

PRAMSGRAM

OKLAHOMA PREGNANCY RISK ASSESSMENT MONITORING SYSTEM VOL 18, NO 1 2014

Bed-Sharing Practices Among First Time Mothers Who Breastfed At Least Eight Weeks

Introduction:

The American Academy of Pediatrics (AAP) recommends room sharing (with a crib, bassinet or cradle near the parents bed) for infants, as opposed to bed-sharing (sharing a sleep surface with a parent or other child).¹ Currently, no specific bed-sharing situations are considered safe; epidemiologic studies have shown that bed-sharing is highly associated with an increased risk of sudden infant death syndrome (SIDS), sudden unexpected infant death (SUID) or suffocation.¹⁻² For the infant, bed-sharing can increase the occurrence of several risk factors for SIDS and SUID, including overheating, airway obstruction, infant head covering, and exposure to tobacco smoke.¹

Willinger et al. found that routine bed-sharing in the United States was more likely among mothers younger than 18 years of age, mothers who were African American or Asian/Pacific Islander, mothers with annual household incomes of less than \$20,000, those living in southern states, and/or mothers with infants less than 8 weeks of age.²⁻³

Breastfeeding is a protective factor for SIDS.⁴⁻⁶ The protective effect of breastfeeding of any duration increases with exclusivity. A study in Germany found that exclusive breastfeeding reduced the risk for SIDS by half, while breastfeeding of any duration, exclusive or not, has been found to reduce the risk of SIDS when compared to no breastfeeding.^{3,5,7,8} In addition, breastfeeding has been associated with a lower risk of post-neonatal mortality.⁹

Breastfeeding has also been associated with an increased likelihood of bed-sharing. A study, using Oregon PRAMS data, reviewed the frequency of bed-sharing among racial groups. Results showed that 76.6% of mothers reported to have bed-shared at least sometimes. African Americans had the highest proportion of bed-sharing followed by Asians/Pacific

In Oklahoma (among first time breastfeeding mothers):

- 74.7% of mothers reported sharing the bed with their infant at least some of the time.
- Mothers younger than 30 were more likely than older mothers to report some bed-sharing.
- Mothers with Medicaid who breastfed for eight or more weeks were more likely to bed-share with their infants (81.5%) compared to mothers without Medicaid (67.5%).
- African American and American Indian mothers were more likely to bed-share compared to white mothers (33% and 21%, respectively) when controlling for other factors.
- Prenatal counseling on safe sleep did slightly reduce the risk for bed-sharing, when controlling for confounding factors.

Islanders. Hispanics had the lowest proportion. In addition, women who breastfed more than four weeks, had annual family incomes less than \$30,000, or were unmarried were more likely to bed-share frequently (always or almost always).¹⁰ Another PRAMS study in Florida found a similar relationship with bed-sharing and breastfeeding among white and African American mothers who breastfed for four or more weeks.¹¹

This study explored bed-sharing practices among first time mothers who breastfed at least eight weeks post-partum in Oklahoma.

Methods:

Oklahoma PRAMS survey data for the years 2009-2011 (n=8,834) were used in this report, with an overall unweighted response rate of 68.3%. PRAMS asked new mothers “How often does your new baby sleep or nap on the same sleep surface with you or anyone else?” Mothers could answer “Always, 5 or more times per week but not always, 3-4 times per week, 1-2 times per week, or Never.” For this study, mothers were categorized as “At least sometimes” if they gave any answer option other than “Never.” Only first time mothers with breastfeeding duration of eight weeks or more were analyzed for this study (n=1,120). This was to reduce potential bias from previous breastfeeding and infant sleep experiences.

Analysis for this study utilized SAS callable SUDAAN. Prevalence rates and 95% confidence interval (C.I.) estimates were calculated. Potential associations were identified using the Cochran-Mantel-Haenszel Chi-Square (χ^2) Test. Variables were considered significant at $p < 0.05$. Multivariate logistic regression models were used to calculate adjusted risk ratios (ARR).

Results:

In Oklahoma, 25.6% (n= 329) of first time mothers who breastfed their infants for eight weeks or longer reported that their infant never shared a bed or sleeping surface (Figure 1). However, 17.4% of new mothers reported their infant always bed-shared, and 23.0% bed-shared 5 or more times per week. Almost three in four infants (74.4%, n=747) born to first time mothers who breastfed eight or more weeks bed-shared at least sometimes.

Figure 1. Frequency of Bed-Sharing Among First Time Mothers Who Breastfed Eight Weeks or Longer, Oklahoma PRAMS 2009-2011

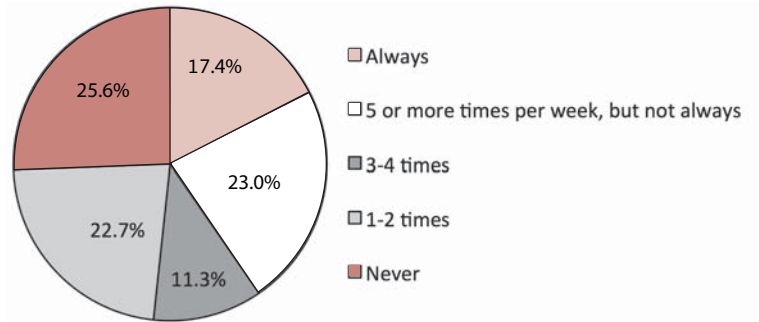


Table 1 highlights the bed-sharing practices (never bed-shared vs. sometimes or always bed-shared) of first time mothers who breastfed for at least eight weeks by selected maternal demographics.

Maternal age, marital status, education, household income, and Medicaid status were significantly associated with bed-sharing sometimes or always. Mothers

Table 1. Bed-sharing Prevalence Among First Time Mothers who Breastfed for Eight Weeks or More by Maternal Demographics, Oklahoma PRAMS 2009-2011

Maternal Demographic	Never Bed-shared		Sometimes or Always Bed-shared	
	Rate (%)	95% C.I.	Rate(%)	95% C.I.
<i>Age*</i>				
< 20 years	21.3	10.9 - 37.3	78.7	63.7 - 89.1
20-29 years	22.5	17.8 - 28.0	77.5	72.0 - 82.2
≥ 30 years	36.7	27.6 - 47.0	63.3	53.0 - 72.4
<i>Race</i>				
White	28.5	23.6 - 34.0	71.5	66.0 - 76.4
African American	-		89.1	63.2 - 97.5
American Indian	-		84.9	66.3 - 94.2
Others	-		78.4	65.1 - 87.6
<i>Hispanic</i>				
No	27.1	22.6 - 32.1	72.9	67.9 - 77.4
Yes	16.0	8.1 - 29.3	84.0	70.7 - 91.9
<i>Marital Status*</i>				
Married	31.3	26.0 - 37.1	68.7	62.9 - 74.0
Other	15.6	10.0 - 23.4	84.4	76.6 - 90.0
<i>Education**</i>				
< HS	-		88.7	67.9 - 96.7
HS	16.1	9.5 - 16.0	83.9	74.0 - 90.5
> HS	30.1	25.0 - 35.8	69.9	64.2 - 75.0
<i>Household income*</i>				
< \$25,000	18.6	13.1 - 25.8	81.4	74.2 - 86.9
\$25,000 - \$49,999	14.4	8.6 - 23.0	85.6	77.0 - 91.4
\$50,000 or more	40.1	32.3 - 48.5	59.8	51.5 - 67.7
<i>Medicaid*</i>				
No	32.5	26.5 - 39.1	67.5	60.8 - 73.5
Yes	18.4	13.3 - 24.9	81.6	75.1 - 86.6

* Significant at $p < 0.05$
 * Excludes mothers less than 18 years old
 - Cell size less than 30

The Pregnancy Risk Assessment Monitoring System (PRAMS) is an ongoing, population-based study designed to collect information about maternal behaviors and experiences before, during, and after pregnancy. Monthly, PRAMS sampled between 200 to 250 recent mothers taken from the Oklahoma live birth registry. Mothers were mailed up to three questionnaires seeking their participation. Follow-up phone interviews for non-respondents were conducted. A systematic stratified sampling design was used to yield sample sizes sufficient to generate population estimates for groups considered at risk for adverse pregnancy outcomes. Information included in the birth registry is used to develop analysis weights that adjust for probability of selection and non-response.

less than 20 years of age had the highest bed-sharing rates (78.7%) compared to the other age groups. African American mothers bed-shared more than the other races. Socio-economic status influenced bed-sharing, as those mothers with incomes less than \$50,000 and those with Medicaid-funded prenatal or delivery care bed-shared more. Rates of bed-sharing ranged from 59.8% for mothers with \$50,000 or more annual household income to 89.1% for African American mothers. However, the confidence intervals were wide in many cases, indicating small sample sizes.

Infants of first time mothers who breastfed for eight or more weeks were more likely to bed-share if their mothers had an unintended pregnancy, smoked (before and/or after pregnancy), and reported symptoms of postpartum depression (Table 2). Eighty-eight percent of first time, breastfeeding mothers with postpartum depression symptoms reported infant bed-sharing compared to 73.0% of mothers without symptoms. Prenatal care in the first trimester and maternal body mass index (BMI) were not significantly associated with bed-sharing among this population.

Table 2. Bed-sharing Prevalence Among First Time Mothers who Breastfed for Eight Weeks or More by Selected Maternal Experiences, Oklahoma PRAMS 2009-2011

Maternal Experiences	Never Bed-shared		Bed-shared Sometimes or Always	
	Rate (%)	95% C.I.	Rate(%)	95% C.I.
<i>Prenatal Care in 1st trimester</i>				
Yes	25.8	21.1 - 31.0	74.2	69.0 - 78.9
No	20.9	12.6 - 32.6	79.1	67.4 - 87.4
<i>Pre-pregnancy BMI</i>				
Underweight	-		-	
Normal	28.4	22.7 - 35.0	71.6	65.0 - 77.3
Overweight	19.3	12.6 - 28.6	80.6	71.4 - 87.4
Obese	20.4	12.8 - 30.9	79.6	69.1 - 87.2
<i>Pregnancy intention*</i>				
Intended	29.5	24.3 - 35.4	70.5	64.6 - 75.7
Unintended	18.5	12.7 - 26.3	81.5	73.7 - 87.3
<i>Smoking 3 months before pregnancy*</i>				
No	28.2	23.5 - 33.6	71.7	66.4 - 76.5
Yes	14.2	8.2 - 23.5	85.8	76.5 - 91.8
<i>Smoking at time of survey*</i>				
No	27.3	22.8 - 32.3	72.7	67.7 - 77.2
Yes	14.8	7.2 - 28.0	85.2	72.0 - 92.8
<i>Postpartum depression symptoms*</i>				
No	27.0	22.5 - 31.9	73.0	68.1 - 77.5
Yes	12.3	6.3 - 22.5	87.7	77.4 - 93.7

* Significant at p < 0.05
- Cell size less than 30

Figure 2. Prevalence of Bed-sharing by Infant Safe Sleep Prenatal Care Counseling among First Time Mothers who Breastfed for Eight or More Weeks, Oklahoma PRAMS 2009-2011

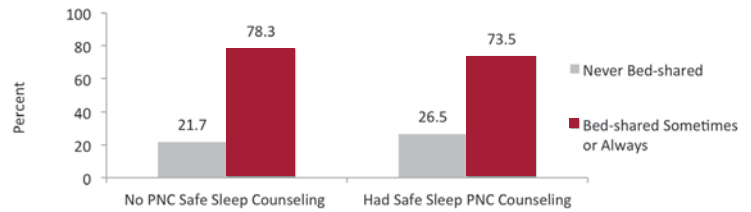


Figure 2 provides the prevalence of bed-sharing practices by the mother’s receipt of prenatal care counseling on infant safe sleep practices. First time, breastfeeding mothers who reported receiving some counseling on safe sleep had a lower prevalence rate of bed-sharing sometimes or always but the difference was not statistically significant in the bivariate analysis.

Multiple logistic regression analysis was done to assess the factors that were significantly associated with bed-sharing practices among first time breastfeeding mothers. Controlling for maternal demographics, prenatal care, and tobacco use, only three variables maintained a significant association: maternal race, prenatal counseling on infant safe sleep, and postpartum depression symptoms (Table 3). African American and American Indian first time breastfeeding mothers were 33% and 21% more at risk (respectively) to report bed-sharing with their infant. Prenatal counseling on infant safe sleep was a protective factor, reducing the risk of bed-sharing, compared to mothers who did not receive counseling on this issue.

Discussion:

Bed-sharing in Oklahoma is a common phenomenon among first time mothers who breastfeed for at least eight weeks. Racial differences found in other bed-sharing studies were observed in Oklahoma. Among mothers who breastfed for eight weeks or longer, a protective factor for SIDS, rates of bed-sharing were significantly higher for African American/Black and American Indian mothers.

A Missouri study reviewing 119 SIDS and SUID cases found that 47.1% of the infants died while sharing a sleep surface with one or more bed mates. Bed-sharing is associated with infant death, either from SIDS or uninten-

Table 3. Adjusted Risk Ratios for Bed-sharing Among First Time Mothers Who Breastfed At Least Eight Weeks, Oklahoma PRAMS 2009-2011

Maternal Characteristic	Adjusted Risk Ratio (ARR)*	95% C.I.
<i>Race</i>		
White	Ref	
African American	1.33	1.2 - 1.4
American Indian	1.21	1.1 - 1.4
Others	0.99	0.8 - 1.2
<i>Prenatal counseling on infant safe sleep counseling</i>		
No	Ref	
Yes	0.87	0.8 - .97
<i>Postpartum depression symptoms</i>		
No	Ref	
Yes	1.16	1.0 - 1.3

* Controlling for maternal age, education, income, Medicaid status, prenatal care, and tobacco use.

tional asphyxiations and involves unsafe sleep surfaces.¹² The Oklahoma Child Death Review Board found that sleep-related deaths made up over 37% (103 out of 278) of all child deaths reviewed in 2013. Of those 103 cases, 60 (58.3%) were associated with bed-sharing.¹³

Mothers who did have prenatal counseling on safe sleep practices for their infant were at a slightly lower risk of bed-sharing compared to mothers who did not receive any counseling on this topic. This reinforces the need for comprehensive counseling on safe sleep at multiple points, during prenatal care, at the delivery hospital and after the infant has come home. However, even among mothers who receive education on infant safe sleep practices, fatigue and lack of quality sleep may override knowledge and usual safety practices.

Among the first time mothers with breastfeeding duration of eight weeks or more, postpartum maternal depression was a slightly elevated risk for bed-sharing. Mothers who were depressed have been found in other research studies to be less likely to follow infant safety guidelines, including infant sleep position recommendations.¹⁴ One small study found that infants of mothers who are depressed took longer to fall asleep and had more sleep disturbances, issues that might prompt tired new mothers to bring an infant to bed with them.¹⁵

One key limitation of this study was the analytic sample size; the sub-analysis produced estimates with wide confidence intervals. Other limitations for this study include the lack of measurable information regarding the breadth and depth of prenatal care counseling concerning safe sleep and lack of information about the sleeping environment (including who was bed-sharing with the infant). Social desirability bias may be causing an over-reporting of breastfeeding in the state and/or an under-reporting of bed-sharing. This study only reviewed first time mothers who breastfed for at least eight weeks. This group is demographically different from mothers who did not breastfeed for as long or at all (in terms of maternal race, education, age) and may have other distinct health behaviors, other than breastfeeding duration. Causation cannot be assessed, only relationships and associations.

Recommendations:

1. Discuss with all members of the family and other potential caregivers the importance of safe sleep practices, what a safe sleep environment looks like and how to encourage its use, and the importance of roomsharing, not bed-sharing.
2. Support and encourage breastfeeding mothers, as every infant feeds and sleeps differently, and reinforce the proximate but separate bed arrangement for optimal breastfeeding and safe sleep success.
3. Support new mothers by allowing them time to sleep without concerns about the infant or household.
4. Advocate for the Office of the Chief Medical Examiner and law enforcement agencies to adopt the Centers for Disease Control and Prevention's model policy for investigation and classification of Sudden Unexpected Infant Deaths (SUID) and Sudden Infant Death Syndrome (SIDS), including the use of scene re-creation and digital photography. The methods currently utilized do not adequately provide the opportunity to distinguish accidental overlay (smothering) from undetermined causes and do not collect information available that would identify risk factors.

5. Provide paid maternity leave for all mothers so they have time to physically recover and bond with their new infant without losing financial support from their job.
6. Incorporate infant safe sleep messages, including statistics, in all levels of care for the mother/baby dyad, including prenatal care, pediatric visits, and postpartum health visits.
7. Adopt a policy regarding in-house infant safe sleep issues in all Oklahoma birthing hospitals that specifies modeling safe sleep positions and environments.
8. Affordable childbirth classes should be available to all expectant mothers and address safe sleep issues prior to birth. Scholarships should also be available to those who cannot afford classes.
9. Support programs that distribute cribs for low-income families, to include information about the importance of roomsharing and why the crib is safer than an adult bed.
10. Support the Infant Safe Sleep workgroup of OSDH's Preparing for a Lifetime, It's Everyone's Responsibility's initiative in its educational efforts and promotion of current American Academy of Pediatrics safe sleep recommendations.
11. Strengthen the referral network for mothers with symptoms of postpartum depression, as some areas do not have adequate services for new mothers.
12. Discuss and assess, via focus groups, those barriers that relate to safe sleep to gain an understanding of why new mothers bed-share, even if they have received education and have resources for providing safe sleep environments.
13. Understand that there are many cultural perspectives associated with bed-sharing, and that educational approaches cannot be "one size fits all" if they are to be successful.
14. Refer all families to the Tobacco Quitline (1-800-Quit-Now) if someone in the household smokes.

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