

## Social Determinants of Black-White Disparities in Breast Cancer Mortality: A Review

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### Abstract

Despite the recent decline in breast cancer mortality, African American women continue to die from breast cancer at higher rates than do White women. Beyond the fact that breast cancer tends to be a more biologically aggressive disease in African American than in White women, this disparity in breast cancer mortality also reflects social barriers that disproportionately affect African American women. These barriers hinder cancer prevention and control efforts and modify the biological expression of disease. The present review focuses on delineating social, economic, and cultural factors that are potentially responsible for Black-White disparities in breast cancer mortality. This review was guided by the social determinants of health disparities model, a model that identifies barriers associated with poverty, culture, and social injustice as major causes of health disparities. These barriers, in

concert with genetic, biological, and environmental factors, can promote differential outcomes for African American and White women along the entire breast cancer continuum, from screening and early detection to treatment and survival. Barriers related to poverty include lack of a primary care physician, inadequate health insurance, and poor access to health care. Barriers related to culture include perceived invulnerability, folk beliefs, and a general mistrust of the health care system. Barriers related to social injustice include racial profiling and discrimination. Many of these barriers are potentially modifiable. Thus, in addition to biomedical advancements, future efforts to reduce disparities in breast cancer mortality should address social barriers that perpetuate disparities among African American and White women in the United States. (Cancer Epidemiol Biomarkers Prev 2008;17(11):2913–23)

During the last two decades, there has been a growing Black-White disparity in breast cancer mortality (1). Although the overall rate of mortality from breast cancer has been decreasing since the early 1980s, this decrease has occurred at a much faster pace for White women than it has for African American women (Fig. 1). This finding is especially noteworthy because the lifetime incidence of breast cancer is actually lower, not higher, among African American women than among their White counterparts (1).

What factors might be responsible for this racial disparity in mortality from breast cancer? Poorer outcomes in African American women, in part, reflect the fact that breast cancer tends to be a more biologically aggressive disease in African Americans than in White Americans (2–6). In addition to biological factors, these disparities also reflect social, economic, and cultural barriers that disproportionately affect African American

women. Barriers such as poverty and racism both hinder cancer prevention and control efforts and modify the biological expression of disease (7–10). The current review focuses on delineating the social, economic, and cultural factors potentially responsible for Black-White disparities in breast cancer outcomes.

### Statement of Purpose

Black-White differences in breast cancer mortality are partially attributable to the fact that, compared with White women, African American women are at greater risk for early onset of breast cancer and are often diagnosed with more aggressive and advanced forms of the disease (11, 12). However, racial differences in survival are apparent even after accounting for disease stage and known tumor characteristics (11), suggesting that the disparity in breast cancer mortality may also be attributable to social forces (7, 10, 13). For example, lack of recommendation for screening mammography (14, 15), poor access to health care (16), and cultural beliefs discouraging women from seeking care for a potential breast problem (10, 17) have each been linked to disparate breast cancer outcomes between African American and White women.

Although previous reviews have identified factors associated with breast cancer disparities (18, 19), none provide a comprehensive picture of the multiple social factors contributing to disparate breast cancer outcomes. Moreover, previous reviews have lacked an overarching

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## Black-White Disparities in Breast Cancer Mortality

theoretical framework for organizing the literature and placing it into the larger context of racial and ethnic disparities in health care (20). The purpose of the current review, therefore, is to provide a comprehensive, theoretically-based review of social, economic, and cultural factors that may contribute to Black-White disparities in breast cancer mortality. We review a broad range of extant data from medical, psychological, sociological, anthropological, and epidemiological literatures. Because some of these social factors may be modifiable, the current review is designed, in part, to inform efforts aimed at reducing Black-White disparities in breast cancer mortality.

### Disparities across the Breast Cancer Continuum

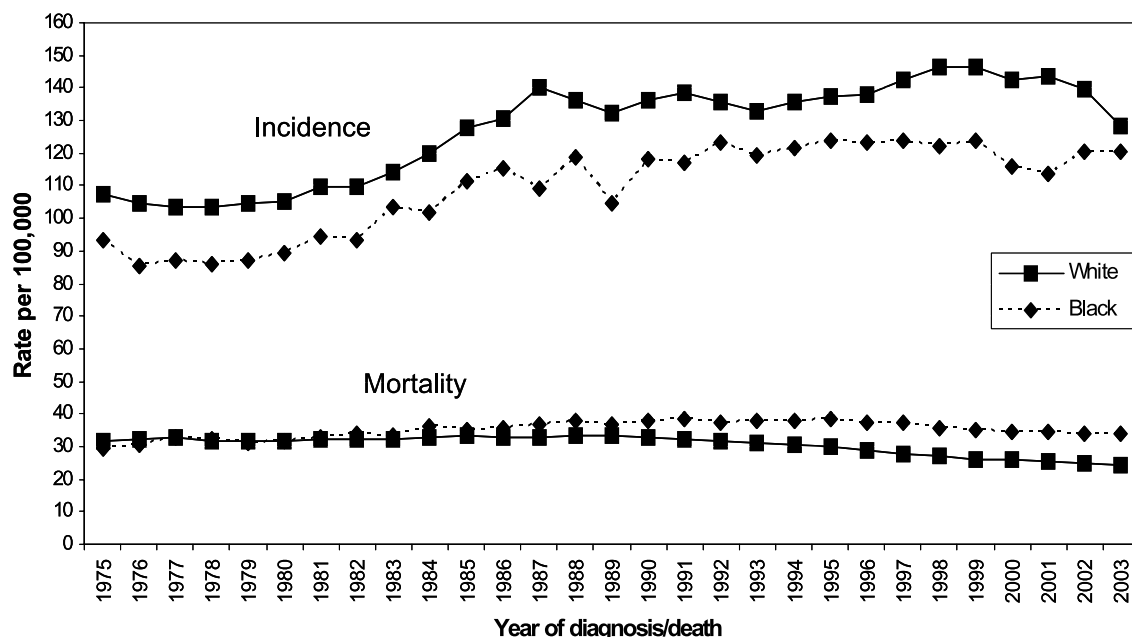
Black-White disparities are evident across the entire breast cancer continuum, from prevention and detection to treatment and survival (18). For example, as mammography screening became widely adopted in the 1980s, utilization rates among African American women lagged behind those of White women. Since then, efforts have been made to increase mammography screening among African American women, and recent data suggest that the Black-White screening utilization gap may be closing. For instance, data from the 2000 National Health Interview Survey indicated that ~70% of both African American and White women received a mammogram in the past 2 years (21). Nevertheless, some states (e.g., Mississippi, Arkansas) continue to report lower screening rates among African American women than among White women (22). Thus, whether the gap in mammography screening is truly closing is unclear.

Studies have also found differences in the timeliness of diagnostic follow-up for breast abnormalities among

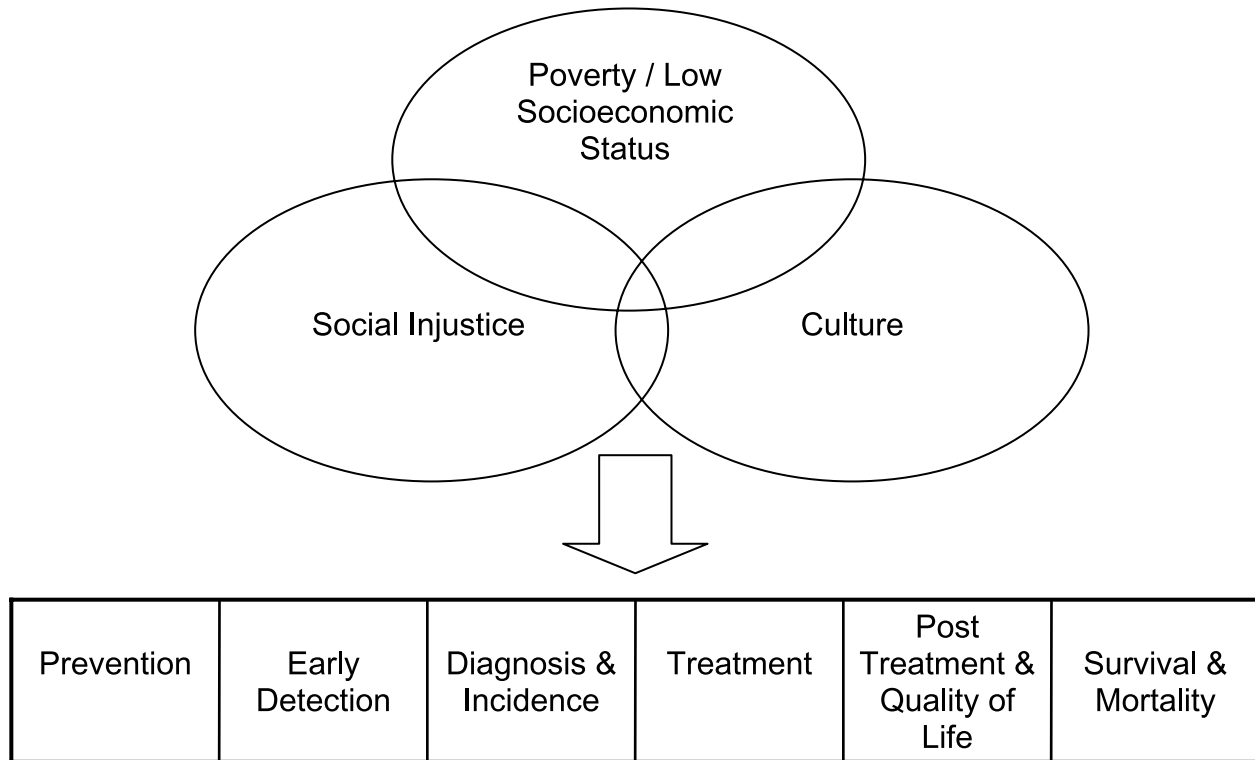
African American and White women (23-25). Generally, African American women are less likely than White women to receive timely follow-up after an abnormal or inconclusive screening mammogram (23, 24), although some inconsistencies have also been noted (26). Caplan et al. (27) reported that African American women had greater difficulty scheduling follow-up appointments than did White women, which resulted in delays in breast cancer diagnosis.

Significant disparities have been documented for breast cancer incidence and diagnosis among African American and White women. Although over their lifetime, African American women are diagnosed with breast cancer at lower rates than White women, African American women younger than 45 years are diagnosed more frequently than White women (9, 12, 28). Along with this earlier onset of disease, African American women also tend to be diagnosed with more advanced-stage breast cancers than White women (11, 12). Late-stage diagnosis is responsible, in large part, for the relatively high mortality rate observed in African American women (9, 12). Evidence indicates that differences in stage of diagnosis between African American and White women are apparent even after accounting for African American women's lower participation in mammography screening (10, 12, 17, 29).

Racial variation in receipt of breast cancer treatment has also been documented, but findings are mixed (19). Although breast-conserving surgery with radiation is typically regarded as the superior treatment for early-stage breast cancers because it is less disfiguring than mastectomy (30), some studies have found that African American women are less likely than White women to receive breast-conserving surgery. Black-White differences in receipt of breast-conserving surgery, however, often disappear in multivariate analyses after controlling



**Figure 1.** Age-adjusted incidence and mortality rates by race for breast cancer (all ages, females, SEER 9 registries for 1975-2003, age adjusted to the 2000 United States standardized population).



**Figure 2.** Social determinants of health disparities in cancer. Reproduced with permission from Freeman and Chu (40).

for other factors (e.g., socioeconomic status, insurance status; refs. 31-33). Studies have been more consistent in showing that, compared with White women, African American women are less likely to receive radiation therapy after breast-conserving surgery (34-37). Systematic differences in the administration of adjuvant chemotherapy between African American and White breast cancer patients have also been observed (38). These differences are noteworthy because African American and White women who receive comparable breast cancer treatment show similar survival outcomes (11, 39).

Despite the somewhat lower lifetime incidence of breast cancer in African American women, deaths from breast cancer continue to remain higher in African American women than in White women (1). Within each tumor stage, African American women have a lower probability of 5-year survival than do White women (19). Overall, these data suggest that African American women experience disadvantages at nearly every stage of the breast cancer continuum.

### Theoretical Framework

The current review explicates social factors that may contribute to Black-White disparities in breast cancer mortality. The social determinants of health disparities model of Freeman and Chu (40) provides a useful framework for organizing research pertaining to these factors. The premise of the model is that disease and its consequences occur within the context of human social

settings. Freeman and Chu (40) identified three major social determinants of health disparities: poverty, culture, and social injustice (Fig. 2). Poverty and low socioeconomic status are associated with a lack of resources, information, and knowledge; inadequate nutrition; poor living conditions; risk-promoting lifestyles, attitudes, and behaviors; and limited access to health care (40). Culture reflects a set of learned and shared beliefs, values, traditions, world views, communication styles, and behaviors that are common to a particular social group (40-42). Social injustice includes factors such as racial prejudice and discrimination, factors that result in unfair treatment of an individual or group based on race. We review literature suggesting that barriers related to poverty, culture, and social injustice may promote disparities at all phases of the breast cancer continuum from prevention, screening, and diagnosis to treatment, rehabilitation, and survival (Fig. 2). This review outlines specific social barriers from each domain and shows how they may contribute to Black-White disparities in breast cancer mortality.

### Materials and Methods

We used multiple methods to obtain the articles included in this review. First, we searched databases such as MEDLINE, CANCERLIT, and HealthSTAR for articles published between 1980 and 2006 that involved Black-White disparities in breast cancer outcomes. The following keywords were used: breast cancer, racial disparities,

African American, Black-White, mammography, breast cancer screening, stage at diagnosis, breast cancer treatment, poverty, socioeconomic status, culture, cultural barriers, religiosity, spirituality, social injustice, prejudice, racism, racial discrimination, racial profiling, underserved, underprivileged, survival, and mortality. Second, we scanned the bibliographies of articles obtained from our initial search. Third, we carried out a focused search of (a) articles published in journals with an emphasis on social-structural factors and health (e.g., *American Journal of Public Health* and *Ethnicity and Disease*) and (b) authors who had previously published articles on Black-White disparities in breast cancer.

### Barriers Related to Poverty

Poverty seems to be the primary social factor underlying health disparities (43). Low socioeconomic status is linked to decreased rates of breast cancer screening, greater probability for late-stage diagnosis, receipt of inadequate and disparate treatment, and higher mortality from breast cancer (18). Poverty is associated with poorer breast cancer outcomes for all Americans, regardless of race; however, because a larger proportion of African Americans than Whites live in poverty (44), African Americans are more likely to face poverty-related barriers.

**Lack of Primary Care Physician.** One barrier related to poverty that has particularly important implications for breast cancer screening and diagnostic follow-up is lack of a primary care physician (24, 45, 46). Having a regular provider is one of the best predictors of mammography use (47, 48). Women with a regular primary care physician, for example, are more than twice as likely as women without one to have undergone mammography screening (49). Similarly, mammography tends to be higher among women with one or more recent primary care visits relative to those with no visits (50). Lack of a primary care physician may partially account for the lower rates of mammography that have been observed in African American women (14, 51). In addition, because medically underserved African Americans often access the health care system only during emergencies, they may fail to benefit from general opportunities for preventive care associated with regular access to a primary care physician (52).

**Geographical Access to Care.** Breast cancer screening, diagnosis, and treatment become difficult when primary care clinics and physicians are not easily accessible in the geographical areas where economically deprived populations live (53). Thus, women residing in disadvantaged communities may be required to travel long distances and bear long waiting times to utilize breast cancer screening and treatment facilities. Indeed, extensive travel time, public transportation hassles, and inconvenient hours of operation have been reported as major factors preventing regular physician visits (14, 49, 54-56).

**Competing Survival Priorities.** "Competing survival priorities" also contribute to failures to engage in breast care (57). It is often difficult for poor African American women to prioritize prevention and screening activities

in the milieu of more pressing survival needs such as obtaining food, shelter, and safety, particularly when they are relying on insufficient and variable resources (53, 57). A higher proportion of African American than White women are likely to be paid on an hourly basis, which means that taking time off from work for health care visits could detract disproportionately from their wages. Many economically disadvantaged African American women report concerns related to everyday safety and survival as the primary needs demanding their attention (58-60).

**Comorbidity.** Comorbidity contributes to racial disparities in breast cancer treatment and mortality. African Americans experience significantly more comorbidity (e.g., hypertension, diabetes, cardiovascular disease, respiratory disease) than do White women, which affects physicians' recommendations and patients' decisions and ability to receive treatments (18, 61, 62). Some physicians may consider low socioeconomic status patients with competing health conditions unable to withstand treatment or abide by posttreatment requirements (20, 63). Moreover, having multiple health problems may make it more difficult for patients to pay particular attention to any one condition, regardless of how intense it is.

**Health Insurance.** Inadequate health insurance is another poverty-related barrier associated with racial disparities across the entire breast cancer continuum. African Americans are twice as likely as White Americans to be uninsured and to depend on public insurance such as Medicaid (64, 65). This difference is largely due to low wages and jobs without employer-paid health benefits (12), both of which are especially common among African Americans in the United States. Uninsured and underinsured women are less likely to undergo breast cancer screening (66, 67), are more likely to receive a late-stage diagnosis (7), and are less likely to survive breast cancer (68, 69). Health insurance type has also been linked to breast cancer outcomes (46, 70, 71). In general, women who are privately insured have a more favorable disease stage at diagnosis than do women who are publicly insured. Publicly insured women, in turn, tend to fare better than women not covered by any health insurance plan (7).

**Lack of Information and Knowledge.** Lack of information and knowledge about breast cancer prevention, the importance of early detection, and treatment options are other factors associated with poverty that may contribute to racial disparities in breast cancer outcomes (58, 72, 73). Relative to Whites, underserved African Americans are less likely to be informed about existing guidelines and recommendations related to breast cancer preventive care (57). Moreover, low-income African American women are less likely than their White peers to be aware that a high-fat, low-fruit and -vegetable diet, and a positive family history may increase their risk for developing breast cancer (74).

**Risk-Promoting Lifestyles.** Poverty is also associated with risk-promoting lifestyles that contribute to morbidity and mortality (40). Poor nutrition, physical inactivity, and postmenopausal obesity, factors that tend to characterize low socioeconomic status populations, have been identified as risk factors for breast cancer (75-78).

Relative to Whites, African Americans are more likely to eat a high-fat diet that is low in fruits and vegetables, are less likely to be involved in regular physical exercise, and are more likely to be obese (79-82). African Americans residing in urban areas may experience safety-related barriers, which can contribute to risk-promoting lifestyles. For instance, a high proportion of African Americans live in neighborhoods without safe open spaces, sidewalks, and parks, which reduces the ability to engage in regular exercise (83).

**Provider- and System-Level Factors.** Poverty has a negative impact on the behavior of health care providers and the availability of health services (40). Those who provide health care for minorities and people in low-income areas, for example, are often less informed about preventive care services and are less likely to be board certified (84, 85). Physicians who are not board certified show lower compliance with appropriate screening recommendations (86, 87). Consequently, health care providers serving low-socioeconomic status communities may not suggest screening tests such as mammography. In addition, relative to affluent areas, fewer health care resources may be available in poor communities, which may contribute to inadequate screening services, untimely reporting of screening outcomes, and diminished quality of care (16, 58).

**Summary.** Barriers related to poverty contribute significantly to Black-White disparities in breast cancer survival (43). Poverty affects all Americans regardless of race; however, African Americans tend to shoulder a greater burden from poverty because they constitute a large proportion of the poor in the United States. Some studies have shown that Black-White disparities in breast cancer mortality are reduced after accounting for socioeconomic status (7, 88). More research is needed to elucidate the specific pathways by which barriers associated with poverty promote differential breast cancer outcomes in African American and White women.

## Barriers Related to Culture

Increasing numbers of studies highlight the role cultural factors play in promoting racial disparities in breast cancer screening, diagnosis, treatment, and mortality. The norms, beliefs, and attitudes about cancer that are shared by a group can play an important role in their decisions about breast cancer (10, 89-92). Cultural factors that have received the most research attention include spirituality, perceived susceptibility to breast cancer, cultural beliefs, and attitudes about breast cancer, and general mistrust of the health care system.

**Spirituality.** Spiritual beliefs and practices are prominent in the African American community and guide many African Americans as they cope with sickness, restore health, and make treatment-related choices (93, 94). For example, many African American women espouse beliefs such as God alone has the power to decide life and death, spirituality is the most effective way to promote curing, and divine intervention or wonders happen (93, 95). Although African Americans derive a great deal of strength from their faith, delegating responsibility for one's health to a higher

power could have negative consequences if it deters one from seeking appropriate medical treatment (10, 17). On the other hand, some research also suggests that spirituality may encourage African American women to be proactive about breast cancer screening and treatment (96-98). Further research is needed to clarify the potentially complex relationship between spirituality and breast cancer decision making among African American women.

**Perceived Susceptibility to Breast Cancer.** Studies suggest that women who feel vulnerable to breast cancer are more likely to receive a mammogram (99-101). African American women usually consider themselves to be at lower risk for developing breast cancer than do White women (14, 17, 102, 103). This pattern is observed even among African American women with a family history of breast cancer (104, 105). Low risk perceptions may translate into low perceived need for mammography or delays in seeking treatment for a breast abnormality (10). One factor that may contribute to this relative perception of invulnerability is the cultural norm against discussing breast cancer that exists within the African American community (91). This norm could inhibit communication among African American women, thereby reducing the salience of issues related to breast cancer screening, follow-up, and treatment.

**Cultural Beliefs and Attitudes.** White women and African American women have different beliefs about breast cancer (17). For instance, some African American women believe that minor trauma to the breasts, having "love bites" on the breast, and/or having big breasts can increase a woman's chances of developing breast cancer (106-108). African American women are also more likely to hold the belief that swelling or a lump on the breast that is not painful need not be reported to a physician, and, furthermore, that if the lump is not painful, it is unlikely to be cancerous (10, 109). Another common misperception held by African American women is that breast self-examination is the most effective method for early detection of breast cancer (110). Although breast self-examination was once considered an essential component of breast cancer detection, recent data suggest no benefit of breast self-examination for reducing breast cancer mortality (111).

Culture-specific fears and beliefs about breast cancer have been associated with differential screening practices in African American and White women. These fears often center on the mammography procedure itself, including fear of pain, discomfort, embarrassment, and radiation (112-115), as well as possible outcomes associated with the procedure, such as fear of discovering a cancerous lump, fear of premature, insufficient, and ineffective treatment for breast cancer, and fear of losing significant others (90). Fear of painful mammograms may be a function of the late-stage breast cancers that are often detected in African American women, cancers that may be associated with more breast pain.

Certain cultural beliefs may also influence African American women's breast cancer treatment-seeking behavior. Compared with White women, African American women are more likely to hold misconceptions and fatalistic beliefs about breast cancer treatment and to display less confidence in Western medicine (17). For example, African American women are more likely than

White women to believe that cutting into a cancerous tumor or exposing it to air may cause it to spread more quickly (10, 108). Cultural and folk beliefs such as these have been shown to explain differences in stage of breast cancer diagnosis among African American and White women (10).

**Medical Mistrust.** Many African Americans have a general mistrust of the health care system (116-118). This mistrust is partially rooted in the history of experimentation and abuse endured by African Americans. Although studies investigating the direct link between medical mistrust and breast cancer decision making are lacking, several researchers have suggested that African Americans' mistrust of the predominately White health care system may affect their decisions about seeking care, their interactions with medical providers, and their general satisfaction with health care (40, 119, 120).

**Summary.** In summary, studies indicate that cultural factors are linked with African American women's decisions about breast cancer screening, diagnosis, and treatment. Further identification of culture-specific barriers is vital for efforts aimed at reducing Black-White disparities in breast cancer mortality. Greater understanding of the impact of cultural barriers on breast cancer-related behaviors and outcomes will enable health care providers to provide better care for their patients.

### Barriers Related to Social Injustice

Although race-based disparities in breast cancer outcomes have been observed (14, 34, 35, 121), direct evidence linking these disparities to social injustice is lacking. In fact, relatively few studies have investigated the relationship between racial discrimination and breast cancer disparities. Nevertheless, there are clear reasons for suspecting that racial prejudice and discrimination contribute to Black-White disparities in breast cancer mortality (40). Some research, for example, suggests that social injustice may be tied to breast cancer incidence, differential referrals for mammography screening, and unequal delivery of breast cancer treatment.

Using prospective data from the Black Women's Health Study, Taylor et al. (122) found a positive association between perceived racial discrimination and incidence of breast cancer. This effect was particularly pronounced among Black women younger than 50 years. Women who reported higher levels of racial discrimination, assessed in terms of both "everyday" experiences and major discriminatory practices associated with employment, housing, or interactions with the police, were at greater risk of subsequently developing breast cancer. The authors posited that perceived experiences with racism may act as a chronic stressor that alters immune functioning and/or endogenous hormone levels, which could, in turn, increase breast cancer risk. More frequent experiences with racial discrimination may partially explain the higher incidence of breast cancer in African American women younger than 45 years relative to White women in this age range. This would also be consistent with evidence suggesting that racial discrimination can promote negative health outcomes more generally (20, 123).

Racial prejudice may also elicit Black-White differences in mammography referrals. Vernon et al., for instance, found that African Americans were more likely than Whites to cite lack of physician recommendation as a reason for not having undergone breast cancer screening (14). Likewise, a report from the 2000 National Health Interview Study indicated that a greater proportion of African American women relative to White women reported that their doctor had never suggested mammography (41% versus 28%; ref. 15). It should be noted, however, that, although lower referral rates could reflect prejudice toward African American patients, they could also reflect the possibility that African American women tend to have doctors who fail to recommend mammography screening more generally.

Physicians' perceptions of patients are affected by patient race and socioeconomic status, and those perceptions in turn can affect quality of care (40). One recent study, for example, found that physicians (mostly White) rated their Black patients with coronary artery disease as less intelligent, less educated, more likely to abuse drugs and alcohol, and less likely to comply with cardiac rehabilitation than their White patients (63). These perceptions held even after controlling for patient socioeconomic status, suggesting that they may reflect racial prejudice. Negative patient perceptions could translate into differential access to breast cancer treatment and satisfaction with care (40). One study, for example, found that breast cancer survivors who reported higher perceived racism during their treatment experience also tended to report lower satisfaction with their breast cancer care (124). Further research is clearly needed to clarify whether Black-White disparities in breast cancer mortality reflect racial bias among medical providers and/or the health care system more generally.

**Summary.** The quality and timeliness of breast cancer screening, follow-up, and treatment often vary by patient race, with poorer outcomes for African American women. The extent to which these disparities are rooted in racial prejudice and discrimination versus other factors discussed in this review remains unclear. Studies directly examining the role of social injustice in disparate breast cancer outcomes are scarce. More research is needed to better understand the potential links between social injustice and Black-White disparities in breast cancer survival.

### Discussion

Despite the recent decline in breast cancer mortality, African American women continue to die from breast cancer at higher rates than do White women (1). Guided by the health disparities model of Freeman and Chu (40), the present review provides a comprehensive analysis of the social, economic, and cultural barriers underlying Black-White disparities in breast cancer mortality. These barriers, in concert with genetic, biological, and environmental factors, can promote differential outcomes for African American and White women along the entire breast cancer continuum, from the initial development of cancerous tumors to access to screening and treatment. Research is only beginning to specify the ways in which these factors contribute to the

development and progression of breast cancer. Future studies are needed to determine the specific mechanisms through which social disadvantages translate into poor breast health outcomes. In addition to research, continued efforts should be directed at reducing social, economic, and cultural barriers to narrow the gap in breast cancer mortality between African American and White women in the United States. Below, we identify directions for future research and propose recommendations for reducing racial disparities in breast cancer outcomes.

**Directions for Future Research.** Race often is confounded with other variables such as poverty, low education, and discrimination (43). One important challenge for future research therefore lies in disentangling apparent effects of race from effects associated with these other factors. Freeman (43) suggested that, to reduce health disparities, researchers must uncover the “real variables” responsible for maintaining Black-White differences in health outcomes. The current review identifies a number of these variables. Research would benefit from further investigation of the specific pathways through which these social, cultural, and economic barriers translate into disparate breast cancer outcomes.

Low socioeconomic status, a variable that frequently characterizes African American women, plays an especially important role in maintaining Black-White disparities in breast cancer mortality (7). Studies have showed that controlling for socioeconomic status can reduce or even eliminate the association between race and breast cancer survival (11, 12). This research has been criticized, however, for using imprecise and potentially inaccurate estimates of socioeconomic status (e.g., census tract or ZIP code information), which may lead researchers to incorrectly characterize the impact of socioeconomic status on breast health outcomes. Broad measures of socioeconomic status often may be the best estimates available because individual-level indicators of socioeconomic status are not regularly assessed in population-based data sources [e.g., the National Cancer Institute’s Surveillance, Epidemiology, and End Results (SEER) program; ref. 13].

We propose that greater insight into the relationship between race and breast cancer may be obtained by expanding the conceptualization of socioeconomic status and focusing on more specific indicators. Studies should investigate effects of factors that are distinct from, but often related to, socioeconomic status such as health care literacy, access to and availability of health care, type of health insurance coverage, method of transportation to clinics, lifestyle factors, amount of social, cultural, and informational capital, and access to mainstream social networks. To the extent possible, attempts should be made to assess individual-level measures of socioeconomic status. By identifying specific socioeconomic barriers that underlie health disparities, intervention efforts can be focused on more effectively reducing those barriers.

Most of the extant breast cancer literature is based on studies including relatively small proportions of African American women (78). Thus, better representation of African American women in future studies, particularly women from a range of socioeconomic status levels, may further help to disentangle the multifaceted and poten-

tially synergistic effects of race and socioeconomic status on breast cancer outcomes (11). Future studies would also benefit from greater focus on other minority or disadvantaged groups. Indeed, although this review focuses on breast cancer disparities in Black and White women, breast cancer incidence and mortality vary across other racial and ethnic groups, as well (9, 13). Future research should assess the extent to which social, economic, and cultural barriers impact breast health of other racial and ethnic groups. Moreover, further understanding of breast cancer risk and protective factors in these populations may shed light on additional solutions for reducing health disparities.

Social and cultural barriers may serve as risk factors for the development of breast cancer tumors and may partially explain the poorly understood crossover in incidence rates observed for African American and White women (that is, the incidence of breast cancer is higher in African American women than in White women younger than 45 years, but this pattern reverses among women older than 45 years; ref. 78). Some researchers, for example, have hypothesized that the crossover might be partially explained by the fact that, relative to White women, African American women tend to have children at a younger age and tend to have more children (125). Although higher parity and early age at first full-term pregnancy can decrease breast cancer risk over a woman’s life span, some data suggest that these factors may increase risk for breast cancer among younger women (125, 126). In addition to reproductive factors, increased risk for breast cancer among young African American women has been associated with behaviors such as low levels of breast feeding, physical inactivity, poor dietary practices, and use of oral contraceptives (28, 78). Social and cultural norms play a large role in contraception use, childbearing decisions, infant feeding practices, and lifestyle (127-129). Therefore, future studies are needed to further understand how culturally specific norms may contribute to the development of breast cancer in young African American women.

Research has alluded to the role of social injustice in preserving Black-White disparities in breast cancer mortality, yet studies have not provided direct evidence for this link. Differential receipt of treatment among African American and White women with breast cancer may reflect racial profiling (40). For example, a medical provider might not offer or deliver a particular treatment to a patient based on conscious or unconscious assumptions about the patient’s race (e.g., assumptions about whether the patient will comply with the treatment; ref. 88). However, such treatment decisions could also result from the presence of comorbid conditions, characteristics of the tumor that render a patient ineligible for a particular treatment or from patients declining or preferring certain treatments over others (38). Few studies have disentangled the potential effects of racial profiling from these other influences. Racial discrimination can be challenging to study because people are often unaware of their biases or hesitant to admit prejudicial attitudes and behaviors (130). Nevertheless, more research is necessary to pinpoint the sources of disparate treatment outcomes among African American and White breast cancer patients and, in particular, to identify the extent to which differential treatment

outcomes are a function of provider, patient, and/or system-level factors.

**Recommendations.** Several recommendations for reducing Black-White disparities in breast cancer mortality emerge from this review. Addressing certain social barriers (e.g., poor access to care, inadequate health insurance) will require major health care system changes. Nevertheless, a number of smaller-scale changes could be enacted to potentially reduce racial disparities in breast cancer mortality. Because Black-White disparities are apparent along the entire breast cancer continuum, efforts should be directed at every phase. We propose that particular emphasis should be given to the areas of breast cancer prevention, early detection, and treatment.

Strategies to reduce breast cancer mortality through primary prevention have received little attention because of limited understanding of modifiable risk factors. Nevertheless, prevention efforts could be directed at known risk factors such as postmenopausal obesity. Prevalence of postmenopausal obesity in African American women is high. Data from the 2003 to 2004 National Health and Nutrition Examination Survey indicated that ~58% and 17% of African American women aged 40 to 59 years met criteria for obesity (body mass index,  $\geq 30$ ) or extreme obesity (body mass index,  $\geq 40$ ), respectively (82). Obesity prevention programs that focus on healthy culturally appropriate foods, increased fruit and vegetable intake, and higher levels of physical activity should be implemented. Such programs could reduce risk for breast cancer and a host of other chronic conditions prevalent among African American women.

At a national level, the Black-White gap in one-time and recent mammography screening rates seems to be closing (21, 131). However, several additional challenges remain. First, some data indicate that African American women aged 40 to 49 years are getting screened at lower rates than White women (12). Because the disparity in breast cancer mortality is especially prominent among women younger than 50 years, it may be particularly important to tailor future screening efforts toward African American women in their early 40s (132). Second, because the gap in Black-White screening rates lingers in certain U.S. states, future screening efforts would benefit from targeting those communities in particular. Third, although great strides have been made in increasing mammography utilization in the United States, data indicate that most women, regardless of race or ethnicity, fail to engage in regular, repeated mammography screening (131). The success of screening programs depends upon repeat screening over time, and, therefore, future efforts should be directed at promoting repeat mammography screening.

Appropriate follow-up care is essential to reducing breast cancer mortality. Patient navigation programs were first introduced to ensure that medically underserved patients with abnormal findings receive timely diagnostic follow-up and cancer treatment (40, 133). Patient navigators work to reduce specific barriers (e.g., scheduling problems, lack of social support, and medical mistrust) encountered by patients as they move through the health care system (134). Studies are beginning to show the benefits of patient navigation (135, 136), and granting agencies have designated funding for future navigator programs (134, 137). Patient navigator pro-

grams should be expanded beyond the inner city to poor rural communities to guarantee that patients with abnormal findings receive quality and timely care (40).

Patient education efforts need to extend beyond mammography screening to address other misconceptions that are common in the African American community, particularly those beliefs that discourage women from seeking timely care for breast problems (10, 17). One viable approach may be to facilitate communication among African American women on issues related to breast cancer through existing social networks. Influential members of the community could be used to disseminate accurate, culturally tailored messages about breast cancer prevention, screening, diagnosis, and treatment within these networks (52, 138). Attempts to involve family members in patient education are also encouraged because family members often play an important role in health care decisions among low socioeconomic status patients (139-141).

Education efforts should also be directed at medical providers. Health care providers should be aware of cultural beliefs and practices that may affect African American women's decisions about breast cancer so issues can be addressed early in the process. It is also important for medical providers to inform African American women with breast cancer about treatment options in a culturally sensitive manner and to assess patients' interest in making decisions about their care (30). This discussion should include sharing of detailed information about all potential treatment options, including their risks and benefits, efficacy, and possible complications, as well as practical considerations such as treatment schedules, cost, time commitment, and location of the treatment facility. Treatment decision aids may assist in this process (142).

**Conclusion.** Summarizing literature from the past 25 years, we provide a comprehensive analysis of barriers associated with poverty, culture, and social injustice that perpetuate disparities in breast cancer mortality among African American and White women. This review suggests that Black-White disparities in breast cancer mortality may be attributable, in part, to the relative social, cultural, and economic positions of African American women in the United States. Our review finds support for the role of social factors in maintaining Black-White disparities in breast cancer prevention, screening, diagnosis, treatment, and survival. Indeed, barriers related to poverty, culture, and social injustice interact with a complex web of genetic, biological, and environmental factors to promote differential outcomes for African American and White women. Many of these barriers are potentially modifiable. Thus, in addition to biomedical advancements, future efforts to reduce disparities in breast cancer mortality should address social barriers that perpetuate disparities among African American and White women in the United States.

#### Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed.

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