

Perspectives in Prevention From the American College of Preventive Medicine
Black-White Infant Mortality Differentials in the United States

Donald W. MacCorquodale, MD, MSPH
Private Consultant, Public Health and Preventive Medicine

At the beginning of the 20th century, about 100 infants died before age 1 year. From 1915 through 1997, the infant mortality rate declined more than 90% to 7.2 per 1,000 live births.¹ Despite this remarkable improvement in survival of American infants, mortality differentials between black and white infants persist. The black to white infant mortality ratios were 1.6 in 1950, 1.9 in 1960, 2.0 in 1980, and about 2.2 in 1989.² What is responsible for these striking differences?

In 1938 the Registrar General of Great Britain examined the association of infant mortality and social class, using the occupational class of the father as the indicator of social class and demonstrated an impressive gradient between social class and infant mortality.³ This is shown in the table below:

Infant mortality related to the occupational class of father*

Occupational class of father	Infant mortality, 1921
I. Professional	38.4
II. Intermediate	55.5
III. Skilled	76.8
IV. Partly skilled	89.4
V. Unskilled	97.0

*From the Registrar General's Decennial Supplement, 1938

Infant mortality in the United States also is highly correlated with social class when the level of educational attainment of the mother is used as an indicator of social class.⁴ It is, noteworthy, however, that the association is more powerful among white mothers than among black mothers. Household income is lower for black women than it is for white women, and the same is true with regard to levels of educational attainment. For many years, it was felt that differences in social class were responsible for black-white disparities in infant mortality.

In 1992 a group of investigators at the Centers for Disease Control examined black and white infant mortality while controlling for social class by confining the study to infants born to college-educated parents.⁵ They calculated infant mortality rates using the National Linked Birth and Infant Death Files for 1983 through 1985. The study population consisted of slightly more than 865,000 white infants and about 42,000 black infants. The infant mortality in that population was 10.2 per 1,000 live births for black infants and 5.4 per 1,000 live births for white infants. This was a striking contrast for the infant mortality rates for all infants born in the United States in 1985, 18.6 and 8.9 per 1,000 live births respectively.⁶

The findings of this study strongly suggest that social class does indeed play a role in black-white infant mortality differentials, but they also point to the fact that something else is involved as well.

After noting that a number of investigators suggested that genetic factors associated with race influence birthweight, and David and Collins analyzed racial differences in birthweight based on U.S.-born black women and African-born black women who delivered in Illinois.⁷ They found that the distribution of birth weights among infants of African-born black women approximated that of U.S.-born white women. The low birthweight rate for African-born black women was intermediate between the rate for U.S.-born white women and that for U.S.-born black women. The authors concluded that their data provided “some evidence” against the theory that there is a genetic disparity between white and black women born in the United States. Other students of this issue, however, regard the findings of this study as compelling evidence that genetic differences exert no influence on birth weights of black infants.

A recent study reported in the Proceedings of the National Academy of Science reported that a genetic variant in black women increases the risk of premature rupture of the membranes, a leading cause of preterm birth.⁸ Heat shock protein 47, Hsp47 stabilizes collagen and gives strength to the amnion. The presence of the variant leads to lower levels of Hsp47 and weakened amniotic membranes that are likely to lead to premature rupture of the membranes. It is estimated that this genetic variant is responsible for about 12% of preterm births.

Some years ago I heard a speaker at an epidemiology meeting suggest that the stress precipitated by racism was the causative determinant of high death rates in infants born to black mothers. I found myself wondering how stress could exert such an effect. In study of 352 births among women enrolled in the Coronary Artery Risk Development in Young Adults Study, Sarah Mustillo and her colleagues found that among black women, 50% of those who had undergone preterm deliveries and 61% of those with low birthweight infants reported that they had experienced racial discrimination in at least 3 situations. Among white women, the corresponding percentages were 5% and 0%.⁹ In their discussion of these findings, the authors suggested that psychological stress may trigger corticotrophin-releasing hormone, which has been linked to preterm delivery.

A case-control study was conducted of 104 black women who delivered very low birthweight infants and 208 black women who delivered infants weighing 2,500 g or more in Chicago, Illinois.¹⁰ The odds ratio adjusted for maternal age, education, and cigarette smoking for lifetime exposure to racism in three or more settings was 2.6, 95% CI: 1.2, 5.3. The authors suggested that chronic stress, a prominent feature in the daily lives of black women, may contribute to preterm delivery and consequent very low birthweight risk.

There is obviously widespread prejudice in our society against other minorities, including Asian-Americans, Hispanic Americans, and Native Americans. Infant mortality rates

during the 1996-1998 and 1999-2000 periods were lowest among those infants born to Chinese-American mothers, 3.4 and 3.2 per 1,000 live births, respectively.¹¹ - curious. Perhaps prejudice toward Chinese-Americans is expressed more subtly than that against African-Americans.

There has been a notable tendency for researchers in this field to hold an “either or view,” i. e., higher infant mortality rates among African-American infants are either due to genetic factors or to discrimination toward African-American mothers. It seems quite clear, however, that there are multiple factors that put black women at risk of bearing preterm infants, whose mortality rate is excessive.

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