

# Racial Differences in Cervical Cancer Mortality in Chicago

## ABSTRACT

Racial differences in cervical cancer mortality in Chicago were examined. Age-adjusted mortality in Blacks (10.0/100 000) was over twice the rate found in Whites (4.6/100 000). Age-specific rates also showed significant excess mortality among Blacks. After stratification by a group-level defined poverty indicator, the race differential in age-adjusted rates remained significant. The race differential in age-specific rates diminished in the group with more than 30% living below the national poverty level, in contrast to the group with 30% or fewer living below the national poverty level, in whom race differences were more marked. Methodological issues concerning hysterectomy prevalence, Hispanic ethnicity, and social class must be considered with respect to interpretation of these findings. (*Am J Public Health*. 1994;84:1007-1009)

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### Introduction

Cancer of the cervix is one of the cancer sites most amenable to early detection and treatment, yet it is the second leading cause of cancer mortality for women worldwide<sup>1</sup> and ranks third among cancer deaths nationally for women aged 25 through 44 years.<sup>2</sup> Throughout the last decade, marked excess cervical cancer mortality in Blacks has persisted despite declining rates in both Black and White women.<sup>3</sup>

Chicago's mortality rates for cervical cancer deaths were 14% higher than national rates for Whites and 24% higher for non-Whites from 1968 through 1982.<sup>4</sup> The present study was conducted as part of a federally funded state health department program established to develop cervical cancer prevention strategies. The program was divided into three phases: descriptive epidemiologic research, analytic study, and finally, the design and implementation of a demonstration project. The present study was undertaken to provide a descriptive account of racial differences in cervical cancer mortality among women in Chicago.

### Materials and Methods

The study area included 37 central Chicago communities (representing approximately 53% of Chicago's total population) selected from the 1980 census. The far northern and southern portions of Chicago were excluded to reduce the number of patients more likely to utilize suburban or out-of-state health facilities and to include a greater proportion of low-income and minority women.

Estimates of the female population residing in the study area were obtained from the 1980 census, the only available data specific for age, race, gender, and community area. Race was classified as White (including Hispanic) and non-White. Because 93% of the non-White group was Black, this term will be used throughout this report.

Deaths from cervical cancer (*International Classification of Diseases*, Ninth Revision, codes 180.0-180.9) were se-

lected from the state of Illinois death tapes for the period from 1975 through 1984. Average annual mortality rates are presented. Information on poverty status was not available on an individual level for this study. Nevertheless, an effort was made to account for potential confounding by categorizing subjects, at the group level, according to the percentage of residents (>30%, ≤30%) living below the national poverty level in the community area where each resided. Thirty percent was chosen as the value to dichotomize this poverty variable in order to minimize the number of cells with zero cases and to ensure a reasonable estimate of poverty in the community areas.

Age-standardized rates were calculated by the direct method<sup>5</sup> with the combined population of the 37 community areas as the standard. The z test (two tailed) based on the standard normal distribution was used for statistical testing of race differences in the age-specific rates<sup>6</sup> and the overall age-adjusted rates.<sup>5</sup> (Significance was defined at  $P < .05$ .) Rate ratios (and 95% confidence intervals [CIs]) comparing mortality in Blacks with that in Whites were calculated with DEPID.<sup>7</sup>

### Results

From 1975 through 1984, 600 cervical cancer deaths were reported for the study

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**TABLE 1—Average Annual Mortality Rates,<sup>a</sup> Rate Ratios,<sup>b</sup> and Confidence Intervals (CIs): Cervical Cancer Project, Chicago Study Area,<sup>c</sup> 1975 through 1984**

	White		Black		Rate Ratio	95% CI	> 30% Poverty		≤ 30% Poverty	
	Rate	No.	Rate	No.			Rate Ratio	95% CI	Rate Ratio	95% CI
Age group, y										
15-34	0.7	9	1.6	26	2.3	1.1, 4.9	...	...	2.3	1.0, 5.7
35-54	9.6	68	20.7	184	2.2	1.6, 2.8	1.8	1.0, 3.3	1.7	1.5, 2.4
55-74	12.7	93	21.7	126	1.7	1.3, 2.2	1.2	0.7, 2.1	1.8	1.2, 2.5
75+	13.0	28	46.0	66	3.6	2.3, 5.5	2.2	0.9, 5.6	3.5	1.9, 6.4
Total sample										
Crude rate	5.2	198	8.8	402	1.9	1.6, 2.1	1.6	1.3, 1.9	1.5	1.2, 1.9
Adjusted rate <sup>d</sup>	4.6		10.0		2.1	1.8, 2.5	1.7	1.2, 2.4	1.9	1.5, 2.4

<sup>a</sup>Rates per 100 000. Rates based on fewer than 5 cases were not calculated.

<sup>b</sup>White is reference group.

<sup>c</sup>Study area includes 37 geographically contiguous communities located in central Chicago selected from the 1980 census.

<sup>d</sup>Rates were age adjusted to the total study population by the direct method.

area (Table 1). Almost half the deaths (287) occurred among women younger than 55 years of age. The age-adjusted mortality rate of 10.0 for Black women was more than twice the overall rate of 4.6 for Whites ( $P < .001$ ). A comparison of age-specific rates yielded similar results: Blacks had statistically significant greater mortality at every age level. Mortality rates for Black women were more than 2 times those for White women in the 15-34 and 35-54 age groups, 1.7 times those for White women in the 55-74 age group, and more than 3.5 times those for White women in the 75+ age group. Mortality rates increased significantly with age for both races, but the greatest increases occurred among Black women.

The race differential in the age-adjusted mortality rates remained statistically significant after stratifying by poverty group. The Black-White rate ratio was 1.7 (CI = 1.2, 2.4) for the >30% poverty group and 1.9 (CI = 1.5, 2.4) for the ≤30% poverty group (Table 1).

Within the community areas of ≤30% poverty, mortality was significantly greater in Blacks in all but the youngest age group (rates not shown). Although the rates for Blacks were greater than the rates for Whites at every age level in the >30% poverty group (rates not shown), none were statistically significant.

## Discussion

The marked excess of cervical cancer deaths among Black women in Chicago described in this report is consistent with national data demonstrating more than a

twofold increase in mortality rates for Black women.<sup>3</sup> Several methodological issues must be considered with respect to the interpretation of our findings.

The rates presented here included women with prior hysterectomies; consequently, mortality was underestimated in this study. The effect on the rate ratios is prohibitively complex to predict because of potential age, race, and socioeconomic differences in hysterectomy prevalence. Results from the Behavioral Risk Factor Surveillance System, however, did show that overall frequency of prior hysterectomy was the same for Whites, Blacks, and Hispanics in a national sample of women; lower income and less education, however, were related to increased prevalence of hysterectomy.<sup>8</sup>

A second limitation of this study concerns the validity of using census denominators to enumerate the Whites and non-Whites in the study population. Because information on ethnicity was not included in mortality data at the time of this analysis, rates for Hispanics could not be calculated separately from those for Whites. As a result, the rates for Whites in this study may have been overestimated (and the rate ratio underestimated) because Hispanic women have been identified as a high-risk group for cervical cancer.<sup>9-11</sup> Alternatively, if the number of non-Whites was underestimated, the comparisons between Whites and non-Whites may have exaggerated the race differential in mortality.

The >30% poverty group comprised a greater proportion of Hispanics to

Whites than did the ≤30% poverty group.<sup>12</sup> The inclusion of Hispanic women in the White category may, in part, account for the insignificant race difference observed in the group with >30% poverty in contrast to the ≤30% poverty group, in whom race differences were significantly more marked. Two other explanations for this finding can also be given. First, the stresses associated with poverty may present barriers to obtaining preventive health services for both Blacks and Whites residing in the most economically disadvantaged communities.<sup>13</sup> Alternatively, whereas social class may be more similar between Whites and Blacks in the >30% poverty group, social class may be more disparate between Whites and Blacks in the ≤30% poverty group. Although our data can neither confirm nor reject these explanations, other studies have shown that race differences in Pap smear screening<sup>14</sup> and incidence of invasive cervical cancer<sup>16</sup> are more marked in higher than in lower socioeconomic areas.

Because poverty status was defined at the group level (according to the percentage of residents living below the national poverty level in the community where each study subject resided), no definitive conclusions may be applied on an individual basis. However, because community areas in Chicago tend to be particularly homogeneous with respect to socioeconomic status, significant misclassification was unlikely. Moreover, group-level definitions of economic status have

been used in other studies of race differences in cervical cancer, which reported results similar to those in studies that used individual indicators.<sup>15,16</sup>

Investigators have suggested for many decades that disparities in screening, in part, account for the excess cervical cancer mortality in Black women.<sup>14,17-20</sup> More recent data from the Behavioral Risk Factor Surveillance System, however, showed that a higher proportion of Blacks than Whites obtained Pap smears.<sup>21</sup> Results from the 1987 National Health Interview Survey demonstrated that poor White women were more likely to have never had a Pap smear than poor Black women.<sup>22</sup> These findings suggest that patient treatment and follow-up also play an important role in the excess mortality in cervical cancer seen in Blacks. Improved recording of Pap smears, specifically through efficient registries, has been recommended to provide better tracking of women with abnormal cytology reports and to promote provider adherence to screening and treatment guidelines.<sup>23,24</sup>

In addition to disparities in screening practices, the race differential in cervical cancer mortality can also be viewed as a function of the less favorable survival experience seen among Blacks. Black women are not only less likely to be diagnosed with localized cervical lesions, but are less likely than Whites to survive at the same stage of diagnosis.<sup>18,25</sup>

In summary, our findings are consistent with other studies reporting a nearly twofold race differential in cervical cancer mortality between White and Black women. The results from this study support intervention efforts focused on reducing cervical cancer mortality among Black women in Chicago. Future studies might attempt to improve measurement of social class to better assess its role in cervical cancer mortality. □

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