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Low Birthweight in Twins: Black and White Differences

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Abstract. Washington State birth certificate data for the years 1984-1988 were analyzed for 2,804 mothers of twins in order to determine whether black mothers of twins have a higher risk of delivering a low birthweight twin infant than white mothers. Seventy four percent of black mothers of twins gave birth to an infant weighing <2500 grams (white 52.9%), while slightly less than 20% gave birth to an infant weighing <1500 grams (white 9.4%). After adjustment for maternal age, parity and marital status, the risk of black mothers giving birth to at least one twin infant <2500 grams relative to white mothers was 1.3 (95% confidence interval, 1.2, 1.5). When this analysis was restricted to very low birthweight babies (<1500 grams), the relative risk for infants of black mothers compared to white mothers adjusted for the same factors was 2.1 (95% confidence interval, 1.5, 3.0). The frequency of neonatal mortality in the study population was also assessed. The overall frequency of mortality in black twin infants was double that in white twins infants. When stratified by birthweight category, the frequency was higher in white infants (30.2%) than in black infants (24.1%) weighing less than 1500 grams at birth. However, within higher birthweight categories, (≥ 1500 grams to <2500 grams and >2500 grams), relative frequencies of neonatal mortality were higher in black infants. This analysis reveals that black mothers of twins are more likely to deliver low birthweight twin infants than white mothers. The increased risk is even more pronounced in very low birthweight twin pairs. However, the additional risks for low birthweight black twin pairs and very low birthweight twin pairs found in this study are lower than the risk increase commonly reported for the respective birthweight categories in black singleton infants relative to white singleton infants. This implies that while black twin pregnancies require many of the same special antepartum considerations given to black singleton pregnancies, the increased baseline risks associated with low birthweight and very low birthweight twin deliveries offset racial disparities traditionally seen in singleton infants.

Key words: Twins, Low birthweight, Perinatal, Epidemiology, Racial differences

INTRODUCTION

It is well established that mothers of twin infants experience an increased risk of delivering a low birthweight infant [5,7,23,25,28]. Ho and Wu suggest that up to 50% of all twins born weigh less than 2500 grams, the minimum weight which typically defines a birthweight that is normal [9]. These low birthweight infants are more likely to die during the neonatal period and surviving infants face increased risks for numerous health problems [11].

The question of whether there is a racial disparity among low birthweight twin infants has never been addressed. While it is known that black mothers of singletons are approximately twice as likely as white mothers to deliver a low birthweight infant [2,8-13,15,16,21] the presence and magnitude of the risk for black mothers of twins is unknown. This may be of particular importance given the higher rate of twinning among blacks [14,20,22,27]. In order to evaluate the risk for low birthweight among black mothers relative to white mothers, a large population-based retrospective cohort study was conducted in which the frequency of black mothers of twins giving birth to at least one low birthweight twin infant was compared to that of white mothers giving birth to a set of normal weight twin infants, i.e. infants weighing at least 2500 grams. This risk was also assessed for mothers giving birth to very low birthweight babies (<1500 grams).

METHODS

Birth certificate data for all twin infants surviving birth in Washington State between 1984-1988 were obtained. Data on the certificate pertinent to the mother and newborn were entered as a series of check marks in the applicable boxes. Recording errors were thus greatly reduced and data is considered to be extremely reliable [3].

During this five year period 3,458 twin pairs were born. The rate of twinning among black mothers was 30 per 1,000 births and among whites, 21 per 1,000 births. Of the 3,458 pairs, 261 sets for whom the mothers racial status was either unknown or other than black or white were excluded. An additional 391 twin sets were excluded because either one or both infants in the pair was born with a malformation, or because information regarding the presence of a malformation was missing. This exclusion was made in order to eliminate factors unique to the malformation which contribute to low birthweight. Finally, 5 pairs were excluded because birthweight for one or both infants was unknown. Of the remaining 2,801 twin sets, 2,658 pairs (94.8%) were born to white mothers and 146 pairs (5.2%) to black mothers.

A normal weight infant was defined as one weighing at least 2500 g at birth. Infants weighing less than 2500 g were classified as low birthweight. For certain analyses, the latter group was further divided into infants considered to be very low birthweight, i.e. those weighing less than 1500 g. A mother was categorized as having given birth to a low birthweight infant if either one or both of her twins weighed less than 2500 g. Similarly, for analyses regarding very low birthweight, a mother was included in the very low birthweight category if even one infant in the set weighed less than 1500 g. Mothers of

both low and very low birthweight twin pairs were assessed in relation to white mothers whose twins both weighed at least 2500 g at birth.

The data were analyzed using a stratified Mantel Haenszel technique which yields a relative risk estimate and 95% confidence interval adjusted for the effects of selected risk factors for low birthweight. Selected factors included maternal age (<20, 20-29, 30+ years), parity (none, one or more), gestational age (<37 weeks, 37 ≥ weeks), marital status (unmarried, married), cigarette smoking status (smoker, nonsmoker), sex of twin pairs (male/male, female/female, unlike sex), and income (<\$15,000, \$15,000-\$25,000, >\$25,000, unknown). In addition, prenatal care was assessed utilizing a classification developed by Kessner et al and modified by Gortmaker [6,13]. This method describes prenatal care as being adequate when it begins in the first trimester and nine or more visits take place. Any other combination of trimester of initiation and number of prenatal visits is considered to be less than adequate.

Not all factors reviewed were to be found documented on the birth certificate for all mothers. Maternal age was unknown for one black mother and one white mother. Information about previous like births was unknown for 4.8% of the black mothers and 5.9% of the white mothers. Gestational age was missing for 14 (9.6%) black mothers and for 192 (7.2%) white mothers. One white mother had missing marital status. The smoking status for 9.6% of the black mothers and 9.0% of the white mothers was unknown. Income was unknown for 27 (18.5%) black mothers and 1,420 (53.4%) white mothers. Since income is ascertained by census tract and is only available for the three most urban counties within Washington state, this accounts for the large number of missing values. Mothers with missing income values are, therefore, largely representative of the rural population within that state. Mothers with unknown information for a given factor were excluded from the analysis of that factor, but were included in the analysis of other factors for which information was available.

Washington State death certificate data were also used in order to assess the relative frequency of mortality within the first 28 days of life in the study population of black and white twin infants. Neonatal mortality percentages were calculated for all birthweights combined and within separate birthweight categories for each race.

RESULTS

On average a white twin infant weighed 382.5 grams more than a black twin infant (Table 1). The mean birthweight of a black twin infant was 2154.1 g ± (S.D. 727.8) and the average weight of a white twin infant was 2536.6 g ± (S.D. 653.2). White mothers were 20% more likely to give birth to twins weighing at least 2500 grams each than black mothers (47.1% vs. 26.0%). Conversely, more black mothers gave birth to twins where at least one infant weighed <2500 g as well as to sets with at least one twin considered to be very low birthweight (<1500 g).

Black mothers of twins were younger (15.9% vs. 6.2% were <20 years) and were more likely to be unmarried (46.6%) than their white counterparts (14.1%) (Table 2). Parous black women more frequently gave birth to at least one low birthweight infant than parous white mothers (64.4% vs. 56.3%). This relationship was reversed when considering parous mothers of normal weight infants.

Table 1 - Birthweight distributions among black and white twin mothers in Washington State, 1984-1988

	Black	White
Number of twin pairs	146	2658
Mean birthweight of twin infant (g)	2154.1	2536.6
Standard deviation	727.8	653.2
Proportion (%) of birthweights ≥ 2500 ¹	26.0	47.1
Proportion (%) of birthweights < 2500 ²	74.0	52.9
Proportion (%) of birthweights < 1500 ³	19.9	9.4

¹Proportion of mothers giving birth to both twins weighing ≥ 2500 grams.

²Proportion of mothers giving birth to one or both twins weighing < 2500 grams.

³Proportion of mothers giving birth to one or both twins weighing < 1500 grams.

More blacks had low ($< \$15,000$) to moderate incomes ($\$15,000$ - $\$25,000$). As expected, these groups experienced a higher percentage of low birthweight infants. Compared to white mothers, black mothers had proportionately more male/male twin pairs (41.1% vs. 35.3%) while whites had more female/female pairs (37.3% vs. 32.9%). Although black mothers in general were more likely to give birth prior to 37 weeks gestation, the distribution of birthweights among term and preterm infants was not significantly different between the two races. White mothers were more likely to have received adequate prenatal care (69.2%) than black mothers (46.6%), nonetheless, white mothers having had adequate care gave birth to more low birthweight infants than black mothers. Maternal smoking during pregnancy was similar for both races in each birthweight category.

Overall, black mothers had a larger proportion of twin pairs in which at least one infant in the pair weighed < 2500 g (74%) than white mothers (52.9%). After adjustment for maternal age, parity and marital status, the risk of black mothers giving birth to at least one twin infant < 2500 g relative to white mothers was 1.3 (95% C.I. 1.2, 1.5). Adjustment for potentially confounding variables, e.g. income or prenatal care, resulted in only minor reductions in risk and thus were not included in the final model.

Relative risks and 95% confidence intervals within different categories of the variables listed in Table 2 are shown in Table 3. The risk of having a low birthweight twin infant was greater for black mothers within all categories of each variable examined. The relative risk associated with black mothers increased with increasing maternal age, ranging from 1.1 (95% C.I. 0.8, 1.5) in those mothers under 20 years old to 1.6 (95% C.I. 1.3, 1.9) in those 30 years or older at the time of delivery. This relative risk was also greater within parous as opposed to non-parous mothers, and in mothers who were married versus those who were not. Black mothers who delivered at term were at greater risk relative to white mothers than those who delivered preterm. When looking at the sex combination of twin pairs, black mothers of male/male twins demonstrated a positive relative risk (1.3; 95% C.I. 1.0, 1.5), although this was lower than the relative risks within mothers of either female/female pairs (1.4; 95% C.I. 1.2, 1.7) or mixed sex pairs (1.6; 95% C.I. 1.3, 1.9).

Infants weighing less than 1500 g were considered to be very low birthweight. Almost 20% of the black mothers gave birth to a very low birthweight infant compared to only

Table 2 - Characteristics of black and white mothers by normal and low birthweight twin sets¹

Characteristic	BLACK				WHITE			
	Either or both twins LBW (n)	%	Both twins normal (n)	%	Either or both twins LBW (n)	%	Both twins normal (n)	%
Characteristics								
totals	(108)	100.0	(38)	100.0	(1405)	100.0	(1253)	100.0
Maternal Age²								
<20 yrs	(16)	14.8	(7)	18.4	(105)	7.5	(60)	4.8
20-29 yrs	(67)	62.0	(23)	60.5	(851)	60.6	(708)	56.5
30+ yrs	(24)	22.2	(8)	21.1	(448)	31.9	(485)	38.7
Parity²								
0	(37)	35.6	(13)	37.1	(570)	43.7	(347)	29.0
1+	(67)	64.4	(22)	62.9	(735)	56.3	(849)	71.0
Marital Status²								
Unmarried	(46)	42.6	(22)	57.9	(239)	17.0	(135)	10.8
Married	(62)	57.4	(16)	42.1	(1165)	83.0	(1118)	89.2
Annual Income								
<\$15000	(27)	25.0	(10)	26.3	(53)	3.8	(33)	2.6
\$15000-\$25000	(48)	44.4	(16)	42.1	(298)	21.2	(248)	19.8
>\$25000	(12)	11.1	(6)	15.8	(295)	21.0	(311)	24.8
Unknown	(21)	19.5	(6)	15.8	(759)	54.0	(661)	52.8
Smoking²								
Smoker	(31)	32.0	(7)	20.0	(387)	31.5	(208)	17.5
Nonsmoker	(66)	68.0	(28)	80.0	(843)	68.5	(980)	82.5
Gestational Age²								
<37 wks	(65)	65.7	(5)	15.2	(814)	62.6	(187)	16.0
≥37 wks	(34)	34.3	(28)	84.8	(486)	37.4	(979)	84.0
Sex of Twins								
M/M	(40)	37.0	(20)	52.6	(496)	35.3	(442)	35.3
F/F	(39)	36.1	(9)	23.7	(562)	40.0	(430)	34.3
Unlike Sex	(29)	26.9	(9)	23.7	(347)	24.7	(381)	30.4
Prenatal Care								
<Adequate	(23)	21.3	(5)	13.1	(136)	9.7	(68)	5.4
Adequate	(85)	78.7	(33)	86.8	(1269)	90.3	(1185)	94.6

¹Twin set birthweight category is low birthweight (LBW) if one or both twins weigh 2500 grams at birth; twin set birthweight category is normal if both twins weigh ≥2500 grams.

²Excludes unknown or missing data.

9.4% of the white mothers (Table 4). A higher percentage of young mothers giving birth to a very low birthweight infant were black (14.3% vs. 9.2%). Older white mothers, however, had a higher proportion of infants in the very low birthweight category (29.2%) than black mothers (25.0%). Black mothers of very low birthweight twins were more often multiparous, unmarried and received less than adequate prenatal care than

Table 3 - Relative risks and 95% confidence intervals for low birthweight in black mothers of twins compared to white mothers of twins for selected risk factors¹

Characteristic	BLACK		WHITE		RR	(95% C.I.)
	(n)	% LBW	(n)	% LBW		
Maternal Age						
< 20 yrs	(23)	63.6	(165)	69.6	1.1	(0.8, 1.5)
20-29 yrs	(90)	74.4	(1559)	54.6	1.4	(1.2, 1.6)
30+ yrs	(32)	75.0	(933)	48.0	1.6	(1.3, 1.9)
Parity						
None	(50)	74.0	(917)	62.2	1.2	(1.0, 1.4)
One or more	(89)	75.3	(1584)	46.4	1.6	(1.4, 1.8)
Marital Status						
Unmarried	(68)	67.6	(374)	63.9	1.1	(0.9, 1.3)
Married	(78)	79.5	(2283)	51.0	1.6	(1.4, 1.8)
Annual Income						
< \$15000	(37)	73.0	(86)	61.6	1.2	(0.9, 1.5)
\$15000-\$25000	(64)	75.0	(546)	54.6	1.4	(1.0, 1.9)
> \$25000	(18)	66.7	(606)	48.7	1.4	(1.0, 1.9)
Unknown	(27)	77.8	(1420)	53.5	1.5	(1.1, 2.0)
Smoking						
Smoker	(38)	81.6	(595)	65.0	1.3	(1.1, 1.5)
Nonsmoker	(94)	70.2	(1823)	46.2	1.5	(1.3, 1.7)
Gestational Age						
< 37 wks	(70)	92.9	(1001)	81.3	1.1	(1.1, 1.2)
≥ 37 wks	(62)	54.8	(1465)	33.2	1.7	(1.3, 2.1)
Sex of Twins						
Male/Male	(60)	66.7	(938)	52.9	1.3	(1.0, 1.5)
Female/Female	(48)	81.3	(992)	56.7	1.4	(1.2, 1.7)
Unlike Sex	(38)	76.3	(728)	47.7	1.6	(1.3, 1.9)
Prenatal Care						
< Adequate	(23)	82.1	(204)	66.7	1.2	(1.0, 1.5)
Adequate	(118)	72.0	(2454)	51.7	1.4	(1.2, 1.6)

¹ Risk is for black mothers relative to white mothers of having one or both twins < 2500 grams vs. having both twins ≥ 2500 grams. RR denotes relative risk; CI denotes confidence interval.

white mothers of very low birthweight twins. In addition, a large racial difference was seen among income categories. A higher proportion of black mothers reporting an income of less than \$15,000/year experienced very low birthweights (41.4%) compared to white mothers (4.8%).

White smokers gave birth to a very low birthweight infant more often than black smokers (35.4% vs. 25.0%). This trend was reversed in nonsmokers. Black like-sex twin pairs were less likely to be very low birthweight than white like-sex twin pairs. Preterm percentages were similar for black and white mothers with the exception of the very low birthweight categories. There were no fullterm very low birthweight black infants.

Table 4 - Characteristics of black and white mothers by normal and very low birthweight twin sets¹

Characteristic	BLACK				WHITE			
	(n)	%	(n)	%	(n)	%	(n)	%
totals	(29)	100.0	(38)	100.0	(251)	100.0	(12)	100.0
Maternal Age²								
<20 yrs	(4)	14.3	(7)	18.4	(23)	9.2	(60)	4.8
20-29 yrs	(17)	60.7	(23)	60.5	(154)	61.6	(708)	56.5
30+ yrs	(7)	25.0	(8)	21.1	(73)	29.2	(485)	38.7
Parity²								
0	(9)	33.3	(13)	37.1	(111)	50.0	(347)	29.0
1+	(18)	66.7	(22)	62.9	(111)	50.0	(849)	71.0
Marital Status²								
Unmarried	(15)	51.7	(22)	57.9	(52)	20.8	(135)	10.8
Married	(14)	48.3	(16)	42.1	(198)	79.2	(1118)	89.2
Annual Income								
< \$15000	(12)	41.4	(10)	26.3	(12)	4.8	(33)	2.6
\$15000-\$25000	(10)	34.5	(16)	42.1	(48)	19.1	(248)	19.8
> \$25000	(1)	3.4	(6)	15.8	(40)	15.9	(311)	24.8
Unknown	(6)	20.7	(6)	15.8	(151)	60.2	(661)	52.8
Smoking²								
Smoker	(6)	25.0	(7)	20.0	(67)	35.4	(208)	17.5
Nonsmoker	(18)	75.0	(28)	80.0	(122)	64.6	(980)	82.5
Gestational Age²								
<37 wks	(25)	100.0	(5)	15.2	(208)	90.4	(187)	16.0
>37 wks	(0)	-	(28)	84.8	(22)	9.6	(979)	84.0
Sex of Twins								
M/M	(9)	31.0	(20)	52.6	(100)	39.8	(442)	35.3
F/F	(9)	31.0	(9)	23.7	(98)	39.0	(430)	34.3
Unlike Sex	(11)	38.0	(9)	23.7	(53)	21.2	(381)	30.4
Prenatal Care								
<Adequate	(10)	34.5	(5)	13.1	(27)	10.8	(68)	5.4
Adequate	(19)	65.5	(33)	86.8	(224)	89.2	(1185)	94.6

¹Twin set birthweight category is very low birthweight (VLBW) if one or both twins weigh <1500 grams at birth; twin set birthweight category is normal if both twins ≥2500 grams.

²Excludes unknown or missing data.

When black mothers giving birth to at least one infant of very low birthweight were assessed relative to white mothers giving birth to both twins of normal weight, the risk for black mothers was more than two-fold that of whites. After adjustment for parity, maternal age, and marital status the relative risk was 2.1 (95% C.I. 1.5, 3.0). Black mothers consistently were at higher risk in all categories of maternal characteristics (Table 5). The same patterns observed among low birthweight mothers were found among very low birthweight mothers, with the exception of prenatal care and income. There

Table 5 - Relative risks and 95% confidence intervals for very low birthweight in black mothers of twins compared to white mothers of twins for selected risk factors¹

Characteristic	BLACK		WHITE		RR	(95% C.I.)
	(n)	%VLBW	(n)	%VLBW		
Maternal Age						
< 20 yrs	(11)	36.4	(83)	27.7	1.3	(0.6, 3.1)
20-29 yrs	(40)	42.5	(862)	17.9	2.4	(1.6, 3.5)
30+ yrs	(15)	46.7	(558)	13.1	3.6	(2.0, 6.4)
Parity						
None	(22)	40.9	(111)	24.2	1.7	(1.0, 2.9)
One or more	(40)	45.0	(960)	11.6	3.9	(2.6, 5.7)
Marital Status						
Unmarried	(37)	40.5	(187)	27.8	1.6	(0.9, 2.3)
Married	(30)	46.7	(1316)	15.0	3.1	(2.1, 4.6)
Annual Income						
< \$15000	(22)	54.6	(45)	26.7	2.0	(1.1, 3.8)
\$15000-\$25000	(26)	38.5	(296)	16.2	2.4	(1.4, 4.1)
> \$25000	(7)	14.3	(351)	11.4	1.3	(0.2, 7.9)
Unknown	(12)	50.0	(812)	18.6	2.7	(1.3, 5.4)
Smoking						
Smoker	(13)	46.2	(275)	24.4	1.9	(1.0, 3.5)
Nonsmoker	(46)	39.1	(1102)	11.1	3.5	(2.4, 5.3)
Gestational Age						
< 37 wks	(30)	83.3	(395)	52.7	1.6	(1.3, 1.9)
> 37 wks	(28)	-0-	(1001)	2.2	-	-
Sex of Twins						
Male/Male	(29)	31.0	(100)	18.5	1.7	(1.0, 3.0)
Female/Female	(18)	50.0	(528)	18.6	2.7	(1.6, 4.4)
Unlike Sex	(20)	55.0	(434)	12.2	4.5	(2.8, 7.2)
Prenatal Care						
< Adequate	(15)	66.7	(95)	28.4	2.3	(1.5, 3.8)
Adequate	(52)	36.5	(1405)	15.9	2.3	(1.6, 3.4)

¹ Risk is for black mothers relative to white mothers of having one or both twins < 1500 grams vs. having both twins ≥ 2500 grams. RR denotes relative risk; CI denotes confidence interval.

was no decrease in risk depending on care category and risk decreased among black mothers relative to white mothers in the highest income category.

Of the 292 black twin infants born to 146 mothers, 17, or 5.8% died within the first 28 days of life. This percentage is compared to 2.9% (155 of 5,309) among white twin infants. When neonatal mortality was calculated within birthweight categories, it was greatly increased for both black and white twin infants weighing less than 1500 grams, where the mortality percentage was higher in white infants than in black infants (30.2% and 24.1% respectively). Although only a small number of infant deaths occurred within

Table 6 - Risk of neonatal mortality in black and white twin infants by birthweight

Birthweight	BLACK		WHITE		RR	(95% C.I.)
	(n) Total/Died	% Died	(n) Total/Died	% Died		
< 1500 g	54/13	24.1	410/124	30.2	0.8	(0.5, 1.3)
> 1500 g	136/2	1.5	1844/17	0.9	1.6	(0.4, 6.8)
< 2500 g	102/2	2.0	3055/14	0.5	4.3	(1.1, 16.6)

¹Excludes 7 missing or unknown.

the two higher birthweight categories of 1) ≥ 1500 to 2500 grams, and 2) ≥ 2500 grams, the relative frequency of neonatal mortality was higher in black infants as shown in Table 6.

DISCUSSION

This study represents the first investigation of the association between maternal race and low birthweight in twin births. Our findings show that black mothers of twins are at an increased risk of giving birth to either a low (< 2500 grams) or very low (< 1500 grams) birthweight infant relative to white mothers. Indeed, 74% of the black mothers in the study population gave birth to at least one low birthweight infant, while 19.9% gave birth to at least one very low birthweight infant. There was a 30% increase in the risk of having a low birthweight twin among black mothers compared to white mothers and approximately a twofold risk when only very low birthweight twins were considered.

A major limitation of this study is that when considering factors other than race which may account for the increased risk of having a low birthweight infant, information is restricted to items contained on the birth certificate. Factors such as maternal weight and stature [8,26], placental weight [1], and behavioral factors such as amount of tobacco and alcohol consumption [19,26] thought to be associated with low birthweight outcomes, are not recorded on the birth certificate. Nevertheless, other known risk factors which are included on the certificate were able to be examined. After accounting for maternal age, parity, marital status, annual income, smoking status, gestational age, sex of the twins, and prenatal care, black mothers remained at an increased risk for delivering at least one low birthweight infant relative to white mothers.

These findings are consistent with the well-established increased risk for black mothers giving birth to a low birthweight singleton infant although risks in twin mothers are lower than risk in singleton mothers. Studies looking at singleton births have reported the risk in black mothers to be around two and threefold for low [12,16,21,26] and very low [15] birthweight infants, respectively. These findings suggest, however, that risks for black mothers of twins are slightly lower than risks for black mothers of singletons. This decrease in risk is most likely due to the inherent risk for low birthweight in twin births.

Previous discussions concerning the public health implications of observed racial disparities in the frequency of low birthweight infants have suggested that birthweight

“norms” may vary biologically between races and therefore, what constitutes a “healthy” birthweight for black infants may be lower than that for white infants [12,19]. We do not disagree with this possibility; rather we have chosen to use the standard definitions because they are known to identify some measure of risk as well as permitting comparisons across populations over time.

When neonatal mortality within the study population was examined, very low birthweight black infants were more likely to survive than white infants in the same birthweight category. At higher birthweights, however, white infants were at less risk of dying. Other studies have reported a similar crossover [4,10,24]. The apparent advantage of very low birthweight black infants is offset by the higher percentage of such births among blacks. Overall, blacks experienced twice the risk for neonatal mortality (RR: 2.0; 95% C.I. 1.2, 3.2).

The incidence of neonatal morbidity and mortality has long been recognised to be higher in twin gestations than in singleton gestations [5,17,18]. Prematurity and resulting low birthweight are cited as being major factors accounting for the difference [5,17]. These findings indicate that black mothers of twins face increased risks for delivering low birthweight infants and very low birthweight infants relative to white mothers of twins. Although the racial disparity among twin births is slightly lower than that in singleton births, the need for further work investigating the difference in risks for black and white mothers remains.

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