

Economic Antecedents of Prone Infant Sleep Placement among Black Mothers

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PURPOSE: Black infants die from sudden infant death syndrome at twice the incidence observed among non-Hispanic white infants. Explanations for this disparity include a two-fold greater prevalence of prone (i.e., stomach) infant sleep placement among black caregivers. I test the hypothesis that the contraction of state economies may contribute to this disparity by increasing the risk of prone infant sleep placement among black mothers.

METHODS: I retrieved data from the Bureau of Labor Statistics employment series and 33,518 black mothers in 26 states participating in the 1996-2002 Pregnancy Risk Assessment Monitoring System. I use weighted multivariable analyses to control for individual characteristics and state and time trends.

RESULTS: Black mothers exhibit an elevated risk of reporting prone placement one month following statewide declines in employment (adjusted odds ratio for a one percent decline = 1.11, 95% CI 1.01 to 1.22). This risk remains elevated after control for individual variables. In contrast, I find no association between the economy and prone placement among white mothers.

CONCLUSIONS: Statewide economic decline may reduce adherence to the recommended non-prone infant sleep position among black, but not white, mothers. Additional research among black caregivers should determine which mechanisms connect economic downturns to prone infant sleep placement.

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INTRODUCTION

Public health campaigns from 1992 to 2003 that discouraged caregivers from placing healthy infants to sleep in a high-risk prone (i.e., stomach) position reportedly reduced the incidence of sudden infant death syndrome (SIDS) in the United States by 56% (1–4). Despite the apparent success of these campaigns, SIDS remains the leading cause of post-neonatal death in the United States (2). These campaigns (5), moreover, appear least effective in changing infant sleep positioning among blacks (3, 4, 6), who have a two-fold greater incidence of SIDS compared to non-Hispanic whites (2). This disparity—which shows evidence of worsening—has led to examination of social and economic factors that may contribute to the high-risk prone placement (7).

Economic hardship represents one well-characterized circumstance associated with SIDS (8, 9). Although much research has focused on individual socioeconomic position, less work has examined whether time-varying factors that impact an entire community, such as an abrupt decline in

regional employment, may increase SIDS risk (10). Previous reports indicate that employment decline may inhibit salutary behavior (11, 12). Regional unemployment induces demoralization and depression among both individuals who lose jobs and the social networks of the unemployed (13, 14). Unexpectedly high levels of unemployment, moreover, cause fear of job loss among those who remain working and their families (15–17). These circumstances suggest that declines in regional employment could reduce parental adherence to the recommended non-prone infant sleep position.

I hypothesize that changes in the monthly number of employed persons in a state will vary inversely with a black mother's odds of reporting a high-risk (i.e., prone) infant sleep position. I test this “reduced adherence” hypothesis among blacks, as this race disproportionately occupies lower socioeconomic strata relative to whites and therefore may possess fewer resources necessary to cope with the distracting correlates of economic decline (18).

METHODS

I retrieved information on reported infant sleep position and other maternal variables from PRAMS (Pregnancy Risk Assessment and Monitoring System), a population-based survey of women whose pregnancies resulted in a live birth (19). Each month, researchers draw a stratified systematic

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Selected Abbreviations and Acronyms

SIDS = sudden infant death syndrome
PRAMS = Pregnancy Risk Assessment and Monitoring System
AAP = American Academy of Pediatrics

sample of between 100 and 250 mothers who have recently given birth. The proportion of mothers in states that responded to the survey range from 59% to 80%; more than three fourths of these states report greater than 70% participation.

Surveys with data on infant sleep position span from June 1996 to March 2003. Twenty-six states that release race/ethnicity and sleep position data participated in PRAMS for at least 12 months over this study period. PRAMS uses standardized data collection methodology, thereby allowing an analysis across these states and times (19).

The question on sleep position asks, “How do you put your new infant down to sleep most of the time?” Responses include back, stomach, or side.

Consistent with the recommendation of the American Academy of Pediatrics (AAP) (20), I classify prone (i.e., stomach) placement as a “high-risk” position and exclusive non-prone (i.e., back or side) placement as a “low-risk” position. Based on the AAP policy and its modification (21), I use a dichotomous measure of sleep position (i.e., prone or non-prone) as the outcome variable.

PRAMS does not release information on the respondent’s place of residence other than at the state level. I, therefore, use as the economic variable the Bureau of Labor Statistics’ unadjusted monthly total employment series for each of the participating states (22). I chose this indicator to gauge the status of the state economy because a decline in employed persons implies that some fraction of the population has lost income, wages, or compensation and that this loss “ripples” through the community. This variable, therefore, may measure the acute, short-term economic antecedents of prone positioning.

Based on previous research (10), I hypothesize between a 0- to 3-month lag between economic decline and prone placement (i.e., the economy at 0, 1, 2, and 3 months before reported placement). I perform a weighted logistic regression analysis that accounts for the complex PRAMS sampling design (23). The odds ratios for the economic variables refer to the increased or decreased odds of reporting prone infant placement for a 1% decrease in monthly statewide employment. I also control for confounding by individual maternal characteristics (3, 6) as well as by state and time trends.

RESULTS

Table 1 presents the findings for 33,518 black mothers from 26 states in which I include four lags of the economic

TABLE 1. Black mothers in PRAMS, 1996–2003. Odds Ratios (95% Confidence Intervals) for Associations of Reported Prone Infant Sleep Position with State-level Economic and Individual-level Variables.*

	OR (95% CI)
One percent decline in state employment lagged at:	
0 months	1.01 (0.93–1.11)
1 month	1.11 (1.01–1.22)
2 months	1.04 (0.94–1.14)
3 months	0.93 (0.85–1.03)
Mother’s education	
<High school graduate	1.00
High school graduate	0.96 (0.88–1.06)
Some college	0.93 (0.82–1.05)
College graduate	0.88 (0.74–1.03)
Infant sex	
Male	1.00
Female	0.93 (0.86–1.00)
Mother’s marital status	
Married	1.00
Unmarried	1.05 (0.95–1.15)
Prenatal care initiation	
First trimester	1.00
Second trimester	0.97 (0.88–1.06)
Third trimester/never	0.85 (0.70–1.03)
Mother’s age at birth	
<20	1.00
20–24	0.99 (0.89–1.11)
25–29	0.89 (0.77–1.01)
≥30	0.81 (0.70–0.94)
Parity	
First child	1.00
Second child	0.98 (0.90–1.07)
Third child	0.90 (0.81–1.01)
Fourth child (or more)	0.87 (0.76–1.00)

PRAMS = Pregnancy Risk Assessment and Monitoring System; OR = odds ratio; CI = confidence interval.

*Includes control for all state and month effects.

variable and relevant covariates. Results support the reduced adherence hypothesis in that a 1% decrease in monthly employed persons precedes by one month a 1.11-fold increased odds of reporting a prone infant sleep position (95% confidence interval, 1.01 to 1.22).

Although white mothers appear more likely than blacks to place their infants to sleep in the recommended non-prone position, they may also exhibit reduced adherence following economic decline. I explored this possibility; unlike black mothers, findings in whites indicate no association (Table 2).

DISCUSSION

Data from black mothers in 26 states participating in PRAMS support the educed adherence hypothesis. Declines in state employment precede by 1 month an increased risk of placing an infant to sleep prone. This association remains

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