution of absolute and relative frequency. Subsequently was performed the calculation of Odds Ratio (OR). Multivariate adjustment was performed for the following variables: age, gender, race, education, marital status, smoking status, region of residence and year of diagnosis.

The etiologic fraction (EF) was calculated from the following equation: Pc X (aOR - 1)/aOR, where Pc is the proportion of the number of exposed cases and aOR, the adjusted odds ratio, assuming that the risk of disease in the population is low and the value of the OR comes near to the relative risk (RR).

For data analysis has been used the statistical program PASW Statistics software, version 18.0.

RESULTS

There were included 50,649 women registered in the Integrator of the CHR in the period between 2000 and 2009. The mean age of patients with breast cancer was 55.12 years (SD = 13.40), 59.3 % were white, 25.9 % were smokers and 13.3 % were alcohol users (Table 1).

Table 1. Characteristics socio-demographic of women included in the study

Characteristics	Cases N (%)	Controls N (%)
Age (years)		
< 24	93 (0,2)	65 (0,6)
25 - 39	4422 (11,2)	642 (5,7)
40 - 59	20811 (52,7)	3243 (29,0)
60 - 74	10464 (26,5)	3796 (34,0)
≥ 75	3682 (9,3)	3431 (30,7)
Race / Skin color		
White	21719 (59,3)	8275 (79,6)
Black/ Non-white	14765 (40,3)	2095 (20,1)
Indigenous/ Yellow	156 (0,4)	28 (0,3)
Marital status		
Single	8105 (21,1)	1685 (15,5)
Married	20595 (53,7)	5122 (47,1)
Widow	6772 (17,6)	3568 (32,8)
Divorced	2913 (7,6)	500 (4,6)
Education		
Illiterate	2723 (9,3)	1662 (20,3)
Primary School	18485 (63,5)	5321 (65,1)
Secondary School or +	7915 (27,2)	1188 (14,5)
Alcohol Consumption		
Yes	5244 (13,3)	632 (5,7)
No	34228 (86,7)	10545 (94,3)
Smoking		
Yes	9994 (25,9)	1911 (17,6)
No	28569 (74,1)	8965 (82,4)
Stage at Diagnosis		
0	864 (2,6)	124 (4,0)
I	5210 (15,5)	1560 (49,8)
II	13667 (40,7)	863 (27,5)
III	10647 (31,7)	419 (13,4)
IV	3218 (9,6)	168 (5,4)
Region of Residence		
North	902 (2,3)	260 (2,3)
Northeast	7877 (20,0)	2246 (20,2)
Midwest	954 (2,4)	111 (1,0)
Southwest	20678 (52,5)	5214 (46,9)
South	8939 (22,7)	3295 (29,6)
Year of Diagnosis		
2000 - 2004	18542 (47,0)	5047 (45,2)
2005 - 2009	20930 (53,0)	6130 (54,8)

The analyzed data (Table 2) showed that women who consume alcoholic beverage have a moderate risk of developing breast cancer. The risk increased by 60% (OR= 1.6; 95% CI: 1.4-1.7), and 5% of cases can be attributed to this consumption.

Table 2. Association between alcohol consumption and the development of breast cancer in women

CRUDE OR			ADJUSTED OR*			ETIOLOGIC FRACTION
OR	95% CI	P Value	OR	95% CI	P Value	(%)
2.6	2.4-2.8	<0.001	1.6	1.4-1.7	<0.001	5.0

* Adjusted by gender, age, race, education, marital status, smoking habits, region of residence and year of diagnosis

DISCUSSION

Although this study has not carried out analysis according to the amount of alcohol consumed per day or week and has not included information about the use of hormone replacement therapy by women, the results are consistent with current knowledge published by the International Agency for Research on Cancer [8], which confirms the existence of compelling evidence between alcohol consumption and the risk for breast cancer.

Horn-Ross et al. [9], in a cohort study of 40,680 participants, found significant risk (RR 1.63, 95% CI: 1.29-2.06) in women who consumed alcoholic drink and were undergoing hormone therapy. On the other hand, a prospective cohort study conducted in Japan [10], after adjustment for potential confounders (age, height, BMI, smoking, physical activity time, age of menarche, age of first child, parity, age at menopause, use of hormone and isoflavones) found evidence that consumption ≥5 to7 doses per week increases by 56% the risk of developing breast cancer (RR 1.56, 95% CI: 1.09-2.23). However, a recent cohort also of Japanese women did not show statistically significant association after adjustment for confounding factors [11]. A case-control study [12] conducted in Uruguay (460 cases and 638 controls) found a positive association (OR 1.63, 95% CI: 1.19-2.23) between the risk of developing this type of cancer and the consumption of alcoholic beverage, adjusting for certain confounding factors, except tobacco.

This study has some limitations that may compromise the interpretation of the results. As the survey was conducted on data source of secondary base, possible information bias and recall bias need to be considered. Furthermore, as it is a hospital-based study, the use of skin cancer as control rather than people without cancer, representative of the population where the cases came from, may also have influenced the results. As other comprehensive studies that analyze the relationship between alcohol consumption and breast cancer in Brazil are unknown, and considering that the majority of the research in this field was performed in North America, Europe and Asia, this study brings important contributions to the development of specific policies for breast cancer control when the results are adjusted considering the existing differences in lifestyle, cultural aspects and habits of the females population according to age, education level, marital status, smoking, region of residence and year of diagnosis.

CONCLUSION

This study confirm alcohol as a risk factor for the development of breast cancer in Brazilian women.

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