
ORIGINAL COMMUNICATIONS

CANCER RATE DIFFERENTIALS BETWEEN BLACKS AND WHITES OF THREE METROPOLITAN AREAS

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This article presents a comparison of the cancer incidence and mortality rates for the populations of the metropolitan areas of Los Angeles, Atlanta, and Nashville. The results reveal that cancer of the lung, prostate, breast, and cervix should be of major concern to all, but especially to blacks and residents of Nashville. The findings have specific implications for the prevention of cancer in the black population of the United States.

The higher rates of cancer among blacks when compared with whites are well documented.^{1,2} There have been several attempts to explain these differences in terms of socioeconomic, sociocultural, or biologic factors,³⁻⁵ however, there are still gaps in our knowledge with respect to the reasons for the differences. It is only when we understand these reasons that we can effectively intervene to close the gap. One approach is to compare differences in cancer rates in different geographic areas. This has been done on an international scale.⁶⁻⁸ An atlas of cancer mortality for whites^{9,10} and a similar atlas for blacks¹¹ have been published, however these publications do not compare the racial differences in a single document. More recently Phillips and

Lacey¹² examined the geographic and racial distribution of cancer mortality in Chicago. They found that the areas of highest cancer mortality were three predominantly black communities. This study compares cancer incidence, mortality, and survival in three communities: Los Angeles, Metropolitan Atlanta, and Nashville-Davidson County. These geographic areas are addressed because they comprise the service areas of the Drew/Meharry/Morehouse Consortium Cancer Center, which focuses on the prevention and control of cancer in blacks. The Center hopes to obtain information from the study of these three populations that will contribute to the effort to reduce the excess risk of cancer among blacks in the United States.

METHOD

All data presented are for the three-year period 1979-1981. Specific rates were available for several cancer sites, but four were selected because of their high incidence or mortality among blacks. These sites were lung and prostate for males, and breast and cervix for females. All rates are expressed as average annual age-adjusted incidence or mortality rate, using the direct method of standardization and the 1980 US population.

Incidence data for Los Angeles were obtained from the Cancer Surveillance Program of the University of Southern California; the source of data for Atlanta was the Surveillance, Epidemiology, and End Results (SEER) program. Nashville does not have a population-based tumor registry and, therefore, incidence data for the metropolitan area are nonexistent. Incidence data for Los Angeles and Atlanta were compared with those of the national SEER program.

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TABLE 1. AVERAGE ANNUAL AGE-ADJUSTED CANCER INCIDENCE RATES BY SEX, PRIMARY SITE, RACE, AND GEOGRAPHIC AREA (1978-1981)*

Geographic Area	Male				Female			
	Lung		Prostate		Breast		Cervix	
	Black	White	Black	White	Black	White	Black	White
Los Angeles	108.1	80.4	119.6	72.2	74.6	98.4	16.4	9.0
Atlanta	110.7	97.0	124.9	75.9	65.8	86.0	20.0	9.8
US (SEER)	119.0	81.0	120.3	75.1	71.9	85.6	20.2	8.8

*Rates per 100,000 population

TABLE 2. AVERAGE ANNUAL AGE-ADJUSTED CANCER MORTALITY RATES BY SEX, PRIMARY SITE, RACE, AND GEOGRAPHIC AREA (1978-1981)*

Geographic Area	Male				Female			
	Lung		Prostate		Breast		Cervix	
	Black	White	Black	White	Black	White	Black	White
Los Angeles	83.9	56.7	44.5	19.2	31.9	32.0	9.6	3.8
Atlanta	84.3	81.9	47.1	21.2	26.0	25.9	8.6	2.7
Nashville	121.0	93.3	51.3	24.6	29.3	23.4	7.5	3.4
US (SEER)	93.5	64.6	44.5	22.5	26.8	27.5	7.3	2.8
US (Total)	91.4	69.3	43.9	21.0	26.3	26.6	8.8	3.2

*Rates per 100,000 population

Mortality data were obtained from the local or state health departments and, in the case of Atlanta, from the SEER program. Data included age, sex, race, and the underlying cause of death. Mortality data were examined for the three geographic areas and compared with the national data from the SEER program and from the entire US, as published by the National Center for Health Statistics. In the absence of survival data for the specific geographic areas, a proxy measure of survival was used. The index used for this purpose is defined by the relationship:

$$\text{Survival index} = 1 - \text{mortality rate/incidence rate}$$

FINDINGS AND DISCUSSION

The rates for both lung and prostate cancers are higher in blacks than in whites in the two cities for which incidence data are available. The incidence of prostate cancer, however, exceeds that of lung cancer in blacks, whereas among whites the reverse is true (Table 1). The differences for lung cancer per 100,000 range from 13.7 in Atlanta to 27.7 in Los Angeles and for prostate cancer from 47.4 in Los Angeles to 49.4 in Atlanta. The relatively small difference in incidence rates for lung cancer in Atlanta is due primarily to the unusually high incidence rate for its white male population in comparison

with Los Angeles or the United States. The incidence of prostate cancer varies little by geographic area, but the rate for blacks is consistently higher than for whites.

White females have higher incidence rates for breast cancer in both Atlanta and Los Angeles as well as in the nation. These differences are more pronounced in Los Angeles (23.8) and Atlanta (20.2) than in the nation (13.7). Rates of cervical cancer incidence in Atlanta closely mirror the national SEER data, which indicate an excess of 11.4 per 100,000 among blacks. The excess among blacks was less pronounced in Los Angeles (7.4).

The excess mortality from lung cancer was similar in Los Angeles, Nashville, and the United States, with the black rates exceeding the white rates by more than 27 per 100,000 (Table 2). However, the lung cancer death rates in Nashville were higher for both blacks and whites than in any of the other areas under consideration. In Atlanta, the difference in mortality between blacks and whites was noticeably small in comparison with other sites due to the relatively high rate of lung cancer among whites in this metropolitan area. Prostate cancer mortality rates are twice as high for blacks as for whites and the rates are highest in Nashville for both blacks and whites.

Although there are large black-white differences in the incidence of breast cancer, with blacks having lower

TABLE 3. SURVIVAL INDEX BY SEX, PRIMARY SITE, RACE, AND GEOGRAPHIC AREA (1978-1981)

Geographic Area	Male				Female			
	Lung Black	Lung White	Prostate Black	Prostate White	Breast Black	Breast White	Cervix Black	Cervix White
Los Angeles	.22	.29	.73	.73	.57	.67	.41	.58
Atlanta	.24	.16	.62	.72	.60	.70	.57	.72
US (SEER)	.21	.20	.63	.70	.63	.68	.64	.68

rates, the differences in breast cancer mortality are uniformly small, with Nashville having the largest black-white difference. Here the rate for blacks exceeds that of whites by 5.9 per 100,000. Mortality attributed to cancer of the cervix is consistently higher for blacks, with an excess ranging from 4.1 in Nashville to 5.9 in Atlanta. The mortality from cervical cancer is more than twice as high for blacks as it is for whites.

As expected, lung cancer shows the lowest survival index (Table 3). This index varies little for blacks, but the white survival index is higher in Los Angeles (0.29) than in Atlanta (0.16) or in the country (0.20). In the case of prostate cancer, the survival index for whites shows little variation; but blacks in Los Angeles have a higher survival index than those in other geographic areas.

The lower survival index for breast cancer among black females is related to the almost equal mortality rates from the disease among the two racial groups, despite the lower incidence among blacks. The cervical cancer survival index is much lower in Los Angeles than in Atlanta. The index for blacks is consistently lower than for whites. Blacks experience a higher incidence of cervical cancer, but they are also subject to a mortality rate that is relatively high for the incidence.

IMPLICATIONS FOR PREVENTION

The data show clearly that cancer of the lung, prostate, breast, and cervix should be of major concern to all, but especially to blacks. From the perspective of cancer prevention in these three cities, lung cancer deserves the highest priority because of its high incidence, low survival rate, and our knowledge of its primary prevention. Because lung cancer accounts for the greatest number of years of potential life lost from cancer in black men under the age of 65,¹³ prevention of this cancer will increase black life expectancy. We currently have the knowledge to achieve its prevention.

The lung cancer problem is especially acute for both blacks and whites in the Nashville metropolitan area, where the mortality rate for whites exceeds the rate for

blacks in Los Angeles, Atlanta, and the nation. The problem is also acute among whites in Atlanta, but to a lesser extent. Nearly 90% of all lung cancers are associated with smoking,¹ and the difference in rates is most likely attributable to differences in smoking behavior in the three metropolitan areas.

Smoking rates among blacks have been declining since 1965, but for persons 20 years of age and older, the percentage of blacks who smoke (41%) exceeds that of whites (32%); however black smokers tend to smoke less than white smokers.¹⁴ The higher smoking rates and lower cessation rates among black smokers may be due to the lack of adequate social support from their peers and families when they try to quit. Smoking cessation rates could be improved if access to effective influences for smoking cessation is enhanced by the use of community resources.¹⁵ One approach could be physician counseling. Smokers can help themselves quit with only one or two minutes of counseling and encouragement from their physicians.¹⁶ Physicians are often discouraged from offering such advice by the low cessation rate. If all physicians counseled their patients on smoking, and if even a small percentage of those responded, the impact would be great. The Drew/Meharry/Morehouse Consortium Cancer Center is conducting research on the effectiveness of physicians in promoting smoking cessation.

The most striking observation from the data for breast cancer in the three metropolitan areas is the high incidence and mortality for both blacks and whites in Los Angeles. The mortality among blacks is comparable to that of whites within each area but the mortality of blacks in Nashville is significantly higher than that of whites.

Black women should be concerned about breast cancer, and the fundamental solution is one of early detection. Although the overall incidence of breast cancer is lower in blacks, this overall rate conceals the higher rate among black women under the age of 40.¹⁷ Furthermore, the five-year relative survival rate for blacks is 62% versus 75% for whites. This is not surprising in

view of the fact that older black women have a greater risk of being diagnosed with the most advanced form of breast cancer.¹⁸

The etiology of breast cancer is not as clear as that of lung cancer, but some studies suggest that breast cancer could be reduced by decreasing fat in the diet.¹⁹ The methods of early detection have been the subject of critical review by the United States Preventive Services Task Force, and its recommendations are based on the evidence that is currently available.²⁰ The Task Force strongly recommends clinical breast examination and mammography. Breast self-examination is also recommended despite the absence of a randomized controlled trial evaluating effectiveness of this method of detection. This recommendation is based on evidence that such screening and follow-up reduces mortality by about one third in women aged 50 to 59. Mammography as a screening technique has been studied extensively in the Breast Cancer Detection and Demonstration Project.²¹ A Health Insurance Plan of New York study has shown that the differentials in breast cancer survival rates between nonwhite and white women can be significantly reduced by the introduction of periodic screening using mammography and clinical breast examination.²²

On the basis of this evidence, physicians should not wait for black women to come to their offices with advanced breast cancer, but should aggressively screen asymptomatic women using the best available techniques. They should also provide appropriate follow-up. Some current guidelines for early detection may not be appropriate for black females because the rate of occurrence in earlier years is higher than in their white counterparts. Physicians caring for black patients should start baseline mammography at age 35 rather than 40. The major deterrent to control of the disease among black women is the high cost of mammography. It is the most expensive of the screening tests routinely recommended and varies considerably in cost. Any serious effort to reduce cancer in the black population must also address the problem of making this effective test available for screening regardless of a person's ability to pay.

Cervical cancer is important in a program of cancer prevention because practically all deaths from this cause are preventable. The incidence of cervical cancer is comparable among whites in Los Angeles and Atlanta. Although the incidence among blacks in Los Angeles is lower than that of blacks in Atlanta, the mortality rate is higher in Los Angeles. The etiology is not yet firmly established, but there has been an efficacious screening technique for many years.²³ Unfortunately, those at

highest risk are least likely to have had a Pap test.²⁴ The cost of this important screening test is not as high as mammography but is not always covered by health insurance and is not done as frequently after child-bearing age as is considered desirable. An annual Pap test and pelvic examination are recommended for all women who are or have been sexually active or have reached 18 years of age. After having had three or more consecutive satisfactory normal annual examinations, the test may be performed less frequently at the physician's discretion. There is also the question of follow-up. As with any screening procedure, the value of the test is sharply reduced if positive individuals are not appropriately followed. Cervical cancer has been a focus of attention within the Consortium and several approaches are being examined.

Prostate cancer has the highest incidence of all forms of cancer in black males, and blacks in the United States have the highest incidence in the world. Mortality from this cancer is much lower than from lung cancer and the disease occurs later in life. Blacks have a five-year relative survival rate that is 13% lower than whites.

Prostate cancer data are consistent for all three metropolitan areas, suggesting that the causative factors, whatever they might be, are common to all three areas and more common among blacks. Various theories about the possible causes of prostate cancer have been proposed but no convincing evidence has yet been produced. Diet and hormones are among the chief suspects.^{25,26} The epidemiology of prostate cancer is still a fertile field for research. Meanwhile, the best hope lies in early detection. Techniques for detection are not as efficacious as in the case of breast or cervical cancer and the problem of the sensitivity and specificity of the rectal exam remains. Work is in progress on the use of transrectal ultrasonography as a screening device, but there are still problems with this technique that need to be resolved. Prostate cancer seems likely to be a challenge for some time to come. Meanwhile, the rectal exam remains the best available tool for early detection. If Ernster is correct in his cohort effect hypothesis, then the rates may decline without intervention.²⁷ They could decline even faster if the best use is made of currently available knowledge about early detection.

The Drew/Meharry/Morehouse Consortium Cancer Center is seeking to find the most effective interventions to reduce cancer in these three cities, with the hope that this knowledge can be applied to reducing the excess risk of cancer among blacks nationally.

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