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Original Article

Evaluation of the Association Between Sleeping Arrangements and Breastfeeding in Infants: A Cross-Sectional, Single Unit Study

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ABSTRACT

Aim: The bed-sharing option has been reported to positively encourage breastfeeding frequency in the literature. However, an association between sudden infant death syndrome (SIDS) and infant bed-sharing has also been identified. The present study aimed to determine the effects of mother-infant bed-sharing and room-sharing on breastfeeding and sleep patterns and whether there is any increased risk of SIDS.

Materials and Methods: We conducted a cross-sectional study among 507 mother-infant dyads between August, 2017 and August, 2018. Bed-sharing was defined as sharing a bed or mattress; room-sharing was defined as sharing the same room for any part of the night. The validated Sleep Questionnaire form was used to assess infant sleep characteristics. Potential predictors of bed-sharing were evaluated via logistic regression models (age, education, etc.).

Results: In the study period, 507 mother-infant dyads were included. The rate of room-sharing was 78.1%, and the rate of bed-sharing was 12.4%. Additionally, the rate of sleeping in a different room was 9.5%. All infants aged 1-5 months who shared a bed with their mother were breastfed, while 94% of those who did not share a bed were breastfed. For 6-12-month-old babies, the breastfeeding frequency was 86% for those who shared a bed, whereas 77% of those who did not share a bed were breastfed. However, the bed-sharing modality was not statistically shown to increase the frequency of breastfeeding [odds ratio (95% confidence interval); 0.362 (0.130-1.01)] (p=0.052).

Conclusion: Sharing a bed remains popular for infants' sleep arrangements. In our study, the majority of infants slept in separate cribs. This study revealed that mother-infant bed sharing increased breastfeeding frequency. Moreover, mother-infant bed sharing delayed the age at which babies with sleep disorders stopped breastfeeding.

Keywords: Infant, sleep, breastfeeding, bed-sharing, room-sharing, SIDS

Introduction

Sleeping is an active neurophysiological process associated with good cognitive, psychomotor, physical, and socioemotional development, mood, and behavior in infancy and childhood. Biological, socio-cultural, and environmental factors influence sleep characteristics and sleep-related behaviors, particularly in the first months after birth (1-4). In addition to sleep quality, safe infant sleep should not be ignored because 3,500 infants die tragically

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of sudden infant death syndrome (SIDS) or other sleep-related mortalities annually in the USA. A technical report was published in 2016 which aimed to decrease mortalities caused by SIDS and other sleep-related infant deaths, including many recommendations for wrong sleep positions or behaviors. One of the most prominent suggestions was a safe sleeping location where by infants should sleep in the parents' room, close to the parent's bed, but on a separate surface (5).

Systematic reviews and studies have focused on the harms and benefits of bed-sharing, which is defined as the parent/parents and the infant sleeping together on the same surface (bed, couch, chair) for many years (6,7). Although epidemiologic studies have declared that bed-sharing might increase the risk of overheating, rebreathing, airway obstruction, and head covering and thus ultimately increase the risk of developing SIDS in infants, the bed-sharing practice remains a popular option in several cultures. Data from the Centers for Disease Control, Pregnancy Risk Assessment Monitoring System, and the National Infant Sleep Position have shown that the practice increased by approximately 6.5% to 13.5% between 1993 and 2010. These studies reported that bed-sharing increases the connection between the mother and infant and supports the socio-emotional development of infants (8-10). It is also noted that an increase in the frequency and quality of breastfeeding is associated with bed-sharing (11). The possible benefits of bed-sharing include an increase in the incidence of successful breastfeeds, the encouragement of breastfeeding for mothers, and the total duration of breastfeeding (12). Nevertheless, a perplexing question has arisen regarding the relationship between bed-sharing and breastfeeding: does bed-sharing facilitate the continuation of breastfeeding, or does breastfeeding encourage the adoption of bed-sharing? Can variabilities in bed-sharing behaviors be used to predict a distinction between low-risk and high-risk infants in a dynamic environment?

The purpose of this study was to detect the prevalence of sleep-sharing practices, to assess the effects of mother-infant bed-sharing and room-sharing on the breastfeeding and sleep patterns of infants, to determine whether there is any increased risky behavior regarding SIDS, and to identify those factors which influence the preference of infant sleep location.

Materials and Methods

Study Design and Dyads

This study was designed as a single-center, cross-sectional study. It was conducted in a children's hospital among mother-infant dyads who were followed up by a social pediatrics outpatient clinic between August, 2017 and August, 2018. Approval for this study was given by the Ege University Faculty of Medicine Clinical Research Ethics Committee (approval no: **17-12/35**, date: 12.12.2017). A total of 507 mothers and 507 infants under 12 months old (507 mother-infant dyads) were enrolled in this study. Oral consent from the mothers was obtained before they participated in this survey after informing them about the study's purpose and expectations.

Sleep Practices and Demographic Questionnaire

The validated Sleep Questionnaire form (adapted and modified from the Sleep Practice Questionnaire) (13) was used to assess infant sleep location, before-bedtime activities, sleep patterns, sleep duration, night waking, night feedings, bedtime routine components and times, infant sleep behaviors and environment, and parenting responses to night wakings. The participants also responded to questions relating to sleeping problems, pillow use, and breastfeeding frequency through the sleep questionnaire form.

The babies were accepted as being breastfed if breastmilk constituted >80% of their daily nutrition. The mothers were interviewed and a questionnaire regarding demographic, socio-economic, behavioral, and biological characteristics, maternal education, sleep location choices, breastfeeding features, and frequencies, etc., was given to those who agreed to be and were accepted as participants. Infants with a birth weight of less than 2,000 grams, acute infections, diseases requiring a particular nutrition program, or a chronic illness requiring hospitalization were excluded from this study. The inclusion criteria for mothers were full-term pregnancies (37 weeks) and being able to speak Turkish. The families' monthly household income levels were evaluated according to the results of the Türk-İş survey of August, 2017 (14).

Two distinct categories were identified: dyads belonging to the bed-sharing group and dyads belonging to the room-sharing group. The groups were compared to assess disparities in terms of their demographic characteristics, sleeping patterns, frequency of breastfeeding, and other socio-economic determinants.

Sleep-Sharing Definitions

Bed-sharing was defined as the infant using the same surface (bed, sofa, or chair) of sleeping location as the mother or parents. Room-sharing was defined as the parent/parents and infant sleeping in the same room on

separate surfaces. Co-sleeping is generally defined as a child sleeping close to the parent/parents on the same sleeping surface (bed-sharing) or in the same room but on a separate sleeping surface (room-sharing). Co-sleeping was not used in this study as it is a broader concept.

Statistical Analysis

Statistical analyses were performed using the IBM SPSS version 21.0 for personal computers (Chicago, IL, USA). The Shapiro-Wilk test was used to check the normality assumption of continuous variables. Fisher's exact and Pearson's chi-squared tests were used for categorical data. In cases of non-normally distributed data, the Mann-Whitney U test was utilized, and the t-test was used in cases of normally distributed data in order to determine whether the difference between the two groups was statistically significant. Pearson or Spearman correlation analyses were used in order to investigate the relationships between numerical variables. Post-hoc analysis was performed for cross-tables larger than 2x2. Logistic regression analysis was used to investigate the effects of independent variables on the dependent binary categorical variable. In univariate analysis, a $p<0.25$ value was used as statistical significance in logistic regression analyses, and then multivariate logistic regression analysis was evaluated. The independent variables were age, sex, educational status, etc., and the dependent variables were defined. It was assumed that the independent variable at the beginning of the process reveals the dependent variable of the process. A two-tailed probability value of $p<0.05$ was considered statistically significant.

Results

Participants and Baseline Characteristics

The participants' characteristics are presented in Table I. The infants were divided into four groups according to age: Group 1 (1-2 months, 39.4%), Group 2 (3-5 months, 26.1%), Group 3 (6-8 months, 20.3%), and Group 4 (9-12 months, 14.2%) (Figure 1). Table I also summarizes the infants'maternal and child characteristics and sleep

Table I. Demographic, socioeconomic, and sleep characteristics of the participants

Infant characteristics			
Age (mean ± SD), months	4.4±1.2		
		n	**%**
Gender	Male	243	47.9
	Female	264	52.1
Age groups, months	1-2	200	39.4
	3-5	132	26
	6-8	103	20.3
	9-12	72	14.2
Delivery form	Vaginal delivery	170	33.5
	Cesarean-section delivery	337	66.5
Birth weight, gr	2,000-2,500	19	3.7
	2,501-4,500	481	95
	>4,500	7	1.3
Infant sleep characteristics	Bed-sharing	63	12.4
	Room-sharing	396	78.1
	Different rooms	48	9.5
Sleep position	Supine	242	47.8
	Lateral	233	45.9
	Non-supine (prone)	32	6.3
Pillow usage	Yes	275	54.4
	No	232	45.6
Sleep surface	Soft	310	61.2
	Hard	197	38.8

Table I. Continued			
Infant characteristics			
Infant's own room	Yes	259	51.1
	No	248	48.9
The number of nights mother and child shared a bed in the last week	Never	315	62.1
	1-6 times	133	26.3
	7 times	59	11.6
Sleeping-waking features (Infants)			
	Duration of sleep in the night (mean ± SD), hours	9±1.2	
	Time to fall asleep (mean ± SD), mins	18.8±17.1	
	Frequency of night wakings (mean ± SD), times	2.7±1.3	
	Duration of sleep in the day (mean ± SD), hours	2.9±2.5	
	Frequency of sleep in the daytime (mean ± SD), times	3±1.5	
Family and maternal demographics			
Maternal age, (mean ± SD) **Maternal age at delivery, (mean ± SD), years**		30.2±5.0 29±5.6	
		n	**%**
Maternal age groups, years	18-24	71	14
	25-34	325	64
	≥35	111	22
Maternal education	Illiterate	9	1.8
	Primary school	61	12
	Secondary school	59	11.6
	High school	150	29.6
	University	228	45
Current breastfeeding status	Yes	454	89.5
	No	53	10.5
Working status of the mothers	Housewife	256	50.5
	Working	65	12.8
	Maternity leave	186	36.7
Home characteristics	Single-family home	466	91.9
	Extended family or others living in the home	39	7.7
	Divorced	2	0.4
Household income, TL	>4,500	166	32.8
	1,500-4,500	311	61.3
	<1,500	30	5.9
Care provider for the infant	Mother	357	70.4
	Babysitter	12	2.3
	Grandmother	138	27.3
Current maternal smoking status	Yes	61	12.1
	No	446	87.9
Current maternal alcohol usage	Yes	14	3
	No	493	97

SD: Standard deviation, TL: Turkish liras

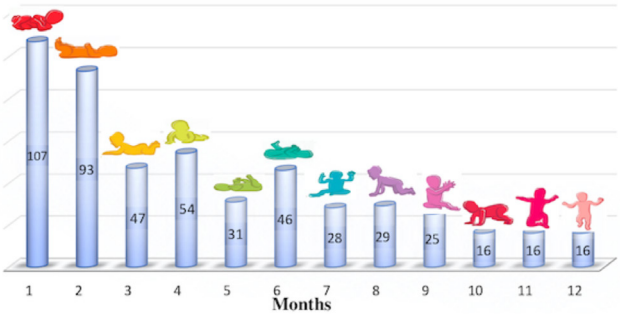

Figure 1. Distribution of the number of babies by month

features. The infants consisted of 243 (47.9%) males and 264 (52.1%) females, with a mean age of 4.4±1.2 months. The mean age of the mothers was 30.2±5.0 years, 14% were 18-24 years old, 64% were 25-34 years old, and 22% were 35 years old or older. 1.8% of the mothers were illiterate; 12% had graduated from primary school; 11.6% from secondary school; and 29.6% had graduated from high school. The rate of room-sharing in the study group was 78.1%, and the rate of bed-sharing was 12.4%. Only 9.5% of the infants slept in a room other than their mother's. It was found that 47.8% of the 507 infants slept on their backs (supine position:

Table II. Comparison of the demographic and sleeping characteristics between room-sharing and bed-sharing sleepers

	Bed-sharing sleepers (n=63)	Room-sharing sleepers (n=396)	p-value
Frequency of breastfeeding at night, n (%)			0.361
0-3 times	34 (54)	266 (67.2)	
4-6 times	29 (46)	130 (32.8)	
Sleep position, n (%)			**0.003**
Back	19 (30.1)	223 (56.4)	
Lateral/Prone	44 (69.9)	173 (43.6)	
Duration of falling sleep, n (%)			**0.006**
5-10 min	30 (47.6)	95 (24.1)	
11-30 min	22 (34.9)	271 (68.4)	
>30 min	11 (17.5)	30 (7.5)	
Frequency of night wakening, n (%)			0.539
Never	2 (3.2)	25 (6.3)	
1-3 times	39 (61.9)	288 (72.8)	
4-6 times	22 (34.9)	83 (20.9)	
Home characteristics, n (%)			0.560
Single-family home	57 (90.4)	363 (91.6)	
Extended family	6 (9.6)	33 (8.4)	
Maternal age, n (%)			0.617
19-25	10 (15.8)	82 (20.7)	
>25	53 (84.2)	314 (79.3)	
Maternal education, n (%)			0.778
Primary school	10 (15.9)	60 (15.2)	
Secondary school	5 (7.9)	54 (13.6)	
High school	29 (46)	131 (33)	
University	19 (30.2)	151 (38.2)	
Maternal working, n (%)			0.655
Working	10 (15.9)	55 (14)	
Housewife	29 (46)	267 (67.4)	
Maternity leave	24 (38.1)	74 (18.6)	
Maternal smoking and/or alcohol use, n (%)			0.341
Yes	11 (17.4)	58 (14.7)	
No	52 (82.6)	338 (85.3)	

n=242), 45.9% slept in a lateral position (n=233), and 6.3% (n=32) slept in a prone position. It was determined that the mean frequency of night waking in infants was 2.7±1.3 times. The mean nighttime sleep duration among mothers was 5.2±1.68 hours; 65.1% of mothers (n=330) described themselves as happy, while 34.9% were unhappy. According to the mothers'perceptions, the prevalence of infant sleep problems was as follows: 24 (4.7%) had severe problems, 151 (29.8%) had moderate problems, and 332 (65.5%) had no sleep problems.

Bed-Sharing vs. Room-Sharing

Table II presents the participant characteristics for each group. No differences existed between groups for breastfeeding frequency at night (p=0.361). Family type, maternal age, maternal education, maternal working status, and maternal smoking or alcohol use also did not show a significant difference between the groups. However, there was a significant difference between the two groups in terms of sleep position and duration of falling asleep (p<0.05). Lateral/prone position patterns were more common in the bed-sharing group than in the room-sharing group, and bed-sharing infants fell asleep in a shorter time than room-sharing infants (p=0.003 and p=0.006, respectively).

There was no significant effect of the independent variables, including the mother's age, education, household income, the sex of the infant, or the number of siblings on bed-sharing preferences. Those infants who were breastfed did not have a statistically significant increase in bed-sharing [odds ratio (OR) (95% confidence interval (CI)); 0.362 (0.130-1.01)] (p=0.052). However, logistic regression analysis showed that the bed-sharing practice increased 1.2 times with increasing age [OR (95% CI); 1.224 (1.126-1.331)] (p<0.001) (Table III) (Figure 2).

Table III. The results of effective factors on choosing a bed-sharing modality via logistic regression analysis

Independent variables	B	S.E	Wald	df	OR (95% CI)	p-value
Breastfeeding	-1.017	0.524	3.767	1	0.362 (0.130-1.01)	0.052
Age	0.202	0.043	22.59	1	1.224 (1.126-1.331)	**<0.001**
Sex (F)	-0.160	0.280	0.328	1	0.852 (0.493-1.474)	0.567
Number of siblings	-0.274	0.210	1.707	1	0.760 (0.505-1.147)	0.191
Mother age	0.032	0.030	1.127	1	1.033 (0.973-1.096)	0.288
Household income	0.000	0.000	0.060	1	1.000 (1.000-1.000)	0.807
Unhappy mother	0.122	0.298	0.167	1	1.129 (0.630-2.026)	0.683
Sleep problems	0.100	0.299	0.111	1	1.105 (0.615-1.986)	0.739
Maternal education (Illiterate)						
Secondary/high school	-0.259	0.448	0.334	1	0.772 (0.321-1.856)	0.563
University	-0.554	0.477	1.346	1	0.575 (0.226-1.465)	0.473

OR: Odds ratio, CI: Confidence interval

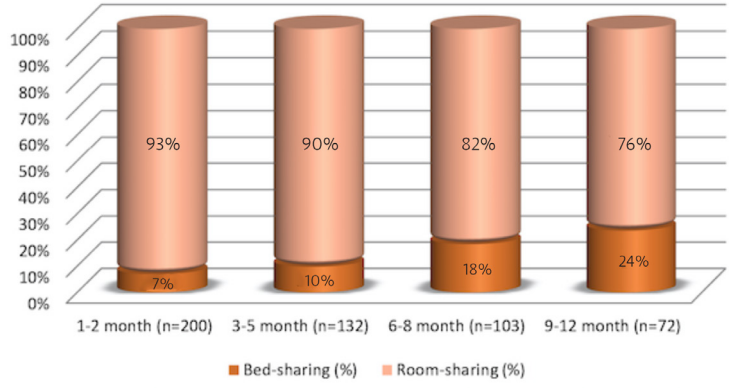

Figure 2. Bed-sharing and room-sharing rates by month

The mothers of the 507 babies who participated in this study reported that 18.8% of their infants were demanding. The age group with the most significant ratio of restless to peaceful infants was 1-2 months, while the age group with the lowest ratio was 9-12 months (Table IV). The logistic regression method was used to identify and assess the independent variables (baby age, unhappy mother, maternal age, pacifier use, breastfeeding, and/or bed sharing) which may have impacted the newborns' sleep issues. It was also found that infants had a 2.2-fold increased risk of sleep problems with unhappy mothers [OR (95% CI); 2.26 (1.53-3.33)] (p=0.006). There was no statistically significant association with the other independent variables on infant sleep problems (Table IV).

Table IV. The results of effective factors on the sleeping problems in infants via logistic regression analysis

Independent variables	B	S.E	Wald	df	OR (95% CI)	p-value
Age, months (1-2 month)						
3-5	-0.007	0.242	0.001	1	0.99 (0.61-1.59)	0.976
6-8	0.322	0.26	1.47	1	1.37 (0.82-2.32)	0.225
9-12	-0.30	0.32	0.832	1	0.74 (0.38-1.41)	0.362
Unhappy mother	0.815	0.19	16.8	1	2.26 (1.53-3.33)	**0.006**
Mother age >25	0.398	0.25	2.51	1	0.67 (0.41-1.10)	0.113
Bed-sharing (Last night)	0.065	0.294	0.049	1	1.067 (0.060-1.89)	0.824
Breastfeeding (No)	0.690	0.36	3.49	1	0.50 (0.24-0.060)	0.061

OR: Odds ratio, CI: Confidence interval

Discussion

This current article mainly examines the preference status for the practice of bed-sharing or room-sharing among mother-infant pairs. It evaluates whether there is a relationship between sleeping place choices and breastfeeding and also whether the determined factors cause sleep problems in infants. We conducted this study to determine the effects of mother-baby bed sharing and room sharing on breastfeeding and sleep patterns and our results show that bed-sharing has no advantage over room sharing in terms of breastfeeding, breastfeeding frequency, sleep patterns, and comfortable sleep during infancy.

Although it has been recommended that infants sleep in the parents' room on a separate surface (room-sharing) for the first year of life (5), most parents prefer bed-sharing situations to accommodate their infants' needs (feeding, crying, etc.). The bed-sharing practice may also provide social-emotional and psychological positive effects within the mother-child dyadic relationship for their infants' development. As is well known, it has been reported that the bed-sharing modality is associated with physical touch (e.g., skin-to-skin contact), emotional security, and physical comfort, which decrease infant distress (13). The bed-sharing modality also comforts breastfeeding mothers in terms of night-sleeping and sustainable sleep. As it may also promote an increased frequency of breastfeeding and its sustainability, infant sleep location choices still tend to maternal-infant bed-sharing in several societies (8).

An international study conducted by Nelson and Taylor (15) from China in 2001 indicated that sleep location choices may vary between countries and cultures and that numerous ethnic and religious beliefs may influence the sleeping location. In that study, a wide range of bed-sharing ratios (2% to 88%) was reported from 21 centers in 17 countries, including Turkey (15). The National Infant Sleep Position Study (9) conducted in the USA with 18,986 participants stated that bed-sharing practices increased between 1993 (6.0%) and 2010 (13.5%), with an 11% prevalence. In a pilot study (16) carried out in the Netherlands among 55 Turkish, 54 Moroccan, and 210 Dutch families, the bed-sharing ratio was reported as being 37% in Turkish families, 40.4% in Dutch, and 38.9% in Moroccan families. Yıkılkan et al. (17) showed that the prevalence of the bed-sharing practice was 16%, and their study noted that the bed-sharing option was more significantly frequent among mothers younger than 20. In this current study, the rate of bed-sharing was 12.4%. Thus, the bed-sharing modality is used in Turkey, just as in many countries which showed low or high rates of SIDS worldwide. This study reported that the risk of SIDS is more likely to occur when the mother is older, has sleep problems, or is unhappy.

Although studies have stated in the literature that bed-sharing is a positive behavior for infant development,

the strong relationship between SIDS and the bed-sharing modality should not be ignored. Sudden infant death syndrome, also known as crib or cot death, is defined as the sudden death of an infant younger than one year of age during sleep, unexplained by complete autopsy and a review of the clinical history of the case (5). The actual incidence of SIDS has not been clearly defined all over the world; however, it has been put forward that there are about 3,500 sudden unexpected infant deaths (SUID), and rates of SIDS, which is a classified subgroup of SUID, declined considerably from 130.3 deaths per 100,000 live births in 1990 to 35.2 deaths per 100,000 live births in 2018 in the United States (approximately 2,500 deaths) (18,19). The incidence of SIDS may indicate disparities based on different cultural practices, races, and ethnicities. Non-Hispanic white infants are determined to have a lower risk for SIDS than Native American, Alaskan Native, and black infants (20).

Several observational and case-control studies have specified many independent epidemiologic risk factors for SIDS. While younger maternal age, inadequate prenatal care, and maternal smoking have been identified as maternal risk factors, soft bedding or bedding accessories such as loose blankets and pillows, head coverings, preterm birth or low birth weight, prone sleeping positions, bed-sharing, and overheating have been proposed as an infant and environmental factor. Lower socioeconomic status has also been associated with an increased risk of SIDS. Gessner et al. (21) reported in their research which included 115 infants who died from SIDS between 1992 and 1997 that 113 (98%) of these 115 infants had slept in a prone position or were bed-sharing. According to our results, the education level of the mothers, household income, infant sex, or the mother's age did not affect bed-sharing choices. However, those mothers who preferred the bed-sharing modality were more likely to show several risks for SIDS, such as lateral sleeping positions. In the National Infant Sleep status study conducted in the United States, it was shown that low household income increased 2-fold the frequency of bed-sharing, high maternal education decreased sleeping with the infants on the same bed, and a negative correlation between maternal age and bed-sharing was shown (22).

Breastfeeding is a critical nutrition form recommended by the World Health Organization, and they recommend "exclusively breastfeeding for the first six months of life, after that for at least two years with the addition of appropriate complementary feedings" for infants. It plays an essential role in lifetime health. The evidence of the strong association between increased breastfeeding frequencies and bed-sharing practices has presented a confusing combination due to a clear dose-response relationship in a similar fashion to the "chicken and egg" conundrum. In a large longitudinal UK cohort study, there was seen to be a positive correlation between the two entities; namely, that breastfeeding rates increased in bed-sharing infants and decreased among those who rarely or never experienced the bed-sharing practice (23). Unfortunately, the bed-sharing practice should not only be associated with several benefits, such as improving breastfeeding rates, increasing breastfeeding duration, encouraging more optimal infant and mother sleep patterns, mother-baby interactions, etc., but also with an obvious proven risk of SIDS. A meta-analysis study showed that bed-sharing infants had a 2.89-fold higher risk of SIDS than non-bed-sharing infants (24). Several studies have also reported showing evidence of death hazards by overlaying/smothering associated with bed-sharing practices (25). As expected, the bed-sharing method is likely related to the other risk factors (such as suffocation, asphyxia, entrapment, falls, and strangulation) which could be lead to the infant's injury or death. This means that infants, particularly those under six months, should sleep through the night alone. Due to a having lower risk for SIDS (as much as by 50%) and being safer than bed-sharing as an infant's sleep location, the room-sharing sleep practice has been recommended as there seems to be a contradiction about the benefits and hazards of bed-sharing such as improved breastfeeding versus the possible risk of death from SIDS (5). Although the rate of bed-sharing practices was found to be low (12.4%) in this study, the mothers or parents had a risky attitude and behavior in deciding on their infants' sleep locations, surfaces, and positions regarding SIDS.

Study Limitations

Our analyses had several limitations. This study was conducted at a University Hospital and in families with relatively high socioeconomic levels, so our results can only be generalized for some Turkish families. Further research is need to reveal more universal parental practices. As the mothers in our cohort had a high level of education, they may not be representative of the general community, and our bed-sharing rates may be lower than those seen in other studies. The other limitation was that we used a subjective question about sleep. The mothers were not asked about their reasons for their bed-sharing choices, which could help establish a cause-and-effect relationship in some variables. Also, this study did not assess whether the ages of other

children in the home had any effect; for instance, whether experienced parents behave differently. Lastly, the infants' sleep problems and their mothers' mode were evaluated subjectively, without using any scale.

Conclusion

The results of this paper do not support that bed-sharing results in an increased breastfeeding frequency. Also, it was found that those infants who slept with a bed-sharing practice showed no differences regarding their sleeping/waking features during their sleep time. Conversely, the lateral sleeping position was more likely to be implemented in bed-sharing dyads than in room-sharing dyads. Consequently, bed-sharing has no advantage over room-sharing during infancy regarding breastfeeding, frequency of lactation nutrition, sleep patterns, or comfortable sleep. Considering the potential risk of death, it might be advocated that an infant's most preferable sleeping location/practice is "room-sharing," especially in those infants younger than six months.

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Ethics

Ethics Committee Approval: Approval for this study was given by the Ege University Faculty of Medicine Clinical Research Ethics Committee (approval no: 17-12/35, date: 12.12.2017).

Informed Consent: All patient's parents received verbal and printed information, and all provided written consent before participation in this study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: T.B.Ö., Ş.G., M.T., F.U.K., Design: T.B.Ö., Ş.G., M.T., F.U.K., Data Collection or Processing: Ş.G., Analysis or Interpretation: T.B.Ö., Ş.G., Literature Search: T.B.Ö., Ş.G., Writing: Ş.G.

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References

1. Sivertsen B, Harvey AG, Reichborn- Kjennerud T, Torgersen L, Ystrom E, Hysing M. Later emotional and behavioral problems associated with sleep problems in toddlers: a longitudinal study. JAMA Pediatr 2015; 169:575-82.
2. Ross CN, Karraker KH. Effects of fatigue on infant emotional reactivity and regulation. Infant Ment Health J 1999; 20:410-28.
3. Spruyt K, Aitken RJ, So K, Charlton M, Adamson TM, Horne SCR. Relationship between sleep/wake patterns, temperament and overall development in term infants over the first year of life. Early Hum Dev 2008; 84:289-96.
4. Moore M, Mindell JA. The impact of behavioral interventions for sleep problems on secondary outcomes in young children and their families. In: Wolfson A, Montgomery-Downs H eds. Oxford Handbook of Infant, Child, and Adolescent Sleepand Behavior. New York, NY: Oxford Press; 2013; 547-58. Available from https://psycnet.apa.org/record/2013-34445-037
5. Moon RY. Task Force on Sudden Infant Death Syndrome. SIDS and other sleep-related infant deaths: Evidence base for 2016 updated recommendations for a safe infant sleeping environment. Pediatrics 2016; 138:e20162940.
6. Horsley T, Clifford T, Barrowman N, et al. Benefits and harms associated with the practice of bed-sharing: a systematic review. Arch Pedia Adolesc Med 2007; 161:237-45.
7. Das RR, Sankar MJ, Agarwal R, Paul VK. Is "Bed Sharing" beneficial and safe during infancy? A systematic review. International Journal of Pediatrics 2014; 2014:468538.
8. Ward TCS. Reasons for mother–Infant bed-sharing: A systematic narrative synthesis of the literature and implications for future research. Maternal and Child Health Journal 2015; 19:675-90.
9. Colson ER, Willinger M, Rybin D, et al. Trends and factors associated with infant bed sharing, 1993-2010: The national infant sleep position study. JAMA Pediatrics 2013; 167:1032-7.
10. Gettler LT, McKenna JJ. Evolutionary perspectives on mother-infant sleep proximity and breastfeeding in a laboratory setting. Am J Phys Anthropol 2011; 144:454-62.
11. Baddock SA, Galland BC, Bolton DP, Williams SM, Taylor BJ. Differences in infant and parent behaviors during routine bed sharing compared with cot sleeping in the home setting. Pediatrics 2006; 117:1599-607.
12. Ball HL, Howel D, Bryant A, Best E, Russell CM. Ward-Platt Bed-sharing by breastfeeding mothers: who bed-shares and what is the relationship with breastfeeding duration? Acta Paediatr 2016; 105:628-34.
13. Germo GR, Chang ES, Keller MA, Goldberg WA. Child sleep arrangements and family life: Perspectives from mothers and fathers. Infant and Child Development 2007; 16:433-56.
14. http://www.turkis.org.tr/dosya/pBDme2chn8Tg.pdf
15. Nelson EA, Taylor BJ. International Child Care Practices Study: infant sleep position and parental smoking. Early Hum Dev 2001; 64:7-20.
16. Van Sleuwen B, L'hoir M, Engelberts A, Westers P, Schulpen TW. Infant care practices related to cot death in Turkish and Moroccan families in the Netherlands. Archives of Disease in Childhood 2003; 88:784-88.
17. Yıkılkan H, Unalan PC, Cakır E, et al. Sudden infant death syndrome: how much mothers and health professionals know. Pediatr Int 2011; 53:24-8.

18. Krous HF, Beckwith JB, Byard RW, et al. Sudden infant death syndrome and unclassified sudden infant deaths: a definitional and diagnostic approach. Pediatrics 2004; 114:234-8.

19. Barfield W, D'Angelo D, Moon R, Lu M, Wong B, Iskander J. CDC grand rounds: public health approaches to reducing U.S. infant mortality. MMWR Morb Mortal Wkly Rep 2013; 62:625-8.

20. Matthews TJ, MacDorman MF. Infant mortality statistics from the 2010 period linked birth/infant death data set. Natl Vital Stat Rep 2013; 62:1-26.

21. Gessner BD, Ives GC, Hester KA. Association between sudden infant death syndrome and prone sleep position, bed-sharing, and sleeping outside an infant crib in Alaska. Pediatrics 2001; 108:923-7.

22. Willinger M, Ko CW, Hoffman HJ, et al. Trends in infant bed-sharing in the United States, 1993-2000: The National Infant Sleep Position Study. Arch Pediatr Adolesc Med 2003; 157:43-52.

23. Blair PS, Heron J, Fleming PJ. Relationship between bedsharing and breastfeeding: longitudinal, population-based analysis. Pediatrics 2010; 126:1119-26.

24. Vennemann MM, Hence HW, Bajanowski T, et al. Bed-sharing and the risk of sudden infant death syndrome: can we resolve the debate? J Pediatr 2012; 60:44-52.

25. Nakamura S, Wind M, Danello M. Review of hazards associated with children placed in adult beds. Arch Pediatr Adolesc Med 1999; 153:1019-42.