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Risk factors for breastfeeding problems in mothers who presented to two public healthcare centers in Kayseri province

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Summary

Aim: This study was conducted to determine problems in lactation and risk factors affecting breastfeeding.

Material and Method: This descriptive study was conducted with mothers who had children aged 24-60 months and who presented for any reason to Family Healthcare Centers of two Public Healthcare Centers in Kayseri province. The study was performed with 500 mothers who gave a verbal consent and a questionnaire was used to collect data. Erciyes University Faculty of Medicine Clinical Research Ethics Committee (2011/20) the approval and verbal consent was obtained from the mothers.

Results: The mean age of the mothers was 29.8±5.3 years, while the mean age of the children was 35.7±10.0 months. 38,6% of the children were born by cesarean section, 8.8% had low birth weight and their mean breastfeeding period was 17.7±8.0 months. The main breastfeeding problems included painful and cracked nipples (46.0%), inadequate lactating (34.2%), excessive lactating (29.8%), flat or inverted nipples (11.6%), mastitis (9.2%), extreme-fullness of the breast (9.0%) and plugged milk ducts (8.2%). Being housewife, moderate and low income status, caesarean delivery, low birth weight and less than 8 lactations a day were the risk factors for inadequate lactating. A maternal age younger than 25 years old, caesarean delivery, premature delivery, less than 8 lactations a day were the risk factors for painful or cracked nipples. The median exclusive breastfeeding duration and total lactation time of the mothers who had concerns about inadequate lactating were significantly lower than the others. The total lactation time of the mothers who had flat and inverted nipples was also shorter.

Conclusions: Lactation problems are observed with a high rate. Awareness of the healthcare professionals and supports given by them may reduce these problems. *(Turk Arch Ped 2013; 48: 145-151)*

Key words: Breastmilk, problems in lactation, risk factors

Introduction

Despite many encouraging studies conducted in our country as in the whole world, the time of exclusive breastfeeding is below the desired level. According to the Turkish Population and Health Survey (TPHS) 2008 report 97% of all children were breastfed for a while. The rate of exclusive breastfeeding was found to be 69% in the first two months of life and 23.6% in the first 4-5 months (1). In the studies performed, the reasons for early discontinuation of breastfeeding included return of the mother to her work, the mother's thought that her milk was inadequate and lack of assistance by healthcare workers (2,3).

The time of exclusive breastfeeding and total breastfeeding time are affected negatively by problems arising from the mother or the infant during the lactation period. Problems arising from the mother usually occur in the first 1-2 weeks of lactation. The primary ones among these problems are related with the breast and sometimes reach a great extent inhibiting breastfeeding (4,5).

It has been reported that one or more of every three mothers experience one or more problems with breastfeeding (5,6). The most common problems related with the breast have been reported to include breast abscess and mastitis (33%), painful nipple/ nipple cracks (34-96%), excessive fullness in the breasts and inverted or

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flat nipple (2.5-10). In addition, mothers frequently (34,2%, 49.5%) complain they have insufficient breastmilk (2,10,11). For continuance of breastfeeding each mother and infant who have breastfeeding problems should be assisted urgently. In previous studies, it was shown that assistance given to mothers by healthcare workers who were experienced in this subject increased the breastfeeding time and breastfeeding success (7-9,12,13,14). This study was performed to determine the problems experienced by mothers during lactation and the risk factors which affect these problems.

Material and Method

This descriptive study was conducted with mothers who had infants aged between 24 and 60 months and who presented to 18 family health centers which are linked with Fevzi Çakmak and Talas Publich Health centers in Kayseri province because of any reason. Considering that the rate of the mothers who experienced extreme fullnes in the breast and painful nipple/cracked nipples was found to be 25%, the sample size was calculated as 288 at a level of 95% confidence interval with a tolerance value of 0,05 and it was planned to include 500 mothers in the study.

The questionnaire form which included questions related with descriptive information about the mothers and children and problems experienced during the lactation period was completed by face to face interview directed to the last child aged between 24 and 60 months who had been breastfed for a while after obtaining verbal consent from the mothers. Data collecting was continued until interviews with 500 mothers were completed.

Infants with a gestational age below 37 weeks at birth were considered as preterm, infants with a gestation age of 37-42 weeks at birth were considered as term and infants with a gestational age above 42 weeks were considered postmature. Infants with a birth weight below 2500 g were considered as low birth weight, infants with a birth weight of 2500-400 g were considered as normal birth weight and infants with a birth weight above 4000 g were considered as macrosomic.

Written consent was obtained from the Erciyes University Medical Faculty Clinical Researches Ethics Committee (2011/20) and Kayseri Provincial Directorate of Health and verbal consent was obtained from the mothers who were included in the study.

The data were analysed in the computer environment. The risk factors for dependent variables were evaluated by single and multiple logistic regression analysis. The Shapiro-Wilk test was used for the normal distribution of the data for numerical variables. The Mann Whitney U test was used in comparison of two groups. A p value of <0.05 was considered statistically significant.

Results

54.2% of the children in the study group were male and 45.8% were female. The mean age was 35.7±10.0 months. The majority of the children (%97.4) were born in a hospital and 38.6% were born by cesarean section. The rate of preterm infants was 8.6% and the rate of small for gestational age infants was 8.8%. While the rate of exclusive breastfeeding for the first six months was 60.8%, the rate of exclusive breastfeeding for less than 6 months was 32.0% (Table 1).

The mean age of the mothers was 29.8±5.3 years. 75% of the mothers were housewives, 44.4% were primary or secondary school graduates and 59% had a moderate economical status. The mean number of children and breastfeeding duration were 2.0± 0.9 ve 17.7± 8.0 months, respectively. 88% of the mothers stated that they breastfed their babies in the first hour after delivery and 62.6% stated that they breastfed their babies 8-12 times a day for the first 6 months (Table 1).

The mothers stated that they mostly experienced (46.0%) painful and cracked nipple problem. 34.2% stated that they experienced insufficient milk supply and 29.8% stated that they experienced extreme milk supply which made it difficult to breasfeed their babies (Table 2).

The factors which increased the concern about insufficent milk supply in the mothers included being a housewife (3465-fold), moderate (2046-fold) or poor (2315-fold) economical status of the family, cesarean delivery (1680-fold), SGA infant (2000-fold), starting breastfeedig after the first hour after delivery (2291-fold) and a frequency of breastfeeding less than 8 a day (5861-fold) ($p<0.005$). The mother's age, education level, the order of birth of the infant, birth place and gestational age were not found to have an effect on concern about insufficient milk supply. A maternal age below 25 years and of 25-35 years increases the risk of occurence of painful and cracked nipples 2188-fold and 2665-fold, respectively. In mothers who gave birth by cesarean section, the risk of experience of painful and cracked nipples was found to be 1737-fold higher compared to the ones who gave birth by vaginal delivery. Premature delivery and breastfeeding less than 8 times a day increased the risk of occurence of painful and cracked nipples 1897-fold and 1841-fold, respectively ($p<0.05$) (Table 3).

It was observed that the mothers who experienced concerns about insufficient milk supply exclusively breastfed their infants for a shorter time and the total breastfeeding times were found to be shorter compared to the ones who did not experience this concern (16 months and 20 months, respectively) ($p<0.001$). In addition, it was found that the mothers who experienced a problem of flat and inverted nipples had a shorter total breastfeeding time (Table 4).

Discussion

While an increase in the rates of starting breastfeeding was provided with breastfeeding programs conducted worldwide, small increases have been found in the rates of exclusive breastfeeding. In the lactation period, the duration of exclusive breastfeedbing and total breastfeeding times are affected negatively because of some problems related with the mother and the infant (11). Maternal problems related with breastfeeding mainly include problems related with the breasts (5).

Table1. Some properties of the mothers and children included in the study (n=500)

Properties of the children	Number (%)	Properties of the mothers	Number (%)
Gender		Education level	
Male	271 (54.2)	Less than primary school	12 (2.4)
Female	229 (45.8)	Primary and secondary school	222 (44.4)
Birth place		High-school	183 (36.6)
Hospital	487 (97.4)	University	83 (16.6)
Home	13 (2.6)	Occupation	
Mode of delivery		Housewife	375 (75.0)
Vaginal	307 (61.4)	Works outside home	98 (19.6)
Cesarean section	193 (38.6)	Works at home for making money	27 (5.4)
Birth weight		Economical status of the family2	
Normal	417 (83.4)	Poor	66 (13.2)
SGA	44 (8.8)	Moderate	295 (59.0)
LGA	39 (7.8)	Well	139 (27.8)
Gestational week at birth		Number of children1	2.0± 0.9
Term delivery	449 (89.8)	Breastfeeding duration (months)1. 2	17.7± 8.0
Preterm delivery	43 (8.6)	The time of first breastfeeding	
Postmature delivery	8 (1.6)	In the first hour	440 (88.0)
Exclusive breastfeeding		1-24 hours	40 (8.0)
Less than 6 months	160 (32.0)	After 24 hours	20 (4.0)
Six months	304 (60.8)	Daily breastfeeding number	
Longer than 6 months	36 (7.2)	Less than 8	68 (13.6)
		8-12	313 (62.6)
		More than 12	119 (23.8)
		Parity	
		Primipar	183 (36.6)
		Multipar	317 (63.4)

[1]according to her self statement
[2]n=427 (the ones weaned)

Table 2. Distribution of the problems faced by the mothers during lactation

Problem (n=500)	Number (%)
Painful and cracked nipples	230 (46.0)
Concern about insufficient breastmilk	171 (34.2)
Excessive milk supply which would complicate breastfeeding	149 (29.8)
Flat and inverted nipples	58 (11.6)
Mastitis	46 (9.2)
Extreme fullness in the breast	45 (9.0)
Plugged milk ducts	41 (8.2)

One or more of every three mothers have been reported to experience problems related with breastfeeding (5,6,7,8). Painful and cracked nipples is one of the most common problems. In the literature, 34-96% of the mothers have been reported to experience a problem of painful nipples in the postnatal period (5,8,9,10,15). In our study, it was found that the mothers most commonly experienced a problem of painful and cracked nipples (46.0%) during the breastfeeding period. Painful nipple is a transient problem which generally occurs in the beginning of breastfeeding, but it is an important factor in early discontinuation of breastfeeding (4,5). Painful and cracked nipples mostly occur as a result of sucking trauma. Wrong placement of the baby to the breast, extreme fullness of the breast and candida infection lead to painful and cracked nipples (11). It is known that painful nipples may occur in mothers who breasfeed their infants (especially in primipar mothers and in the first 5-10 days postnatally) even though cracked nipples are not present (15,16). Li et al. (10) reported that primipar mothers experienced nipple problems with a

Table 3. Logistic regression analysis of the risk factors which affect experience of concern about insufficicent milk supply and nipple problems by the mothers

Factors	Painful and cracked nipples OR (%95 GA)	Concern about insufficient milk supply OR (%95 GA)
Maternal age		
35 years and above	1	1
25 years and below	2.188 (1.192-4.017)*	1.414 (0.753-2.657)
	2.665 (1.662-4.273)*	1.582 (0.975-2.566)
Maternal education		
High school and above	1	1
Below high school	0.708 (0.497-1.009)	1.194 (0.825-1.729)
8-12 arası		
Maternal education		
Works at home for making money	1	1
Housewife	1.431 (0.647-3.166)	3.465 (1.174-10.225)*
Works outside home	0.738 (0.308-1.771)	2.076 (0.656-6.575)
Economical status of the family		
Well	1	1
Poor	1.274 (0.706-2.298)	2.315 (1.233-4.346)*
Moderate	1.335 (0.888-2.008)	2.046 (1.292-3.240)*
Parity		
Multipar	1	1
Primipar	0.960 (0.666-1.383)	0.905 (0.616-1.331
Birth place		
Home	1	1
Hospital	0.994 (0.329-3.000)	1.755 (0.477-6.465)
Delivery mode		
Normal	1	1
Cesarean section	1.737 (1.208-2.499)*	1.680 (1.153-2.450)*
Gtonal week at birth		
Term	1	1
Preterm	1.897 (1.002-3.592)*	1.286 (0.677-2.443)
The time of starting breastfeeding		
TIn the first hour	1	1
Later	1.397 (0.813-2.399)	2.291 (1.329-3.949)*
The time of starting breastfeeding		
More than 12	1	1
Less than 8	1.841 (1.006-3.366)*	5.861 (3.049-11.266)*
8-12	1.016 (0.664-1.555)	1.623 (0.994-2.650)

* $p<0.05$

higher rate compared to multipar mothers (170-fold) and the mothers in the 25-29 age group experienced nipple problems with a higher rate (111-fold). In our study, it was also observed that the mothers below the age of 35 years experienced a problem of painful and cracked nipples with a higher rate. However, the mother's being multipar or primipar was not a risk factor for painful and cracked nipples (Table 3).

It may be thought that a high number of breastfeeding may allow the infant to damage the nipple with a higher rate. However, it has been argued that limitation of the frequency of breastfeeding would lead to extreme fullness in the breast by inhibiting the milk let-down reflex and would complicate the infant-mother concordance (6,8,11,17). In a study performed by Gerd et al. (18) in Sweden, it was found that the mothers who breastfed their babies less than 5 times a day (82.9%) experienced more nipple problems compared to the mothers who breastfed their babies 6-10 times a day (39.2%). In our study, it was found that breastfeeding less than 8 times a day increased the risk of occurence of painful and cracked nipples 1841-fold (Table 3).

In our study, the risk of nipple problems increased 1737-fold in the mothers who gave birth by cesarean delivery compared to the ones who gave birth by vaginal delivery. This might have been resulted from the fact that the mothers who gave birth by cesarean section could not place the infant appropriately on the breast because of post-operative pain (19). In the Norvegian Mother and Child Cohort study, it was reported that the rates of breastfeeding in the first month were low in the mothers who gave birth by cesarean section (13).

Preterm infants may stay apart from their mothers for a while because they are kept in intensive care units for a certain time. In this condition, the nipples may be exposed to trauma when the mothers milk their breastmilk to be given to their infants and this may lead to painful and cracked nipples (4,20). In our study, it was found that preterm delivery increased the risk of painful and cracked nipples in the mother 11897-fold.

In our study, the other problem which the mothers most commonly faced was concern about insufficient milk supply (34.2%) (Table 2). In a study, it was found that the most common problem experienced by both primipar and multipar mothers was insufficient milk supply (37.5%) (15). It is difficult for mothers to decide if their milk is actually insufficient or not. Generally, most mothers produce more

Table 4. Exclusive breastfeeding times of the mothers with and without breastfeeding problems (months)

Problems	Problems present median (%25-%75)	Problems absent median (%25-%75)	P
Exclusive breastfeeding times (n=500)			
Insufficient milk supply	6 (4-6)1	6 (6-6)2	<0.001
Excessive milk supply	6 (6-6)	6 (5-6)	0.074
Extreme fullness in the breast	6 (5-6)	6 (5-6)	0.455
Painful and cracked nipples	6(5-6)	6(5-6)	0.560
Plugged milk ducts	6 (5-6)	6 (5-6)	0.178
Mastitis	6 (5-6)	6 (5-6)	0.904
Flat and inverted nipples	6 (5-6)	6 (5-6)	0.228
Total breastfeeding times (n=427)3			
Insufficient milk supply	16 (10-23)	20 (15-24)	<0.001
Excessive milk supply	20 (14-24)	18 (12-24)	0.058
Extreme fullness in the breast	18 (10-23.5)	18.5 (12-24)	0.150
Painful and cracked nipples	18 (12-24)	18 (12-24)	0.236
Plugged milk ducts	20.5 (12.5-24.5)	18 (12-24)	0.494
Mastitis	18 (10-24)	20 (12-24)	0.125
Flat and inverted nipples	15 (9.75-24)	20 (12-24)	0.045

1Mean Rank (mean Standard score)= 197. 2Mean rank= 267. 3Excluding the ones who are still breastfeeding (73 children

milk than their infants need. There are rare conditions where milk production is insufficient physiologically (3,11,16). In our study, the factors which increased the risk of insufficicent milk supply included being a housewife (3465-fold), moderate (2046-fold) or poor (2315-fold) economical status of the family, cesarean delivery (1680-fold), SGA infant (2000-fold), starting breastfeedig after the first hour after delivery (2291-fold) and a number of breastfeeding less than 8 a day (5861-fold) ($p<0.005$) (Table 3). It was found that the mothers who experienced concerns about insufficicent milk supply had shorter exclusive breastfeeding times and total breastfeeding times compared to the ones who did not experience such a problem ($p<0.001$) (Table 4). Similar to the results of our study, two different studies showed that low economic status of the family increased the maternal thought that their milk was insufficient and shortened the duration of breastfeeding (9,10). Although it was reported that the duration of breastfeeding was longer in families with lower income in the studies performed in our country, no information about insufficient milk supply was given (21,22,23).

It is known that lactation may be delayed in mothers who give birth by cesarean section (19). Studies have shown that mothers who give birth by cesarean section start breastfeeding later compared to the ones who give birth by vaginal delivery (24,25,26,27). Prolactin hormone which is necessary for milk production is released when the infant starts breastfeeding (28). Milk production and milk release reflex start lately, since the mothers who give birth by cesarean delivery start breastfeeding later. Thus, mothers think that their milk is insufficient and start to give their infants formulas additionally. In this condition, the breastfeeding frequency decreases and insufficient milk supply is possible (29). In our study, delivery by cesarean section, starting breastfeeding after the first hour postnatally and a daily mean number of breastfeeding less than 8 were found to be the risk factors for concern about insufficient milk supply.

The birth weight of the baby affects the time of starting feeding. The facts that preterm or SGA infants are kept in intensive care units for a certain time, can not hold the breast strongly and experience other health problems decrease the rates of breastfeeding in these infants (20). Many studies have shown that SGA infants start breastfeeding later compared to non-SGA infants and they have a shorter time of exclusive breastfeeding (18,21,22). In our study, it was found that the infant's being SGA increased the concern about insufficicent milk supply 2 fold.

Conclusively, it was found that mothers experienced different problems including mainly painful and cracked nipples and insufficient milk supply. Awareness of the healthcare professionals about the problems experienced during lactation and supports given by them may reduce these problems.

Conflict of interest: None declared.

References

1. Türkiye Nüfus ve Sağlık Araştırması. Ankara: Hacettepe Üniversitesi Nüfus Etütleri Enstitüsü. ISBN 978-975-491-274-6, 2008: 174-175.
2. Lewallen LP, Dick MJ, Flowers J, Powell W, Zickefoose KT, Wall YG, Price ZM. Breastfeeding support and early cessation. J Obstet Gynecol Neonatal Nurs 2006; 35(2): 166-172.
3. World Health Organization: infant and young child feeding-model chapter for textbooks for medical students and allied health professionals, ISBN 978 92 4 159749 4, 2009: 5-6.
4. Coşkun T. Anne sütü ile besleme sırasında karşılaşılan sorunlar. Katkı Pediatri Dergisi 2003; 25: 225-235.
5. Walker M. Conquering common breast-feeding problems. J Perinat Neonatal Nurs 2008; 22(4): 267-274.
6. Briggs J. The management of nipple pain and/or trauma associated with breastfeeding. Best Pract 2003; 7:1-6.
7. Spencer JP. Management of mastitis in breastfeeding women. Am Fam Physician 2008; 78(6): 727-731.
8. Blair A, Cadwell K, Turner-Maffei C, Brimdyr K. The relationship between positioning, the breastfeeding dynamic, the latching process and pain in breastfeeding mothers with sore nipples. Breastfeed Rev 2003; 11(2): 5-9.
9. Ahluwalia IB, Morrow B, Hsia J. Why do women stop breastfeeding? Findings from the pregnancy risk assessment and monitoring system. Pediatrics 2005; 116(6): 1408-12.
10. Li R, Fein SB, Chen J, Grummer-Strawn LM. Why mothers stop breastfeeding: mothers' self-reported reasons for stopping during the first year. Pediatrics 2008; 122(Suppl 2): 69-76.
11. Gökmirza E. Anne sütü ile beslenme. Türk Ped Arş 2007; 42(Suppl 1): 11-15.
12. Kronborg H, Vaeth M, Olsen J, Harder I. Health visitors and breastfeeding support: influence of knowledge and self-efficacy. Eur J Public Health 2008; 18(3): 283-288.
13. Häggkvist AP, Brantsæter AL, Grjibovski AM, Helsing E, Meltzer HM, Haugen M. Prevalence of breast-feeding in the Norwegian Mother and Child Cohort Study and health service-related correlates of cessation of full breast-feeding. Public Health Nutr 2010; 13(12): 2076-2086.
14. Hauck YL, Fenwick J, Dhaliwal SS, Butt J. A Western Australian survey of breastfeeding initiation, prevalence and early cessation patterns. Matern Child Health J 2011; 15(2): 260-268.
15. Jain S, Parmar VR, Singla M, Azad C. Problems of breast feeding from birth till discharge--experience in a medical college in Chandigarh. Indian J Public Health 2009; 53(4): 264.
16. Akkuzu G, Taşkin L. Impacts of breast-care techniques on prevention of possible postpartum nipple problems. Prof Care Mother Child 2000; 10(2): 38-41.
17. Morland-Schultz K, Hill PD. Prevention of and therapies for nipple pain: a systematic review. J Obstet Gynecol Neonatal Nurs 2005; 34(4): 428-437.
18. Gerd AT, Bergman S, Dahlgren J, Roswall J, Alm B. Factors associated with discontinuation of breastfeeding before 1 month of age. Acta Paediatr 2012; 101(1): 55-60.
19. Riordan J, Wambach K. Perinatal and intrapartum care. Breastfeeding and human lactation. 4th ed. Massachusetts: Jones and Bartlett Publishers, 2010: 236-239.
20. Xu F, Qiu L, Binns CW, Liu X. Breastfeeding in China: a review. Int Breastfeed J 2009; 4: 6.
21. Örün E, Yalçın S, Madendağ Y, Eras ZÜ, Dursun A, Mutlu B, Kutluk Ş, Yurdakök K. Annelerin sosyodemografik ve psikopatolojik özellikleri ile bebeklerini ilk 1-1.5 ayda sadece anne sütü ile besleme durumlarına etkisi. Çocuk Sağlığı ve Hastalıkları Dergisi 2009; 52: 167-75

22. Ünsal H, Atlıhan F, Özkan H, Targan Ş, Hassoy H. Toplumda anne sütü verme eğilimi ve buna etki eden faktörler. Çocuk Sağlığı ve Hastalıkları Dergisi 2005; 48: 226-233.
23. Karaçam Z. Factors affecting exclusive breastfeeding of healthy babies aged zero to four months: a community-based study of Turkish women. J Clin Nurs 2008; 17(3): 341-349.
24. Erbil N, Oral D. Doğum şeklinin emzirme tutumu üzerine etkisi. IV. Ulusal Hemşirelik Öğrencileri Kongresi, 19 Mayıs Üniversitesi Ordu Sağlık Yüksekokulu. Ankara: Kök Yayıncılık, 2005: 255.
25. Torvaldsen S, Roberts CL, Simpson JM, Thompson JF, Ellwood DA. Intrapartum epidural analgesia and breastfeeding: a prospective cohort study. Int Breastfeed J 2006;1; 24.
26. Shawky S, Abalkhail BA. Maternal factors associated with the duration of breast feeding in Jeddah, Saudi Arabia. Paediatr Perinat Epidemiol 2003; 17(1): 91-96.
27. Pérez-Escamilla R, Maulén-Radovan I, Dewey KG. The association between cesarean delivery and breast-feeding outcomes among Mexican women. Am J Public Health 1996; 86(6): 832-836.
28. Amir LH. Breastfeeding--managing 'supply' difficulties. Aust Fam Physician 2006; 35(9): 686-689.
29. DiGirolamo AM, Grummer-Strawn LM, Fein SB. Effect of maternity-care practices on breastfeeding. Pediatrics 2008; 122(Suppl 2): 43-49.