



Identification of Breastfeeding Problems and the Effect of Educational Breastfeeding Support on the Breastfeeding Success

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ABSTRACT

Aim: The identification of breastfeeding problems in the postpartum period and the effect of interventions on these problems.

Materials and Methods: This was a retrospective and cross-sectional study. This study included mothers who had an infant and were admitted to the breastfeeding and lactation unit (BLU) during the study period. Individualized educational breastfeeding support (EBS) was provided to the study mothers at the BLU. The demographic data and breastfeeding problems of the included infants and their mothers were obtained from files of the BLU and they were retrospectively analyzed. Breastfeeding duration was evaluated after the infants in this study group reached 6 months of age.

Results: During the study period, 163 infants of 158 mothers were enrolled. The most common complaint on admission to the BLU was breast and nipple problems (60.1%). Sub-complaints included poor grasping of the nipple (30.1%), breast engorgement (12.3%), breast refusal (8.1%), the use of nipple shields (6.1%), and cracked nipples (2.5%). With the exception of cases involving breast and nipple problems, the most prevalent reason for presentation to the BLU was the early initiation of formula feeding (13.5%). Among the 114 infants whose mothers received EBS and who were older than 6 months at the time of follow-up, 75% were exclusively breastfed, and the median breastfeeding duration was 10 months (range: 6-20).

Conclusion: Breast and nipple problems, which constitute the majority of the reasons for admission to the BLU, can be resolved with EBS. Consequently, EBS has the potential to enhance the rate of exclusive breastfeeding for a period of at least six months, thereby surpassing the national average for breastfeeding.

Keywords: Breastfeeding, educational breastfeeding support, breast problems, cracked nipple, formula feeding, lactation training

Introduction

Breastfeeding has an important role in infant and maternal health as well as in public health. Therefore, both national and global policies to promote breastfeeding

need to be supported (1,2). The World Health Organization recommends exclusive breastfeeding for all infants up to 6 months and continued breastfeeding until at least 2 years of age, depending on the desires of the mother and child (3). It has been reported that around 820,000 children's lives

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could be saved annually through breastfeeding alone, and around 87% of these children are infants under 6 months of age (4). It is also known that in low- and middle-income countries, similar to our country, mortality due to diseases such as pneumonia or diarrheal decreases 11 to 15 times as a result of breastfeeding (5). The benefits of breastfeeding are not only limited to the breastfeeding period, but also have significant positive effects on health in adulthood. Therefore, the importance of breastfeeding in establishing the fundamentals of a healthy life cannot be denied (6).

According to the Türkiye Demographic and Health Survey (TDHS) 2018, the rate of exclusive breastfeeding was 41% of children younger than 6 months of age in our country. TDHS data reported that exclusive breastfeeding was 59% in the neonatal period, but this rate decreased to 45% in infants aged 2-3 months and to 14% in infants aged 4-5 months. The breastfeeding behavior of mothers is influenced by many factors and may require support. These factors may be due to socio-demographic, obstetric, maternal or infant-related reasons. These factors may be due to breastfeeding failure and reluctance may occur in the early period or during follow-up (7,8).

The main aim of this study was to determine the causes of breastfeeding failure in mothers and their babies who presented with breastfeeding problems. The secondary aim was to determine the effects of educational breastfeeding support (EBS) on breastfeeding behavior and its duration.

Materials and Methods

Study Design

This retrospective and cross-sectional study included mother-baby pairs who were admitted to the "breastfeeding and lactation unit" (BLU) of Kırıkkale University Faculty of Medicine between 01.11.2022 and 01.12.2023 for breastfeeding difficulties and problems and whose retrospective records were available for review. The study protocol was approved by the Non-Interventional Clinical Research Ethics Board of Kırıkkale University Faculty of Medicine (approval no.: 2024.02.07, date: 14.02.2024). The authors have confirmed in writing that they complied with the World Medical Association Declaration of Helsinki regarding the ethical conduct of research involving human subjects and/or animals.

Settings and Relevant Context

The mothers in this study received individualized EBS from a certificated nurse practitioner (Ç.A). The EBS targeted the mother and/or family members such as parents. This support included increasing the mother's motivation to

breastfeed, whether that be via providing information about the health outcomes of breastfeeding, providing women with the skills and confidence to commence breastfeeding, or using more structured approaches such as motivational interviewing which sought to "increase an individual's belief that they can achieve a desired outcome" (8).

Sample

Educational Breastfeeding Support (EBS)

- The benefits of breast milk and breastfeeding were explained to mothers.
- Mothers were briefed on breastfeeding positions, the stomach capacity of the newborn, signs of the newborn being full with breast milk and assessing the adequacy of breast milk, expressing and storing breast milk, breast care, and breast rejection.
- When the nipple was inverted, mothers underwent Hoffman exercises to help them initiate and maintain breastfeeding. Hoffman exercises were performed by taking the nipple between the index finger and thumb and gently pulling it into the baby's mouth and using the same technique to stretch the nipple and make it visible (9).
- When the mother suffered breast engorgement, warm gauze pad application to the breast, taking a hot shower, massaging the breast softly, massaging the shoulder and back area, and hand milking were recommended and practiced.
- Management of mastitis included increased fluid intake, rest, antibiotic treatment and drainage of excess milk from the breast. General surgery consultation was indicated for drainage in mastitis when complicated with abscesses.
- Crying and screaming while on the mother's breast or stopping breastfeeding after feeding for a very short period of time were considered as breast refusal. The rejection of the breast may arise from either the mother or the infant. Some conditions of the infant, such as thrush, pharyngitis, clavicle fracture or diseases of the mother, the smell of perfume, or a lack of knowledge and experience, can cause breast rejection. Breast refusal is resolved by finding the underlying cause of the infants' breast refusal and providing an appropriate approach.
- If the baby's nipple latching problem was caused by the mother, the mother-baby pair was encouraged to provide support for each breastfeeding at 2 to 3 hours intervals all day long, which was called "breastfeeding camp". At each breastfeeding period during the day, the mother was shown

how to breastfeed appropriately with an individualized approach and given the opportunity to practice exercises.

- Counseling on breastfeeding and how to continue breastfeeding was provided for those mothers who had returned to their jobs.

- Re-lactation means re-establishing (restarting) breastfeeding. Various methods such as nipple stimulation, the breastfeeding support system, the drop and drip technique and skin-to-skin contact were used to achieve lactation. Lactogogues are rarely necessary for re-lactation.

Routinely, all mothers who received EBS by the BLU nurse (Ç.A.) were contacted by phone in order to obtain information regarding breastfeeding durations when their babies had reached 6 months of age.

Statistical Collection

The data of the included infants and their mothers were obtained from files of the BLU. Demographic data including gender, gestational age, birth weight, mode of delivery, co-morbidities, maternal age, maternal education and occupation, duration of breastfeeding, risk factors, and breastfeeding problems were retrospectively analyzed. When their children were six months old, the families were contacted again and their breastfeeding information was recorded.

Statistical Analysis

Statistical Package for Social Sciences (SPSS) version 28 (SPSS, Chicago, IL, USA) was used for the statistical analysis. The data are expressed as mean $\pm$ standard deviation, medians (minimum-maximum values), percentages and ratios. The variables were analyzed for normal distribution using the Shapiro-Wilk test. Mean and standard deviation values were calculated for the data which matched the normal distribution, and median and minimum-maximum values were calculated for the data which did not match the normal distribution.

Results

During the study period, 166 infants were admitted. Sixteen of these babies were twins. Three of these infants who were twin pairs were not included in this study because they did not have breastfeeding problems. The remaining 163 infants from 158 mothers were enrolled (Figure 1). The rate of caesarean section (CS) was 88% (n=144) among the mothers. The demographic data on the infants and mothers are shown in Table I. The rate of initiation of breastfeeding in the first 1 hour after birth was 73% (n=116).

The most common complaint reported by mothers on admission to the BLU was breast and nipple problems (60.1%). Among those mothers admitted to BLU with breast and nipple problems, the most common sub-complaint was poor grasping of the nipples (30.1%). Early initiation of formula feeding (13.5%) was the most common complaint in the "other reasons" group. Table II shows the reasons for applying to the BLU for other breastfeeding problems.

Seventy-two (44%) of the infants used formula at some point in their lives. Table III summarizes when and for what reasons the infants were started on formula and who recommended it.

Thirty (18.4%) of the infants who participated in this study were hospitalized within the first 15 days of life. The reasons for hospitalization were indirect hyperbilirubinemia (n=18), prematurity (n=5), early-onset sepsis (n=5), prematurity (n=2) and hyperbilirubinemia (n=2).

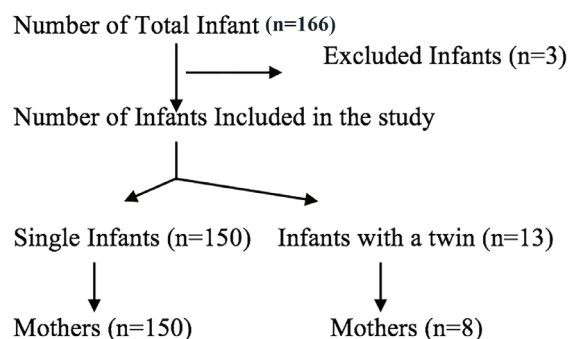


Figure 1. The mother-infant pair in the study

		Infants (n=163)	Mothers (n=158)
Gestational age (week)*		38 (31-42)	
Birth weight (gr)**		3,069 $\pm$ 526	
Caesarean section (CS) (n, %)		144 (88)	
Singleton birth (n, %)		153 (94)	
Female (n, %)		84 (52)	
Day of admission*		21 (1-270)	
Mothers' age*			28 (18-42)
Mother's education (n, %)	University		67 (43)
	High school		75 (48)
	Elementary		16 (10)
Employed mother (n, %)			4 (3)

*Median (minimum-maximum), **Mean $\pm$ standard deviation

Mastitis or nipple problems were detected on breast examination in 57 (36%) of the mothers presenting to the BLU. The most common maternal nipple problem was found to be inverted nipple (49.1%) (Table IV).

Table II. The reasons of breastfeeding problems expressed by mothers, n (%)

Breast and nipple problems	97 (60.1)
Poor grasping of the nipple	49 (30.1)
Breast engorgement	20 (12.3)
Breast refusal	14 (8.6)
Use of nipple shields	10 (6.1)
Cracked nipples	4 (2.5)
Other reasons	66 (39.9)
Early initiation of formula	22 (13.5)
Psychological problems of mothers	19 (11.7)
Reduction or cessation of breast milk	10 (6.1)
Failure to gain weight	8 (4.9)
Delayed lactation	6 (3.7)
Adoption	1 (0.6)

Table III. Feeding with formula (n=72)

Reason for giving formula, n (%)	
Maternal anxiety	28 (39)
Failure to gain weight	22 (30)
Lack or delay of mother's milk	16 (22)
Indirect hyperbilirubinemia	5 (7)
Excessive weight loss during exclusively breastfeeding	1 (2)
When was formula started? n (%) 72 (44)	
<7 days	42 (58)
7-14 days	23 (32)
14-30 days	3 (4)
>30 days	4 (6)
Who recommended giving formula to the baby? n (%)	
Mother	41 (57)
Health professional	31 (43)

Table IV. Maternal nipple problems and mastitis

	n: 57, 36%
Cracked nipples	13 (22.8)
Inverted nipple	28 (49.1)
Breast engorgement without mastitis	15 (26.3)
Mastitis	1 (1.8)

The rate of initiation of exclusive breastfeeding was 52.1% (n=85/163) among those infants whose mothers received EBS. Exclusive breastfeeding was documented in 52% (n=75/144) of those babies born by CS. Exclusive breastfeeding was documented in 10 (52.6%) of the 19 babies born by normal spontaneous vaginal delivery. There was no difference in breastfeeding success between vaginal delivery and CS (p=0.083).

After a single visit to the BLU, 22 (14%) mothers achieved breastfeeding success. The remaining 136 (86%) mothers achieved breastfeeding success after more than one BLU visit. The median number of readmissions to the BLU was 1 (1-4).

During the study period, 114 (75%) of the 152 mothers with infants aged six months or over were contacted via telephone. Of these infants, 85 (75%) were exclusively breastfed, 13 (11%) received both formula and breastmilk, and 16 (14%) received only formula. The median duration of breastfeeding in the exclusively breastfed infants was 10 months (range: 6-20).

Discussion

In this study, we investigated factors affecting breastfeeding success, and then examined long-term breastfeeding rates after breastfeeding interventions. We found that the main reasons for admission to the BLU were poor latching and breast refusal due to breast and nipple problems (60.1%). The most common sub-complaint of the mothers was poor grasping of the nipples (30.1%). Similarly, in a Danish study, 40% of the admissions for breastfeeding failure were attributed to the baby's inability to latch onto the breast. The next reason was reported as sore, wounded or cracked nipple (10). In line with our results, Gerd et al. (11) showed the same breastfeeding problems in their study.

In our study, the most common reason for formula initiation was maternal anxiety with a rate of 39%. Similarly, in a Canadian cohort study of 306 women, maternal anxiety was associated with an 11% reduction in the odds of exclusive breastfeeding at 6 months (12). However, the study by Arifunhera et al. (13) showed that maternal anxiety had a weak effect on breastfeeding. A Turkish cohort study of 60 mothers measured state and trait anxiety, and they found no significant differences between levels of anxiety and exclusive breastfeeding status at 4 months postpartum (14).

In the present study, the decision to start formula feeding was made by the mother herself in 57% of the cases, while 43% were influenced by health professionals. In an Australian study, it was reported that the person who

started formula was the mother, and the most common reason was that she thought her milk decreased in the second week after discharge (15). Furthermore, it was found that the total duration of breastfeeding was shorter in those who started formula in the first days in line with the recommendations of health professionals (16). In order to prevent this situation in our hospital, it is planned to increase the frequency of training for health professionals, as recommended by the Turkish Ministry of Health (17).

The present study found that 36% of breastfeeding problems in mothers were due to nipple problems. Feenstra et al. (10) reported that 38% of mothers had nipple cracks, 7% had mastitis, 40% had breast rejection due to various factors, and 4% had sucking failure due to breast engorgement and hyperlactation. The prevalence of nipple-related issues, including sore, wounded, or cracked nipples, was found to be 22.8% in the present study, which is consistent with the findings of Swedish mothers who reported experiencing sore nipples (25%) (11).

The rate of initiation of breastfeeding within the first 1 hour after birth was 73% in the present study. This might have contributed to the high success rate of breastfeeding. Many studies have shown that breastfeeding within the first hour after birth has an impact on breastfeeding success. They suggested that the value of breastfeeding and skin-to-skin contact within the first hour should be emphasized (18-20). Similarly, in a study conducted in Spain on 151 mother-infant pairs, it was found that the early breastfeeding group (within the first hour of life) had a significantly higher rate of exclusive breastfeeding at hospital discharge or within 15 days after delivery (21).

It is known that the rate of breastfeeding decreases and formula feeding increases after CS due to maternal pain, the effect of anesthetic agents and surgical complications. In this context, the negative effects of CS on breastfeeding cannot be underestimated (22,23). In the present study, 87% of deliveries were by CS, and 60.2% of them were able to breastfeed exclusively.

In the literature, the primary expectations of mothers from health workers are that breastfeeding support should be tailored to the specific needs of each woman, grounded in evidence-based practices, and provide practical assistance (24,25). It has been observed that our BLU has positive contributions to ensure that the mother can breastfeed correctly and effectively. After a single visit to the BLU, 22 (14%) mothers achieved breastfeeding success. The remaining 136 (86%) mothers achieved breastfeeding success after more than one BLU visit.

According to the TDHS 2018 data, the rate of exclusive breastfeeding of infants in our country decreases from

45% at 3 months to 14% at 5 months (7). In our study, it was shown that 75% of infants with a 6-month median age (6-20) were exclusively breastfed. This demonstrated that EBS had significant positive effects on exclusive breastfeeding success, especially in mother-infant pairs with breastfeeding problems. Similarly, it was reported in the literature that interactive, applied breastfeeding trainings given to mothers have positive contributions towards the development of breastfeeding behavior (25-28). Also, a Canadian study of vulnerable mothers in need of breastfeeding counselling found that breastfeeding rates increased after counselling (29).

Study Limitations

There were some limitations in the present study. Firstly, this study had a retrospective design. Secondly, this study had a small sample size. The third limitation was that some of the patients could not be reached when they were called by phone during the follow-up.

Conclusion

Breast and nipple problems, which constitute the majority of the reasons for admission to our BLU, can be resolved with EBS. Consequently, EBS has the potential to enhance the rate of exclusive breastfeeding for a period of at least six months, thereby surpassing the national average for breastfeeding. Motivating the mother during follow-up should be an important task of healthcare professionals. Furthermore, BLUs should be established more widely in order to enhance support for breastfeeding mothers. Future research should focus on evaluating the long-term outcomes of EBS interventions, ideally through prospective and multi-center studies.

Ethics

Ethics Committee Approval: The study protocol was approved by the Non-Interventional Clinical Researches Ethics Board of Kırıkkale University Faculty of Medicine (approval no.: 2024.02.07, date: 14.02.2024).

Informed Consent: This is a retrospective and cross-sectional study.

Footnotes

Authorship Contributions

Surgical and Medical Practices: Ü.A.T., Ç.A., S.A., H.F.G., Concept: Ü.A.T., Ç.A., S.A., H.F.G., Design: Ü.A.T., Ç.A., S.A., H.F.G., Data Collection or Processing: Ü.A.T., Ç.A., Analysis or Interpretation: Ü.A.T., S.A., H.F.G., Ü.A.T., Ç.A., S.A.,

H.F.G., Literature Search: Ü.A.T., Ç.A., S.A., Writing: Ü.A.T., Ç.A., S.A., H.F.G.

Conflict of Interest: No conflict of interest was declared by the authors.

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