Influence of Socioeconomic and Cultural Factors on Racial Differences in Late-Stage Presentation of Breast Cancer

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Context.—Breast cancer mortality is higher among African American women than among white women in the United States, but the reasons for the racial difference are not known.

Objective.—To evaluate the influence of socioeconomic and cultural factors on the racial difference in breast cancer stage at diagnosis.

Design.—Case-control study of patients diagnosed as having breast cancer at the University Medical Center of Eastern Carolina from 1985 through 1992.

Setting.—The major health care facility for 2 rural counties in eastern North Carolina.

Subjects.—Five hundred forty of 743 patients with newly diagnosed breast cancer and 414 control women from the community matched by age, race, and area of residence.

Main Outcome Measures.—Breast cancer stage at diagnosis.

Results.—Of the 540 patients, 94 (17.4%) presented with TNM stage III or IV disease. The following demographic and socioeconomic factors were significant predictors of advanced stage: being African American (odds ratio [OR], 3.0; 95% confidence interval [CI], 1.9-4.7); having low income (OR, 3.7; 95% CI, 2.1-6.5); never having been married (OR, 2.9; 95% CI, 1.4-5.9); having no private health insurance (OR, 2.5; 95% CI, 1.6-4.0); delaying seeing a physician because of money (OR, 1.6; 95% CI, 1.1-2.5); or lacking transportation (OR, 2.0; 95% CI, 1.2-3.6). Univariate analysis also revealed a large number of cultural beliefs to be significant predictors. Examples include the following beliefs: air causes a cancer to spread (OR, 2.8; 95% CI, 1.8-4.3); the devil can cause a person to get cancer (OR, 2.1; 95% CI, 1.2-3.5); women who have breast surgery are no longer attractive to men (OR, 1.9; 95% CI, 1.1-3.5); and chiropractic is an effective treatment for breast cancer (OR, 2.4; 95% CI, 1.4-4.4). When the demographic and socioeconomic variables were included in a multivariate logistic regression model, the OR for late stage among African Americans decreased to 1.8 (95% CI, 1.1-3.2) compared with 3.0 (95% CI, 1.9-4.7) for race alone. However, when the belief measures were included with the demographic and socioeconomic variables, the OR for late stage among African Americans decreased further to 1.2 (95% CI, 0.6-2.5).

Conclusions.—Socioeconomic factors alone were not sufficient to explain the dramatic effect of race on breast cancer stage; however, socioeconomic variables in conjunction with cultural beliefs and attitudes could largely account for the observed effect.

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ALTHOUGH breast cancer incidence is somewhat lower among African American women than among white women in the United States, breast cancer mortality is consistently higher among African Americans.1-7 A large part of the explanation for this is that African Americans present with more advanced-stage disease.4,12 The reasons for this racial difference in stage, however, are not clear. Socioeconomic factors have been shown to strongly influence the stage of disease presentation1,8 and may partially account for the difference. African Americans have less access to medical care and are less likely to undergo breast cancer screening.17,18 Most studies, however, show that socioeconomic variables alone do not account for all of the observed effect.11,13-23 Even when universal access to medical care is ensured, there are still racial disparities in breast cancer diagnosis and outcome.24,25

Cultural factors such as beliefs, attitudes, and knowledge about cancer are also known to vary dramatically by race26,27 and the importance of these cultural factors is increasingly recognized. No study to date, however, has shown a direct relationship between these cultural factors and breast cancer stage or mortality, nor have the interactions among socioeconomic factors, cultural factors, and race been explored. In 1988 a comprehensive, long-term study to evaluate factors that influence breast cancer diagnosis, treatment, and outcome was started at the Leo W. Jenkins Cancer Center of East Carolina University, Greenville, NC. Emphasis was placed on psychosocial factors as well as medical factors. This report presents study results showing how race, socioeconomic factors, and cultural factors interact to influence breast cancer stage at diagnosis.
METHODS

Patient Population

The University Medical Center of Eastern Carolina (consisting of East Carolina University School of Medicine, Pitt County Memorial Hospital, and the local private-practice community) is the only inpatient or surgical health care facility in Pitt County or Greene County and is the regional tertiary care referral center for the 29 surrounding counties in eastern North Carolina. Numerous marketing surveys have shown that over 95% of all Pitt County and Greene County residents and a significant percentage of the population of the surrounding counties who require inpatient care or surgery receive this at the facility. The area is predominately rural, and the largest town has a population of fewer than 60,000. The population of the entire referral area is about 1.5 million, of whom one third are African American. About 25% of the population lives below the federal poverty level, compared with 14.4% nationally.21

Starting in 1988 all patients diagnosed as having breast cancer between January 1, 1985, and December 31, 1992, at the University Medical Center of Eastern Carolina were evaluated for interview. Of the 743 white or African American patients diagnosed (1 person each of Asian and Hispanic ethnicity was excluded), 37 (5%) of the total died before interviews could be completed, and another 35 (5%) either moved out of eastern North Carolina prior to being interviewed or were determined to be either physically or mentally incapable of being interviewed. Of the 671 patients still resident in eastern North Carolina and well enough to be interviewed, 53 (8%) refused to participate in the project, and 1 physician at the medical center refused to allow his 78 patients (12%) to participate. Therefore, interviews were completed with 540 of the 671 eligible patients for a response rate of 80%. Interviews were conducted as soon as possible after diagnosis; 38% were completed within 3 months, 70% within 1 year, and 90% within 3 years of the date of diagnosis.22 About half of the interviewed patients were residents of Pitt County or Greene County, and the other half were from 20 surrounding counties. Table 1 shows demographics for the patients interviewed, patients treated at the medical center but not interviewed, and patients in the North Carolina State Tumor Registry for the 20 surrounding counties who were not interviewed. The study participants were slightly younger than patients who did not participate, but Table 1 suggests they were otherwise representative of all breast cancer patients in eastern North Carolina.

Control Population

The study also included a control group of community-dwelling women without breast cancer from eastern North Carolina matched to each breast cancer patient by race, age, and residence type (ie, rural nonfarm, rural farm, small town, large town). These control women were interviewed in their homes with the same instrument administered to the patients.

A multistage, stratified, random procedure developed and used previously by members of the research team23 was used to identify a pool of adult women older than 25 years living in Pitt County or 4 adjacent counties in eastern North Carolina. These counties each demonstrated demographic and residential variability similar to that found in the 20 eastern North Carolina counties from which the patient population was derived. Sampling began with the random selection of 15 census enumeration districts (equivalent to track blocks) from within the 5 counties with a minimum of 2 enumeration districts from each county. With maps to define enumeration district boundaries, a door-to-door canvass identified 1530 households containing eligible adult women. Verbal consent to participate in the study was obtained during the initial contact, and women who had breast cancer were eliminated from the potential respondent pool. About 90% of those contacted initially agreed to participate in the project. Households were then stratified by residential type (households on rural farms, small towns, and so forth) and by race and age categories of the women residents. As each breast cancer patient was entered into the study, a control subject was chosen randomly from all women in the respondent pool who matched the patient by age, race, and residence categories. A total of 414 matched controls were interviewed over the 5-year study period. There were 135 more patients interviewed than controls. This difference occurred because control group sampling and interviews lagged behind patient interviews. As the end of the funding cycle approached, a preliminary analysis of the data indicated that a sufficient number of controls existed to conduct statistical comparisons with the patient population, and a decision was made to end control group recruitment. The data in Table 1 verify that there are no significant differences in demographic and socioeconomic characteristics between the patient and control groups.

Interview and Data Collection

Each patient and matched control was interviewed in person by a sex- and race-matched interviewer. Thirty older adult women residents of the study counties, who had never had breast cancer, were recruited as interviewers. Interviewers were paid to attend 2 intensive day-long training sessions that taught the procedures for obtaining informed consent, the mechanics for administering and recording responses on the structured interview guide, and ways to minimize bias.

Table 1.—Demographics of Study and Control Populations

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Study Population (n = 540)</th>
<th>ECU Patients Not in Study (n = 200)</th>
<th>Patients From State Tumor Registry† (n = 2004)</th>
<th>Control Group Without Cancer (n = 414)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>70</td>
<td>74</td>
<td>75</td>
<td>70</td>
</tr>
<tr>
<td>African American</td>
<td>30</td>
<td>26</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤65</td>
<td>34</td>
<td>48</td>
<td>48</td>
<td>36</td>
</tr>
<tr>
<td>56-65</td>
<td>34</td>
<td>33</td>
<td>30</td>
<td>37</td>
</tr>
<tr>
<td>≥65</td>
<td>32</td>
<td>19</td>
<td>22</td>
<td>27</td>
</tr>
<tr>
<td>Income, $ per capita in family</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;10,000</td>
<td>44</td>
<td>NA</td>
<td>NA</td>
<td>50</td>
</tr>
<tr>
<td>5000-10,000</td>
<td>29</td>
<td>NA</td>
<td>NA</td>
<td>25</td>
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<td>≤5000</td>
<td>27</td>
<td>NA</td>
<td>NA</td>
<td>25</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;High school</td>
<td>39</td>
<td>NA</td>
<td>NA</td>
<td>40</td>
</tr>
<tr>
<td>High school</td>
<td>27</td>
<td>NA</td>
<td>NA</td>
<td>27</td>
</tr>
<tr>
<td>≤High school</td>
<td>34</td>
<td>NA</td>
<td>NA</td>
<td>33</td>
</tr>
<tr>
<td>Married</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ever</td>
<td>92</td>
<td>91</td>
<td>NA</td>
<td>94</td>
</tr>
<tr>
<td>Never</td>
<td>8</td>
<td>9</td>
<td>NA</td>
<td>6</td>
</tr>
<tr>
<td>Tumor stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local</td>
<td>60</td>
<td>54</td>
<td>60</td>
<td>...</td>
</tr>
<tr>
<td>Regional</td>
<td>33</td>
<td>32</td>
<td>32</td>
<td>...</td>
</tr>
<tr>
<td>Distant</td>
<td>7</td>
<td>14</td>
<td>8</td>
<td>...</td>
</tr>
</tbody>
</table>

*All numbers are percentages. ECU indicates East Carolina University; NA, not available. Ellipses indicate data not applicable.
†Data from the North Carolina State Tumor Registry for the 20 surrounding counties for 1988-1992 excluding the study patients.
in the interview encounter and to probe
neutrally for more feedback. The project
team observed 10% of the interviews
conducted by each interviewer, and call-
backs were made to each of the first 10
respondents visited by an interviewer
to make sure she had indeed been in
the home and that the interview had pro-
cceeded smoothly. The project team ed-
ited every interview for completeness
and checked for any inconsistencies in
response patterns signaling the need to
modify the interviewer’s techniques.

Interviewers were matched to pa-
tients and controls by race, but within
racial categories, each interviewer re-
ceived assignments randomly. The in-
terviewers knew only that the patients
had been diagnosed as having breast
cancer, and they were given no addi-
tional information. Since none of the
interviewers received any specific train-
ing in breast cancer, it is doubtful that
they were aware at all of stage differ-
ences or attentive to any clues in physi-
appearance that might have signaled
such differences. They knew only that
we wanted to learn more about the rea-
sons why women did or did not seek
medical care for breast cancer.

The structured interview was de-
veloped based on preliminary in-depth in-
terviews by a cultural anthropologist with a
random sample of patients diagnosed pre-
viously at the institution. The instrument
was subsequently pretested by project
staff on both clinic and control populations
and revised prior to the beginning of the
study. The final structured interview in-
cluded 173 questions in a variety of closed-
ended answer formats on the topics of de-
mographics, health history, support sys-
tems, socioeconomic status, and beliefs
and attitudes regarding breast cancer,
cancer treatment, and health care in gen-
eral. Many of the questions related health
care to cultural factors such as folk beliefs,
religious beliefs, and attitudes regarding
family and relationships with men.

Questions were read to the respondent
by the interviewer since many of the re-
pondents had low literacy levels. The
structured interview took a mean time of
50 minutes to complete. At the end of the
structured component, each patient was
asked 10 open-ended questions about her
particular illness experience, and these
were analyzed separately from the an-
swers to the structured interview.

Tumor Stage
Data regarding tumor stage was col-
lected from each patient’s medical rec-
dord. Tumors were staged using the
American Joint Committee on Cancer’s
Manual for Staging of Cancer. When the
project first began, the second edition of
the manual (1983) was used and tumors
that were TNM stage III or IV were
considered “advanced stage,” whereas all
others were considered “early stage.”
In subsequent editions of the manual, T3,
N0 tumors (ie, tumors >5 cm) are now
considered stage IIB instead of stage
III. For consistency, we defined any tu-
mor larger than 5 cm as “advanced
stage,” including all stage III and IV can-
cers and some stage IIB tumors.

Analysis
Data were analyzed for statistical sig-
nificance using the logistic regression
procedures of SPSS software version 7.5.
Tumor stage was the dependent variable
dichotomized as either early or late. Var-
ious demographic, socioeconomic, or cul-
tural factors were the independent vari-
ables. Per capita income was calculated
by dividing household income by the
number of people supported by that in-
come and categorized as more than
$10,000, between $5000 and $10,000, or
less than $5000. Age and education were
also split into 3 categories: younger than
50 years, aged 50 to 65 years, or older
than 65 years; and less than high school
education, high school graduate, or more
than high school education. The cultural
variables were all dichotomized into true
and false or agree and disagree answers.

Univariate analyses were performed
to describe the relationship between
each of the independent variables and
tumor stage. Odds ratios (ORs) and 95%
confidence intervals (CIs) were calcu-
lated for each comparison. The preval-
ence of each of the cultural beliefs
among race, income, age, education, and
tumor status (ie, either patient or con-
control) subgroups was also analyzed using
univariate techniques. In these analy-
ises, holding a particular belief was con-
sidered the dependent variable, and each
of the demographic characteristics was
the independent variable. The effect of
race was studied both alone and adjusted
for income, age, and education.

Multivariate logistic regression mod-
els were constructed to evaluate the in-
fluence of race, socioeconomic factors, and
cultural factors on tumor stage. The po-
tential interaction of race with the socio-
economic and cultural factors was as-
essed with a hierarchical backward
elimination approach described by Klein-
baum. Determination of whether the so-
ioeconomic and cultural factors were po-
tential confounders of race involved ex-
amination of the ORs for different mod-
els containing the socioeconomic and cul-
tural factors.

RESULTS

Method of Presentation

Table 2. Reason Patient Presented for Medical Care

<table>
<thead>
<tr>
<th>Stage and Race</th>
<th>Breast Lump or Symptom</th>
<th>Screening Physician Breast Examination</th>
<th>Screening Mammogram</th>
<th>Symptom of Metastases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White (n = 327)</td>
<td>54†</td>
<td>12</td>
<td>34†</td>
<td>.</td>
</tr>
<tr>
<td>African Amer. (n = 118)</td>
<td>70†</td>
<td>15</td>
<td>15†</td>
<td>.</td>
</tr>
<tr>
<td>Late stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White (n = 45)</td>
<td>85†</td>
<td>4</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>African Amer. (n = 48)</td>
<td>84†</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

*All numbers are percentages. Ellipses indicate data not applicable.
†Combined early stage vs combined late stage, P < .001.
‡White vs African American, P < .001.

Of the 540 patients interviewed, 94
(17.4%) presented with advanced-stage
disease. The method of presentation of
the breast cancer patients is shown in
Table 2. Whereas a significant percent-
age of early-stage cancers were found on
screening mammography or screening
clinical breast examination, almost all
patients with late-stage cancers pre-
sented with breast symptoms or symp-
toms of distant metastases. In many
cases the tumors replaced a large portion
of the breast. About 25% of the late-
stage patients had frank ulceration,
which led to bleeding or tissue infection.

Effect of Demographic and
Socioeconomic Factors

Table 2. Method of Presentation of Breast Cancer Patients

The association of a variety of demo-
graphic and socioeconomic factors with
advanced disease stage is shown in Table 3.
Being African American, having a per
capita income of $10,000 or less, and lack-
ing private health insurance all had a ma-
jor impact on disease stage. In addition, as
might be expected, patients who reported
that they had put off seeing a physician
because of money or transportation prob-
lems were also significantly more likely to
present with late-stage disease. Never
having been married was also significantly
associated with stage, perhaps because
these women lacked both the financial and
social support provided by a spouse. Age
did not have a significant association with
stage at presentation and, surprisingly,
the relationship between education and
stage was only marginally significant.

Effect of Psychosocial and
Cultural Factors on Tumor Stage

Table 4 shows a variety of cultural and
psychosocial factors that all had a signifi-
cultural factors seem to fall into the following categories: health care utilization, folk beliefs, fundamentalist religious beliefs, relationships with men, perceived risk or fatalism, belief in the effectiveness of herbs, medicines, or chiropractic. Most of the folk beliefs and fundamentalist religious beliefs that were associated with late-stage cancer were actually more prevalent in the control group than in the patient group. Clearly these beliefs did not result from experiences related to having breast cancer or interacting with the health care team but rather were preexistent in the general population.

**Multivariate Modeling of Race and Socioeconomic and Cultural Factors on Tumor Stage**

To assess the confounding of socioeconomic and cultural factors on race and to evaluate the relative importance of these variables in predicting breast cancer stage, various multivariate models were constructed. Before analyzing the models, the assessment of race as a possible effect modifier was performed by analyzing the interaction of race with each socioeconomic and cultural factor using a backward elimination procedure. There were no statistically significant interactions. Next, the effect of race on tumor stage was assessed both alone and when the socioeconomic or cultural variables were added as a group to the model as potential confounders. Table 6 shows that the OR for advanced disease among African Americans compared with whites decreased from 3.0 to 1.8 when either the socioeconomic variables or the cultural variables were added to the model. When both the socioeconomic and cultural variables were added to the model, the OR diminished further to 1.2. Thus, it appears that both the socioeconomic and cultural variables are strong confounders of race and together can largely account for the effect of race on late-stage disease presentation.

**COMMENT**

The most important reason for the lower survival rate from breast cancer among African American women compared with white American women is that African American women present with more advanced-stage disease. The reasons for this disparity in stage, however, are not completely understood. While several investigators have emphasized the relative importance of socioeconomic status in influencing access to physician care and screening services, others have found that socioeconomic effects alone cannot account for all of the difference. Yet others have emphasized the possible role of biological differences in tumor characteristics. Race is used by many in-
investigators to refer mainly to overt phenotypic differences, usually of skin color, and is rarely, if ever, operationalized in terms of specific gene frequencies. The American Anthropological Association argues in its Statement on Race that modern humans (Homo sapiens) are a fairly recent and homogeneous species, and genetic data indicate that there is as much genetic variability between 2 people from the same “racial” group as there is between 2 people from any 2 different “racial” groups. Thus, there are few biological differences between these large population groups that are of explanatory relevance.

To the extent that the individuals labeled as belonging to a particular race or ethnic group share certain beliefs, attitudes, and behaviors (culture), they may come to engage in similar health practices and may develop similar illness profiles. Recently, many studies have shown that there is a large difference among races in breast cancer knowledge, beliefs, and attitudes. This has been shown to influence cancer screening and prevention behaviors but until now has not been shown to directly influence stage at diagnosis. Our results demonstrate clearly that psychosocial and cultural variables directly influence stage and, in combination with socioeconomic variables, are sufficient to explain the difference in stage between African Americans and whites.

An important question is how the cultural beliefs that we have identified led to diagnosis of breast cancer at a more advanced stage. In our study, 30% of the cancers in whites and 11% in African Americans were discovered by routine screening mammography. Obviously cancers discovered by screening at an early stage do not become advanced, and therefore, part of the explanation may be that the cultural beliefs were associated with differential use of screening mammography. However, O’Malley et al.43 in a study involving women in the same community at the same time, found that women’s knowledge and beliefs had very little influence on use of screening mammography, and the most important factor was whether it was recommended by a physician. Furthermore, in our study the majority of early-stage cancers as well as late-stage cancers were found by the patient. Therefore, we believe that the most important effect of the cultural beliefs is that they lead to delayed presentation once a woman has developed a palpable breast abnormality. This would also be consistent with the finding of Jones et al.48 that mammography alone does not explain all of the racial differences in stage of diagnosis.

Our previous analysis of the open-ended portion of the interviews with African American women with late-stage disease allows some understanding of the reasoning process involved and demonstrates that cultural conceptions of breast lumps and cancer directly influence women’s recognition and evaluation of breast symptoms. These women...
Table 5.—Difference in Prevalence of Cultural Beliefs by Race in Patient and Control Groups

<table>
<thead>
<tr>
<th>Cultural Beliefs</th>
<th>Percentage Who Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patients</td>
</tr>
<tr>
<td></td>
<td>White (n = 373)</td>
</tr>
<tr>
<td></td>
<td>White (n = 268)</td>
</tr>
<tr>
<td></td>
<td>OR (95% CI), Patient Control†</td>
</tr>
<tr>
<td>Health care utilization</td>
<td></td>
</tr>
<tr>
<td>No regular doctor</td>
<td>8 (14)</td>
</tr>
<tr>
<td>&lt;2 visits to doctor</td>
<td>11 (13)</td>
</tr>
<tr>
<td>Folk beliefs</td>
<td></td>
</tr>
<tr>
<td>Air causes cancer growth</td>
<td>25 (55)</td>
</tr>
<tr>
<td>Surgery causes cancer growth</td>
<td>52 (61)</td>
</tr>
<tr>
<td>High blood causes cancer†</td>
<td>8 (21)</td>
</tr>
<tr>
<td>Thin blood causes cancer‡</td>
<td>8 (23)</td>
</tr>
<tr>
<td>Root or spell causes cancer†</td>
<td>1 (7)</td>
</tr>
<tr>
<td>Worry makes cancer worse</td>
<td>52 (65)</td>
</tr>
<tr>
<td>Fundamentalist religious beliefs</td>
<td></td>
</tr>
<tr>
<td>God will cure without medical treatment</td>
<td>6 (30)</td>
</tr>
<tr>
<td>Devil causes cancer</td>
<td>11 (31)</td>
</tr>
<tr>
<td>Relationships with men</td>
<td></td>
</tr>
<tr>
<td>Surgery makes women not attractive</td>
<td>9 (16)</td>
</tr>
<tr>
<td>Men would not want to know about cancer</td>
<td>13 (28)</td>
</tr>
<tr>
<td>Men attracted to women without problems</td>
<td>69 (66)</td>
</tr>
<tr>
<td>Perceived risk and fatalism</td>
<td></td>
</tr>
<tr>
<td>No doctor if lump not bothersome</td>
<td>0 (8)</td>
</tr>
<tr>
<td>No cancer if take good care of themselves</td>
<td>5 (16)</td>
</tr>
<tr>
<td>If lump, worst thing would be surgery</td>
<td>36 (55)</td>
</tr>
<tr>
<td>When sick, I am to blame</td>
<td>15 (31)</td>
</tr>
<tr>
<td>If it’s meant to be, I will stay healthy</td>
<td>65 (81)</td>
</tr>
<tr>
<td>Health professionals control my health</td>
<td>39 (50)</td>
</tr>
<tr>
<td>Belief in treatments</td>
<td></td>
</tr>
<tr>
<td>Herbs</td>
<td>9 (28)</td>
</tr>
<tr>
<td>Medicines</td>
<td>67 (84)</td>
</tr>
<tr>
<td>Surgery</td>
<td>96 (93)</td>
</tr>
<tr>
<td>Chiropractic</td>
<td>6 (24)</td>
</tr>
<tr>
<td>Breast cancer knowledge</td>
<td></td>
</tr>
<tr>
<td>Increased risk if multiparous</td>
<td>33 (23)</td>
</tr>
<tr>
<td>Increased risk for daughter</td>
<td>60 (38)</td>
</tr>
</tbody>
</table>

*OR indicates odds ratio; CI, confidence interval. †Odds ratio is (No. of cancer patients agree/No. of cancer patients disagree)/(No. of controls agree/No. of controls disagree). ‡Odds ratio is (No. of African Americans agree/No. of African Americans disagree)/(No. of whites agree/No. of whites disagree). §Adjusted for income, age, and education.

Table 6.—Relative Odds for Late-Stage Disease

<table>
<thead>
<tr>
<th>Variables in Model</th>
<th>OR (95% CI)†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race alone</td>
<td>3.0 (1.9-4.7)</td>
</tr>
<tr>
<td>Race, socioeconomic factors‡</td>
<td>1.8 (1.1-3.2)</td>
</tr>
<tr>
<td>Race, cultural factors§</td>
<td>1.8 (1.0-3.2)</td>
</tr>
<tr>
<td>Race, socioeconomic, and cultural factors</td>
<td>1.2 (0.6-2.5)</td>
</tr>
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*African Americans compared with whites, multivariate modeling.
†OR indicates odds ratio, ie, (No. of late African Americans/No. of early African Americans)/(No. of late whites/No. of early whites); CI, confidence interval.
‡Socioeconomic factors are all factors from Table 3.
§Cultural factors are all factors from Table 4.

Patients reported that “lumps that aren’t bothering you are best left alone.” However, lumps often change, and once a lump begins to “take on a life of its own,” it may become bothersome. This transition was reported by patients to happen for several reasons—either a blow or bruise to the breast triggers the growth, or an ever-increasing number of impurities in the blood begins to “move up” or “grow out,” or a lump stays in 1 place too long and begins to “take root.” Recognizing that a lump is growing and becoming bothersome, however, does not necessarily imply that a woman will seek medical treatment for it. The majority of patients with late-stage presentation believed that “letting air get to a cancer” or “cutting on a cancer” was to be avoided because it would cause the cancer to spread. Instead, many advocated the use of alternative treatments including herbal remedies, over-the-counter medications, chiropractic regimens, and, perhaps most importantly, prayer and a reliance on God to heal the disorder. Finally, a significant number of the African American women presenting with late-stage disease were reluctant to seek medical treatment for cancer because of their fears about how the disease would impact on their relationships with the men in their lives. These women were afraid that their husbands or male partners would leave them if a cancer diagnosis became known, both because they would no longer be physically attractive but also because they might become burdens to men financially and emotionally.

A very important question is whether the results presented in this article can be generalized to a larger population. It seems likely that the attitudes and beliefs identified are fairly widespread throughout the rural southeastern United States. Whether they will be found to apply to inner-city African Americans in the northern or western areas of the United States, however, will require further study. If the cultural beliefs are found to be regionally specific, at least the principle that cultural beliefs and socioeconomic factors act together to explain the racial effect on tumor stage at diagnosis may be broadly applicable.
The findings reported here have important implications for physicians. Physicians must be aware of the cultural and psychosocial biases of their patients and address them in culturally sensitive ways. If physicians understand their patients’ fears and misconceptions about breast cancer, they will be more effective in promoting behavior that may allow early detection and treatment. For example, physicians can explain that air and surgery do not make breast cancer spread, but instead early removal offers the best chance for cure. To counteract the fatalistic notion that the breast cancer is part of God’s plan, it is helpful to promote the concept that God works through physicians to cure breast cancer. Finally, physicians must be aware of a patient’s concern about the influence a diagnosis may have on her husband or partner and deal with this in a sensitive manner.

These findings also have positive implications for cancer education efforts and public health interventions. If the racial difference in breast cancer stage at diagnosis were purely socioeconomic, this would be very discouraging as economic issues are difficult to change. However, by recognizing that at least part of the problem is cultural, it may be possible to modify key beliefs in a way that will lead to earlier breast cancer diagnosis and still be consistent with the underlying cultural attitudes of the target population. Promotion of increased breast examination and mammography in the absence of research on the compatibility of these practices with predominant cultural beliefs and psychosocial attitudes identified in this research may be effective at decreasing the excess stage III and IV cancer among African Americans. Although these cancers account for only 15% to 30% of the total, they have a high mortality and contribute significantly to the difference in survival rates by race.

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References