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ORIGINAL CONTRIBUTIONS

Trends in Preterm Birth and Neonatal Mortality among Blacks and Whites in the United States from 1989 to 1997

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Preterm birth, a major determinant of infant mortality, has been increasing in recent years. The authors examined trends in preterm birth and its determinants by using the US birth and infant death files for 1989–1997. The impact of trends in preterm birth rates on neonatal and infant mortality was also evaluated. Among Whites, preterm births (<37 completed weeks of gestation) increased from 8.8% of livebirths in 1989 to 10.2% in 1997, a relative increase of 15.6%. On the other hand, preterm births among Blacks decreased by 7.6% (from 19.0% to 17.5%) during the same period. An increase in obstetric interventions contributed to increases in preterm births for both races but was outweighed by other unidentified favorable influences for Blacks. Neonatal mortality among preterm Whites dropped 34% during the 8 years of the study, while the decrease was only 24% among Blacks. This large disparity countered the changes in preterm birth rates so that the percentage decline in neonatal mortality was similar in the two racial groups (18–20%). In conclusion, the anticipated mortality benefit from a lower preterm birth rate for Blacks has been blunted by suboptimal improvement in mortality among the remaining preterm infants. The widening race gap in mortality among preterm infants merits attention. *Am J Epidemiol* 2001;154:307–15.

cesarean section; infant mortality; infant, premature; labor, induced; racial stocks

Preterm birth is the leading cause of perinatal death in the United States (1–3). Many industrialized countries, with the possible exceptions of France and Finland, have reported an increase in the rate of preterm birth during the last two decades (4–6). More recently, Joseph et al. (7, 8) examined rates of preterm birth in Canada and reported an increase from 6.3 percent in 1981 to 6.8 percent in 1994 (a relative increase of 9 percent). Because of the relative homogeneity of the population, as well as the prevailing universal access to health care in Canada, it is uncertain whether similar factors are driving US preterm birth trends. In the United States, a 4 percent increase in the overall preterm birth rate has been reported from 1989 through 1996; this overall increase hides remarkable racial differences, however (3, 9).

Although preterm birth was found to be almost twice as likely among Blacks than Whites, in the 1990s the rate of preterm births of Black singletons decreased by 10 percent, while it increased by 8 percent for Whites (3). To better understand the reasons for the Black-White disparity in preterm birth trends, as well as their implications for neonatal and infant mortality, we examined these secular trends in detail.

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MATERIALS AND METHODS

For this study, we used the 1989–1997 US livebirth, fetal death, and infant death databases (10). The National Center for Health Statistics (Hyattsville, Maryland) routinely links livebirth and infant death records. Only those births recorded as of White or Black race were included in the analysis.

Preterm birth and neonatal and infant mortality were the principal outcomes evaluated. Preterm birth was defined as livebirth prior to 37 completed weeks of gestation. Early preterm birth (livebirth before 34 completed weeks) was also examined. Gestational-age information on the birth certificates was derived from the following algorithm proposed by the National Center for Health Statistics: 1) computation using the dates of childbirth and last menstrual period, 2) imputation from the last normal menses, and 3) from the clinical estimate (11). For over 95 percent of pregnancies, gestational age was based on the last menstrual period. The

clinical estimate of gestation is used for births for which data on the last menstrual period are missing or are incompatible with the reported birth weight. In general, gestational-age information reported on the basis of women's menstrual history appears to be reasonably reliable (12–14).

Neonatal mortality was defined as infant death during the first 28 days of life. Fetal death (in utero death at or beyond 28 weeks of gestation), perinatal mortality (sum of fetal death and death during the first 28 days of life), and infant mortality (death during the first year of life) were additional outcome variables examined in this study. We used in utero death at or beyond 28 weeks of gestation (as opposed to ≥20 weeks) because of substantial variation in registration practices among US states.

Independent variables considered as either potential determinants or confounders of the secular trend in preterm birth included multiple births, gravidity, proportion of births of infants weighing less than 500 g, marital status, level of maternal education, maternal age, time of onset of prenatal care, infant gender, and incompetent cervix. Other determinants included preterm induction, preterm cesarean delivery, preterm premature rupture of membranes, prepregnancy hypertension, pregnancy-induced hypertension, previous preterm birth, diabetes (type I, II, and gestational), placental abruption, placenta previa, and tobacco use and alcohol consumption during pregnancy. The birth certificate contains boxes to be checked to identify medical risk factors, obstetric procedures, complications of labor and delivery, and method of delivery.

Logistic regression models were used to assess changes in preterm birth rates during the study period and to examine the independent contributions of the changes in potential determinants in explaining secular trends in preterm birth. All analyses were carried out for livebirths, separately for Blacks and Whites, and were repeated for total preterm births and early preterm births. Births after 37 or more completed weeks of gestation formed the comparison group for both total and early preterm births. The logistic regression analysis was conducted in several steps. First, we estimated the unadjusted odds ratios for the period variable (comparing rates of preterm births between 1989 and 1997). We then sequentially included the potential determinants, which enabled us to examine the contribution of each variable to the secular trends in preterm birth. Order of entry of these determinants into the model was established by using a priori knowledge of their significance in predicting preterm birth (8). Determinants for which data quality was poor (e.g., cigarette smoking and alcohol consumption) were considered last. Because of the high incidence of preterm births among multiple births (40–50 percent), odds ratios obtained from the logistic regression models are not good approximations of the relative risks. Therefore, we used the method described by Zhang and Yu (15) to approximate the relative risks from the corresponding odds ratios obtained from the logistic models. We examined the change in gestational-age-adjusted neonatal mortality for Black and for White preterm infants over the 8 years by using the 1989 race and gestational-age-specific population weights (20–36 weeks in 1-week increments) as the standard.

RESULTS

Secular trends in preterm birth among all livebirths from 1989 through 1997 are displayed for Whites and Blacks separately in table 1. For Whites, preterm birth increased from 8.8 percent in 1989 to 10.2 percent in 1997, a relative increase of 15.6 percent. On the other hand, for Blacks, preterm birth decreased from 19.0 percent in 1989 to 17.5 percent in 1997, a relative decrease of 7.6 percent. Similarly, early preterm birth increased by 12.7 percent among Whites, while it decreased by 11.3 percent among Blacks. The pattern of preterm birth rates was fairly consistent for singleton births to both Whites and Blacks. However, for multiple gestations, the rate of preterm birth increased among Whites and Blacks; the relative increase was larger for Whites.

Analysis of the trends of potential determinants between 1989 and 1997 showed an increase in multiple births; the increase among Whites was almost twice that among Blacks (table 2). The proportion of births of infants weighing less than 500 g increased for both Whites and Blacks. Births to mothers who were 35 years of age or more increased substantially for Whites and Blacks. The proportion of births to mothers with less than a high school education decreased; the decrease was higher for Blacks than Whites. Although a much higher proportion of Black mothers were unmarried, the rate of increase for unmarried status was greater in the White community. The proportion of livebirths for whom mothers' onset of prenatal care was during the second or third trimester decreased for both races, as did the proportion of births for which information on gestational age was missing.

The rates of preterm induction of labor, preterm cesarean delivery, diabetes, and pregnancy-induced hypertension increased from 1989 to 1997. The increase was more pronounced among Whites for preterm induction and preterm cesarean delivery, but it was higher among Blacks for pregnancy-induced hypertension and diabetes. On the other hand, previous preterm birth, placental abruption, placenta previa, preterm premature rupture of membranes, and tobacco use and alcohol consumption during pregnancy decreased between 1989 and 1997. The relative decrease in preterm premature rupture of membranes, placenta previa, and tobacco use was greater among Blacks, while the decrease in alcohol consumption was greater among Whites. Prepregnancy hypertension and incompetent cervix decreased among Whites but increased among Blacks.

Unadjusted logistic regression analyses comparing the proportion of preterm births in 1989 and 1997 showed that the rate of preterm livebirths increased by 15.6 percent among Whites and decreased by 7.6 percent among Blacks (tables 1 and 3). Table 3 also shows the changes that occurred when potential determinants were sequentially included in a multivariable logistic regression model. Because births due to preterm induction of labor and preterm cesarean delivery are a subset of preterm births, we estimated the temporal effect after elimination (one variable at a time) of births that occurred as a result of preterm induction of labor or preterm cesarean delivery and those births of newborns weighing less than 500 g. Doing so enabled us to estimate the individual contribution of changes in obstetric intervention and in birth registration.

TABLE 1. Preterm births, according to gestational-age categories, to White mothers and Black mothers, United States, 1989 and 1997

Gestational age (weeks)	Livebirths to White mothers			Livebirths to Black mothers		
	Preterm birth rate (per 100 livebirths)		% change, 1989–1997	Preterm birth rate (per 100 livebirths)		% change, 1989–1997
	1989	1997		1989	1997	
All livebirths	*n* = 3,153,776	*n* = 3,047,017		*n* = 662,702	*n* = 594,758	
<23	0.1	0.1	3	0.5	0.4	–4.8
23–27	0.4	0.4	12	1.4	1.4	–2.6
28–32	1.4	1.5	11	4.0	3.4	–14.2
33–36	7.0	8.2	17	13.1	12.3	–6.2
<37	8.8	10.2	16	19.0	17.5	–7.6
Data not available	1.4	1.0		1.6	0.9	
Singleton livebirths	*n* = 3,082,715	*n* = 2,959,686		*n* = 644,931	*n* = 576,443	
<23	0.1	0.1	1.0	0.4	0.4	–2.7
23–27	0.3	0.3	3.7	1.3	1.2	–5.7
28–32	1.2	1.2	2.5	3.7	3.0	–17.1
33–36	6.4	7.2	13.1	12.6	11.5	–8.6
<37	8.0	8.8	10.9	17.9	16.1	–10.1
Data not available	1.4	0.9		1.6	0.9	
Multiple births	*n* = 71,061	*n* = 87,331		*n* = 17,771	*n* = 18,315	
<23	1.0	0.9	–11.8	2.9	2.1	–24.8
23–27	3.0	3.6	19.4	6.5	6.9	6.8
28–32	9.3	11.7	25.5	13.9	14.1	1.2
33–36	33.2	40.6	22.4	32.4	37.6	16.0
<37	46.5	56.7	22.1	55.7	60.8	9.1
Data not available	1.2	1.0		1.9	1.1	

After we eliminated births resulting from preterm induction, the secular increase in preterm birth among Whites was reduced to 7.7 percent. Elimination of preterm cesarean births further decreased the period increase in preterm birth from 7.7 to 0.5 percent. Exclusion of births of infants weighing less than 500 g did not influence the secular trends in preterm birth (table 3). Sequential adjustment for changes in multiple births entirely eliminated the temporal increase in preterm birth. Further adjustment for changes in maternal age and gravidity had little impact on preterm birth trends. Adjustment for unmarried status reversed the slight increase in preterm birth to a 2 percent decrease, while adjustment for prepregnancy hypertension and preterm premature rupture of membranes further elevated the increase to 4.8 and 7.0 percent, respectively. These results imply that had there not been a reduction in the proportion of women with prepregnancy hypertension and preterm premature rupture of membranes from 1989 to 1997, the rate of spontaneous preterm birth (≥500 g) would have increased 4.8 and 7.0 percent, respectively, among Whites.

Among Blacks, eliminating preterm births due to induction increased the period reduction in preterm birth from 7.6 to 12.3 percent. Exclusion of preterm cesarean births further increased the period reduction in preterm birth from 12.3 to 19.2 percent. Eliminating births of infants weighing less than 500 g had little impact on trends in preterm birth, as did adjustment for changes in the rate of multiple births. After adjustment for changes in unmarried status, the decline was 21 percent. On the other hand, adjustment for onset of prenatal care, level of maternal education, prepregnancy hypertension, preterm premature rupture of membranes, and tobacco use had an opposite effect (table 3). Adjustment for improvement in prenatal care reduced the period decrease in preterm birth to 18.1 percent, while adjustment for improvement in level of maternal education, prepregnancy hypertension, preterm premature rupture of membranes, and cigarette smoking during pregnancy further reduced it to 17.2, 14.4, 13.7, and 12.2 percent, respectively. In other words, other things being equal, if there had not been improvements in prenatal care, level of maternal education, preterm premature rupture of membranes, and cigarette smoking among Blacks, the decrease in preterm birth would have been smaller.

Table 3 also shows the crude and sequentially adjusted analysis for secular trends in early preterm birth. Preterm cesarean delivery followed by preterm induction were the two major factors that drove the secular trend in preterm birth among Whites and Blacks. Changes in unmarried status, onset of prenatal care, and prepregnancy hypertension were additional factors that impacted the temporal trend in early preterm birth rates.

Because preterm births accounted for the large majority of neonatal deaths (78 percent in 1997), one would have expected the narrowing of the race difference in preterm births to reduce the difference in this measure. However, as shown in table 4 (right-hand column), the secular reduction in overall neonatal mortality was 18 percent for Blacks and 20 percent for Whites. The expected relative improvement for Blacks was completely negated by a much more striking improvement in mortality among preterm births of Whites (34 percent) than of Blacks (24 percent). The race difference regarding secular improvement was even more dramatic for

TABLE 2. Secular trends in potential determinants of preterm births to White mothers and Black mothers, United States, 1989–1997

Determinant	Frequency (per 100 livebirths)					% change, 1989–1997
	1989	1991	1993	1995	1997	
Multiple births						
Whites	2.3	2.3	2.5	2.6	2.9	27.4
Blacks	2.7	2.8	2.9	2.9	3.1	14.7
Maternal age <20 years						
Whites	10.8	11.0	11.0	11.5	11.2	3.3
Blacks	23.4	23.1	22.7	23.1	22.2	–4.9
Maternal age ≥35 years						
Whites	8.8	9.7	10.9	12.0	13.1	49.3
Blacks	5.7	6.4	7.4	8.4	9.1	59.5
Gravida 1						
Whites	34.2	33.8		34.1	33.5	–2.0
Blacks	30.6	29.2		31.1	30.4	–1.0
Gravida ≥4						
Whites	16.7	17.5		17.5	17.8	6.9
Blacks	23.4	25.0		24.9	25.1	7.4
Maternal education <12 years						
Whites	21.6	22.5	22.0	21.6	21.4	–1.0
Blacks	30.4	30.4	29.8	28.7	27.6	–9.1
Unmarried status						
Whites	19.2	21.8	23.6	25.3	25.8	34.4
Blacks	65.7	67.9	68.7	69.9	69.2	5.3
Onset of prenatal care other than 1st trimester						
Whites	19.8	19.4	17.3	15.7	14.5	–26.7
Blacks	36.8	35.2	31.4	27.5	25.6	–30.4
Birth weight <500 g						
Whites	0.1	0.1	0.2	0.1	0.1	15.9
Blacks	0.4	0.4	0.5	0.4	0.4	15.9
Male sex						
Whites	51.3	51.2	51.3	51.3	51.2	–0.2
Blacks	50.8	50.8	50.7	50.8	50.8	0.0
Gestational age missing						
Whites	1.4	1.0	0.9	0.9	0.9	–30.7
Blacks	1.6	1.2	0.9	0.8	0.9	–44.2
Previous preterm birth						
Whites	1.4	1.1	1.1	1.1	1.2	–15.8
Blacks	1.8	1.4	1.5	1.5	1.5	–14.3
Preterm induction of labor						
Whites	0.5	0.7	0.9	1.1	1.4	148.0
Blacks	0.9	1.1	1.5	1.6	1.9	102.0
Preterm cesarean delivery						
Whites	2.4	2.9	2.9	3.0	3.2	30.8
Blacks	3.9	4.5	4.6	4.6	4.7	21.6

Table continues

infant mortality among preterm births. For Whites, infant mortality among preterm births decreased by 30 percent from 1989 to 1997, while this reduction was only 14 percent for Blacks. Over this period, the Black-White difference in infant mortality *among preterm births* actually widened by 6 per 1,000 (from 15 to 21 per 1,000).

Although preterm births are more common among Blacks than Whites, it has been known for many years that, at a given preterm gestational age, Black infants have a better chance of survival (figure 1). As shown in this figure, the improvement in mortality at specific gestational ages over the 8-year study period was generally larger for White

TABLE 2. Continued

Determinant	Frequency (per 100 livebirths)					% change, 1989–1997
	1989	1991	1993	1995	1997	
Prepregnancy hypertension						
Whites	0.6	0.6	0.6	0.6	0.6	–7.46
Blacks	1.2	1.1	1.2	1.2	1.2	1.5
Pregnancy-induced hypertension						
Whites	2.9	2.8	3.0	3.5	3.7	27.1
Blacks	2.9	2.8	2.9	3.5	4.0	35.3
Diabetes						
Whites	2.1	2.4	2.6	2.5	2.6	21.3
Blacks	1.8	2.0	2.3	2.3	2.5	33.8
Preterm premature rupture of membranes						
Whites	1.0	1.0	1.0	1.0	1.0	–2.2
Blacks	2.0	2.0	1.9	1.8	1.8	–10.2
Placental abruption						
Whites	0.6	0.6	0.6	0.6	0.6	–13.9
Blacks	0.8	0.7	0.7	0.7	0.7	–12.7
Placental previa						
Whites	0.4	0.4	0.4	0.3	0.3	–8.9
Blacks	0.4	0.4	0.4	0.3	0.3	–25.3
Cigarette smoking during pregnancy						
Whites	20.3	18.8	16.7	15.0	14.3	–29.8
Blacks	17.1	14.6	12.7	10.6	9.7	–43.2
Alcohol consumption during pregnancy						
Whites	4.1	2.8	1.8	1.4	1.1	–73.5
Blacks	4.2	3.4	3.0	2.3	1.7	–61.1
Incompetent cervix						
Whites	0.3	0.2	0.2	0.2	0.2	–5.7
Blacks	0.3	0.3	0.3	0.4	0.4	35.3

infants than for Black infants, so the difference in gestational-age-specific neonatal mortality was narrowed by 1997. The data on neonatal mortality after 36 weeks were excluded from figure 1 because of the known crossover in the lines for Black and for White neonatal mortality rates at around 36 weeks.

To be sure that the widening race gap in preterm neonatal mortality was not due to changes in the gestational-age distribution of preterm births between the races, we examined the change in gestational-age-adjusted neonatal mortality for Black and for White preterm infants over the 8 years by using the 1989 race- and gestational-age-specific population weights as standards. The improvement in these statistics was 11 per 1,000 (28 percent) for Whites and 7 per 1,000 (15 percent) for Blacks.

Because of potential errors in assessing gestational age from the birth certificate, we also examined the changes in neonatal mortality by using birth weight categories (figure 2). The pattern of greater improvement for Whites than Blacks was reproduced. Mortality patterns for deaths within 7 days were similar to those for 28-day mortality (data not shown).

DISCUSSION

We examined changes in preterm birth rates and their determinants for all livebirths that occurred in the United States between 1989 and 1997. We also investigated the contribution of changes in preterm birth rates to trends in neonatal and infant mortality during the same period. The data showed an increase in preterm birth rates among Whites but a decrease of an almost similar magnitude among Blacks. Preterm induction of labor and preterm cesarean delivery were the primary factors associated with the increase in preterm births among Whites. These factors also contributed to a preterm birth trend among Blacks, but their effects were masked by the overall decrease in the preterm birth rate among Blacks.

Obstetric interventions were the most important identified factors that contributed to changes in preterm birth rates. Obstetric interventions such as preterm induction of labor and preterm cesarean deliveries are usually introduced to prevent in utero death or maternal complications. Increases in these factors were greater for Whites than Blacks, perhaps

TABLE 3. Crude and sequentially adjusted multiple logistic regression analysis for secular trends in preterm births to White mothers and Black mothers, United States, 1989–1997

	% change, 1989–1997			
	<37 weeks of gestation		<34 weeks of gestation	
	Whites	Blacks	Whites	Blacks
Crude analysis	15.6	–7.6	12.7	–11.3
Excluding births as a result of Preterm induction	7.7	–12.3	7.4	–14.7
Plus preterm cesarean delivery	0.5	–19.2	–7.9	–25.7
Plus births of infants weighing <500 g	0.6	–19.6	–7.8	–27.1
Analysis adjusted for multiple births	0.0	–19.7	–8.5	–27.3
Plus maternal age	0.3	–19.7	–8.4	–27.1
Plus gravidity	0.2	–19.7	–8.5	–27.2
Plus marital status	–2.6	–21.0	–13.2	–29.0
Plus onset of prenatal care	0.5	–18.1	–8.5	–24.7
Plus maternal education	1.5	–17.2	–7.0	–23.8
Plus infant gender	1.5	–17.2	–7.0	–23.8
Plus prepregnancy hypertension	4.8	–14.4	–3.0	–20.1
Plus pregnancy-induced hypertension	4.9	–14.3	–2.8	–19.9
Plus previous preterm birth	5.4	–14.1	–2.2	–19.6
Plus diabetes	5.4	–14.1	–2.2	–19.6
Plus preterm premature rupture of membranes	7.0	–13.7	–2.2	–19.6
Plus placental abruption	7.0	–13.5	–2.2	–19.1
Plus placenta previa	7.0	–13.5	–2.2	–19.1
Plus incompetent cervix	7.0	–13.5	–2.2	–19.1
Plus cigarette smoking during pregnancy	7.0	–12.2	–2.2	–19.1
Plus alcohol consumption during pregnancy	7.0	–11.9	–2.2	–19.1

because Blacks had higher baseline rates of such interventions in 1989. It is of interest that several studies have reported that Blacks are less likely than Whites to receive surgical treatment or therapeutic and diagnostic procedures, even after the data are adjusted for the confounding effects of insurance or payor types (16, 17). Similarly, the larger increase in multiple births among Whites as compared with Blacks is likely due to Whites' greater access to assisted reproductive methods.

Preterm obstetric interventions such as labor induction or cesarean delivery usually occur late enough in gestation for neonates to die as a result of preterm birth, but these obstetric interventions were the most important factors identified in explaining the trends in preterm birth among Whites and Blacks. If earlier gestation rather than less than 37 completed weeks had been used to define preterm birth, the role of obstetric interventions in the temporal trends in preterm birth would not have diminished. In fact, the Black-White difference in the temporal trends of preterm birth and its associated mortality followed the same pattern for early gestational ages (tables 1 and 3 and figures 1 and 2).

Improvements in onset of prenatal care and cigarette smoking during pregnancy had favorable effects for Blacks. Taken together, changes in these risk factors were not sufficiently different in the two race groups to explain the different trends in preterm rates. It seems likely that other unmeasured factors, perhaps general economic improvement in the 1990s or the ebbing of the crack cocaine epidemic, contributed to the decreased preterm birth rates among Black women.

Reduction of race disparities in infant mortality is an important public health objective in the United States and is reflected in the new national Health Objectives for the Year 2010 (18). The narrowing of the difference in preterm birth rates between Blacks and Whites during the 1990s is a welcome development, but, unfortunately, it has been accompanied by an increase in the race discrepancy in neonatal and infant mortality rates among the remaining preterm births. This increased discrepancy partially relates to a change in the

TABLE 4. Mortality rates for preterm infants and fetuses, United States, 1989–1997

	Mortality rate for preterm births (per 1,000)			Mortality rate for total births (per 1,000)		
	1989	1997	% change	1989	1997	% change
Neonatal mortality*						
Blacks	49.5	37.4	–24.4	11.0	9.0	–18.2
Whites	40.3	26.7	–33.8	5.0	4.0	–20.0
Infant mortality†						
Blacks	64.0	55.1	–13.9	18.0	13.0	–27.8
Whites	48.9	34.2	–30.1	8.0	6.0	–25.0
Fetal mortality‡						
Blacks				6.5	5.4	–16.9
Whites				3.8	3.1	–18.4
Perinatal mortality§						
Blacks				17.5	14.4	–17.7
Whites				8.8	7.1	–19.3

* Infant deaths during the first 28 days of life.
† Deaths within 1 year of life.
‡ Fetal deaths at ≥28 weeks.
§ Sum of deaths during the fetal period and the first 28 days of infancy.

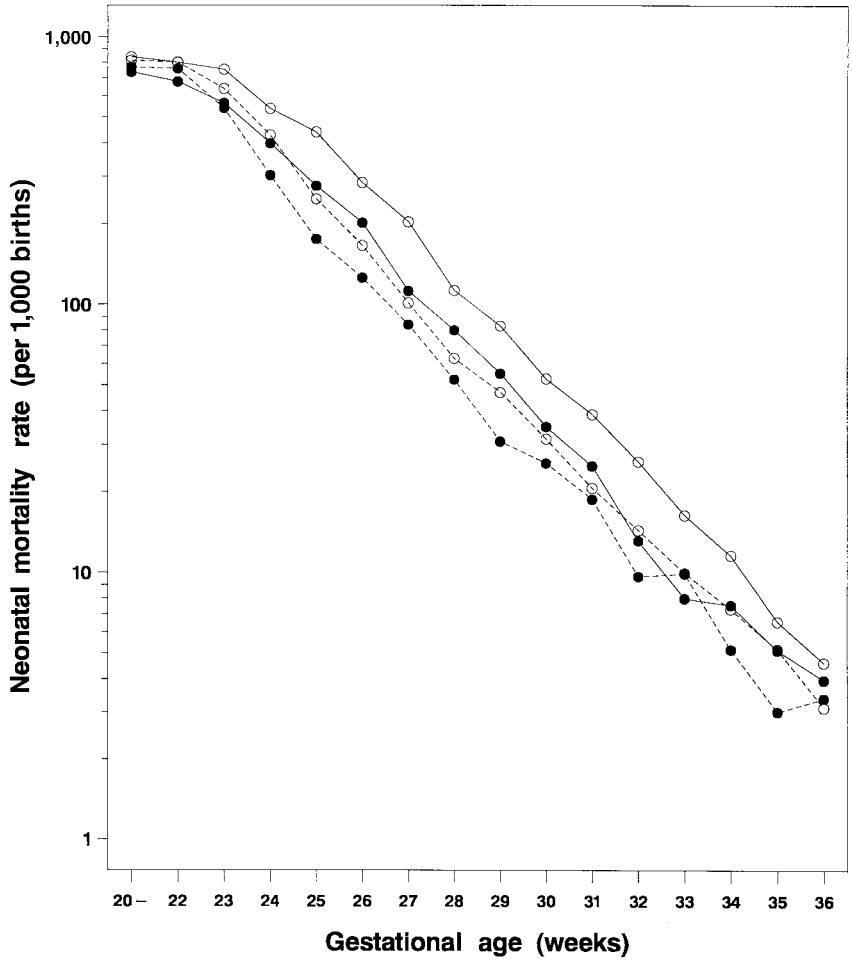

FIGURE 1. Neonatal mortality, by gestational age, for Black (●) and for White (○) infants in the United States. Solid lines denote data for 1989; dashed lines are for 1997. Data shown are for <37 weeks of gestation only.

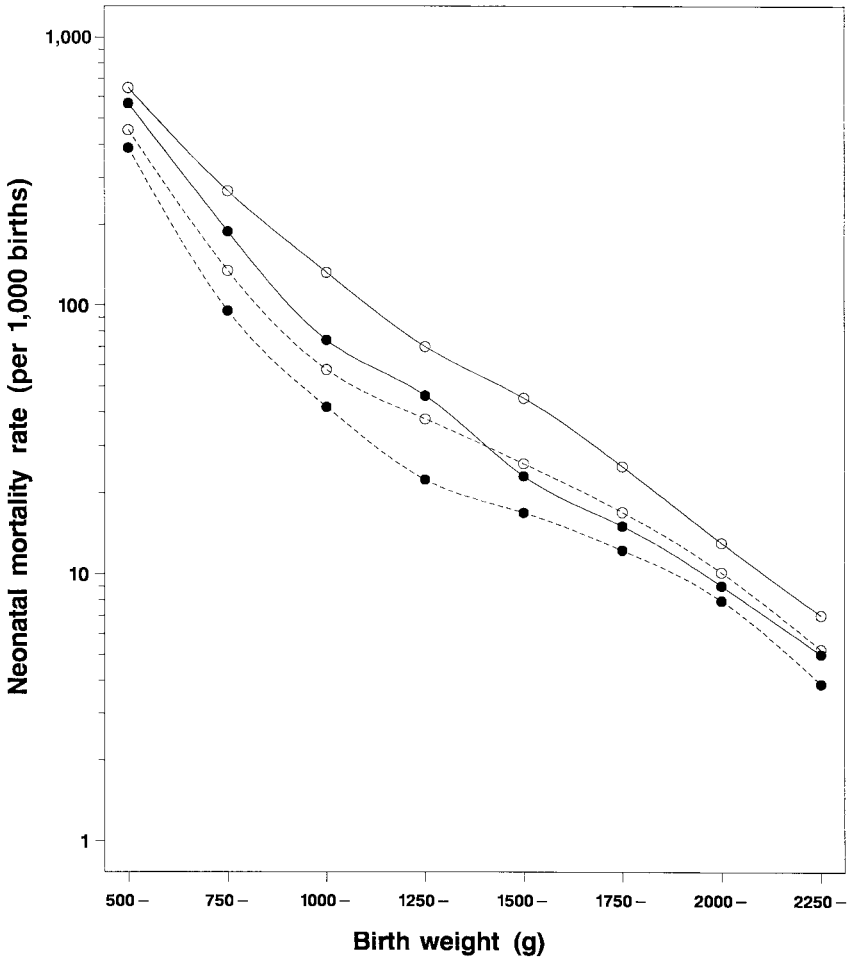

FIGURE 2. Neonatal mortality, by birth weight categories, for Black (●) and for White (○) infants in the United States. Solid lines denote data for 1989; dashed lines are for 1997. Data shown are for births of newborns weighing <2,250 g only.

distribution of gestational age for preterm births, including the effect of the larger increase in the number of intentional preterm deliveries of White infants. However, considerably greater improvement in gestational-age-specific survival for preterm White infants than for preterm Black infants was still evident after controlling for the effect of changes in the gestational-age distribution between the races. This disparity may be due to differences in access to neonatal intensive care or provision of specific interventions (e.g., antenatal steroids, surfactant) or to unrecognized race differences in the efficacy of interventions. White infants of very low birth weight have been reported to benefit from exogenous surfactant to a greater extent than Black infants of similar birth weight and gestational age (19, 20). Recent studies have also shown that very-low-birth-weight infants of White mothers are less likely to be delivered in level III hospitals and that reductions in gestational-age-specific neonatal mortality were greater for White than for Black preterm infants (21).

In conclusion, the reduction in preterm deliveries among Black women from 1989 to 1997 was not fully explained by risk factors recorded in vital statistics. Although poorly understood, this reduction is a welcome improvement concerning this important determinant of reproductive health. Unfortunately, the anticipated benefit from this change has been blunted by suboptimal improvement in neonatal mortality among the remaining Black preterm infants. The widening race gap in neonatal and infant mortality among preterm infants merits attention.

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