



Lifestyle behaviors in Black and White women with a family history of breast cancer

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ABSTRACT

Objectives. To examine lifestyle behaviors among non-Hispanic Black and White women with a family history of breast cancer and determine the extent to which they meet American Cancer Society (ACS) Nutrition and Physical Activity Recommendations for Breast Cancer Prevention.

Method. Cross-sectional data from 44,364 women enrolled in the Sister Study (2009), a study of sisters of women with breast cancer within the U.S., were analyzed. Descriptive statistics and chi-square analyses were used to examine body mass index and lifestyle behaviors (e.g., exercise, diet, and smoking) and to determine percentages of women meeting ACS recommendations.

Results. Black women consumed a lower percentage of calories from fat (mean 36.90% vs. 37.17%) and were more likely to meet ACS alcohol recommendations than Whites. White women consumed more fruits and vegetables/day (mean 4.81 vs. 4.41) than Black women and were more likely to meet ACS guidelines for physical activity (26.4% vs. 18.2%) and body mass index (42.5% vs. 16.7%).

Conclusion. Despite an elevated risk for breast cancer due to a family history of breast cancer, the majority of women were no more likely than women in the general population to engage in healthy lifestyle behaviors. These women may benefit from lifestyle behavior risk-reduction counseling.

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Introduction

Modifiable lifestyle factors such as overweight/obesity and adult weight gain (post-menopausal breast cancer), physical inactivity, and alcohol consumption have been linked with breast cancer risk (World Cancer Research Fund, 2007). The relationship between diet and breast cancer is less certain, but a diet high in fat typically leads to increased caloric intake, which can result in overweight/obesity. Family history of breast cancer may enhance the relationship between breast cancer risk and factors such as obesity, physical inactivity, alcohol consumption and smoking (Carpenter et al., 2003; Couch et al., 2001; Sellers, et al., 2002; Vachon et al., 2001; Verloop et al., 2000).

The American Cancer Society (ACS) breast cancer prevention guidelines include the adoption of a physically active lifestyle, maintaining a normal body weight, minimizing lifetime weight gain, and limiting alcohol to no more than one drink/day (Kushi et al., 2006). Differences in lifestyle behaviors between White and Black women have been studied in the general population (Bernstein et al., 2003; Centers for Disease Control (CDC), 2007), but not among

women with a breast cancer family history. Aims of this study were to examine whether lifestyle behavior differences exist between Black and White women with a family history of breast cancer and determine the extent to which women adhere to ACS guidelines.

Methods

Participants

We analyzed baseline data from the Sister Study (www.SisterStudy.org), a prospective study of environmental and genetic risk factors for breast cancer in 50,844 women who have had a sister with breast cancer. Participants are volunteers aged 35 to 74 years from the U.S. and Puerto Rico without breast cancer at time of enrollment. Women completed self-administered questionnaires and structured telephone interviews on a wide range of known and potential disease risk factors. Participants provided written consent and procedures were approved through the Institutional Review Boards of the National Institutes of Health and Copernicus Group.

Data were from women who completed all baseline enrollment activities as of November 2009. Women were excluded if they: a) were adopted, b) had a prior cancer history, or c) were not White or Black (non-Hispanic), resulting in data from 44,363 non-Hispanic women (40,072 Whites and 4292 Blacks).

Measures

We examined demographics and lifestyle-related behaviors. Current physical activity was assessed based on self-reported sports and exercise activities (e.g., walking for exercise, yoga, dance, etc.). Questions included, "In

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the past 12 months, have you done any sports or exercise activities at least once a week for at least one month?”, “How many days per week or per month did you do this?” and “On days that you did this activity, about how much time did you spend on average each day you did this?”. Total hours/week of physical activity was calculated from this data.

Current diet (past 12 months) was assessed using a modified-Block food frequency questionnaire (FFQ) (Block et al., 1986). Total daily caloric intake (kcal/day) and percent of total calories from fat were calculated. Fruits and vegetables consumed over the past 12 months were categorized based on daily intake of both combined. Alcohol consumption was classified as never, former, and current, with current drinkers categorized as ≤ 1 drink/day or greater than 1 drink/day. Body mass index (BMI) (kilograms/meters squared) was calculated from height and weight and categorized as: <18.5 (underweight), 18.5–24.9 (normal), 25.0–29.9 (overweight), and ≥ 30.0 (obese) (CDC, 2008).

Analysis

Descriptive statistics were generated using frequencies and percentages and chi-square statistics to compare White and Black women on demographic factors, smoking, and body mass index. Similar analyses were conducted to determine the percentage of women meeting the ACS breast cancer prevention recommendations. We calculated means as the measure of central tendency and 25th, 50th, and 75th percentiles as measures of variability for physical activity and dietary behaviors.

Results

The mean ages for non-Hispanic White and Black women were 55.4 and 53.1 years, respectively. Most women (85%) had at least a college degree. Black women were more likely than White women to have a household income $<\$50,000$ and to have never married or be divorced. Overweight and obesity were more prevalent in Black women than White women (83.0% vs. 57.5%). Black women exercised less (mean 2.31 vs. 2.89 h a week) and consumed less fruits & vegetables/day (4.41 vs. 4.81) (Table 1), whereas White women were more likely to consume a higher % of their total daily kcal from fat.

Most women did not meet the ACS recommendation for physical activity or BMI, although White women were more likely to have a BMI <25 (42.5% vs. 16.7%) and were more likely to exercise ≥ 4 h/week (26.4% vs. 18.2%) (Table 2). Most women met the ACS recommendation of ≤ 1 alcoholic drink/day with a higher percentage of Black women meeting the recommendation than White women. Only 12.7% of White and 4.5% of Black women met all three recommendations.

Discussion

Women in our study appeared no more likely to have a normal BMI or engage in healthy lifestyle behaviors than women in the general

Table 1

Participant characteristics and means and percentiles (P25, P50, P75)^a for physical activity and dietary intake, non-Hispanic Black and White women in the U.S. (2004–2009).

Variables	Black women (<i>n</i> = 4292)	White women (<i>n</i> = 40,072)	p-value
	<i>n</i> (%)	<i>n</i> (%)	
Age			
35–39	236 (5.5)	1585 (4.0)	<0.0001 ^b
40–49	1254 (29.2)	9464 (23.6)	
50–64	2429 (56.6)	21789 (54.4)	
65–75	373 (8.7)	7234 (18.1)	
Education			
<BS degree	428 (10.0)	6093 (15.2)	<0.0001
BS degree	2713 (63.2)	24276 (60.6)	
>BS degree	1150 (26.8)	9700 (24.2)	
Annual household income			
<\$20,000	262 (6.3)	1327 (3.5)	<0.0001
\$20,000–\$49,999	1054 (25.3)	7585 (19.7)	
\$50,000–\$99,999	1767 (42.5)	15902 (41.3)	
\$100,000–\$200,000	896 (21.5)	10647 (27.7)	
>\$200,000	182 (4.4)	3001 (7.8)	
Marital status			
Never married	576 (13.4)	1788 (4.5)	<0.0001
Legally married/living as married	2229 (52.0)	31099 (77.6)	
Widowed	265 (6.2)	1922 (4.8)	
Divorced/separated	1219 (28.4)	5260 (13.1)	
Body mass index (kg/m ²)			
<18.5 (underweight)	14 (0.3)	366 (0.9)	<0.0001
18.5–24.9 (normal)	697 (16.3)	16602 (41.6)	
25.0–29.9 (overweight)	1443 (33.8)	12667 (31.7)	
≥ 30.0 (obese)	2113 (49.5)	10315 (25.8)	
Smoking status			
Never smoked	2740 (63.9)	22005 (54.9)	<0.0001
Past smoker	1126 (26.2)	14886 (37.2)	
Current smoker	425 (9.9)	3174 (7.9)	
	Means ^c (Percentiles)	Means ^c (Percentiles)	
Physical activity (total h/week)	2.31 (0.25, 1.42, 3.19)	2.89 (0.62, 2.19, 4.23)	<0.0001 ^d
Total caloric intake (kcal/day)	1626 (1071, 1456, 1980)	1631 (1208, 1548, 1952)	0.66
% of total daily kcal from fat	36.90 (32.30, 36.90, 41.50)	37.17 (32.60, 37.00, 41.50)	0.023
Fruit & veg intake (servings/day)	4.41 (2.30, 3.60, 5.70)	4.81 (2.80, 4.30, 6.30)	<0.0001

Note. Negligible missing data for most variables (income had the highest at 4%).

^a Px = xth percentile.

^b p-value based on chi-square.

^c Means age-adjusted.

^d p-value based on t-test comparing adjusted means.

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