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Original Contribution

Racial Discrimination and Breast Cancer Incidence in US Black Women

The Black Women's Health Study

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Perceived discrimination may contribute to somatic disease. The association between perceived discrimination and breast cancer incidence was assessed in the Black Women's Health Study. In 1997, participants completed questions on perceived discrimination in two domains: "everyday" discrimination (e.g., being treated as dishonest) and major experiences of unfair treatment due to race (job, housing, and police). Cox proportional hazards models were used to estimate incidence rate ratios, controlling for breast cancer risk factors. From 1997 to 2003, 593 incident cases of breast cancer were ascertained. In the total sample, there were weak positive associations between cancer incidence and everyday and major discrimination. These associations were stronger among the younger women. Among women aged less than 50 years, those who reported frequent everyday discrimination were at higher risk than were women who reported infrequent experiences. In addition, the incidence rate ratio was 1.32 (95% confidence interval: 1.03, 1.70) for those who reported discrimination on the job and 1.48 (95% confidence interval: 1.01, 2.16) for those who reported discrimination in all three situations—housing, job, and police—relative to those who reported none. These findings suggest that perceived experiences of racism are associated with increased incidence of breast cancer among US Black women, particularly younger women.

African Americans; breast neoplasms; prejudice; women

Abbreviation: CI, confidence interval.

Breast cancer is an important health problem among Black women (1). The incidence is greater among Black women than among White women before the age of 40 years, and breast cancer mortality is greater at every age (2). A growing body of literature suggests that mistreatment due to discrimination can lead to psychological stress (3), which may contribute to somatic disease.

Numerous reports describe Blacks' experiences of discrimination (3–9). For example, a review of public opinion polls (6) found that 60 percent of Blacks reported that they had been discriminated against in at least one situation (education, housing, jobs, or equal wages). In the National Americans Changing Lives Survey (9), 47 percent of Blacks reported racial or ethnic discriminatory treatment. These reports suggest that African Americans have frequent exposure to discriminatory practices.

There has been emerging interest in the potential consequences of racial discrimination on physical health (10, 11).

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The majority of these studies have focused primarily on cardiovascular health. Studies have provided mixed results on whether elevated blood pressure in African Americans is positively associated with perceived discrimination (12–16). Results from studies assessing hypertension have also been inconsistent (17–20). Findings from the Black Women's Health Study regarding racism and hypertension were largely null, although there were some elevated risk estimates in the small group of foreign-born participants (18).

The effect of discrimination on health may be due, in part, to discrimination's acting as a chronic stressor in the lives of many African Americans (21). For example, a study of African-American women (mean age: 44.4 years) revealed that past-year and lifetime discrimination were both related to global psychological distress. In addition, numerous reports have shown that African Americans demonstrate physiologic arousal in response to racially stressful stimuli (22–24).

Over the past several decades, researchers have examined the extent to which psychological stress may influence breast cancer (25–41). Results to date have been inconclusive. Some studies have reported an increased risk of breast cancer among women with high stress levels (25–31). For example, Chen et al. (30) investigated the association between adverse life events and the development of breast cancer during a 5-year follow-up. Women experiencing adverse life events were 11.6 times more likely to develop breast cancer. Other studies, however, have shown decreased risk (34) or no association (35–42). A recent study investigating job stress and breast cancer incidence reported that job stress was not related to increased breast cancer risk (41).

Despite these inconsistent findings, a relation between psychological stress and increased risk of breast cancer is biologically plausible, because stress adversely affects immunologic function (43–45) and contributes to negative health behaviors (46, 47), both of which could play a role in breast carcinogenesis. No study to date has examined the effect that racial discrimination has on the occurrence of breast cancer. The aim of the current study was to determine if perceived discrimination was associated with increased breast cancer incidence among US Black women.

MATERIALS AND METHODS

Study population

Study participants were part of the Black Women's Health Study, an ongoing prospective cohort study designed to examine risk factors for major illnesses in African-American women. In 1995, 64,524 Black women, aged 21–69 years, were enrolled through questionnaires mailed to subscribers of *Essence* magazine, members of Black professional organizations, and friends and relatives of respondents. The survey instrument obtained information on a variety of personal and health characteristics, including reproductive and contraceptive histories, cigarette and alcohol use, physical activity and nutrition, psychosocial history, health-care utilization, and medical conditions. Black Women's Health Study respondents represent various geographic regions of the United States, with the majority of respondents residing in California, New York, Illinois, Michigan, Georgia, and New Jersey. The 59,000 women (91 percent of the initial enrollment) whose addresses were considered to be valid 1 year after baseline have been followed. Updated information has been obtained by postal questionnaire every 2 years from 80 percent or more of the initial cohort through 2003. The study protocol was approved by the institutional review board of the individual study sites in accordance with an assurance filed with and approved by the US Department of Health and Human Services.

Ascertainment of discrimination

The 1997 questionnaire asked participants about discrimination. The questions were adapted from a questionnaire by Williams et al. (7); they found responses to these questions to be associated with perceived mental and physical health problems in their study population. Five items were intended to measure the frequency of racial discrimination in everyday life (''everyday discrimination''). These questions asked about the frequency that participants experienced the following: ''you receive poorer service than other people in restaurants or stores,'' ''people act as if they think you are not intelligent,'' ''people act as if they are afraid of you,'' ''people act as if they think you are dishonest,'' and ''people act as if they are better than you.'' Possible responses were as follows: ''never'' (coded 1), ''a few times a year'' (coded 2), ''once a month'' (coded 3), ''once a week'' (coded 4), and ''almost every day'' (coded 5). An everyday discrimination summary score was devised by taking the average of the five everyday discrimination items. This summary score was divided into quartiles. Respondents were also asked about experiences of ''major discrimination''—if they had ever been treated unfairly because of their race on the job, in housing, and by the police (yes = 1, no = 0). A summary variable for major discrimination was devised: 1) yes to none, 2) yes to one, 3) yes to two, and 4) yes to three.

We chose to use two categories of discrimination on the basis of a previous study that examined discrimination and hypertension in the Black Women's Health Study population (18). Cozier et al. (18) used a principal components factor analysis utilizing an orthogonal rotation that revealed two factor patterns, which confirmed the two categories of discrimination. The item loadings on the first factor, which assessed ''everyday discrimination,'' ranged from 0.66 to 0.81. The second factor, which assessed ''major discrimination,'' was constituted by items with factor loadings that ranged from 0.61 to 0.77.

Since questions about discrimination were asked only once, in the 1997 questionnaire, we do not have formal test-retest data. However, during each follow-up cycle, multiple waves of questionnaires were mailed to women who had not yet responded. During the 1997 follow-up cycle, 1,172 women returned duplicate questionnaires. Weighted kappa (κ) values for the agreement between the questionnaires for responses to the racism questions ranged from 0.54 to 0.73 and did not differ according to the time interval between the two questionnaires (18). These results indicate satisfactory reliability of the responses.

Documentation of breast cancer diagnosis

A breast cancer case was defined as self-report of a breast cancer diagnosis made during follow-up from 1997 to 2003 or a death from breast cancer during that period among women who had not reported the cancer. There were 593 cases of incident breast cancer ascertained during questionnaire cycles 1997–1999, 1999–2001, and 2001–2003. Medical record review is an ongoing process in the Black Women's Health Study. We have sought consent to obtain medical records from participants who reported breast cancer that was diagnosed after enrollment into the study in 1995 and were still alive. To date, we have received permission from 54 percent of the women approached and obtained appropriate medical records for 416 women, among whom incident breast cancer was confirmed for 99 percent. These results suggest that self-report of breast cancer by the Black Women's Health Study participants is accurate. Among the confirmed cases, 88 percent were invasive cancer.

Statistical methods

The current analysis was restricted to 49,161 women who completed the 1997 questionnaire and one or more of the 1999, 2001, and 2003 follow-up questionnaires, and who did not report a diagnosis of breast cancer before 1997. Baseline for the present analyses was 1997, because the racism data were provided in that questionnaire.

Women contributed person-years from the date of return of the 1997 questionnaire until diagnosis of breast cancer, date of death, loss to follow-up, or end of the 6-year follow-up period (return of the 2003 questionnaire), whichever came first. Cox proportional hazards models (SAS, version 9.1, PROC PHREG; SAS Institute, Inc., Cary, North Carolina) were used to separately assess the association between the discrimination variables and breast cancer incidence, yielding incidence rate ratios and the corresponding 95 percent confidence intervals. Adjustments were made for factors known to be associated with breast cancer (48, 49). Hence, the incidence rate ratios were adjusted for age (continuous), body mass index (weight (kg)/height $(m)^2$: <25, 25–29, ≥ 30), education (≤ 12, 13–15, ≥ 16 years), age at menarche (<12, 12, 13, ≥ 14 years), menopausal status (pre-, post-), use of female hormone supplements (yes, no), parity (0, <2, ≥ 2 children), age at first birth (nulliparous, <25, ≥ 25 years), oral contraceptive use (yes, no), vigorous physical activity (0, ≤ 2, >2 hours/week), alcohol use (<1, ≥ 1 drink/week), mammography use (yes, no), cyst in breast (yes, no), and family history of breast cancer (first degree relative) (yes, no). Adjustments were also made for questionnaire cycle. Age was handled as a time-varying covariate and henceforth updated biannually. The Andersen-Gill data structure was used to update the time-dependent covariate with the EXACT option in SAS software used to handle tied event times. All analyses were conducted using SAS software.

Breast cancer incidence at younger ages is higher among African-American women than among White women (2). Therefore, we conducted a subgroup analysis by assessing discrimination in relation to breast cancer within categories of age, less than 50 and 50 or more years. To examine whether the association between perceived racism and breast cancer was modified by age, we conducted likelihood ratio tests that compared models with and without cross-product terms between the racism variables and binary age (<50, ≥ 50 years).

RESULTS

Reported everyday discrimination (highest quartile of the summary variable) and major discrimination (yes in all three spheres) are shown according to characteristics of the study participants in 1997 (table 1). Of women aged less than 30 years, 31.8 percent were in the highest quartile of the summary score for everyday discrimination compared with 8.5 percent of women aged 60–69 years. Major discrimination in all three spheres—housing, police, and job—was reported most frequently among women aged 40–49 years (12.9 percent).

Everyday discrimination, at least once a month, was reported by 16.9 percent of women for receiving poorer service, 26.2 percent for being treated as not intelligent, 14.7 percent for people acting as if they were afraid of them, 12 percent for people acting as if they were dishonest, and 33.8 percent for people acting as if they were better (table 2). Over half of the women (58 percent) reported discrimination due to race in the workplace, and 66 percent reported the occurrence of discrimination in one or more of the three situations considered—on the job, in housing, and by police (table 3).

There were 593 incident cases of breast cancer reported during 259,613 person-years of observation; 287 cases occurred before the age of 50 years, and 306 cases occurred at the age of 50 or more years. Table 2 gives data on the association between everyday discrimination and breast cancer incidence in the total sample, as well as for age subgroups. In the total sample, incidence rate ratios for the various categories of the five everyday racism questions, ranging from a few times a year to almost every day, were generally greater than 1.0, but all confidence intervals included 1.0. For the summary variable, incidence rate ratios for quartiles 2, 3, and 4 relative to 1 (lowest) ranged from 1.15 to 1.27; all confidence intervals included 1.0. The incidence rate ratios for the summary variable were greater among women aged less than 50 years than among older women: The incidence rate ratios for quartiles 2, 3, and 4 among women aged less than 50 years were 1.58, 1.33, and 1.44, respectively, and the 95 percent confidence interval for the incidence rate ratio for quartile 2 excluded 1.0. However, none of the tests for age interaction was statistically significant.

Data for ''major discrimination'' on the job, in housing, and by police are given in table 3. In the total sample, women responding ''yes'' to racial discrimination in housing and by police had incidence rate ratios very close to 1.0, and all confidence intervals included 1.0. There was a significant association with breast cancer incidence for women reporting racial discrimination on the job (incidence rate ratio = 1.20, 95 percent confidence interval (CI): 1.01, 1.42) compared with those reporting no such discrimination. For women who reported unjust treatment in all three areas

TABLE 1. Reported everyday discrimination and major discrimination according to characteristics of participants in the total sample, Black Women's Health Study, 1997*

Characteristic	No.	%	Everyday discrimination, highest quartile (%)	Major discrimination, all three spheres (%)
Age (years)				
<30	7,452	15.2	31.8	7.3
30–39	16,029	32.6	26.2	10.0
40–49	15,284	31.1	23.5	12.9
50–59	7,243	14.7	17.8	11.9
60–69	3,153	6.4	8.5	7.6
Age at menarche (years)				
<12	13,982	28.4	25.5	10.5
12	13,803	28.1	23.5	10.3
13	11,774	23.9	22.7	10.3
≥14	9,368	19.1	23.2	11.8
Menopausal status				
Premenopausal	31,837	64.8	26.1	10.3
Postmenopausal	13,932	28.3	19.1	11.1
Supplemental hormone supplements				
No	40,405	82.2	24.4	10.3
Yes	7,806	15.9	20.7	11.6
Parity (no. of children)				
0	16,395	33.3	26.6	9.5
<2	11,139	22.7	24.0	10.6
≥2	22,526	43.8	21.6	11.5
Age at first birth (years)				
Nulliparous	16,395	33.6	26.5	9.4
<25	22,319	45.5	22.8	11.6
≥25	10,373	21.1	21.6	10.2
Oral contraceptive use				
No	38,746	78.8	23.1	11.3
Yes	9,664	19.7	27.4	8.2
Education (years)				
≤12	7,992	16.3	21.4	7.6
13–15	17,611	35.8	25.1	10.5
≥16	23,216	47.2	23.7	11.7
Body mass index (kg/m^2)				
<25.0	17,240	35.1	22.2	10.1
25.0–29.9	15,971	32.5	22.7	10.8
>29.9	15,950	32.4	26.7	11.1
Physical activity (hours/week)				
0	21,753	44.3	22.6	9.5
≤2	12,554	25.5	24.9	11.5
>2	13,344	27.1	25.1	11.5
Alcohol use (drinks/week)				
<1	35,594	72.4	48.7	19.9
≥1	4,517	9.2	23.5	11.9
Mammography use				
No	22,376	45.5	27.4	9.7
Yes	26,264	53.4	20.8	11.3
Family history of breast cancer				
No	41,784	85.0	24.1	10.7
Yes	3,250	6.6	22.4	10.8

* Cell percentages do not equal 100% because missing cases have been omitted.

TABLE 2. Adjusted incidence rate ratios for breast cancer according to everyday discrimination variables, Black Women's Health Study, 1997–2003*

Discrimination variables	Total sample (593 cases; 259,613 person-years)				Aged <50 years (287 cases; 190,903 person-years)				Aged ≥50 years (306 cases; 68,710 person-years)			
	%	No. of cases	Adjusted incidence rate ratios†	95% confidence interval	%	No. of cases	Adjusted incidence rate ratios†	95% confidence interval	%	No. of cases	Adjusted incidence rate ratios†	95% confidence interval
Received poorer service than others												
Never	12.6	88	Referent		11.3	32	Referent		17.6	56	Referent	
A few times a year	69.3	410	0.95	0.75, 1.20	69.1	197	0.99	0.68, 1.44	69.8	213	0.88	0.66, 1.19
Once a month	8.5	45	1.07	0.74, 1.54	9.5	27	1.09	0.65, 1.82	4.7	18	1.06	0.62, 1.81
At least once a week	6.0	28	0.91	0.59, 1.40	6.5	18	1.03	0.58, 1.84	3.9	10	0.74	0.38, 1.46
Almost every day	2.4	15	1.06	0.61, 1.83	2.5	9	1.29	0.61, 2.70	2.3	6	0.80	0.35, 1.87
People act as if you are not intelligent												
Never	21.2	128	Referent		19.1	47	Referent		29.2	81	Referent	
A few times a year	51.4	332	1.22	1.00, 1.50	51.2	158	1.29	0.93, 1.78	52.2	174	1.15	0.88, 1.51
Once a month	8.6	39	1.08	0.75, 1.56	9.5	27	1.29	0.80, 2.07	5.0	12	0.83	0.45, 1.53
At least once a week	9.0	51	1.35	0.97, 1.88	10.0	30	1.36	0.86, 2.15	5.2	21	1.35	0.83, 2.19
Almost every day	8.6	39	1.00	0.70, 1.44	9.1	22	1.06	0.64, 1.76	6.7	17	0.91	0.54, 1.54
People act as if they are afraid of you												
Never	46.3	292	Referent		43.7	120	Referent		56.3	172	Referent	
A few times a year	37.8	213	1.02	0.85, 1.22	38.9	117	1.09	0.85, 1.41	33.4	96	0.91	0.71, 1.18
Once a month	5.2	26	1.13	0.75, 1.69	5.9	12	0.82	0.45, 1.49	2.6	14	1.67	0.97, 2.89
At least once a week	5.2	28	1.14	0.77, 1.69	5.8	20	1.32	0.82, 2.12	3.0	8	0.83	0.41, 1.69
Almost every day	4.3	27	1.30	0.87, 1.92	4.6	15	1.22	0.71, 2.10	3.0	12	1.32	0.73, 2.38
People act as if you are dishonest												
Never	44.4	283	Referent		42.2	123	Referent		52.9	160	Referent	
A few times a year	42.3	244	1.01	0.85, 1.20	43.3	123	1.01	0.78, 1.30	38.2	121	1.00	0.79, 1.27
Once a month	4.8	19	0.86	0.54, 1.37	5.4	14	1.02	0.58, 1.77	2.4	5	0.64	0.26, 1.56
At least once a week	4.0	20	1.04	0.66, 1.65	4.5	10	0.85	0.45, 1.63	2.3	10	1.38	0.72, 2.61
Almost every day	3.2	19	1.20	0.75, 1.91	3.4	14	1.56	0.90, 2.71	2.3	5	0.73	0.29, 1.77
People act as if they are better than you												
Never	12.3	81	Referent		10.3	31	Referent		19.7	50	Referent	
A few times a year	52.3	335	1.13	0.89, 1.45	51.1	152	0.98	0.66, 1.44	56.7	183	1.20	0.88, 1.64
Once a month	9.5	49	1.19	0.83, 1.70	10.6	30	1.03	0.62, 1.70	5.4	19	1.30	0.76, 2.22
At least once a week	8.5	39	1.04	0.71, 1.53	9.5	23	0.87	0.51, 1.50	4.8	16	1.16	0.65, 2.05
Almost every day	15.8	79	1.13	0.83, 1.55	17.0	46	1.00	0.63, 1.58	11.0	33	1.16	0.74, 1.81
Summary variable												
Quartile1	17.8	111	Referent		14.1	34	Referent		27.2	77	Referent	
Quartile 2	27.2	185	1.25	0.99, 1.59	25.5	90	1.58	1.06, 2.34	30.3	95	1.05	0.78, 1.43
Quartile 3	27.4	150	1.15	0.90, 1.48	29.3	80	1.33	0.89, 1.99	22.5	70	1.03	0.74, 1.43
Quartile 4	23.8	125	1.27	0.98, 1.65	28.0	73	1.44	0.95, 2.16	15.0	52	1.18	0.82, 1.69

* Cell percentages do not equal 100% because missing cases have been omitted.

† Adjusted for age, body mass index, family history of breast cancer, menopausal status, age at menarche, parity, vigorous exercise, age at first birth, oral contraceptive use, hormone replacement use, cyst in breast, educational status, mammography use, and alcohol consumption.

TABLE 3. Adjusted incidence rate ratios for breast cancer according to major discrimination, Black Women's Health Study, 1997–2003*

Discrimination variables	Total sample (593 cases; 259,613 person-years)				Aged <50 years (287 cases; 190,903 person-years)				Aged ≥50 years (306 cases; 68,710 person-years)			
	%	No. of cases	Adjusted incidence rate ratio†	95% confidence interval	%	No. of cases	Adjusted incidence rate ratio†	95% confidence interval	%	No. of cases	Adjusted incidence rate ratio†	95% confidence interval
Discrimination in housing												
No	61.1	347	Referent		63.0	177	Referent		54.1	170	Referent	
Yes	34.7	229	1.00	0.84, 1.18	33.7	107	0.98	0.77, 1.25	38.2	122	0.98	0.77, 1.24
Discrimination by the police												
No	72.7	433	Referent		72.8	202	Referent		72.4	231	Referent	
Yes	23.1	134	1.07	0.88, 1.29	24.1	80	1.23	0.95, 1.60	19.1	54	0.88	0.65, 1.18
Discrimination in the workplace												
No	39.8	202	Referent		40.4	92	Referent		37.5	110	Referent	
Yes	57.7	376	1.20	1.01, 1.42	57.5	191	1.32	1.03, 1.70	58.4	185	1.05	0.83, 1.34
Summary variable of major discrimination												
No to all	28.5	150	Referent		28.7	70	Referent		27.8	80	Referent	
Yes to one	31.6	191	1.18	0.95, 1.46	32.8	94	1.13	0.83, 1.54	27.0	97	1.19	0.88, 1.61
Yes to two	23.5	144	1.07	0.85, 1.35	23.4	72	1.12	0.81, 1.56	23.8	72	0.98	0.71, 1.36
Yes to three	10.6	77	1.31	1.00, 1.73	10.7	44	1.48	1.01, 2.16	10.5	33	1.06	0.70, 1.61

* Cell percentages do not equal 100% because missing cases have been omitted.

† Adjusted for age, body mass index, family history of breast cancer, menopausal status, age at menarche, parity, vigorous exercise, age at first birth, oral contraceptive use, hormone replacement use, cyst in breast, educational status, mammography use, and alcohol consumption.

relative to none, the incidence rate ratio was 1.31 (95 percent CI: 1.00, 1.73). Among women aged 50 or more years, the incidence rate ratios were close to 1.0. Among women aged less than 50 years, the incidence rate ratios were increased: For discrimination on the job, the incidence rate ratio was 1.32 (95 percent CI: 1.03, 1.70), and for discrimination in all three situations—housing, job, and police—the incidence rate ratio was 1.48 (95 percent CI: 1.01, 2.16). A test for age interaction for discrimination on the job yielded a p value of 0.33; for the summary discrimination variable (discrimination in zero, one, two, or three areas), the p value was 0.68 for the age interaction.

DISCUSSION

In this 6-year follow-up study of Black women, we found an association between racial discrimination and increased incidence of breast cancer. Our findings add to the growing body of literature that demonstrates that discrimination adversely affects health (49–55) and are the first to suggest an effect on breast cancer incidence. There was no significant relation between everyday discrimination and breast cancer incidence overall, but the incidence rate ratios for the summary variable were elevated among women aged less than 50 years. For major discrimination, in the total sample, breast cancer risk was increased 20 percent for women reporting ''yes'' to racial discrimination on the job. This increase was largely accounted for by an increased risk (incidence rate ratio = 1.32) among women less than 50 years of age. Moreover, although discrimination in housing and discrimination by police were not individually associated with breast cancer risk, women who reported discrimination in all three areas (police, housing, and job) were 31 percent more likely to develop breast cancer than were women who did not report discrimination in any domain. Again, the association was stronger among women less than 50 years of age. The higher risk among women who reported discrimination in three areas suggests that a compilation of racial discrimination experiences may have a stronger effect on health.

Black women have a higher incidence of breast cancer than White women do at a younger age (2). The associations between discrimination and breast cancer among women aged less than 50 years in the present study suggest that discrimination may be a potential factor contributing to the initiation of this disease and the higher incidence at younger ages. We note, however, that the moderating effect of age on the associations between racism and breast cancer risk in the present study was not statistically significant.

To the extent to which discrimination can be considered a form of stress among Black women, the present results lend support to the notion that breast cancer may be influenced by stress. It is hypothesized that altered immune functioning is one mechanism through which stress may influence breast cancer. For example, high levels of catecholamines are released during episodes of psychological stress (56). As a result of this catecholamine release, reactive oxygen species are emitted, which are known to be highly toxic and capable of stimulating cancer development (57–59).

It has also been suggested that psychological stress influences cancer development via endogenous hormones. Animal models, for example, suggest that chronic stress upregulates endogenous estrogen levels (60–62), and high levels of endogenous estrogen are strongly associated with increased breast cancer risk in women (63).

Our findings linking job-related discrimination with breast cancer are consistent with those of other studies that demonstrate that job-related discrimination adversely affects health (64–66). Previous studies that have investigated this issue have focused primarily on cardiovascular parameters. For example, a population-based study that included 356 African-American men and women assessed whether blood pressure outcomes were positively associated with perceived stress following race-based discrimination at work (64). After adjustment for covariates (age, body mass index, gender, and coping ability), blood pressure increases were observed with increasing level of perceived stress following racial discrimination at work. In another study, James et al. (65) found that rural African-American male workers who perceived race as a hindrance to job success had an 8-mmHg higher diastolic blood pressure than did those who perceived that race helped them. Borrell et al. (66) examined the relation between physical health and perceived racial discrimination at work. Perceiving discrimination at work was associated with diminished physical health for both men and women. These findings support the notion that job-related racial discrimination may have a damaging effect on health. The current study adds to this evidence by showing the impact that work-related racial discrimination has on breast cancer development.

The present study has several notable strengths. The prospective nature of this study allowed for a longitudinal investigation of discrimination on breast cancer, eliminating potential retrospective report bias. Also, the large sample size provided good statistical power to detect any potential effects overall. A validation study indicated that self-reports of breast cancer were highly accurate. Duplicate reports of the racism variables indicated a satisfactory level of reproducibility. Confounding by important breast cancer risk factors was ruled out. Finally, the fact that the women in this report were Black is notable because this group has been underrepresented in many areas of research.

A shortcoming of the current study was the lack of an assessment of coping. How a woman copes with an event determines if she will perceive the event as stressful and could likewise have an impact on subsequent health outcomes (67). Data suggest that, depending on a person's coping style, an individual may or may not interpret perceived discriminatory interactions as stressful. For example, in previous studies of racism and blood pressure, it was reported that coping, rather than racism itself, was associated with elevated blood pressure (12, 14). On the other hand, in a study of racism and low birth weight, experiences of racism were associated with lower birth weight regardless of coping style (68). Future studies should collect information on coping strategies to determine the potential mediating effects of coping on perceived discrimination.

Moreover, 97 percent of the Black Women's Health Study participants have completed high school or a higher level of education, whereas 85 percent of Black women of the same ages nationally have completed high school or beyond (69). Therefore, our results may be applicable to most African-American women, but not to the least educated.

In conclusion, our findings revealed an association between perceived racial discrimination and breast cancer risk among Black women, particularly those less than 50 years of age. These results require confirmation. It is recommended that further research assess potential mediators of the breast cancer/discrimination relation. The present study underscores the need for a continued commitment by health researchers to work toward understanding the possible impact of discrimination on health outcomes among US Blacks.

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