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Differences in African-American Maternal Self-Efficacy Regarding Practices Impacting Risk for Sudden Infant Death

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Abstract

Background—Sudden Infant Death Syndrome (SIDS) and other sleep-related deaths, including accidental suffocation, account for ~4000 U.S deaths annually. Parents may have higher self-efficacy with regards to preventing accidental suffocation than SIDS.

Objective—To assess self-efficacy in African-American mothers with regards to safe sleep practices and risk for SIDS and accidental suffocation.

Methods—As part of randomized clinical trial in African-American mothers of newborn infants, mothers completed a baseline survey about knowledge of and attitudes towards safe sleep recommendations, current intent, self-efficacy, and demographics. Tabular and adjusted, regression-based analyses of these cross-sectional data evaluated the impact of the message target (SIDS risk reduction vs suffocation prevention) on perceived self-efficacy.

Results—1194 mothers were interviewed. Mean infant age was 1.5 days. 90.8% of mothers planned to place their infant supine, 96.7% stated that their infant would sleep in the same room, 3.6% planned to bedshare with the infant, and 72.9% intended to have soft bedding in the crib. Mothers were more likely to believe that prone placement (70.9% vs. 50.5%, $p<0.001$), bedsharing (73.5% vs. 50.1%, $p<0.001$), and having soft bedding in the sleep area (78.3% vs. 59.5%, $p<0.001$) increased their infant's risk for suffocation than it did for SIDS. Mothers had higher self-efficacy, viz. increased confidence that their actions could keep their infant safe, with regards to suffocation than SIDS (88.0% vs. 79.4%, $p<0.001$). These differences remained significant when controlled for sociodemographics, grandmother in home, number of people in home, and breastfeeding intention.

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Conclusion—Maternal self-efficacy is higher with regards to prevention of accidental suffocation in African-Americans, regardless of sociodemographics. Healthcare professionals should discuss both SIDS risk reduction and prevention of accidental suffocation when advising African-American parents about safe sleep practices.

Keywords

African-American; disparity; self-efficacy; SIDS; suffocation

Introduction

Sudden Infant Death Syndrome (SIDS, ICD10 R95) and other sleep-related deaths, usually due to accidental suffocation and strangulation in bed (ASSB, ICD10 W75) and ill-defined (ICD10 R99) causes of death, account for approximately 4000 U.S deaths annually. (Mathews & Macdorman, 2013) Indeed, the decline in SIDS rates that was initially seen in the 1990s after the Back to Sleep campaign was initiated, has plateaued, (Moon, 2011) and the rates of ASSB and ill-defined cause of death have increased in recent years. (Malloy & MacDorman, 2005; Shapiro-Mendoza, Kimball, Tomashek, Anderson, & Blanding, 2009; Shapiro-Mendoza, Tomashek, Anderson, & Wingo, 2006) At the same time, racial disparities in SIDS and other sleep-related deaths have increased over the past decade, with African-American infants twice as likely to die as other infants. (Moon, 2011) Certain infant sleeping practices that increase the risk for SIDS and other sleep-related deaths, such as prone (stomach) sleeping, (Colson et al., 2009; Robida & Moon, 2012) use of soft bedding and soft sleep surfaces, (Ajao, Oden, Joyner, & Moon, 2011; Shapiro-Mendoza et al., 2015) and bedsharing, (Colson et al., 2013; Fu, Colson, Corwin, & Moon, 2008; Fu, Moon, & Hauck, 2010) are more common in African-American families and are likely to contribute to these racial disparities. In addition, there is overlap in the safe sleep recommendations for SIDS and other sleep-related deaths, in that SIDS risk factors, such as prone placement, soft bedding, soft surfaces, and bedsharing, are also risk factors for accidental suffocation, (Byard, Beal, & Bourne, 1994; Combrinck & Byard, 2011; Drago & Dannenberg, 1999) and the American Academy of Pediatrics recommends against all of these practices. (Moon, 2011) However, recent data show that the proportion of families placing their infants prone, (Colson et al., 2009) using soft bedding, (Byard et al., 1994) and bedsharing (Shapiro-Mendoza et al., 2009) have increased in recent years.

Qualitative studies suggest that, although parents have a low degree of self-efficacy (i.e., belief that one's actions can make a difference in the outcome) with regard to SIDS risk reduction, they have a higher degree of self-efficacy with regard to preventing accidental suffocation in their infants. (Moon, Oden, Joyner, & Ajao, 2010) However, no quantitative studies have asked about parental self-efficacy with regards to sleep-related infant deaths. Given that similarity of behavioral risk factors for SIDS and other sleep-related deaths, intervention strategies may be more effective if they capitalize on areas for which there are high degrees of parental self-efficacy. Given that African-American infants are at increased risk for both SIDS and other sleep-related deaths, we aimed to assess self-efficacy in African-American parents with regards to safe sleep practices.

Methods

We conducted a prospective study of mothers of newborns at an urban hospital. Mothers self-identified as African-American and were excluded if they were <18 years or could not complete the interview in English, or if the infant was <36 weeks gestational age, required hospitalization in the neonatal intensive care unit, or was diagnosed with a medical condition (e.g., recent spinal surgery) that precluded use of supine sleep position. After written informed consent was obtained, a brief survey about knowledge of and attitudes towards safe sleep recommendations, current intent with regards to safe sleep recommendations, and demographics was completed. We specifically asked about parental self-efficacy with regards to safe sleep practices by asking mothers about their beliefs that specific practices could increase the infant's risk of SIDS or suffocation and about their confidence in their ability to prevent SIDS or suffocation from occurring. All questions were validated.

Simple cross tabulations, followed by multiple logistic regression analyses to control for sociodemographic differences, were developed to evaluate the impact of the safe sleep message target (SIDS vs suffocation) on the parental perception of self-efficacy. This study received approval from the institutional review boards of Children's National Medical Center and Medstar Health Research Institute.

Results

We collected data from 1194 participants between June 2011 and November 2013. Demographic characteristics of participants are described in Table 1. All mothers were interviewed before discharge from the birth hospital; mean infant age was 1.5 days (range, 0–6 days). Mean maternal age was 26.4 years (range, 18–42 years). 79.1% of mothers were never married. Approximately half of mothers had completed education beyond a high school diploma or GED. More than half (57.5%) received benefits from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and had public health insurance (62.1%). Almost all (93.8%) of the infants lived with their mother; half (49.2%) lived with their father. A grandmother was present in approximately 10% of households. Almost half (44.8%) of households had more than 4 people, including the infant.

When mothers were asked about intended infant care practices (Table 2), approximately 90% of mothers planned to place their infant supine for sleep. Nearly all (96.7%) mothers stated that their infant would sleep in the same room as them, and 51.7% stated that the father would also be sleeping in the same room. Fewer than 5% of mothers planned to bedshare with the infant. Approximately three-quarters (72.9%) of mothers who planned for their infant to sleep in a crib intended to have soft bedding (bumpers, pillows, quilts, blankets, toys) in the crib. Approximately one-third (37.5%) intended to exclusively breastfeed, 31.2% partially breastfeed, and 31.0% formula feed. Of those planning to partially or exclusively breastfeed, 61.3% planned to breastfeed for 6 months or less.

With regards to self-efficacy, mothers were asked whether they believed that specific infant care practices increased their infant's risk of dying from SIDS or suffocation. Mothers were more likely to believe that prone placement increased their infant's risk for suffocation than it did for SIDS (70.9% vs. 50.5%, $p<0.001$). Mothers were also likely to believe that sleeping with another person placed their infant at higher risk of suffocation than for SIDS (73.5% vs. 50.1%, $p<0.001$). In addition, they were more likely to believe that having soft bedding in the sleep area placed their infant at higher risk for suffocation than for SIDS (78.3% vs 59.5%, $p<0.001$). Finally, mothers had higher self-efficacy with regards to suffocation than for SIDS, i.e., they were more confident that their actions could keep their infant safe from suffocation than from SIDS (88.0% vs. 79.4%, $p<0.001$). These differences in beliefs remained statistically significant when controlled for maternal age, educational level, health insurance, presence of grandmother in home, number of people in home, and breastfeeding intention. Mothers were less likely to believe that prone sleeping (aOR 0.38, 95% CI 0.34–0.43), sleeping with another person (aOR 0.33, 95% CI 0.30–0.38), and having soft items in the infant sleep area (aOR 0.37, 95% CI 0.32–0.42) increased risk for SIDS than suffocation. Mothers were also significantly less confident that their actions could keep their infant safe from SIDS than from suffocation (aOR 0.50, 95% CI 0.43–0.57).

Discussion

Safe sleep recommendations to place infants supine and to avoid bedsharing, soft surfaces, and soft bedding in the infant sleep environment will reduce the risk of SIDS, accidental suffocation and strangulation in bed, and ill-defined causes of sleep-related death.(Moon, 2011) However, most healthcare providers and messages have traditionally emphasized SIDS risk reduction and have not discussed prevention of accidental deaths. Qualitative data have suggested that parents have a low degree of self-efficacy with regard to SIDS risk reduction.(Moon et al., 2010) This is the first quantitative study assessing maternal self-efficacy with regards to preventing infant deaths. We found that African-American mothers have higher self-efficacy with regards to suffocation prevention than SIDS risk reduction. Further, mothers were more likely to believe that practices such as prone positioning, bedsharing, and use of soft bedding increased their infant's risk of suffocation than SIDS.

Approximately 90% of mothers in this study intended to place their infants supine and to have the infant sleep in the same room without bedsharing. These proportions are higher than what has been seen in surveys in which parents report their infant care practices at home, but are similar to what parents have reported as prenatal intention.(Hauck, Tanabe, McMurphy, & Moon, 2014) This can largely be explained by the fact that mothers were interviewed soon after the infant's birth before hospital discharge. Once parents take the infant home, behavior often changes from the intended behavior.(Hauck et al., 2014) Therefore, these figures can be interpreted as a reflection of parental awareness of safe infant sleep recommendations and indicate that health messaging about safe sleep position and location for the infant has been effective.

In contrast, approximately 80% of mothers intended to use soft bedding in their infant's sleep area. This is consistent with a recent national survey that found that more than half of parents usually placed their infants to sleep with blankets, quilts, pillows, and other similar

objects, with soft bedding use being more prevalent when mothers were teenaged, non-white, and not college educated.(Shapiro-Mendoza et al., 2015) This suggests that health messages about soft bedding have been less successful than health messages for other practices, such as sleep position and sleep location. A recent analysis of infant sleep-related deaths reported to state child death review teams found that soft bedding is an important risk factor for SIDS and accidental sleep-related deaths, particularly in infants 4–12 months of age, as infants will roll into the bedding.(Colvin, Collie-Akers, Schunn, & Moon, 2014) Given the magnitude of the risk of soft bedding in the infant’s sleep area, it will be important for public health and medical professionals to re-assess how to increase the effectiveness of health messaging about soft bedding use with infants.

One of the limitations of our study is that our population was recruited from a specific geographic area and was less likely to be married and attend college, and more likely to have Medicaid health insurance than the national norms of African-American women.(“U.S. Census Bureau, 2006–2010 American Community Survey,” 2012) However, the intended infant care practices mirror those seen in other surveys,(Hauck et al., 2014; Shapiro-Mendoza et al., 2015) so we believe that these responses are fairly representative of the general African-American population. In addition, families with lower socioeconomic status are less likely to adhere with safe infant sleep recommendations,(Colson et al., 2009; Colson et al., 2013; Hauck et al., 2014; Shapiro-Mendoza et al., 2015; Shapiro-Mendoza et al., 2006) and thus it is particularly important to find health messages that will resonate with this subset and improve sleep safety. Further studies will be needed to confirm these findings and to determine whether findings are consistent in other geographic and racial/ethnic populations.

In conclusion, maternal self-efficacy is higher with regards to prevention of accidental suffocation, as compared with SIDS risk reduction, in African-Americans, regardless of socioeconomic status. Health messages promoting safe sleep practices as a way to prevent suffocation may resonate more with African-American families than messages promoting the same practices as a strategy to reduce the risk of SIDS. Health care professionals should discuss both SIDS risk reduction and prevention of accidental deaths when advising African-American parents about safe infant sleep practices.

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ABBREVIATIONS

ASSB	Accidental suffocation and strangulation in bed
GED	General educational development
ICD-10	International Classification of Disease, 10 th revision
SIDS	Sudden infant death syndrome

WIC Special Supplemental Nutrition Program for Women, Infants, and Children

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Table 1

Characteristics of study participants (n=1194)

Characteristic	N (%)
Infant age	Mean 1.5 days; range, 0 to 6
Maternal age (mean 26.4 years; range, 18 to 42)	
18 to 24 years	522 (43.6%)
25 to 29 years	305 (25.5%)
30 to 34 years	212 (17.7%)
>=35 years	125 (10.5%)
Did not answer	32 (2.7%)
Maternal marital status	
Married	240 (20.1%)
Never married	945 (79.1%)
Divorced/separated	8 (0.7%)
Widowed	1 (0.1%)
Maternal Education	
Grades 9–11	149 (12.5%)
High school graduate/GED	466 (39.0%)
Some college/technical/vocational school	349 (29.2%)
Technical or vocational school graduate	31 (2.6%)
4 year college graduate	137 (11.5%)
Postgraduate or professional degree	62 (5.2%)
Infant gender	
Female	588 (49.2%)
Male	606 (50.8%)
Receive WIC benefits	
No	507 (42.4%)
Yes	686 (57.5%)
Did not respond	1 (0.1%)
Medical Insurance status	
Medicaid	742 (62.1%)
Non-Medicaid	448 (37.5%)
None	4 (0.4%)
Other people at home (because of multiple responses, total does not equal 100%)	1120 (93.8%)
Baby's mother	588 (49.2%)
Baby's father	347 (29.1%)
Baby's grandmother	117 (9.8%)
Baby's grandfather	452 (37.9%)

Characteristic	N (%)
Baby's sister	445 (37.3%)
Baby's brother	202 (16.9%)
Baby's aunt	152 (12.7%)
Baby's uncle	138 (11.6%)
Other	
Number of people in the household (including infant)	
2	40 (3.4%)
3	265 (22.2%)
4	339 (28.4%)
5	265 (22.2%)
6	142 (11.8%)
7	83 (7.0%)
8 or more	58 (4.8%)
Did not respond	2 (0.1%)

Table 2

Intended infant care practices

Practices	N (%)
Infant sleep position	
Back	1084 (90.8%)
Side	82 (6.9%)
Prone	21 (1.8%)
Did not answer	7 (0.6%)
Sleep in same room as infant	
Nobody	27 (2.3%)
Mother	1155 (96.7%)
Father	617 (51.7%)
Sibling	115 (9.6%)
Grandmother	8 (0.7%)
Other relatives (aunts, uncles, cousins)	6 (0.5%)
Other	2 (0.2%)
Sleep location for Infant	
Same room as parent, not bedsharing	1079 (90.4%)
Bedsharing	43 (3.6%)
Separate room	27 (2.3%)
Did not answer	45 (3.8%)
Soft bedding (bumpers, pillows, quilts, blankets and toys)	
In crib	
Any soft bedding	871 (72.9%)
No soft bedding	125 (10.5%)
In playpen	
Any soft bedding	27 (2.3%)
No soft bedding	18 (1.5%)
On adult bed	
Any soft bedding	34 (2.8%)
No soft bedding	1 (0.1%)
On sofa	
Any soft bedding	1 (0.1%)
No soft bedding	0 (0.0%)
Breastfeeding	
Exclusive breastfeeding	448 (37.5%)
Partial breastfeeding	373 (31.2%)
Formula feeding	370 (31.0%)
Did not answer	3 (0.3%)

Practices	N (%)
Duration of breastfeeding (N=816)	
<27 weeks	500 (61.3%)
27 to 52 weeks	282 (34.6%)
53 to 104 weeks	28 (3.4%)
105 to 156 weeks	1 (0.1%)
Did not answer	5 (0.6%)

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Table 3

Maternal beliefs about SIDS vs. suffocation and infant care practices

Beliefs		SIDS	Suffocation	Univariate p-value	Multivariate p-value*	Adjusted odds ratio (SIDS vs Suffocation, 95% CI)
Do you believe that stomach sleeping definitely increases risk?	Definitely no	143 (12.0%)	57 (4.8%)	<0.001	<0.001	0.38 (0.34–0.43)
	Doubtful	35 (2.0%)	12 (1.0%)			
	Unsure	140 (11.8%)	41 (3.4%)			
	Possibly	272 (22.8%)	234 (19.6%)			
	Definitely yes	601 (50.5%)	847 (71.2%)			
Do you believe that sleeping with another person definitely increases risk?	Definitely no	229 (19.2%)	80 (6.7%)	<0.001	<0.001	0.33 (0.30–0.38)
	Doubtful	51 (4.3%)	24 (2.0%)			
	Unsure	100 (8.4%)	28 (2.4%)			
	Possibly	215 (18.0%)	184 (15.4%)			
	Definitely yes	597 (50.1%)	875 (73.5%)			
Do you believe that having soft items increases risk?	Definitely no	196 (16.4%)	52 (4.4%)	<0.001	<0.001	0.37 (0.32–0.42)
	Doubtful	34 (2.8%)	11 (0.9%)			
	Unsure	65 (5.4%)	21 (1.8%)			
	Possibly	188 (15.8%)	174 (14.6%)			
	Definitely yes	709 (59.5%)	933 (78.3%)			
How confident are you that your actions can keep your baby safe?	Definitely not confident	13 (1.1%)	4 (0.3%)	<0.001	<0.001	0.50 (0.43–0.57)
	Doubtful	5 (0.4%)	0 (0.0%)			
	Unsure	43 (3.6%)	6 (0.6%)			
	Pretty confident	184 (15.5%)	133 (11.2%)			
	Definitely confident	946 (79.4%)	1046 (88.0%)			

* Adjusted for maternal age, educational level, health insurance, presence of grandmother in home, number of people in home, and breastfeeding intention