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Socioeconomic Status and Childhood Mortality in North Carolina

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ABSTRACT

Children in families eligible to receive Aid to Families with Dependent Children (AFDC) were found to have substantially higher mortality rates than non-AFDC children. The disparity seems to be greater for Whites than for non-Whites. These results suggest the presence of social class differentials in access to and use of health care and related services and facilities, in exposure to environmental risks, and in knowledge of injury control measures. (*Am J Public Health.* 1992;82:1131–1133)

Introduction

The relationship between socioeconomic status and health was first documented in this country in 1925[1] and has since been widely recognized.[2–13] The present study assesses the differences in mortality between children in families eligible to receive Aid to Families with Dependent Children (AFDC) and those not eligible for such aid from July 1, 1985, through December 31, 1988.

Methods

Lacking a more suitable indicator of poverty, the population of AFDC recipients and Medicaid participants who are eligible for AFDC was used as a surrogate. Children in the AFDC and AFDC-eligible Medicaid registries were matched to child death certificates. Death certificates for 3679 children aged 28 days through 17 years who died from July 1, 1985, to December 31, 1988, were matched with AFDC and AFDC-eligible Medicaid files for the same period. Decedents under 28 days of age were excluded because the short time between birth and death may have precluded the certification of AFDC eligibility of some otherwise potentially eligible children. Five hundred sixteen of the 3679 decedents were, at some time during this period, recipients of AFDC.

By race and age group for July 1, 1985, through December 31, 1988, unduplicated counts of AFDC eligibles aged 17 or younger were obtained. These figures were subtracted from the North Carolina population by race and age group for the same period to obtain figures for the non-AFDC population. Whether the ratio of an AFDC to a non-AFDC mortality rate was statistically different from 1.0 was determined by dividing the difference between the natural logs of the rates by the standard deviation of that difference to yield a *z* score.

Results

As shown in Table 1, the ratio of AFDC to non-AFDC death rates reveals that AFDC children aged 28 days through 17 years experienced a mortality rate 2.7 times that of their non-AFDC counterparts. The disparity seems to be even greater for Whites than for non-Whites.

In many cases, the cause-specific ratios are alarming. For all childhood age groups combined, AFDC children were 6.9 times more likely than non-AFDC children to die from fire and 6.1 times more likely to die from poisoning. Mortality from homicide and mortality from pneumonia or influenza were 4.7 and 4.8 times as high, respectively, for AFDC eligibles than for noneligibles. Heart disease claimed the lives of AFDC children 3.8 times more often than it claimed the lives of non-AFDC children. AFDC eligibles were 5.4 times more likely to die from perinatal conditions, 3.5 times more likely to die from congenital anomalies, 3.1 times more likely to suffer death from unintentional injuries, 2.3 times more likely to die from drowning, 1.8 times more likely to die from cancer, and 1.4 times more likely to suffer a motor-vehicle fatality.

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TABLE 1—Statistically Significant Ratios of AFDC to Non-AFDC Death Rates: North Carolina, July 1, 1985 to December 31, 1988

Age Group	Cause of Death	White	Non-White	Total
28 d–1 y	Sudden infant death syndrome	1.6*	...	1.3*
	Congenital anomalies	2.5***	...	1.6*
	Perinatal conditions	3.7***	...	2.2***
	Heart disease	...	...	2.5**
	Pneumonia/influenza	...	...	2.7**
	Homicide	...	...	3.9**
	Unin non-MV injuries	3.0*	...	...
	Accid mech suffoc	6.6*	...	...
	All causes	2.1***	...	1.6***
1–4 y	Congenital anomalies	4.2***	...	2.8***
	Perinatal conditions	...	...	3.1*
	Cancer	2.8*	...	...
	Heart disease	...	...	2.7*
	Pneumonia/influenza	6.2*	...	...
	Homicide	...	...	4.1**
	Unin non-MV injuries	2.6**	3.5***	4.2***
	Fires	8.3***	4.9***	9.0***
	IICO	14.0**	...	4.7**
	Drowning	...	7.3*	...
	Motor-vehicle injuries	...	2.4**	2.6***
	All causes	2.4***	2.4***	2.9***
5–9 y	Unin non-MV injuries	3.0*	...	3.0***
	Fires	...	...	3.9**
	Drowning	...	...	3.2*
	Firearms	13.1*	...	...
	Motor-vehicle injuries	3.6**	2.7***	3.3***
	All causes	2.5***	2.0***	2.5***
10–14 y	Congenital anomalies	...	5.0*	5.2**
	Heart disease	8.2**	...	4.0*
	Pneumonia/influenza	...	...	24.2*
	Homicide	22.9***	8.4***	15.4***
	Unin non-MV injuries	...	...	2.6**
	Fires	...	...	4.5*
	Drowning	...	...	5.3***
	All causes	2.6***	2.0**	2.3***
15–17 y	Cancer	5.7***	...	2.5*
	Poisoning	57.4*	...	22.9**
28 d–17 y	Congenital anomalies	5.1***	2.8***	3.5***
	Perinatal conditions	6.7***	3.7***	5.4***
	Cancer	2.8***	...	1.8**
	Heart disease	3.1*	3.1***	3.8***
	Pneumonia/influenza	8.9***	2.2*	4.8***
	Homicide	4.3**	2.7***	4.7***
	Unin non-MV injuries	2.9***	2.4***	3.1***
	Poisoning	11.2**	...	6.1**
	Fires	6.8***	4.2***	6.9***
	IICO	7.8**	...	3.3**
	Accid mech suffoc	...	3.4*	4.3***
	Drowning	...	2.1*	2.3**
	Motor-vehicle injuries	...	1.7**	1.4**
	All causes	2.8***	2.3***	2.7***

Note. AFDC = Aid to Families with Dependent Children; Unin non-MV injuries = unintentional non–motor-vehicle injuries; Accid mech suffoc = accidental mechanical suffocation; IICO = inhalation or ingestion causing obstruction. Nonsignificant and incalculable ratios are not reported.
*P < .05.
**P < .01.
***P < .001.

The age-specific ratio of AFDC to non-AFDC eligibles is greatest at ages 1 through 4 (2.9) and least at 28 days to 1 year (1.6). For the 15- through 17-year-olds, the ratio of total mortality rates of AFDC to non-AFDC eligibles is not significantly different from 1.0.

For specific age groups and causes of death, some ratios of AFDC-eligible to non–AFDC-eligible death rates are re-

markably high. AFDC eligibles 1 to 4 years of age are 9 times more likely to suffer death from fire than their non-AFDC counterparts. AFDC eligibles 10 to 14 years of age are 24.2 times more likely to die from pneumonia or influenza and 15.4 times more likely to be a victim of homicide than their non-AFDC counterparts. AFDC-eligible decedents 15 through 17 years of age are 22.9 times more likely to die from poisoning than their counterparts. Other age/cause-specific ratios, along with age/cause/race-specific ratios, can be found in Table 1.

Controlling for poverty, that is, comparing the mortality rates of AFDC non-Whites and AFDC Whites, the marked disparity between the races is not present as is the case in the general population. The AFDC non-White to AFDC White mortality ratios are not significantly different from 1.0 for specific age/cause groups or for all ages and causes combined.

Discussion

The overall childhood mortality rate of AFDC eligibles is nearly three times the rate of children not eligible for such aid. On an age/cause-specific basis, the disparity is even more extreme. Furthermore, no statistical difference is found between the mortality rates of non-White AFDC children and their White counterparts.

The strong association between childhood mortality and socioeconomic status points to the existence of social class differences in housing, nutrition, education, exposure to environmental risks, and access to and use of health care and related services and facilities.

That poor children die from endogenous causes such as cancer, heart disease, and pneumonia/influenza, as well as from congenital anomalies and perinatal conditions, at two to five times the rates of non-poor children suggests that parents or guardians of poor children either postpone seeking medical care until it is too late to benefit or do not have access to medical care.

The relationship of socioeconomic status to exogenous causes of death is not as well documented. That fire takes the lives of AFDC children at nearly seven times the rate of children not enrolled in AFDC suggests that substandard housing among the poor and their inability to afford smoke detectors may be a factor. Other researchers have reported a greater risk of house fires in rental property[14] and a lower rate of smoke detector installation by renters than by homeowners.[15]

AFDC-eligible children also die at a higher rate from the other exogenous causes

shown in Table 1, suggesting a greater exposure to a hazardous and violent environment. These exogenous causes also need traditional public health interventions such as legislation, education, or education.

The large differences in mortality rates between poor and nonpoor youth for these and other causes warrant further studies to determine, on a cause-specific basis, the reasons for these mortality differentials. □

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Does Equal Socioeconomic Status in Black and White Men Mean Equal Risk of Mortality?

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ABSTRACT

Although concerns have been expressed that mortality from coronary disease and all other causes is greater among Blacks than Whites, we hypothesized that, when socioeconomic status is adequately considered, mortality inequalities between Blacks and Whites are insignificant. The study population was a random sampling of Black and White men who were 35 years of age or older when recruited into the Charleston Heart Study in 1960. Education level and occupational status at baseline were used to compare mortality over the ensuing 28 years between Black and White men, who were classified as low or high socioeconomic status. In no instance were Black-White differences in all-cause or coronary disease mortality rates significantly different when socioeconomic status was controlled. We conclude that socioeconomic status is an important predictor of mortality and that, when socioeconomic status is considered, differences in Black-White mortality rates may be small. (*Am J Public Health.* 1992;82:1133–1136)

Introduction

In the early 1970s Terris[1] expressed disdain for evaluation of health statistics by race, contending that the appropriate variable for comparison was socioeconomic status. Despite evidence by Antonosky, Kitagawa, Kaplan, Feldman, Marmot, and Haan[2–7] of an inverse relationship between socioeconomic status and mortality, studies have continued to focus on ethnicity. Such studies[8–9] identify a racial difference in risk factors for mortality but, in most instances, use the concept of socioeconomic status to explain the reported difference. Nevertheless, these studies have served social and humanitarian purposes by identifying underserved populations at particular risk of disease or death. In the Charleston Heart Study cohort, low socioeconomic status was found to be a significant predictor of the incidence of hypertension, while skin color was not.[10] Recently, Gillum[11] has shown that mortality from coronary heart disease or from all other causes among Blacks has been greater than among Whites. The purpose of this report is to provide additional evidence from the Charleston Heart Study to support the hypothesis that socioeconomic status is a key predictor of mortality when ethnicity is controlled.

Materials and Methods

The study population in Charleston, SC, was a random sampling of Black and White men who were 35 to 74 years of age