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Alcohol, Anthropometrics, and Breast Cancer Risk in African American Women

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To the Editor

Alcohol consumption is an extensively studied risk factor for breast cancer; however limited data are available for African American women. Given the higher levels of obesity in African Americans, as well as disparities in breast cancer prognosis, we investigated the associations between alcohol consumption and breast cancer and examined effect modification of weekly alcohol consumption by anthropometric measures, specifically, waist circumference, waist-to-hip ratio (WHR), and body mass index (BMI) as well as plasma leptin concentrations in a small African American case-control study (cases = 97; controls = 102).

Ever drinkers in our study reported significantly lower alcohol consumption than reported for other racial/ethnic populations and most often consumed wine. Bessaoud and colleagues (1) demonstrated a significant reduction in risk among women who consumed approximately one drink of wine per day compared to non-drinkers. These data support the hypothesis that wine consumption, at low levels, elicits a protective effect against breast cancer due to its high content of antioxidants and the phytoestrogen, resveratrol. This protective effect could explain why we observed a 53% reduction in risk in our study.

We demonstrated a 77% breast cancer risk reduction among women who had low WHR and moderately consumed alcohol (Table 1). This is the first report showing such a reduction in alcohol-related breast cancer risk. An earlier study consisting of a large number of African Americans (2), reported no association between alcohol consumption and breast cancer, which does not support the positive association reported in recent studies (3–5).

It is a widely held view that high levels of body fat, particularly among older women, increase breast cancer risk and disrupts hormone balance. Typically BMI is used as the measure of general obesity in epidemiological studies. Few studies have focused on waist circumference (abdominal obesity) and WHR (body fat distribution) and breast cancer risk. It may be that excess abdominal fat and the distribution of body fat are important modifiers of breast cancer, especially among African American women. In addition, leptin has not been adequately studied with regard to breast cancer risk in African Americans. Leptin is secreted into circulation by white adipose tissues and transported to the brain where it functions to affect energy balance via appetite control and energy expenditure. Leptin also

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has local tissue effects, and may be a growth factor for cancer. Some studies have reported a positive association between plasma leptin and breast cancer (6–9), confirming the importance of this hormone in carcinogenesis. Our finding that moderate alcohol consumption is significantly associated with a reduction of breast cancer risk in women with low WHR may support the hypothesis that the distribution of body fat, possibly working through leptin, modifies alcohol-related breast cancer risk in African American women. Conversely, high levels of abdominal obesity appear to increase alcohol-related breast cancer risk.

Our study was limited due to the small sample size. Nonetheless, we have shown some interesting and significant findings that warrant further study. Another limitation is the potential for recall bias among cases, however we addressed this issue by focusing our attention on reported consumption for the past 7 days, but there may have been reduction in alcohol consumption among cases.

In summary, our data provide initial evidence of a possible association between low to moderate alcohol consumption and breast cancer risk reduction in African American women, which may be modified by anthropometric measurements.

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Table 1
Odds Ratios for the Association between Alcohol Consumed in the Past 7 Days and Breast Cancer Risk by Anthropometric Measurements and Plasma Leptin

	Odds Ratio (95% CI)*	Odds Ratio (95% CI)†
Low waist circumference, <98.5 cm (<i>n</i> = 51)		
Total alcohol consumed		
<1 drink	1.00 (ref)	1.00 (ref)
1–6 drinks	0.48 (0.18, 1.30)	0.44 (0.15, 1.26)
7 drinks	0.52 (0.08, 3.30)	0.47 (0.07, 3.28)
High waist circumference, ≥98.5 cm (<i>n</i> = 46)		
Total alcohol consumed		
<1 drink	1.00 (ref)	1.00 (ref)
1–6 drinks	0.82 (0.28, 2.37)	0.84 (0.27, 2.59)
7 drinks	3.50 (0.35, 35.14)	4.22 (0.39, 46.15)
Low WHR, <0.85 (<i>n</i> = 46)		
Total alcohol consumed		
<1 drink	1.00 (ref)	1.00 (ref)
1–6 drinks	0.24 (0.07, 0.79)	0.23 (0.07, 0.79)
7 drinks	0.90 (0.12, 6.72)	1.07 (0.13, 8.46)
High WHR, ≥0.85 (<i>n</i> = 51)		
Total alcohol consumed		
<1 drink	1.00 (ref)	1.00 (ref)
1–6 drinks	1.41 (0.51, 3.90)	1.46 (0.49, 4.35)
7 drinks	1.54 (0.24, 9.75)	1.62 (0.23, 11.26)
Low BMI, <30.0 kg/m ² (<i>n</i> = 44)		
Total alcohol consumed		
<1 drink	1.00 (ref)	1.00 (ref)
1–6 drinks	0.51 (0.18, 1.39)	0.53 (0.18, 1.54)
7 drinks	0.41 (0.07, 2.42)	0.36 (0.06, 2.25)
High BMI, ≥30.0 kg/m ² (<i>n</i> = 53)		
Total alcohol consumed		
<1 drink	1.00 (ref)	1.00 (ref)
1–6 drinks	0.75 (0.26, 2.14)	0.70 (0.23, 2.14)
Low plasma leptin, <59.8 ng/mL (<i>n</i> = 44)		
Total alcohol consumed		
<1 drink	1.00 (ref)	1.00 (ref)
1–6 drinks	0.82 (0.28, 2.46)	0.77 (0.24, 2.43)
7 drinks	0.79 (0.16, 3.81)	0.90 (0.18, 4.47)
High plasma leptin, ≥59.8 ng/mL (<i>n</i> = 45)		
Total alcohol consumed		
<1 drink	1.00 (ref)	1.00 (ref)
1–6 drinks	0.52 (0.19, 1.46)	0.46 (0.15, 1.40)

* Odds ratios, unadjusted.

[†] Odds ratios, adjusted for age, education, age at menarche, and parity.

BMI, body mass index; CI, confidence intervals; WHR, waist-to-hip ratio.

N represent the number of cases in each category of the corresponding anthropometric measurement. Bolded odds ratios indicate significance at 0.05.