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Fathers, Breastfeeding, and Infant Sleep Practices: Findings From a State-Representative Survey

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Abstract

OBJECTIVES: To assess infant breastfeeding initiation and any breastfeeding at 8 weeks and safe sleep practices (back sleep position, approved sleep surface, and no soft objects or loose bedding ["soft bedding"]) by select paternal characteristics among a state-representative sample of fathers with new infants.

METHODS: Pregnancy Risk Assessment Monitoring System (PRAMS) for Dads, a novel population-based cross-sectional study, surveyed fathers in Georgia 2–6 months after their infant's birth. Fathers were eligible if the infant's mother was sampled for maternal PRAMS from October 2018 to July 2019.

RESULTS: Of 250 respondents, 86.1% reported their infants ever breastfed and 63.4% reported breastfeeding at 8 weeks. Initiation and breastfeeding at 8 weeks were more likely to be reported by fathers who reported wanting their infant's mother to breastfeed than those who did not want her to breastfeed or had no opinion (adjusted prevalence ratio [aPR] = 1.39; 95% confidence

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interval [CI], 1.15–1.68; aPR = 2.33; 95% CI, 1.59–3.42, respectively) and fathers who were college graduates than those with ≤high school diploma (aPR = 1.25; 95% CI, 1.06–1.46; aPR = 1.44; 95% CI, 1.08–1.91, respectively). Although about four-fifths (81.1%) of fathers reported usually placing their infants to sleep on their back, fewer fathers report avoiding soft bedding (44.1%) or using an approved sleep surface (31.9%). Non-Hispanic Black fathers were less likely to report back sleep position (aPR = 0.70; 95% CI, 0.54–0.90) and no soft bedding (aPR = 0.52; 95% CI, 0.30–0.89) than non-Hispanic white fathers.

CONCLUSIONS: Fathers reported suboptimal infant breastfeeding rates and safe sleep practices overall and by paternal characteristics, suggesting opportunities to include fathers in promotion of breastfeeding and infant safe sleep.

Breastfeeding and safe sleep are 2 infant health measures of national public health and clinical importance.[1-3] Breastfeeding provides maternal and infant health benefits, and the American Academy of Pediatrics (AAP) recommends exclusive breastfeeding through about 6 months and supports continued breastfeeding through 2 years or beyond, as mutually desired by mother and child.[4] Despite the AAP's longstanding support for breastfeeding, 25.6% of infants are exclusively breastfed through 6 months and 35.0% are breastfed at 1 year, compared with the Healthy People 2030 targets of 42.4% and 54.1%, respectively.[5,6] Additionally, there are racial and ethnic disparities in breastfeeding rates.[7] Similarly, 79.8% of infants are placed on their back to sleep, which is below the national target of 88.9%.[8] In 2020, there were 3356 cases of sudden unexpected infant death (SUID) in the United States and racial and ethnic disparities persist.[9] To prevent SUID, select AAP recommendations for safe sleep include: back sleep position, use of a firm, flat, noninclined sleep surface (ie, a crib, bassinet, or a pack-and-play), room sharing without bed sharing, and avoidance of soft objects and loose bedding in the sleep environment.[10]

In the past 50 years, fathers have tripled the time they spend engaging in childrearing activities,[11] and there is growing evidence linking paternal involvement to positive child health outcomes.[12] For example, paternal involvement in childcare is associated with breastfeeding initiation and continuation,[13,14] with less infant nighttime awakenings[15] and improved maternal sleep.[16] For these reasons, educational campaigns for breastfeeding[17] and safe sleep[18,19] have begun to include fathers. There is limited information, however, collected from fathers about their attitudes toward and experiences with infant breastfeeding and safe sleep practices.[20] The objectives of this study were to (1) assess father-reported rates of infant breastfeeding and safe sleep practices and (2) identify associations between paternal sociodemographic characteristics with (a) breastfeeding initiation and any breastfeeding at 8 weeks and (b) infant safe sleep practices (back sleep position, approved sleep surface, and no soft objects or loose bedding).

METHODS

Study Design and Data Source

This analysis is from survey responses from fathers who participated in the Pregnancy Risk Assessment Monitoring System (PRAMS) for Dads study.[21] The PRAMS for Dads protocol was modeled after maternal PRAMS[22] and surveyed a statewide-representative sample

of fathers from Georgia 2 to 6 months after their infant's birth.[21] The survey collected data on paternal attitudes, behaviors, and experiences before, during, and shortly after their infant's birth.[21] Prevalence estimates accounted for the PRAMS for Dads sampling design and weights (sample, nonresponse, and noncoverage weights) to be representative of fathers of live-born infants who were either married or unmarried (with a completed paternity acknowledgment form) in Georgia. All fathers for whom the infant's mother had been randomly sampled for PRAMS in Georgia from October 15, 2018 to July 3, 2019, were eligible for the PRAMS for Dads sample. During the study period, Georgia PRAMS sampled 1074 women with a live birth, and eligible fathers could be identified by marriage or paternity acknowledgment (PA) form for 857 (79.8%) births. Among the 857 sampled fathers, 266 fathers completed the survey (31.0% unweighted response rate, 31.7% weighted response rate). This study was approved by both the Georgia Department of Public Health Institutional Review Board and the Northwestern University Institutional Review Board.

Measures

Breastfeeding—Breastfeeding outcomes were based on established PRAMS indicators.[23] To assess breastfeeding initiation and any breastfeeding at 8 weeks, respondents were asked "Did your baby's mother ever breastfeed or pump breast milk to feed your new baby, even for a short period of time?" and "How many weeks or months did your baby's mother breastfeed or pump breast milk to feed your baby?" Breastfeeding initiation was categorized as (1) ever breastfed or pumped breast milk or (2) never breastfed or pumped breast milk. Any breastfeeding at 8 weeks was categorized as (1) breastfed or pumped breast milk for ≥8 weeks in any amount or (2) never breastfed or stopped breastfeeding or pumping breast milk before the infant was 8 weeks of age. Respondents selecting "I don't know" were categorized as missing. Paternal breastfeeding attitude was assessed by asking "When your new baby was born, what did you think about your baby's mother breastfeeding your baby?" Responses were categorized as (1) "I wanted her to breastfeed" and (2) "I did not want her to breastfeed" or "I had no opinion."

Safe Sleep—Safe sleep outcomes were modeled after previous analyses[23,24] and included paternal report of 3 infant sleep practices: (1) back sleep position, (2) approved sleep surface, and (3) no soft objects or loose bedding (hereafter referred to as "soft bedding"). Sleep position was assessed by the question, "In which 1 position do you most often lay your baby down to sleep now?" Back sleep position was defined as responding affirmatively to "on his or her back" and not on his or her "stomach" or "side."

Information on the other sleep practices was assessed by the question "Listed below are some things about how babies sleep. How did your new baby usually sleep in the past 2 weeks? For each item check *No* if your baby did not usually sleep like this and *Yes* if he or she did." Binary composite variables were created: (a) approved sleep surface was defined as the infants usually sleeping in a crib, bassinet or pack-and-play, but not in a twin or larger mattress or bed, couch, sofa, or armchair, or infant car seat or swing; and (b) no soft bedding was defined as infants who slept without blankets, toys, cushions, or pillows, including nursing pillows or crib bumper pads (mesh or nonmesh). Fathers were recorded as

practicing all 3 recommended safe sleep measures if they were categorized as “yes” to back sleep position, approved sleep surface use, and no soft bedding.

We examined reported receipt of advice on the 3 measured safe sleep practices: fathers reported whether they were told by a healthcare provider (“doctor, nurse, or other healthcare worker”) (1) to “place my baby on his or her back to sleep;” (2) to “place my baby to sleep in a crib, bassinet, or pack-and-play;” and (3) “what things should and should not go in bed with my baby.” Responses were categorized into (1) “yes” and (2) “no” or “I don’t know.” A composite variable was calculated as, “received advice on all sleep measures,” if fathers answered “yes” to advice received for the above 3 measures.

Covariates—Based on literature examining breastfeeding and infant sleep practices,[24,25] covariates included paternal age, race and ethnicity, education, and marital status (from birth certificate), and paternal health insurance status (from PRAMS for Dads survey). For paternal race and ethnicity, respondents were grouped as non-Hispanic white, non-Hispanic Black, Hispanic, and Non-Hispanic other. Because of small sample size ($n = 22$), “non-Hispanic other” included all other reported races (Asian, Native Hawaiian, other Pacific Islander, multiple, or other) ($n = 19$) and unknown race or ethnicity ($n = 3$). Fathers were asked “what kind of health insurance do you have now,” and were categorized as insured (all types) or uninsured (“I don’t have health insurance now”).

Analytic Plan

Statistical analysis was conducted via Stata.[26] Analysis included descriptive statistics for paternal characteristics, breastfeeding practices, and safe infant sleep practices, along with 95% confidence intervals, and multivariable logistic regression analyses for 5 main outcomes: ever breastfed, any breastfeeding at 8 weeks, back sleep position, approved sleep surface, and no soft bedding. Multivariable models included age, race and ethnicity, health insurance status, education, and marital status. We ran an additional multivariable model examining the association between age, race and ethnicity, health insurance status, education, and marital status and receipt of safe sleep information. The sample size determination for each outcome is detailed in Fig 1. To maintain correct standard errors from our survey design, we used the subpopulation command in Stata to exclude fathers with missing outcome data during our prevalence estimates and regression analysis.

RESULTS

Breastfeeding

Among 250 respondents, 56.5% were aged 25 to 34 years, 44.7% were non-Hispanic white, 37.1% were college graduates, and 65.2% were married (Table 1). Most fathers (86.1%) reported their infant was ever breastfed; a smaller proportion (63.4%) reported any breastfeeding at 8 weeks (Table 1). Of infants who were ever breastfed, 26.1% were no longer breastfed at 8 weeks. About two-thirds (67.8%) reported they wanted the infant’s mother to breastfeed. Fathers who reported wanting their infant’s mother to breastfeed were more likely to report breastfeeding initiation (95.4% vs 68.7%, adjusted prevalence ratio

[aPR] = 1.39; 95% confidence interval [CI], 1.15–1.68) and breastfeeding at 8 weeks (77.5% vs 33.3%, aPR = 2.33; 95% CI, 1.59–3.42) than their counterparts (Table 2).

Hispanic fathers were more likely to report their infant was ever breastfed than non-Hispanic white fathers (96.4% vs 80.0%, aPR = 1.20; 95% CI, 1.05–1.39), but there were no differences in breastfeeding at 8 weeks by race and ethnicity (Table 2). Fathers who were college graduates were more likely to report their infant ever breastfed (93.6% vs 75.1%, aPR = 1.25; 95% CI, 1.06–1.46) and breastfed at 8 weeks (74.7% vs 52.0%, aPR = 1.44; 95% CI, 1.08–1.91) than those with a high school diploma or less.

Safe Sleep

Nearly all fathers (99.4%) reported placing their infant to sleep. About four-fifths (81.1%) reported placing their infant on their back to sleep, 31.9% using an approved sleep surface, 44.1% reported using no soft bedding, and 15.7% reported following all 3 recommended practices (Table 1). Most fathers reported receiving advice from a healthcare provider to place their infant on their back (84.7%), to use a crib, bassinet, or pack-and-play (78.7%), and what things should and should not go in bed with the baby (79.1%); about two-thirds (68.4%) received advice on all 3 safe sleep measures. Non-Hispanic Black fathers were less likely to place their infant on their back to sleep (62.5% vs 89.5%; aPR = 0.70; 95% CI, 0.54–0.90) and avoid soft bedding (28.1% vs 54.1%; aPR = 0.52; 95% CI, 0.30–0.89) than non-Hispanic white fathers (Table 3). Fathers who were college graduates were more likely to avoid soft bedding (61.4% vs 31.9%; aPR = 1.92; 95% CI, 1.25–2.95) (Table 3), receive advice on the back sleep position (94.3% vs 73.6%; aPR = 1.28; 95% CI, 1.09–1.51) and receive advice on what should and should not go in their infant's bed (88.1% vs 68.5%; aPR = 1.29; 95% CI, 1.06–1.57) than fathers with a ≤high school diploma (results not shown). There was no difference in receipt of safe sleep advice by age, race, health insurance status, or marital status (results not shown).

DISCUSSION

In this representative sample of fathers from Georgia, we present father-reported prevalence estimates of breastfeeding and infant safe sleep practices. We found multiple associations between paternal characteristics and infant breastfeeding, with increased likelihood among fathers who wanted their infant's mother to breastfeed and those with higher educational attainment. Our infant safe sleep practices prevalence estimates are similar to maternal PRAMS data in Georgia[27] and nationwide,[23,24] which suggests mothers and fathers use similar infant sleep practices and identifies that many fathers in Georgia are not following AAPs evidence-based safe sleep recommendations.[10]

The paternal reported prevalence estimates of breastfeeding initiation (86%) and any breastfeeding at 8 weeks (63%) are similar to maternal reported rates in Georgia (80% to 83% and 55% to 61%, respectively)[27] and nationwide (range by site: 84% to 88% and 69% to 76%).[23,28] There was no difference in breastfeeding initiation and any breastfeeding at 8 weeks between infants of non-Hispanic Black fathers and non-Hispanic white fathers, which differs from national data and data from Georgia, demonstrating that non-Hispanic white mothers breastfeed more often than non-Hispanic Black mothers.[29]

Our study adds to previous literature that shows fathers who have a positive attitude toward breastfeeding report higher infant breastfeeding rates.[30-32] In our sample, among fathers who wanted their infant's mother to breastfeed, 95% reported breastfeeding initiation and 78% reported breastfeeding at 8 weeks, which is significantly higher than fathers who had no opinion or did not want their infant's mother to breastfeed, of whom 69% reported breastfeeding initiation and 33% reported breastfeeding at 8 weeks. Fathers have endorsed various concerns around breastfeeding, such as breastfeeding potentially impacting the father-infant relationship,[31] decreased intimacy with the mother, feeling uncomfortable about their partners breastfeeding in public, and feeling inadequate as a parent.[33] Furthermore, mothers take father's attitudes into consideration when making decisions about breastfeeding as demonstrated by a US survey of 123 mothers that found that "father's feelings" were the primary reason women chose to bottle-feed.[34]

We estimated paternal educational attainment was associated with breastfeeding initiation and breastfeeding at 8 weeks. Similarly, previous maternal surveys have found higher paternal educational attainment[35] and maternal educational attainment[25] are associated with higher breastfeeding rates. Educational attainment, a predictor of health literacy,[36] is associated with less breastfeeding knowledge among fathers internationally,[37] but this relationship needs to be explored in the United States. A meta-analysis of father-focused interventions to promote breastfeeding found a significant benefit in all measured breastfeeding outcomes.[38] Additionally, few fathers report receiving information directly from healthcare providers, whereas most report information is passed through their partners.[33,39] Father focused interventions and healthcare professionals may be able to improve breastfeeding rates by directly engaging fathers (or nonbirthing parents) in breastfeeding discussions and offering suggestions for how partners can support mothers and infants throughout breastfeeding.[31,33,40]

Regarding sleep practices in this study sample of fathers, 99% reported placing their infant to sleep, suggesting they are an important audience for safe infant sleep information and practices. We found a similar proportion of fathers reported placing their infants to sleep on their backs compared with overall estimates from maternal PRAMS,[8,24] but slightly higher than Georgia maternal PRAMS estimates.[27] Furthermore, our findings are similar to other studies showing differences in patterns by race and ethnicity reported by mothers,[24] as we report that non-Hispanic Black fathers are less likely to use the back sleep position and more likely to use soft bedding than non-Hispanic white fathers. Nationally, the rate of SUID of non-Hispanic Black infants is more than twice that of non-Hispanic white infants[9,41]; differences in unsafe sleep position and environment may contribute to this disparity.[10,24,42] To reduce racial and ethnic disparities in SUIDs, strategies to increase safe sleep practices in the Black community, including communication campaigns, home visiting programs, and provider counseling of safe infant sleep practices, are key.[10,43] For example, the National Institute for Child Health and Human Development's Safe to Sleep campaign for specific communities has partnered with local community organizations to design tailored and effective safe sleep messaging and used national summits to disseminate their resources.[44]

Reported paternal behaviors around sleep and sleep environment were also suboptimal, with only 32% reporting use of an approved sleep surface and 44% avoiding soft bedding, estimates that mirror practices in mothers.[24] The majority of fathers reported being told to place their infant on their back to sleep (85%), but this percentage is lower than overall PRAMS estimates that 93% of mothers receive back to sleep position advice.[24] Most fathers (68%) reported receiving advice on all 3 measures (back sleep position, sleep surface, and soft bedding), but almost a third of respondents were missing at least 1 key component of safe sleep education.[10] Although we found no associations between receipt of sleep advice and sleep practices, we found fathers with a college degree were more likely to report receiving advice on the back sleep position and what items should and should not go in baby's crib, compared those with a high school degree or less. Since fathers who were college graduates were more likely to avoid soft bedding, these findings suggest receipt of provider advice may be a contributing factor to paternal sleep practices. Moreover, all parents should receive safe sleep guidance,[10] and to promote healthy equity, it is important to ensure safe sleep advice is provided to fathers of lower educational attainment.

Limitations

Several limitations exist for this study. First, although the response rate (31.7%) was less than optimal, it is similar to studies designed to reach new fathers.[45-47] Additionally, PRAMS for Dads survey respondents did not differ significantly on measured paternal age, education, race and Hispanic origin, and marital status as compared with the target population of fathers in Georgia.[21] Furthermore, in 2019, 7 states had maternal PRAMS response rates below 50%,[48] Georgia had a response rate of 61%,[48] and generally fathers have lower response rates than mothers.[49,50] Second, the PRAMS for Dads study relied on birth certificate records, for which information on unmarried men without a paternity acknowledgment form was not available and were therefore excluded from the study sample. Unmarried men without a paternity acknowledgment form represented 20% of live births in Georgia during the study period. Third, since fathers completed the survey 2 to 6 months postpartum, as with maternal PRAMS, we were unable to measure breastfeeding at 6 months and 1 year, which are key national breastfeeding metrics.[5,6] Fourth, we do not have information on how frequently fathers placed their infants to sleep, which would be important data to collect in future surveys of new fathers. Finally, the sample size in this secondary analysis makes it difficult to ascertain significant difference among subgroups, as the original PRAMS for Dads study was powered to detect difference in methodological approaches to survey delivery[21] but not differences among demographic groups for survey questions.

CONCLUSIONS

In this analysis of a representative sample of fathers, 86% reported their infant initiated breastfeeding; however, of those who reported their infant was ever breastfed, approximately one-quarter reported their infant was not being breastfed at 8 weeks. Father's attitude toward breastfeeding and educational attainment were associated with breastfeeding rates. Only 16% of fathers implemented all 3 recommended infant sleep practices (using the back sleep position, an approved sleep surface, and avoiding soft bedding) and two-thirds received

advice on all 3 practices from a healthcare provider. These findings reveal that father-reported breastfeeding and safe sleep practices do not meet national recommendations[4,10,51] and emphasize the key role fathers can play in facilitating breastfeeding and safe infant sleep. There is evidence that tailored educational interventions improve breastfeeding and safe sleep rates,[52] and additional research is needed to further explore how father-focused interventions and educational campaigns can improve infant health practices. Including fathers and birth partners in strategies to improve infant health, such as public health programs and engaging them directly in clinical settings, can help narrow disparities and promote child health.

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ABBREVIATIONS

AAP	American Academy of Pediatrics
PRAMS	Pregnancy Risk Assessment Monitoring System
SUID	sudden unexpected infant death

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WHAT'S KNOWN ON THIS SUBJECT:

Improving breastfeeding rates and safe infant sleep practices are public health and clinical priorities. Growing evidence links paternal characteristics and childcare involvement with positive child outcomes. There is limited information collected from fathers on infant breastfeeding and safe sleep practices.

WHAT THIS STUDY ADDS:

Using population-based data, 86.1% of fathers reported their infants ever breastfed, 63.4% reported any breastfeeding at 8 weeks, and 15.7% reported placing infants to sleep on their back, on an approved surface, without soft bedding. Practices varied by paternal characteristics.

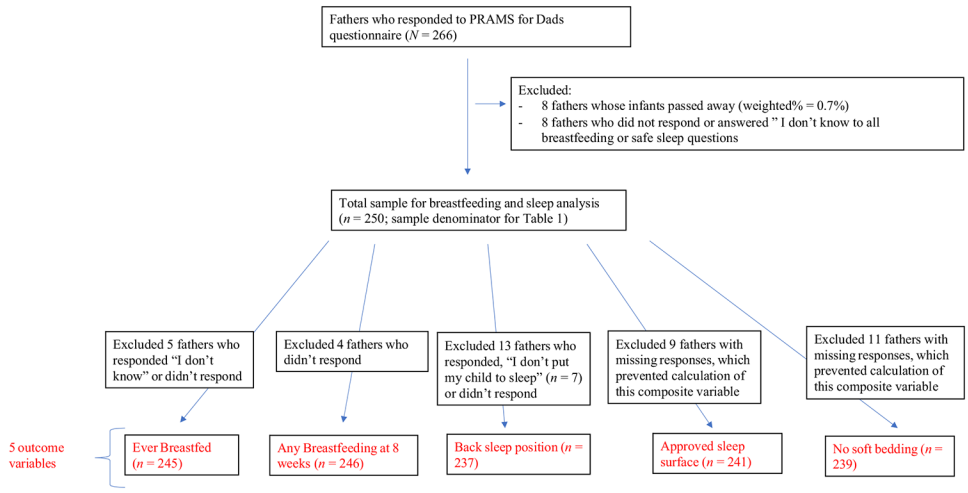

FIGURE 1.

Flow diagram for determining the sample size of breastfeeding and infant safe sleep outcomes.

TABLE 1

Paternal Characteristics, Breastfeeding Practices and Safe Infant Sleep Practices, Pregnancy Risk Assessment Monitoring System (PRAMS) for Dads Study, Georgia, USA, 2018 to 2019

Variable	Unweighted Sample Size[a] (*n* = 250)	Weighted[b] % (95% CI)
Age (*n* = 250)		
<25	30	13.6 (8.9–20.1)
25–34	136	56.5 (48.6–64.1)
≥35	84	29.9 (23.3–37.5)
Race and Hispanic origin (*n* = 250)		
Non-Hispanic white	114	44.7 (37.1–52.6)
Non-Hispanic Black	69	28.5 (21.7–36.3)
Hispanic	46	18.4 (13.1–25.2)
Non-Hispanic other or unidentified[c]	21	8.4 (4.9–14.1)
Health insurance status (*n* = 250)		
Uninsured	73	29.2 (22.4–37.1)
Insured	177	70.8 (62.9–77.6)
Education (*n* = 250)		
≤High school or GED	111	43.7 (36.1–51.6)
Some college, no degree	44	19.2 (13.4–26.5)
College graduate[d]	95	37.1 (30.0–44.8)
Marital status (*n* = 250)		
Married	183	65.2 (56.8–72.7)
Unmarried with PA form	67	34.8 (27.3–43.2)
Breastfeeding outcomes		
Ever breastfed (*n* = 245)	211	86.1 (79.3–90.9)
Breastfeeding at 8 wk (*n* = 246)	158	63.4 (55.3–70.7)
Initiated breastfeeding but stopped by 8 wk (*n* = 211)	55	26.1 (19.2–34.3)
Breastfeeding attitude (*n* = 249)		
“I want her to breastfeed”	180	67.8 (59.8–74.8)

Variable	Unweighted Sample Size[a] (*n* = 250)	Weighted[b] % (95% CI)
"I didn't want" or "no opinion"	69	32.2 (25.2–40.2)
Safe sleep outcomes		
Back sleep position[e] (*n* = 237)	189	81.1 (74.0–86.6)
Approved sleep surface use[f] (*n* = 241)	78	31.9 (24.9–39.7)
No soft bedding[g] (*n* = 239)	103	44.1 (36.4–52.2)
Sleep surface use		
Crib, bassinet or pack-and-play (*n* = 245)	222	90.7 (85.1–94.4)
Twin or larger bed (*n* = 236)	78	35.2 (27.8–43.4)
Sofa, couch or armchair (*n* = 236)	30	9.6 (5.8–15.5)
Infant car seat or swing (*n* = 239)	133	58.4 (50.3–66.0)
Soft bedding use		
Blanket (*n* = 238)	110	47.1 (39.2–55.1)
Toys, cushions, or pillows (*n* = 234)	29	10.7 (6.7–16.8)
Crib bumper pads (*n* = 231)	45	19.4 (13.8–26.6)
Practicing all 3 recommended sleep practices[h] (*n* = 227)	34	15.7 (10.8–22.3)
Type of safe sleep advice received		
Place infant in back sleep position (*n* = 247)	210	84.7 (78.2–89.5)
Place infant to sleep in a crib, bassinet, or pack-and-play (*n* = 248)	197	78.7 (71.3–84.5)
What things should and should not go in bed with my baby (*n* = 247)	197	79.1 (72.1–84.7)
On all 3 above safe sleep measures (*n* = 247)	175	68.4 (60.6–75.3)

GED, General Educational Development.

[a] Unweighted total sample size for variable; sample size may vary because of missing data.

[b] Weighted percentage. Father analysis wt is the product of his sampling wt, nonresponse wt, and noncoverage wt.

[c] Non-Hispanic other included all other reported races and fathers who left race unanswered.

[d] Associate degree, bachelor's degree, or higher.

[e] Defined as most often placing their infant to sleep on the back versus side or stomach.

[f] Defined as infants usually sleeping in a "crib, bassinet, or pack-and-play" but not in a "twin or larger bed," "sofa, couch or armchair," or "infant car seat or swing."

[g] Defined as infant usually sleeping without blankets; toys, cushions, or pillows; and crib bumper pads.

[h] Three practices included back to sleep, approved sleep surface, and no soft bedding.

TABLE 2

Adjusted Prevalence and Prevalence Ratios for Breastfeeding Practices and Paternal Characteristics, Pregnancy Risk Assessment Monitoring System (PRAMS) for Dads Study, Georgia, USA, 2018 to 2019

Characteristic	Ever Breastfed (*n* = 245)		Any Breastfeeding at 8 wk (*n* = 246)	
	Adjusted[a] Prevalence	aPR (95% CI)	Adjusted[a] Prevalence	aPR (95% CI)
Age(y)				
<25	93.1	Ref	71.5	Ref
25–34	82.7	0.89 (0.78–1.02)	59.5	0.83 (0.62–1.12)
≥35	87.9	0.94 (0.83–1.07)	66.7	0.93 (0.67–1.29)
Race and Hispanic origin				
Non-Hispanic white	80.0	Ref	59.3	Ref
Non-Hispanic Black	83.4	1.04 (0.87–1.25)	61.9	1.04 (0.77–1.42)
Hispanic	96.4	1.20 (1.05–1.39)	67.3	1.13 (0.81–1.58)
Non-Hispanic other or unidentified	96.4	1.20 (1.05–1.38)	79.9	1.35 (0.97–1.87)
Health insurance status				
Uninsured	85.8	Ref	72.2	Ref
Insured	86.2	1.00 (0.89–1.14)	59.0	0.82 (0.64–1.03)
Education				
≤High school or GED	75.1	Ref	52.0	Ref
Some college, no degree	93.2	1.24 (1.06–1.45)	67.1	1.29 (0.93–1.79)
College graduate[b]	93.6	1.25 (1.06–1.46)	74.7	1.44 (1.08–1.91)
Marital status				
Unmarried with PA form	79.7	Ref	47.2	Ref
Married	89.6	1.12 (0.95–1.33)	71.8	1.52 (1.01–2.29)
Breastfeeding attitude				
“I didn’t want” or “no opinion”	68.7	Ref	33.3	Ref
“I want her to breastfeed”	95.4	1.39 (1.15–1.68)	77.5	2.33 (1.59–3.42)

GED, General Educational Development.

[a]All models adjusted for age, race or Hispanic origin, health insurance status, education, and marital status.

[b] Associate degree, bachelor's degree, or higher.

TABLE 3

Adjusted Prevalence and Prevalence Ratios for Infant Safe Sleep Practices and Paternal Characteristics, Pregnancy Risk Assessment Monitoring System (PRAMS) for Dads Study, Georgia, USA, 2018 to 2019

Characteristic	Back Sleep Position (n = 237)[a]		Approved Sleep Surface Use[b] (n = 241)		No Soft Objects or Loose Bedding[c] (n = 239)	
	Adjusted[d] Prevalence	aPR (95% CI)	Adjusted[d] Prevalence	aPR (95% CI)	Adjusted[d] Prevalence	aPR (95% CI)
Age						
<25	77.0	Ref	33.1	Ref	45.5	Ref
25 – 34	76.2	0.99 (0.78–1.26)	32.1	0.97 (0.46–2.04)	41.5	0.91 (0.56–1.48)
≥35	90.5	1.18 (0.93–1.48)	30.9	0.93 (0.40–2.16)	48.9	1.08 (0.63–1.83)
Race and Hispanic origin (n = 263)						
Non-Hispanic white	89.5	Ref	30.1	Ref	54.1	Ref
Non-Hispanic Black	62.5	0.70 (0.54–0.90)	36.6	0.82 (0.46–1.46)	28.1	0.52 (0.30–0.89)
Hispanic	82.6	0.93 (0.77–1.11)	24.6	0.67 (0.29–1.54)	54.4	1.00 (0.67–1.51)
Non-Hispanic other or unknown	81.1	0.91 (0.70–1.18)	25.1	0.68 (0.24–2.00)	25.5	0.47 (0.21–1.10)
Health insurance status						
Uninsured	89.0	Ref	24.3	Ref	42.5	Ref
Insured	76.2	0.86 (0.73–1.01)	34.9	1.44 (0.76–2.71)	44.8	1.05 (0.68–1.63)
Education						
≤High school or GED	75.8	Ref	32.8	Ref	31.9	Ref
Some college, no degree	86.2	1.14 (0.94–1.37)	35.2	1.07 (0.58–1.98)	39.2	1.23 (0.69–2.18)
College graduate[e]	84.4	1.11 (0.94–1.32)	29.2	0.89 (0.50–1.60)	61.4	1.92 (1.25–2.95)
Marital status						
Unmarried with PA form	79.6	Ref	27.9	Ref	47.8	Ref
Married	82.0	1.03 (0.85–1.24)	33.8	1.21 (0.62–2.37)	42.3	0.88 (0.59–1.32)
Received advice on all safe sleep measures[f]						
No	82.8	Ref	27.4	Ref	38.9	Ref
Yes	81.0	0.98 (0.85–1.12)	33.9	1.24 (0.71–2.17)	46.4	1.19 (0.80–1.79)
Received advice on back sleep position						

Characteristic	Back Sleep Position (n = 237)[a]		Approved Sleep Surface Use[b] (n = 241)		No Soft Objects or Loose Bedding[c] (n = 239)	
	Adjusted[d] Prevalence	aPR (95% CI)	Adjusted[d] Prevalence	aPR (95% CI)	Adjusted[d] Prevalence	aPR (95% CI)
No	78.8	Ref	NA	NA	Ref	Ref
Yes	82.1	1.04 (0.86–1.27)	NA	NA	NA	NA
Received advice on using crib, bassinet or pack-and-play						
No	NA	NA	28.6	Ref	NA	NA
Yes	NA	NA	32.8	1.15 (0.61–2.17)	NA	NA
Received advice on what should and should not go in baby's bed						
No	NA	NA	NA	NA	52.4	Ref
yes	NA	NA	NA	NA	41.9	0.80 (0.55–1.17)

NA, not applicable; GED, General Educational Development.

[a] Defined as most often placing their infant to sleep on the back versus side or stomach.

[b] Defined as infants usually sleeping in a "crib, bassinet, or pack in play" but not in a "twin or larger bed," "sofa, couch or armchair," or "infant car seat or swing."

[c] Defined as infant usually sleeping without blankets; toys, cushions, or pillows; and crib bumper pads.

[d] All models adjusted for age, race or Hispanic origin, health insurance status, education, and marital status.

[e] Associate degree, bachelor's degree, or higher.

[f] The 3 sleep advice measures were: "place my baby on his or her back sleep position," "place my baby to sleep in a crib, bassinet, or pack-and-play," and "what things should and should not go in bed with my baby".