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Perceived Racial Discrimination and Nonadherence to Screening Mammography

Abstract
Objective. We examined whether African American women were as likely as White women to receive the results of a recent mammogram and to self-report results that matched the mammography radiology report (i.e., were adequately communicated). We also sought to determine whether the adequacy of communication was the same for normal and abnormal results. Methods. From a prospective cohort study of mammography screening, we compared self-reported mammogram results, which were collected by telephone interview, to results listed in the radiology record of 411 African American and 734 White women who underwent screening in 5 hospital-based facilities in Connecticut between October 1996 and January 1998. Using multivariate logistic regression, we identified independent predictors of inadequate communication of mammography results. Results. It was significantly more common for African American women to experience inadequate communication of screening mammography results compared with White women, after adjustment for sociodemographic, access-to-care, biomedical, and psychosocial factors. Abnormal mammogram results resulted in inadequate communication for African American women but not White women (PAfrican American women may not be receiving the full benefit of screening mammograms because of inadequate communication of results, particularly when mammography results are abnormal.

Keywords
African American Women, Mammography, Communication in Medicine

Disciplines
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Original Contribution

Perceived Racial Discrimination and Nonadherence to Screening Mammography Guidelines: Results from the Race Differences in the Screening Mammography Process Study

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The study objective was to determine whether perceived racial discrimination influenced nonadherence to screening mammography guidelines. Enrolled in this prospective study were 1,451 women aged 40–79 years who obtained an "index" screening mammogram at one of five urban hospitals in Connecticut between October 1996 and January 1998. This logistic regression analysis included 1,229 women (484 African American (39%), 745 White (61%)) who completed telephone interviews at baseline and follow-up (on average 29 months later). Perceived racial discrimination was measured as lifetime experience in seven possible situations. Approximately 42% of African-American women and 10% of White women reported lifetime racial discrimination. Perceived racial discrimination was not associated with nonadherence to age-specific mammography screening guidelines in unadjusted or multivariate-adjusted analyses. Although these negative findings may reflect the well-recognized problems associated with measurement of perceived discrimination, it is possible that women who recognize and report racial discrimination develop compensatory characteristics that enable positive health prevention behavior, in spite of their past experiences.

African Americans; breast neoplasms; discrimination (psychology); ethnic groups; mammography; prejudice; risk factors

Explanations for racial/ethnic disparities in health outcomes, a persistent public health concern in the United States, extend beyond issues of socioeconomic inequality and access to care (1–4). According to Williams and Jackson (1), racial/ethnic disparities in health are rooted in history, geography, social culture, economics, and politics. In attempts to explain variation in health outcomes by race/ethnicity, the role of racism has been investigated as a contributor to disparities in a number of physical and mental health outcomes. Racial discrimination remains pervasive—existing, for example, in mortgage lending, housing, hiring practices, and the criminal justice system, as well as in interpersonal experiences (5–7). Although the consequences of racial discrimination have yet to be fully explored, many studies have reported associations between perceived racial discrimination and mental health outcomes (e.g., psychological distress, depression and anxiety) as well as physical health outcomes (e.g., self-rated health, days spent unwell in bed, blood pressure, cardiovascular outcomes, and low birth weight), albeit with varying results (8).

Stressful experiences, such as discrimination, may lead to a decrease in health-sustaining behaviors and an increase in health-damaging behaviors (9, 10). Health-damaging behaviors associated with perceived racial discrimination include cigarette smoking (11) and alcohol use (12). Perceived discrimination is also thought to influence levels of compliance with medical recommendations, despite the lack of literature in this area (8, 13). In one example, perceived unfair treatment due to race/ethnicity was shown to be associated with delay in filling prescriptions (14). To our

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knowledge, no published studies have examined the influence of perceived discrimination on health preventive behaviors, such as breast cancer screening.

Mammography is widely accepted as an effective method for early detection of breast cancer, and it is currently recommended annually (15) or (at a minimum) biennially (16, 17) for women aged 40 years or older. However, less than half (46 percent) of all women receive mammograms regularly, as reported in a systematic review of repeat mammography (18). Furthermore, the percentage of African-American women who receive regular mammograms may be even lower (19). In addition to sociodemographic and access-to-care variables (20), a number of social and psychological influences on mammography screening behavior have been reported (21, 22), including our own studies of psychosocial factors associated with adherence to screening mammography guidelines, using the same source data as the present study (23, 24). As part of that larger prospective study, Race Differences in the Screening Mammography Process, this investigation aimed to describe the role of perceived racial discrimination in nonadherence to screening mammography guidelines in a cohort of 1,451 African-American and White women living in Connecticut.

MATERIALS AND METHODS

Study population, procedures, and participation

As previously reported (23–25), women who presented for a *screening* mammogram (hereafter referred to as the ‘‘index’’ mammogram) between October 1996 and January 1998 were recruited for enrollment. Because African Americans constitute only 9.1 percent of the Connecticut population (26), we used 1990 US Census data (27) and our own 1994 survey of mammography facilities in Connecticut (28) to identify the mammography facilities most likely to provide screening mammograms to African-American women. Thus, study subjects were recruited from hospital-based facilities in the four Connecticut cities with the largest general (and largest African-American) populations. Furthermore, to increase geographic representation, we also included the major hospital facility in a somewhat less populated urban area, but one that was located in the fourth largest county of Connecticut.

All eligible African-American women who obtained index mammograms at these five facilities during the study period were invited to participate. White women were selected by a computer-generated, random selection process and were frequency matched to the African-American women on facility and date of mammogram. Asymptomatic women aged 40–79 years who self-identified as African American or White and had no previous history of breast malignancy, cyst aspiration, or biopsy were eligible for participation. In accordance with age recommendations for regular mammography screening in the general population (29, 30), women younger than age 40 years were not included. Women older than age 79 years were also excluded because of a lack of consensus with regard to screening recommendations for older women (31, 32). Approvals of the institutional review boards of Yale University School of Medicine (New Haven, Connecticut) and each participating hospital were maintained throughout the study period.

Initially, 2,359 women were identified for participation, with a final number interviewed of 1,451 after we excluded ineligible women ($n = 171$), those who could not be contacted or were deceased or ill ($n = 206$), and women who declined participation ($n = 531$). Participation differed across race group (African American, 69 percent; White, 77 percent; $p < 0.001$) as well as by age (age 40–49 years, 76 percent; age 50 years or older, 72 percent; $p = 0.052$). Two interviews were conducted in this study: 1) a 45-minute baseline telephone interview approximately 1 month after the index screening mammogram to allow time for receipt of mammography results (mean time to baseline interview, 1.5 months; standard deviation, 0.85 month) and 2) a follow-up interview arranged a minimum of 26 months after the index screening. The time interval between baseline and follow-up interview averaged 29.4 months (standard deviation, 1.42 months), with a range of 27–41 months. Of the 1,451 women who participated in the baseline interviews, 1,249 (86 percent) completed follow-up interviews, 20 of whom were excluded because of a cancer diagnosis associated with the examination ($n = 11$) or inadequate information to determine adherence to mammography screening guidelines ($n = 9$). Thus, 1,229 women (484 African American (39 percent), 745 White (61 percent)) were included in this analysis. Women included differed significantly from those excluded or lost to follow-up by race (participation: African American, 78 percent; White, 93 percent; $p < 0.001$) but not by age.

Measures

Perceived racial discrimination. Perceived racial discrimination, assessed during the follow-up interview, was adapted from the discrimination measure developed by Krieger and used in the Coronary Artery Risk Development in Young Adults study (33, 34). For this analysis, the participants were asked whether they had ever experienced discrimination, defined as having been prevented from doing something or been hassled or made to feel inferior, because of their race or color, in any of the following seven situations: 1) at school, 2) getting a job, 3) at work, 4) at home, 5) getting medical care, 6) on the street or in a public setting, and 7) from the police or in the courts. The situations were summed and coded into three categories (none vs. one or two situations vs. three or more situations).

Nonadherence to screening mammography guidelines. The American Cancer Society screening guidelines in effect (32) at the onset of this study's data collection period (1996) were used to determine the main outcome, nonadherence to screening mammography guidelines. Women aged 40–49 years were considered nonadherent if they did not obtain at least one mammogram within 2 years (+ 2 months) of the index examination. Women aged 50 years or older were considered nonadherent if they did not obtain at least two screenings within 2 years (+ 2 months) of the index examination. The ‘‘+ 2 months’’ allowed for reasonable delays in scheduling appointments.

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For 1,126 respondents (92 percent), the outcome was determined by self-report. The remaining 103 women (8 percent) did not provide sufficient self-reported information to ascertain the outcome (i.e., they could not recall the month or year of at least one mammogram), but they did consent to a review of their mammography records. For these women, we relied on radiology records to determine outcome status. These 103 women did not differ from women who self-reported data by recruitment site or family breast cancer history, but they were more likely to be African American than White (55 percent vs. 38 percent, $p < 0.001$) and to be aged 50 years or older (78 percent vs. 63 percent were less than age 50 years, $p < 0.003$).

A wide range of potential confounders and variables known to be associated with screening mammography or perceived racial discrimination, as well as variables known to vary significantly by race/ethnicity, were also examined in this analysis. Included were sociodemographic factors, variables specific to the experience of undergoing mammography screening, health status and behaviors, logistic barriers, interaction with provider, provider characteristics, psychosocial factors, and known breast cancer risk factors.

Statistical analyses

Bivariate associations were examined between perceived racial discrimination and the outcome (nonadherence to screening mammography guidelines) and additional covariates. Statistical significance was determined by the chi-square test ($p < 0.05$). Multivariate logistic regression was used to determine the adjusted association between reported racial discrimination and nonadherence to screening mammography guidelines; adjusted odds ratios with 95 percent confidence intervals are reported in this paper. Variables that contributed significantly to the fit of the model by likelihood ratio tests (35) were retained. A criterion of a 10 percent change in the odds ratio estimate for racial discrimination was used to identify potential confounders (36). Variables known to be associated with mammography screening and/or perceived discrimination or known to vary significantly by race/ethnicity were tested in multivariate models. All analyses were performed with SAS software, version 9.1 (37).

RESULTS

Characteristics of the study population

Characteristics of the study population by race/ethnicity are presented in table 1. More than 60 percent of the respondents were aged 50 years or older, with no significant difference by race/ethnicity. African-American women were significantly more likely than White women to be single than married/living as married, to have lower annual family incomes, to have less than 12 years of education, and to be in the lowest occupational status quartile (based on a combined spouse pair score, adapted from the Duncan Socioeconomic Index (38, 39)). Over two thirds of all participants reported complete coverage for annual screening mammography. The majority of women reported having a usual health care provider and that they received a recommendation from their provider to get a mammogram in the 2 years after the index screening (with no significant differences by race/ethnicity). African-American women were significantly less likely than White women to correctly identify screening mammography guidelines and less likely to report a family history of breast cancer (any first- or second-degree relative).

Perceived racial discrimination

As reported in table 2, more than 20 percent of the study population reported racial discrimination in at least one situation. As expected, African-American women more commonly experienced racial discrimination. Approximately 42 percent of the African-American respondents reported racial discrimination in at least one situation compared with 10 percent of White women. Perceived racial discrimination experienced at work or with the police or courts was reported most often (12.8 percent each). Nearly 10 percent of respondents reported racial discrimination when trying to get a job, and 8.7 percent of respondents reported racial discrimination at school. Although the majority of participants reported no experiences of racial discrimination (77.5 percent), 14.4 percent reported one or two situations in which they had experienced racial discrimination, and 8.1 percent reported three or more such situations.

Nonadherence to mammography screening guidelines

Bivariate results. As shown in table 3, 47.8 percent of the total study population was nonadherent to screening mammography guidelines. African-American women were more likely than White women to be nonadherent (odds ratio = 1.48, 95 percent confidence interval: 1.18, 1.87). Perceived racial discrimination was not significantly associated with nonadherence among African-American or White women.

Multivariate results. As presented in table 4, perceived racial discrimination was not associated with nonadherence to screening mammography guidelines in multivariate models among either African-American or White women. Adjustment for primary covariates—marital status, age, income, family size, full/annual mammography insurance, having a usual care provider, and history of nonadherence to mammography guidelines (model 1)—did not significantly influence the results for either racial group. The results were similar even with additional adjustment for these potential confounders: body mass index, perceived susceptibility to breast cancer, perceived usefulness of mammography, pain experienced compared with expectations during the index mammogram, provider recommendation to get a mammogram, and receipt of a reminder notice for a mammogram (model 2). Additional adjustment for discrimination based on *social class or position* (model 3) also did not appreciably change the reported results in either racial group. The relative infrequency of racial discrimination for White women resulted in very wide confidence intervals, potentially limiting interpretability of these results.

In view of the negative findings, we evaluated the potential influence of many additional covariates. The following eight additional sets of variables were tested in multivariate

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TABLE 1. Characteristics of the study population by race/ethnicity (n = 1,229), Connecticut, 1996–2000

Variable	African American (n = 484)		White (n = 745)		OR*	95% CI*
	No.†	%	No.†	%		
Sociodemographic factors						
Age (years)						
40–49	168	34.7	275	36.9	0.91	0.71, 1.16
≥50	316	65.3	470	63.1	1.00	
Marital status						
Single	319	66.5	206	27.8	5.16	4.02, 6.61
Married/living as married	161	33.5	536	72.2	1.00	
Education (no. of years)						
<12	146	30.4	34	4.6	14.24	9.25, 22.02
12	176	36.7	184	24.8	3.17	2.39, 4.21
>12	158	32.9	524	70.6	1.00	
Annual family income ($)						
<15,000	206	46.7	62	8.8	18.93	12.77, 28.15
15,000–49,999	162	36.7	227	32.2	4.07	2.92, 5.68
≥50,000	73	16.6	416	59.0	1.00	
Occupational status‡						
Quartile 1(lowest)	202	48.4	54	7.7	17.86	11.37, 28.15
Quartile 2	121	29.0	196	28.0	2.95	1.98, 4.40
Quartile 3	45	10.8	216	30.9	0.99	0.62, 1.59
Quartile 4	49	11.8	234	33.4	1.00	
Access to medical care						
Mammography insurance (full, annual coverage)						
No	155	32.3	231	31.0	1.06	0.83, 1.36
Yes	325	67.7	513	69.0	1.00	
Usual health care provider						
No	56	11.7	64	8.6	1.40	0.95, 2.04
Yes	424	88.3	676	91.4	1.00	
Mammography-related factors						
History of nonadherence to mammography screening guidelines§						
Nonadherent	143	29.8	93	12.5	2.96	2.21, 3.97
Adherent	337	70.2	649	87.5	1.00	
Health care provider recommended a mammogram						
No	134	27.7	201	27.1	1.03	0.80, 1.33
Yes	349	72.3	541	72.9	1.00	
Knowledge of screening mammography guidelines						
Incorrect	188	40.6	220	30.3	1.58	1.23, 2.00
Correct	275	59.4	507	69.7	1.00	
Family history of breast cancer¶						
Yes	104	21.6	251	33.8	0.54	0.41, 0.70
No	378	78.4	491	66.2	1.00	

* OR, odds ratio; CI, confidence interval.

† Numbers for each characteristic may not sum to total because of some missing data. (Percentages are based on nonmissing data.)

‡ Combined spouse pair score, adapted from the Duncan Socioeconomic Index (38, 39); missing data included women who reported no occupation for either themselves or a partner.

§ Refers to a previous history of nonadherence to guidelines, calculated based on the respondent's age and available data on the number of lifetime mammography screenings she reported (0, 1, 2, 3, 4, or ≥5). Women aged 40–49 years were considered nonadherent if they did not obtain at least one screening every 2 years. Women aged ≥50 years were considered nonadherent if they did not obtain at least five screenings.

¶ Breast cancer in a first- or second-degree relative.

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TABLE 2. Perceived discrimination based on race or color reported by situation/context (n = 1,229), Connecticut, 1996–2000

	African American (n = 484)		White (n = 745)		Total (n = 1,229)	
	No.*	%	No.*	%	No.*	%
No. of situations reported†						
None	277	58.2	666	89.9	943	77.5
1 or 2	104	21.8	71	9.6	175	14.4
≥3	95	20.0	4	0.5	99	8.1
Situation†						
At school	87	18.4	19	2.6	106	8.7
Getting a job	103	21.8	16	2.2	119	9.8
At work	130	27.8	24	3.2	154	12.8
At home	6	1.3	2	0.3	8	0.7
Getting medical care	47	10.2	3	0.4	50	4.2
On the street/in public	35	7.4	5	0.7	40	3.3
Police/courts	125	26.6	30	4.1	155	12.8

* Numbers may not sum to total because of some missing data. (Percentages are based on nonmissing data.)

† Racial discrimination question: "Have you ever experienced discrimination based on your race or color in the following situations: at school, getting a job, at work, at home, getting medical care, on the street/in public, police/courts?" Categories are not mutually exclusive.

models but did not contribute to the fit of the models or significantly change the regression coefficients of independent covariates: 1) occupational status (based on the Duncan Socioeconomic Index (38, 39)) and general work status over the lifetime; 2) mammography-related variables (e.g., knowledge of age-specific mammography guidelines and the screening facility); 3) health status and behavior variables (smoking, exercise, and alcohol use); 4) attendance at religious services; 5) logistical barriers (travel time to index screening appointment, how the participant traveled to the index screening, special arrangements (e.g., child care) needed to attend the screening appointment, and whether the participant took time off from work, with or without pay); 6) race and gender concordance with medical staff; 7) additional psychosocial factors (treated with respect, embarrassment and/or anxiety experienced during the index mammogram, worry about the outcome of the examination, effect of the index mammogram on breast cancer worry in general, confidence in one's ability to obtain a future mammogram (i.e., mammography-specific self-efficacy), encouragement from a friend or relative to get a mammogram, perceived control over remaining healthy, perceived control over developing cancer, perceived control over recovering from cancer if diagnosed, and stressful life events experienced during the interval between the index examination and follow-up interview (e.g., job loss, divorce); and 8) breast cancer risk factors (e.g., family history of breast cancer).

DISCUSSION

The goal of this analysis was to build upon an extensive analysis of factors that contribute to poor adherence to mammography screening for some women. With nearly half of the women in this study nonadherent to mammography screening guidelines and a significant race difference in nonadherence, we hypothesized that racism might play a role in mammography screening behavior.

In this study, perceived racial discrimination was not associated with adherence to screening mammography guidelines. Even though we have used an adaptation of a measure shown to be valid and reliable (40), there are limitations in the measurement of racial discrimination. Although not unique to our study, the potential for underreporting may be of concern. The percentage of African Americans reporting racial discrimination (42 percent) in our cohort of women aged 40–79 years was similar to the percentage reported by Kessler et al. (41), in which nearly 49 percent of African Americans reported lifetime discrimination in a study of men and women aged 25–74 years. Notably, in younger cohorts, such as the Coronary Artery Risk Development in Young Adults study, among African-American women reports of perceived racial discrimination are more common (75–77 percent) (34, 42).

Reasons for underreporting may be linked to the sensitive nature of the topic, social desirability, or discomfort in reporting discrimination to a person of a different racial/ethnic background. Moorman et al. (43) showed that using interviewers whose racial background is similar to that of the respondents improved response rates in case-control studies. Although our interviewers were White, we conducted telephone interviews, in theory blinding participants to the race of the interviewer. However, it is possible that participants felt uncomfortable reporting sensitive information such as experiences of racial discrimination over the telephone, irrespective of respondents' perceptions of the race of the interviewer. Additional reasons for underreporting may include denial (44), keeping quiet about unfair treatment (33), endorsement of racial ideology (the acceptance of beliefs about race and racial inequality), low levels of racial identification, or internalization of racial prejudice (expression of negative feelings toward members of your racial group) (45–47). In our study, if women did not report racial discrimination but in fact did experience it, we may have underestimated the prevalence of racial discrimination and subsequently diluted any effect on regular mammography screening if those women were also less likely to adhere to screening mammography guidelines.

Coping mechanisms could have buffered an association between perceived racial discrimination and regular mammography screening, also contributing to the negative association. For example, it has been suggested that, for some, an experience perceived as racial discrimination may result in a realization that others face the same experiences and possibly lead to the search for social support or other resources (48). Although we did not have a specific measure of social support or social resources, we examined the impact of encouragement from a friend or relative to get a mammogram (not statistically significant; data not shown)

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TABLE 3. Unadjusted associations between nonadherence to mammography screening guidelines and race/ethnicity and perceived racial discrimination (n = 1,229), Connecticut, 1996–2000

	Nonadherent (n = 587)		Adherent (n = 642)		OR*	95% CI*
	No.†	%	No.†	%		
Race/ethnicity						
African American	260	53.7	224	46.3	1.48	1.18, 1.87
White	327	43.9	418	56.1	1.00	
Total	587	47.8	642	52.2		
Perceived racial discrimination (no. of situations reported)‡						
African American						
≥3	47	49.5	48	50.5	0.74	0.45, 1.21
1 or 2	50	48.1	54	51.9	0.70	0.43, 1.12
None	158	57.0	119	43.0	1.00	
White						
≥3§	2	50.0	2	50.0	1.26	0.09, 17.44
1 or 2	27	38.0	44	62.0	0.77	0.45, 1.31
None	295	44.3	371	55.7	1.00	

* OR, odds ratio; CI, confidence interval.

† Numbers may not sum to total because of some missing values. (Percentages are based on nonmissing data. (54)).

‡ Racial discrimination question: “Have you ever experienced discrimination based on your race or color in the following situations: at school, getting a job, at work, at home, getting medical care, on the street/in public, police/courts?”

§ Because the cell size for White women who reported three or more situations was less than 5, Fisher's exact test confidence intervals were calculated.

and also church attendance. Although spirituality has been shown to buffer reports of discrimination (49), attendance at religious services did not explain the negative findings in this study.

An advantage of our measure of experiences of racial discrimination is its multidimensionality; we measured experiences that occurred in seven possible situations. Multi-item responses have better validity and reliability compared with other measures that use single-item responses (40). Intuitively, discrimination in the medical care setting seemed of particular relevance to our study outcome. However, with fewer than 5 percent of all respondents reporting discrimination in the medical care setting, we lacked the statistical power to identify independent effects of discrimination in individual settings, including the medical care arena.

Another advantage of our analysis is that the data were derived from a study specifically designed to investigate race differences in the screening mammography process. Our comprehensive collection of information such as sociodemographic characteristics, mammography-related factors, breast cancer risk factors, health status and behaviors, logistical barriers, health care provider characteristics, psychosocial factors, and variables of known relevance from the health disparities literature enabled us to examine many factors that may confound, mediate, or moderate the relation between perceived racial discrimination and adherence to screening mammography guidelines.

The outcome, adherence to mammography screening guidelines, measured subsequent to an index screening, is a more detailed assessment of mammography utilization than that generally reported from retrospective studies of mammography screening and national surveys. Although the proportion of the population who has never received a screening mammogram is relatively low (15.9 percent according to national survey data (2002) (50)), this study was not designed to address nonadherence in this group; thus, these results are not generalizable to women who have never been screened.

Loss to follow-up was more common for African-American women as well as for women of lower socioeconomic status, potentially influencing the association between discrimination and mammography screening behavior, particularly if women lost to follow-up were more likely to report racial discrimination and to be more nonadherent than the women included in the analysis. However, as in other studies (41, 51), socioeconomic status (data not shown, but adjusted for in all multivariate analyses) was inversely associated with reports of perceived discrimination among African Americans. Thus, it is likely that the women lost to follow-up were *less* likely to report experiences of discrimination (and more likely to be nonadherent).

The sampling strategy used in this study was designed to reflect the general population of African-American and White women in Connecticut of mammography screening

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TABLE 4. Race-specific multivariate logistic regression models of the association between perceived racial discrimination and nonadherence to screening mammography guidelines, Connecticut, 1996–2000

Model	No. of situations of perceived racial discrimination reported	OR*	95% CI*
	African American		
Model 1: Adjusted for primary covariates† ($n = 425$)	None	1.00	
	1 or 2	0.71	0.43, 1.20
	≥3	1.00	0.59, 1.69
Model 2: Model 1 plus adjustment for additional covariates‡ ($n = 421$)	None	1.00	
	1 or 2	0.71	0.41, 1.24
	≥3	1.14	0.66, 1.98
Model 3: Model 2 plus adjustment for socioeconomic status discrimination§ ($n = 421$)	None	1.00	
	1 or 2	0.74	0.42, 1.30
	≥3	1.28	0.65, 2.52
	White		
Model 1: Adjusted for primary covariates† ($n = 697$)	None	1.00	
	1 or 2	0.82	0.48, 1.42
	≥3¶		
Model 2: Model 1 plus adjustment for additional covariates‡ ($n = 679$)	None	1.00	
	1 or 2	0.78	0.45, 1.38
	≥3¶		
Model 3: Model 2 plus adjustment for socioeconomic status discrimination§ ($n = 679$)	None	1.00	
	1 or 2	0.85	0.47, 1.54
	≥3¶		

* OR, odds ratio; CI, confidence interval.

† Adjusted for marital status, age, education, income, family size, mammography insurance, having a usual care provider, and history of adherence to screening mammography guidelines.

‡ Additionally adjusted for body mass index, perceived susceptibility to breast cancer, perceived usefulness of mammography, embarrassment experienced during the index mammogram, provider recommendation within the past 2 years, and receipt of a reminder notice for a mammogram.

§ Additionally adjusted for discrimination based on social class or position.

¶ Perceived racial discrimination in three or more situations for White women was rare (four total; two nonadherent, two adherent). Thus, odds ratios were not estimable.

age. On the basis of our own statewide survey of mammography facilities, in which we collected information on volume of screening mammography and racial composition of the population served in each facility (28), we were able to identify the facilities that African Americans were most likely to use. As expected, these were all large, hospital-based facilities in large, urban centers. Because some (mostly White women) also receive mammograms in smaller, private facilities, limiting our comparison to larger, hospital-based facilities may have attenuated differences across racial groups. That said, as in the general US and Connecticut populations, we observed the usual racial/ethnic differences in socioeconomic status variables (52, 53).

Although embedded within a prospective study, this analysis was cross-sectional, as are the majority of the published studies on perceived discrimination. The problem most often associated with using cross-sectional data is the potential for observing spurious associations due to "reverse causation." Although this problem is less of a concern for studies with negative findings (as in this study), future work on perceived discrimination will benefit from prospective designs.

In conclusion, results from this study do not support the hypothesis that perceived racial discrimination is associated with nonadherence to mammography screening guidelines. Unlike some aspects of care in which patients are less involved in decision making (e.g., surgical procedures), health prevention behavior reflects the complexity of patient-provider and patient-institution associations. Although our negative findings may reflect the well-recognized problems associated with measurement of perceived discrimination, it is possible that women who recognize and report racial discrimination develop compensatory characteristics that enable positive health prevention behavior, in spite of their past experiences. Additional studies, incorporating multilevel assessments of discrimination, may further our understanding of the role of racial discrimination in regular mammography screening.

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