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Relationship of Lower Breastfeeding Score and Problems in Infancy

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Abstract

Background and Methods: We undertook a descriptive study in 2-month-old healthy infants to determine the factors that affect breastfeeding score. Mother's breastfeeding was evaluated and scored according to the World Health Organization/UNICEF B-R-E-A-S-T Feeding Observation Form.
Results: The breastfeeding score (BFS) was higher in female than male babies ($p = 0.005$). The babies with regurgitation had lower BFS than the babies without ($p = 0.016$). The BFS was lower in babies who had repeated, without cause, inconsolable crying than in those without such crying ($p < 0.004$). When the crying was problematic for the family, BFS was lower ($p = 0.028$). Babies who had another sibling with a history of colic had a lower BFS ($p = 0.038$). A low BFS was associated with short duration of night sleeping ($p = 0.032$).
Conclusions: A decreased BFS may be a risk factor or indicator for infant crying, regurgitation, and short sleeping duration. As a result, tracking the BFS and appropriate breastfeeding intervention during the newborn period may assist in decreasing the frequency of regurgitation and infant crying.

Introduction

Breastfeeding gives significant health advantages to both the mother and growing child, and the World Health Organization (WHO) recommends exclusive breastfeeding for the first 6 months of life, with the gradual introduction of complementary foods and continuation of breastfeeding until 2 years or beyond.[1–3] The promotion of successful breastfeeding has long been a major focus for healthcare providers and researchers.[3–6] Using a "breastfeeding score (BFS) checklist" may help health personnel to assess breastfeeding more accurately, to identify mothers with low breastfeeding confidence who are at high risk to prematurely discontinue breastfeeding, and to determine which aspects need improving.[3–6] Then, UNICEF/WHO Baby Friendly Hospital Initiative training, including how to breastfed, can be applied to these mothers.[3,7]

There are several published breastfeeding assessment tools.[3,5,6,8,9] They focus on different aspects of baby and maternal behaviors during breastfeeding interactions, such as the absence of breastfeeding problems, maternal satisfaction, and duration of the feeding. They evaluate breastfeeding according to the baby's behavior, the mother's behavior, positioning, attachment, effective feeding, health of the breast, health of the baby, and mother's experience.

Successful breastfeeding is influenced by maternal characteristics and social situation.[2–4,10] Therefore, some factors, including delivery type, parity, gestational age, birth weight of infant, and lactation consultants, might have a role influencing the BFS.[3,11] Determining the factors that affect BFS might improve child breastfeeding. Some mothers complain about sleeping, regurgitation, and crying problems of their infants, and, to the best of our knowledge, there has been no published study to date on breastfeeding patterns of infants with such problems. Considering the lack of data, we undertook a descriptive study in 2-month-old infants to determine the effect of maternal and infant characteristics on BFS by using the WHO/UNICEF B-R-E-A-S-T-Feeding Observation Form and to evaluate the BFS of infants demonstrating regurgitation, crying, and sleeping problems.

Subjects and Methods

This descriptive study was conducted at the Unit of Social Pediatrics, Department of Pediatrics, Hacettepe University Faculty of Medicine, Ankara, Turkey. Only healthy infants (2 months of age) were included in the study; infants hospitalized for any reason and infants with acute or chronic disease were excluded. Infants with vomiting, which denotes an active reflux process or with pathologic regurgitation (regurgitating more than 20 mL/day or any complication of gastroesophageal reflux, including failure to thrive or pulmonary disease) were not accepted for this study. To prevent the effect of previous breastfeeding counseling on BFS, the

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Table 1. General Characteristics of the Study Population ($N = 82$)

Demographic	*Value*
Gestational age (weeks)	38.9 ± 1.7
Maternal age (years)	30.2 ± 4.7
Educational level of the mother ≥8 years	68 (82.9%)
Prenatal and/or postnatal maternal smoking	11 (13.4%)
Paternal smoking	41 (50.0%)
Mode of delivery (spontaneous vaginal/cesarean)	35/47
Birth weight (g)	3197 ± 461
Male/female baby	42/40
Repeated, inconsolable crying without apparent cause	55 (67.1%)
Problematic crying for the family	14 (17.1%)
Daily crying duration ≥60 minutes	12 (14.6%)
Consultation to a doctor for colic	13 (15.9%)
Infants with complaint of daily regurgitation	51 (62.2%)
Infants with constipation	13 (15.9%)
Bottle usage	28 (34.1%)
Pacifier usage	37 (45.1%)
Presence of primary caregiver other than the mother	14 (17.1%)
First breastfeeding time ≥2 hours after delivery	30/82 (36.6%)
Daily frequency of breastfeeding	10.47 ± 3.78
Frequency of breastfeeding at night (21:00–07:00 hours)	2.74 ± 1.30
Duration of	
Breastfeeding (minutes)	17.5 ± 11.5
Sleeping during the day (08:00–20:00 hours) (hours)	6.1 ± 2.3
Sleeping at night (21:00–07:00 hours) (hours)	6.7 ± 1.9

Data are mean ± SD values or *n* (%) as indicated.

mothers who had received breastfeeding counseling on admission were excluded from this study. All suitable infants and mothers with verbal consent were included in the study.

During the 2-month study period, a total of 217 mother–infant pairs were admitted to our unit; 125 mothers and their babies were excluded from the study because of history of receiving breastfeeding counseling, and four of them were excluded because of hospitalization and acute or chronic disease. Among the remaining 88 mothers, 82 of them who gave verbal consent were included in the study.

A questionnaire including gestational age, sex, birth weight, type of delivery, maternal/paternal smoking, infant's crying characteristics, regurgitation, constipation, bottle/pacifier usage, presence of a primary caregiver other than the mother, educational level of the mother, time of the first breastfeeding, frequency and duration of breastfeeding, and infant sleeping duration was given to mothers. There were four generally formulated questions regarding parental concern about crying and colic: namely, about whether mothers thought their infants sometimes had repeated, inconsolable crying, without apparent cause; whether the infant's crying constituted a problem for her or the rest of the family; whether they considered that the daily duration of crying was ≥60 minutes; and whether mothers felt the need to seek help from a doctor.[12,13]

In an otherwise healthy infant, regurgitation was defined to the mothers as the effortless return of gastric contents at least into the mouth.[14] Infants who regurgitate at least once a day were defined as a regurgitating infant.

The breastfeeding technique of the mother was evaluated and scored according to the B-R-E-A-S-T Feeding Observation Form,[3] which is a tool developed for use by health professionals carrying out the WHO/UNICEF Breastfeeding Management course. This Form is divided into six sections: body position, responses, emotional bonding, anatomy, suckling, and time spent suckling. The Form consists of two columns: one indicating signs of a successful breastfeeding, and the other giving the opposing signs. If the health worker records only positive signs, this indicates that breastfeeding is probably going well. If some negative signs are observed, this indicates that there may be problems, and follow-up action may be required. Positive signs were coded as 1, and all positive signs were summed. There were 25 items, and each positive item was multiplied by 4. In this manner, a mother–infant pair with only positive signs had 100 for a BFS. Sucking period was not taken into consideration.

Table 2. Breastfeeding Score According to Infant Parameters ($N = 82$)

Parameter	n	*Breastfeeding score*	p
Sex			0.005
Male	42	83.7 ± 7.4	
Female	40	88.8 ± 8.8	
Delivery mode			0.354
Vaginal	35	87.2 ± 9.3	
Cesarean	47	85.5 ± 7.7	
First food given to the infant			0.852
Breastfeeding	68	86.1 ± 8.5	
Infant formula	14	86.6 ± 8.1	
Bottle usage			0.712
Yes	28	85.7 ± 7.5	
No	54	86.4 ± 8.9	
Pacifier usage			0.730
Yes	37	85.8 ± 8.3	
No	45	86.5 ± 8.6	
Presence of daily regurgitation			0.016
Yes	51	84.5 ± 8.2	
No	31	89.0 ± 8.2	
Constipation			0.245
Yes	13	83.7 ± 8.6	
No	69	86.7 ± 8.4	
Color of the stool			0.796
Yellow	54	86.4 ± 8.4	
Green-yellow/green	28	85.9 ± 8.5	
Stool consistency			0.702
Watery	34	85.8 ± 8.8	
Solid (firm)	48	86.5 ± 8.2	
Presence of caregiver other than the mother			0.610
Yes	14	85.1 ± 7.8	
No	68	86.4 ± 8.6	

Breastfeeding score data are mean ± SD values.

Statistical analysis

Data were analyzed using SPSS version 10.0 for Windows software (SPSS Inc., Chicago, IL). Results were reported as mean ± SD values or *n* (%) where appropriate. The normality of data distribution was checked using the Kolmogorov–Smirnov test in the whole group and the subgroups. Student's *t* test was used to compare BFS in groups with normal distribution, whereas the Mann–Whitney U test was used in groups with skewed distribution. Pearson correlation coefficients were calculated. A p value of < 0.05 was considered to indicate statistical significance.

Results

General characteristics of enrolled cases are given in Table 1. Of the 82 babies, 42 were male, and 40 were female.

Mean (±SD) BFS was 86.2 (±8.4). The BFS was higher in female than male babies (88.8 ± 8.8 vs. 83.7 ± 7.4, respectively; $p = 0.005$) (Table 2). The babies with regurgitation had lower BFS than the babies without (84.5 ± 8.2 vs. 89.0 ± 8.2, respectively; $p = 0.016$) (Table 2). The BFS was lower in babies who had repeated, inconsolable crying without cause than in those without such crying (84.4 ± 7.7 vs. 89.9 ± 8.8, respectively; $p = 0.004$) (Table 3). When the crying was problematic for the family, BFS was lower (81.7 ± 6.2 vs. 87.1 ± 8.5; $p = 0.028$) (Table 3). The babies who had another sibling with a history of colic had a lower BFS than those without such a sibling history (83.5 ± 8.7 vs. 88.7 ± 7.8; $p = 0.038$). Low BFS was associated with short duration of sleeping between 21:00 and 07:00 hours ($r = 0.238$, $p = 0.032$). There was no correlation between BFS and birth weight, gestational age, time of the first breastfeeding, frequency of breastfeeding, and duration of breastfeeding. Presence of infant's constipation, first food given to infant, and bottle or pacifier usage did not significantly affect BFS.

Table 3. Breastfeeding Score According to Infant Crying Characteristics ($N = 82$)

Parameter	n	*Breastfeeding score*	p
Repeated, inconsolable crying without apparent cause			0.004
Yes	55	84.37 ± 7.7	
No	27	89.93 ± 8.8	
Crying problematic for the family			0.028
Yes	14	81.71 ± 6.2	
No	68	87.12 ± 8.5	
Daily duration of crying (≥60 minutes)			0.597
Yes	12	85.00 ± 7.5	
No	70	86.40 ± 8.6	
Consultation to a doctor for colic			0.059
Yes	13	82.15 ± 8.9	
No	69	86.96 ± 8.2	
Sibling with colic history ($n = 45$)			0.038
Yes	22/45	83.46 ± 8.7	
No	23/45	88.70 ± 7.8	

Breastfeeding score data are mean ± SD values.

Maternal factors, including age, education, active or passive smoking exposure, type of delivery, and presence of another caregiver other than the mother, had no significant effect on BFS (Table 2) of infants 2 months old.

Discussion

In the present study, 57.6% of mothers admitted to our center received lactation counseling. In our previous study, 68.3% of mothers received lactation counseling support.[15] In a recent hospital-based study, we also found that 24% of the mothers received breastfeeding counseling during their pregnancy and 65% of the mothers did so in the hospital after labor.[16] The results show that more efforts are necessary to give the lactation counseling programs to every pregnant and lactating mother.

To the best of our knowledge, there has been no previous study evaluating the impact of infant and maternal factors on the BFS. Interestingly, we found that the BFS is higher in female than male babies; it is speculated that this may stem from behavioral differences between female and male babies. Obviously, this aspect needs further evaluation.

A second notable factor was regurgitation. Uncomplicated regurgitation in otherwise healthy infants is not a disease.[14] It consists of milk flow from the mouth during or after feeding. Common causes include overfeeding, air swallowed during feeding, crying, or coughing; physical exam is normal, and weight gain is adequate. Our data suggest a difference in BFS according to the presence or absence of regurgitation. Babies who regurgitate had lower BFS than those who did not. One explanation for this is that the infants with lower BFS might swallow more air during sucking then regurgitate. However, regurgitation might decrease BFS, and additional cohort studies should be done to show which one is first.

Lower BFS was also associated with crying characteristics, including repeated, inconsolable crying without cause, problematic crying for the family, and presence of a sibling with history of infantile colic. It was speculated that a lower BFS may indicate an increased risk of worse crying characteristics. We cannot, however, determine if there is a causal relation between colic and feeding problems from this study.In our previous nested case-control study, colic was found to be associated with various perinatal factors (maternal education, smoking habits, cheese consumption, hostility scores, and domestic violence).[17] However, BFS was evaluated in infants with problematic crying for the first time. The present study indicates that higher BFS might decrease the colic incidence. On the other hand, it is possible that low BFS contribute to colic symptoms, that colic contributes to low BFS, or that they are co-occurring conditions with similar etiologies. As a limitation of a descriptive study, we could not say which comes first: lower BFS or crying. Previously, Miller-Loncar et al.[18] reported that infants in the colic group displayed more difficulties with feeding, including disorganized feeding behaviors, less rhythmic nutritive and non-nutritive sucking, more discomfort following feedings, and lower responsiveness during feeding interactions. Further studies are necessary to analyze these interactions.

The B-R-E-A-S-T Feeding Observation Form is used all over the world as a part of UNICEF/WHO Baby Friendly Hospital Initiative training.[3] The most commonly reported reasons are

that such a tool would enable healthcare workers to determine areas of needed follow-up care and to facilitate the teaching of breastfeeding techniques to both parents and health workers. In our study, it was also found that tracking the BFS and appropriate breastfeeding observation during the newborn period may decrease the occurrence of regurgitation and problematic crying. Determinants for lower BFS could be male infants, infants with regurgitation, inconsolable crying, and sleeping problems.

Disclosure Statement

No competing financial interests exist.

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