Center of Excellence in Maternal and Child Health
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Decomposing a Disparity: Explaining Excess Preterm Birth among U.S.-born Black Women

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Background

- Preterm birth (PTB) is defined as birth < 37 wks. gestation
- PTB is associated with higher rates of infant death, respiratory problems, developmental delay, cerebral palsy, and other adverse child health outcomes
- In the U.S., non-Hispanic black women have the highest rate of PTB compared to other racial/ethnic groups
- Although PTB disparities are well documented, they remain poorly understood
- Despite foreign-born black women having birth outcomes closer to those of white women in the U.S. than to those of U.S.-born black women, most studies of the black-white disparity in PTB do not account for maternal nativity

Purpose

To determine components of excess PTB rates for U.S.-born black women relative to foreign-born black women and U.S.-born white women attributable to differences in observed sociodemographic, behavioral, and medical risk factors

Methods

- Used data from the 2013 U.S. restricted use natality files, which include mother's country of birth
- Restricted to 40 states and Washington, DC using the 2003 revision of the birth certificate and to records with complete data for our variables of interest
- Tabulated the characteristics of the sample by race and nativity and used χ^2 tests to determine significant differences between groups
- Used Oaxaca-Blinder decomposition methods to estimate the contribution of the group differences in the prevalence of PTB predictors between U.S.- and foreign-born black women and U.S.-born black and white women
- Used a single linear probability model with robust standard errors to account for heteroskedasticity
- Analyzed data in SAS 9.4 and Stata SE 12

Results

Table 1. Maternal characteristics and behaviors by women's race and nativity, 2013 birth certificates (N= 1,933,942) (*Note: χ^2 tests significant at p < .0001 for all variables)

	US-born NH black (N= 345,912) %	Foreign-born NH black (N= 65,790) %	US-born NH white (N= 1,522,240) %
Preterm birth	11.2	7.9	6.8
Maternal education			
< High school	17.7	16.2	8.3
High school diploma/GED	33.5	26.7	21.6
Some college/Associate's degree	35.7	30.0	31.9
Bachelor's degree or higher	13.1	27.1	38.1
Paternal involvement			
Unmarried, father not named	33.8	13.6	7.9
Unmarried, father named	43.0	24.2	22.4
Married	23.3	62.1	69.8
Maternal age (years)			
< 18	3.7	0.6	1.3
18-24	43.6	14.9	24.9
25-34	43.4	58.7	59.3
≥ 35	9.3	25.8	14.5
Number of previous live births			
0	39.4	35.4	42.2
1-2	45.4	49.2	48.3
≥3	15.3	15.4	9.6
Prenatal care			
None or inadequate	24.1	27.2	11.8
Intermediate or adequate	43.4	46.0	51.3
Adequate plus	32.5	26.9	37.0
Payer			
Medicaid	68.6	52.5	31.2
Private insurance	24.9	32.3	61.4
Other	6.5	15.3	7.5
Maternal smoking	8.4	0.9	13.1
Chronic medical conditions	4.0	3.0	2.0

U.S.-born black versus foreign-born black

- U.S.-born blacks had a 3.3 (95% CI: 3.1, 3.5) percentage point higher risk of PTB than foreign-born blacks
- 26.7% of the disparity in PTB was explained by the variables in our model, leaving 73.3% of the disparity unexplained
- The variables with the largest contributions to the disparity were prenatal care (13.7%), paternal involvement (12.4%), and maternal education (5.6%)

U.S.-born black versus U.S.-born white

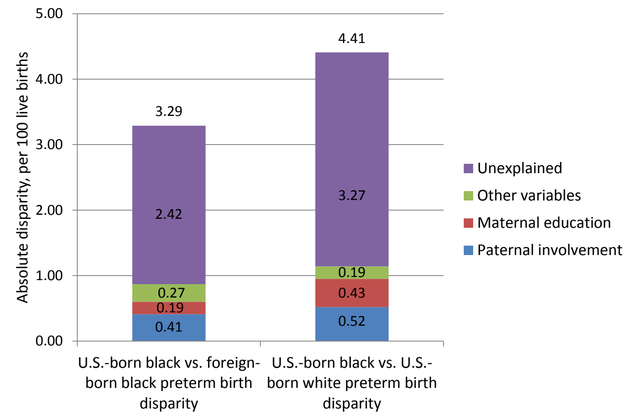
- U.S.-born blacks had a 4.4 (95% CI: 4.3, 4.5) percentage point higher risk of PTB than U.S.-born whites
- 25.9% of the disparity in PTB was explained by the variables in our model, leaving 74.1% of the disparity unexplained
- The variables with the largest contributions to the disparity were paternal involvement (11.7%) and maternal education (9.7%)

Table 2. Decomposition of preterm birth rate disparities between U.S-born and foreign-born black women and U.S.-born black and white women

	US-born black versus foreign-born black disparity contribution		US-born black versus US-born white disparity contribution	
	Absolute (95% CI)	Percentage	Absolute (95% CI)	Percentage
Maternal education	0.19 (0.17, 0.20)	5.6	0.43 (0.40, 0.45)	9.7
Paternal involvement	0.41 (0.37, 0.45)	12.4	0.52 (0.46, 0.57)	11.7
Maternal age	-0.49 (-0.53, -0.46)	-15.0	-0.25 (-0.27, -0.23)	-5.7
Previous live births	0.04 (0.03, 0.05)	1.2	0.06 (0.05, 0.07)	1.5
Prenatal care	0.45 (0.42, 0.49)	13.7	0.13 (0.11, 0.15)	3.0
Payer	0.02 (0.01, 0.04)	0.8	0.16 (0.12, 0.20)	3.6
Maternal smoking	0.16 (0.15, 0.17)	4.8	-0.10 (-0.11, -0.09)	-2.3
Chronic medical conditions	0.10 (0.09, 0.12)	3.1	0.19 (0.18, 0.20)	4.4
Total Explained	0.88 (0.82, 0.94)	26.7	1.14 (1.08, 1.20)	25.9
Total Unexplained	2.42 (2.19, 2.65)	73.3	3.27 (3.15, 3.39)	74.1

Results, continued

Figure 1. Unexplained and explained components of PTB disparities for U.S.-born black women relative to foreign-born black and U.S.-born white women



Conclusions

- Missing paternal acknowledgement data is likely a marker for lack of psychosocial and material support for mother
- The negative percentage of the disparity explained by maternal age suggests that U.S.-born black women have more favorable distributions of this variable (fewer mothers ages 35+)
- The portion of the disparities that remained unexplained may be due to unmeasured factors, including racial discrimination at the interpersonal and institutional levels
- Programs and policies that encourage paternal involvement and education and that support single mothers might have an important role in reducing PTB disparities in the U.S.

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