

## An Evaluation of the Factors Affecting Exclusive Breastfeeding

## Sadece Anne Sütü ile Beslemeye Etki Eden Faktörlerin Değerlendirilmesi

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## ABSTRACT

**Introduction:** Breast milk is not only the ideal nourishment for babies, but is also unique in terms of its health benefits for mothers and economic benefits for the society. The World Health Organization and United Nations Children's Fund support exclusive breastfeeding for the first 6 months of post-natal life.

**Methods:** A total of 355 mothers who all delivered in our hospital were included in this study. A questionnaire was created to include questions regarding the mothers' opinions about breast milk and their reasons for continuing or discontinuing exclusive breastfeeding. We collected other data separately, including the socio-cultural and socio-economic characteristics of the mothers, fathers and babies. Using the data collected, the mothers were grouped and compared according to their breastfeeding behaviour. Fathers were also grouped according to their paternal characteristics and their potential impact on the mothers' breastfeeding behaviour was investigated.

**Results:** In this study, 49% of the mothers expressed the belief that breast milk is healthy and protects babies from diseases. Of the mothers who discontinued exclusive breastfeeding, 44.3% did so because they thought their milk was insufficient for their babies. In addition, 56.5% of mothers continued exclusive breastfeeding at post-natal month 4 and 35.2% at month 6. A higher percentage of mothers with a high level of education continued exclusive breastfeeding ( $p=0.011$ ). There was no statistically significant difference between the different age groups in terms of breastfeeding behaviour. Mothers with healthy medical histories were found to have continued exclusive breastfeeding for longer periods than the others ( $p=0.037$ ). Mothers who had help at home also continued exclusive breastfeeding for longer periods ( $p=0.031$ ). Mothers using pacifiers were found to have a higher exclusive breastfeeding discontinuation rate than the others ( $p=0.007$ ).

**Conclusion:** The leading reasons for discontinuing breastfeeding are incorrect and inadequate information about breastfeeding. Therefore, it is imperative that mothers are supported with appropriate and consistent education, both before and after birth, regarding the benefits of continued breastfeeding.

**Keywords:** Exclusive breastfeeding, pacifier, mother's attitude, bottle feeding, mother milk

## ÖZ

**Amaç:** Anne sütü, bebekler için eşsiz bir besin kaynağı olmasının yanı sıra anne sağlığı ve toplum ekonomisi için de önemlidir. Dünya Sağlık Örgütü ve Birleşmiş Milletler Çocuklara Yardım Fonu ilk 6 ay sadece anne sütüyle beslenmeyi desteklemektedir.

**Yöntemler:** Bu çalışmaya hastanemizde doğum yapan 355 anne ve bebeği dahil edildi. Annelere uygulanan ankette; anne sütü hakkındaki düşünceleri, sadece anne sütüyle beslemeye devam etme ya da etmeme sebepleri soruldu. Anne, baba ve bebek için sosyo-kültürel ve sosyo-ekonomik özellikler dahil olmak üzere tüm sosyo-demografik veriler kaydedildi. Anneler emzirme davranışlarına göre gruplandırıldı ve karşılaştırıldı. Babaların sosyo-demografik özelliklerinin annelerin emzirme davranışları üzerine etkileri araştırıldı.

**Bulgular:** Çalışmadaki annelerin %49'u anne sütünün sağlıklı olduğunu ve bebekleri hastalıklardan koruduğuna inanıyordu. Emzirmeyi bırakan annelerin %44,3'ü sütlerinin bebekleri için yetersiz olduğunu düşünüyordu. Annelerin %56,5'i bebeklerini doğum sonrası ilk 4 ay sadece anne sütü ile beslerken, %35,2'si ilk 6 ay sadece anne sütü ile beslediği görüldü. Emzirme davranışı açısından farklı yaş grupları arasında istatistiksel olarak anlamlı bir fark bulunmadı. Yüksek eğitim düzeyine sahip anneler ve sağlıklı tıbbi öyküsü olan annelerin sadece anne sütü ile beslemeyi diğerlerinden daha uzun süre sürdürdüğü bulundu ( $p=0,011$ ), ( $p=0,037$ ). Evde yardımcı olan anneler daha uzun süre sadece anne sütü ile beslemeye devam ettiler ( $p=0,031$ ). Emzik kullanan annelerin sadece anne sütü ile beslemeyi daha önce bıraktıkları bulundu ( $p=0,007$ ).

**Sonuç:** Emzirmeyi bırakmanın başlıca nedenleri emzirme hakkında yanlış ve yetersiz bilgilerdir. Bu nedenle annelerin, emzirmeye devam etmenin yararları konusunda hem doğumdan önce hem de sonra uygun ve tutarlı bir eğitim ile desteklenmesi zorunludur.

**Anahtar Kelimeler:** Sadece anne sütü ile besleme, emzik, anne davranışı, biberon ile besleme, anne sütü



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## Introduction

Breast milk is unique in that it provides the ideal nourishment for the growth babies and also for the development of their immune system. Its benefits are not limited to infant health, but also extend to maternal health as well as to economical saving for the society (1-4). For these reasons, many national and international institutions, including the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) advocate for the need of exclusive breastfeeding during the first 6 months following birth and the continuation of breastfeeding with necessary supplements until the age of 2 years (4,5).

Exclusive breastfeeding is defined as breastfeeding with breast milk only, without any other liquid supplements such as water or any solids (6). In many countries, most mothers start feeding their babies artificial supplements within the first 6 months of life and discontinue breastfeeding within the first 2 years. The most common reason for this behaviour is the mothers' conviction that breast milk is not sufficient for their babies or due to certain difficulties they face with breastfeeding, including not knowing how to continue breastfeeding while working outside of their homes. At other times, the reason may be as simple as that the mother does not have anyone to provide the support she needs or that the guidance and information received from health care professionals was not in support of breastfeeding (7-13).

Although breastfeeding is common in Turkey, exclusive breastfeeding dropped from 42% in 2008 to 30% in 2013, according to Turkey Population and Health Research (TPHR). This data suggests that exclusive breastfeeding is recommended, but is not widely practiced. It is common to encounter cases where babies are fed with formula or bottles. The percentage of babies receiving supplements within the first 6 months has increased from 8% in 2008 to 12% in 2013. This ratio varies significantly across different cultures and societies (14).

The primary aim of this study was to examine the factors leading to mothers to discontinue exclusive breastfeeding within the first 6 months of life. We also assessed the reasons for continuing exclusive breastfeeding as well as opinions regarding breast milk.

## Methods

This prospective and comparative study was conducted according to the principles of the Declaration of Helsinki and was approved by the Bağcılar Training and Research Hospital Non-interventional Clinical Research Ethics Committee (protocol no:2016/446, date: 17.03.2016). All the participants received oral and written information about the study and each participant provided a written informed consent.

### Study Population and Design

The study included babies born in same hospital and their mothers. This hospital is the only public maternity clinic in the area with an average of 4,500 births/year and has a patient population distribution similar to that of Turkey's. Three or four cases per day were randomly selected as subjects from among the new-borns, who were born between March and July 2016 and were at 38 to 42 gestational weeks. Exclusion criteria included preterm births (<38 weeks) and unhealthy babies. All the new-borns received a comprehensive physical examination, including measuring the weight, height and head circumference (Table 1).

Data (age, type of delivery, parity, education, occupation, medical history, family type, consanguinity) was collected from the mothers via face-to-face post-natal interviews (within 3 days following delivery). Father's age, education and occupation, as well as monthly household income were also collected.

We also examined the mothers' opinions concerning breast milk and their reasons for discontinuing breastfeeding if they chose to do so. The methodology was as follows: after the mothers' opinions concerning breast milk were obtained (Table 2), they were informed about breast milk and its benefits by same specialist. At 2 weeks, 2 months, 4 months and 6 months after birth, the specialist called each mother and asked whether they have continued breastfeeding and if not, their reasons for discontinuation (Table 3). The specialist also asked whether any supplements (e.g. water, solids and formula) were given to the baby, if pacifiers/bottles were used and whether there was anyone helping the mother. Fifteen cases were excluded during follow-up because they were unreachable.

Exclusive breastfeeding is defined as breastfeeding with breast milk only, without any other liquid supplements (including water) or any solids for the first 6 months of life. Partial breastfeeding is defined as providing artificial nutrients to an infant in addition to breast milk. No breastfeeding is defined as complete cessation of breastfeeding before 6 months. The information gathered was classified according to the definitions above in Tables 4 and 5.

Mothers were classified according to their age, education, income level, medical history, occupation, consanguineous marriage, family type, helper at home, delivery method and use of pacifier (Table 5). These groups of mothers were then compared according to their exclusive breastfeeding behaviour.

### Statistical Analysis

All statistical analyses were performed using the Statistical Package for Social Sciences (SPSS) version 20.0 for Windows (SPSS, Chicago, IL). The 1-sample Kolmogorov-Smirnov test was used to evaluate the distribution characteristics of the variables. Demographic and clinical characteristics of the Exclusive Breastfeeding and Discontinuing Exclusive Breastfeeding groups were compared using the Mann-Whitney U test for continuous variables and the  $\chi^2$  test for categorical variables. Logistic regression model was used for multivariate analysis. A  $p < 0.05$  was considered statistically significant.

## Results

This study included 355 mothers and their babies. The mothers' breastfeeding behaviour and factors affecting this behaviour were tracked for the first 6 months of post-natal life. The demographic and clinical characteristics of the mothers and their babies are shown in Table 1.

We asked their opinions about breast milk and the mothers mentioned the following three beliefs the most: 49% of the mothers think breast milk is healthy and protects infants from diseases, 41.1% find it more nutritious than other options and 31.6% consider it the most natural food for their babies. Other opinions can be found in Table 2.

Three hundred and fifty participants (98.6% of the total participants) started breastfeeding after birth, while five participants (1.4%) did not breastfeed at all. After the first post-natal month, one third of the mothers had stopped exclusive breastfeeding (31.6%, shown in Table 4). The percentage of mothers continuing exclusive breastfeeding from month 1 to month 4 was found to be quite high (month 1, 68.4%; month 4, 56.5%). In addition, 42% of the participants who continued breastfeeding after the fourth month started including supplements in their babies' diets. The percentage of mothers who were breastfeeding exclusively by month 4 was 56.5% and 35.2% by month 6. Twenty-six participants (7.3%) fed their babies with breast milk and water within the first 6 months.

The most common three reasons given by the mothers for discontinuing exclusive breastfeeding were as follows: 44.3% said they were concerned that their milk was not sufficient for their babies, 19.1% reported that it was because their babies were not gaining weight and 13.9% mentioned that their babies did not want to breastfeed. The remaining reasons can be found in Table 3.

We found that the percentage of mothers who continued exclusive breastfeeding was significantly higher among mothers with a high level of education ( $p=0.011$ ). Regarding breastfeeding behaviour, there was no statistically significant difference between the different age groups. Mothers with a certain medical condition reported discontinuing exclusive breastfeeding sooner ( $p=0.037$ ) than healthy mothers. Mothers who had someone helping them at home with their baby continued exclusive breastfeeding longer than the others ( $p=0.031$ ). Mothers using pacifiers were observed to have transitioned to adding supplements

to their babies' diets and to have discontinued exclusive breastfeeding sooner compared to the mothers who do not use pacifiers ( $p=0.007$ ). Other maternal socio-cultural and socio-economic characteristics are shown in Table 5.

In the logistic regression analysis, the presence of a helper for the mothers at home and pacifier use were found to be a factor independently affecting exclusive breastfeeding (Table 6).

Regarding paternal characteristics, there were no statistically significant differences in terms of age, education or occupation.

### Discussion

Although health authorities strongly recommend exclusive breastfeeding, this advice has not been put into practice at a satisfactory level. This is the main reason why mothers' breastfeeding behaviour is supported by health policies and various educational programmes by health personnel globally (15). In our study, we found that exclusive breastfeeding occurred with 35.2% of participants. Although this percentage is higher than the country average of 30% (TPHR 2013) (14), we have a long way to go before we hit the 2025 target set by WHO and UNICEF in Global Nutrition Targets 2025: >50% exclusive breastfeeding in the first 6 months (15). In a study examining breastfeeding with and

**Table 1. Demographic and clinical characteristics of the mothers and their babies**

Baby	
Gender (male/female) (n)	175/180
Height (cm) (mean ± SD)	50.1±1.2
Weight (g) (mean ± SD)	3201.4±469.2
Head circumference (cm) (mean ± SD)	34.9±0.8
Mother	
Age (years) (mean ± SD)	28.3±5.2
Delivery method	
Vaginal/caesarean section (n)	179/176

SD: Standard deviation

**Table 2. Mothers' opinions about breastfeeding**

Opinions*	(n) %
It is healthier and protects against diseases	(174) 49.0
More nutritious	(146) 41.1
The most natural food	(112) 31.6
Affordable and hassle-free to give	(42) 11.9
To develop a close relationship with my baby	(21) 5.9
Doctor says it is better	(14) 4.0
Other opinions	(35) 9.9

\*Mothers may have given more than one opinion on breastfeeding

**Table 3. Reasons for discontinuing exclusive breastfeeding**

Reasons*	(n) %
I am concerned that my milk is not sufficient for my baby	(157) 44.3
My baby is not gaining weight	(68) 19.1
My baby does not want breast milk	(49) 13.9
My baby's health has deteriorated	(46) 13.0
I wanted my baby to taste something else as well	(34) 9.6
My baby is restless and crying and I think he/she is not satisfied	(15) 4.3
Breast-related problems (mastitis, engorgement, cracked or sore nipple)	(12) 3.5
I was affected by the people around me	(9) 2.6
Breastfeeding contra-indicated	(9) 2.6
Other reasons	(9) 2.6

\*Mothers who may have given more than one reason for discontinuing

**Table 4. Rates of no, partial and exclusive breastfeeding from 1 to 6 month**

Age (Month)	No Breastfeeding* (n) %	Partial Breastfeeding** (n) %	Exclusive Breastfeeding*** (n) %
1	(16) 4.5	(96) 27.1	(243) 68.4
2	(26) 7.3	(103) 28.9	(226) 63.8
3	(34) 9.6	(106) 29.9	(215) 60.5
4	(42) 11.9	(112) 31.6	(201) 56.5
5	(50) 14.1	(148) 41.8	(157) 44.1
6	(56) 15.8	(174) 49.0	(125) 35.2

\*Complete cessation of breastfeeding  
 \*\*Providing artificial nutrients to an infant in addition to breast milk  
 \*\*\*Breastfeeding with breast milk only, without any other liquid supplements (including water) or any solids

without prenatal breast milk and breastfeeding training, the rates of exclusive breastfeeding at month 6 were 67.8% and 28%, respectively (16). In another national study, exclusive breastfeeding rate was 45% at month 4 (17). The importance of breastfeeding has been more widely acknowledged in low and middle-income countries; however, breastfeeding in high-income countries has been on the decline (18). Between 2006 and 2012, exclusive breastfeeding was at 25% in the WHO European Region, while it was at 43% in the WHO South-East Asia

Region. More recent data (2015) from 21 countries in Europe show that exclusive breastfeeding has now dropped to 13% (19).

The benefits of breast milk are widely known by mothers and this awareness has been the main driving factor behind breastfeeding (20). In our study, mothers predominantly believed that breast milk is healthier, protects against disease and that it is more nutritious. This by itself indicates that most of the mothers understand the importance of breast milk. However, other factors often have a negative impact on the inclination to breastfeed. The mothers' empirical decisions and values have been shown to inhibit breastfeeding (21). Mothers who are less confident about breast milk discontinue breastfeeding at earlier stages (22). In our study, the main reasons for discontinuing breastfeeding were concerns that the breast milk is not sufficient for the baby and that the baby was not gaining weight. To mitigate these concerns, education and support for breastfeeding for mothers, as well as continuous and sufficient information flow to mothers during follow-ups would boost the mothers' confidence and have a positive impact on their breastfeeding behaviour (23).

Many studies showed that maternal age and level of education has a strong positive correlation with breastfeeding in developed countries (24-26). However, in developing countries, there is an inverse correlation as we see other factors such as traditional breastfeeding behaviours and advice from family and friends becomes more dominant (27). As the age and level of education of the mother increases, so does the percentage of mothers who start and continue to breastfeed. The older the mother, the more likely she is to start and continue breastfeeding (24,28,29). Very young mothers are more likely to have lower education and a higher tendency to feed their babies formula (30). In another study, first-time mothers were found to be more likely to continue breastfeeding (31). In our study, exclusive breastfeeding was more common in mothers with high levels of education; however, there was no statistically significant difference in breastfeeding behaviour among different age groups.

Less educated and younger mothers are less likely to use alternatives to pacifiers to calm their babies and are more likely to introduce pacifiers to their babies at earlier stages. This leads to discontinuation of the exclusive breastfeeding (32). In our study, we observed that mothers who introduced pacifiers to their babies within the first month are less likely than the other mothers to continue exclusive breastfeeding.

Another major factor associated with breastfeeding is the mother's socio-economic status (occupation, household income, etc). In developed countries, there is a positive correlation between high income and breastfeeding (26-28); however, there is an inverse correlation in developing countries (29). In our study, there was no statistically significant relationship between household income/mother's occupation and breastfeeding continuation. In addition, having a helper at home is positively correlated with breastfeeding according to our findings.

Another factor influencing the breastfeeding behaviour is the health of the mother. We found that mothers with any health condition are less likely to continue exclusive breastfeeding (33-35). Also, the method of infant delivery may have an impact on breastfeeding behaviour. Pain/discomfort after a caesarean may delay breastfeeding, whereas breastfeeding can commence sooner after vaginal birth (36). In our

**Table 5. Maternal socio-cultural and socio-economic characteristics**

Characteristics	Discontinuing Exclusive Breastfeeding (n=230) %	Exclusive Breastfeeding (n=125) %	p
<b>Age at delivery (Years)</b>			
<25	(62) 26.9	(36) 28.8	ns
25-29	(71) 30.9	(41) 32.8	
30-34	(67) 29.1	(35) 28.0	
>34	(30) 13.1	(13) 10.4	
<b>Education</b>			
Illiterate	(19) 8.3	(7) 5.6	0.011
Primary school	(101) 43.9	(33) 26.4	
Secondary school	(79) 34.3	(41) 32.8	
High school	(23) 10.0	(29) 23.2	
University	(8) 3.5	(15) 12.0	
<b>Monthly income (Turkish Liras)</b>			
<1500	(160) 69.6	(88) 70.4	ns
1500-3000	(59) 25.6	(28) 22.4	
>3000	(11) 4.8	(9) 7.2	
Disease presence	(29) 12.6	(7) 5.6	0.037
Occupation	(35) 15.2	(22) 17.6	ns
Consanguineous marriage	(41) 17.8	(25) 20.0	ns
<b>Family type</b>			
Small*	(177) 76.9	(91) 72.8	ns
Large	(53) 23.1	(34) 27.2	
Helper at home	(35) 15.2	(29) 23.2	0.031
<b>Delivery method</b>			
Vaginal	(114) 49.6	(65) 52.0	ns
Caesarean section	(116) 50.4	(60) 48.0	
Pacifier use (First 1 month)	(104) 45.2	(24) 19.2	0.007

SD: Standard deviation, ns: non-significant, \*Small family: mother, father and children, Statistically significant increased values (p<0.05)

**Table 6. Logistic regression analysis of factors influencing exclusive breastfeeding**

	$\beta$	p	OR	95% CI
Maternal education	-0.12	0.158	0.20	0.52-1.52
Maternal illness	-0.56	0.27	1.21	0.21-1.55
Helper at home	0.62	0.035	4.44	0.30-0.96
Pacifier use	0.23	0.03	1.61	0.64-1.41

$\beta$ : Beta coefficient, OR: odds ratio, CI: confidence interval

study, we did not come across any correlation between method of delivery and breastfeeding behaviours.

In November 2019, TPHR announced that exclusive breastfeeding as 40.7% in the first 6 months. The rate of breast-milk use decreased from 66% for one year to 34% for 2 years. The rate of feeding babies with other milk instead of breast milk is 23%. Feeding with bottle is reported as 53% in the first 2 years (37).

Our study is important because it provides some valuable results on the breastfeeding behaviours of mothers; however, it has a few limitations. The first limitation is the small sample size. Secondly, we only followed-up the participants for 6 months after birth, as we focused on exclusive breastfeeding.

## Conclusion

Breast milk is the best source of nutrition during the first 6 months of life. Therefore, it is an important public health objective to increase the number of mothers who practice exclusive breastfeeding. Hospital policies and practices are essential in meeting this objective. Within the scope of the Baby-Friendly Hospital Initiative, the confidence of the mothers needs to be boosted through education about breast milk and breast feeding both in the prenatal and post-natal periods. In addition, a high level of awareness regarding the benefits of breastfeeding needs to be created among health care personnel and in the society, with education supported by factual and scientific information.

## Ethics

**Ethics Committee Approval:** This prospective and comparative study was approved by the Bağcılar Training and Research Hospital Non-interventional Clinical Research Ethics Committee (protocol no: 2016/446, date: 17.03.2016).

**Informed Consent:** All the participants provided a written informed consent.

**Peer-review:** Externally peer-reviewed.

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