Factors Affecting Exclusive Breastfeeding in the First Six Weeks Postpartum in Bolu, Turkey

Bolu İlinde Postpartum İlk Altı Haftada Sadece Anne Sütüyle Beslemeyi Etkileyen Faktörler

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ABSTRACT Objective: Despite strong emphasizes and intensive supports of many national and international organizations early-start of breastfeeding and its continuation for a recommended time-period are still important problems worldwide. This prospective study aimed to determine characteristics of mothers and their infants in relation to the breastfeeding status in Bolu, Turkey. **Material and Methods:** Study sample included 160 mothers, who gave birth in a one-year period and were in their first week postpartum with a living infant. Data were collected by home-visits in the 1st and 6th weeks postpartum with face-to-face interviews *via* a questionnaire including 30 questions about mothers' sociodemographics, type of delivery, infants' characteristics, and type and status of infant feeding. Data were analyzed by percentage, Chi square, Fisher's exact test and correlation. **Results:** Methods of delivery and gestational age of infants affected the form of feeding in the 1st week ($p< 0.05$). Mothers' educational levels, length of marriage, place of residence, family type, parity, pregnancy interval and Apgar scores did not affect breastfeeding initiation time and feeding type ($p> 0.05$). Most important reasons why mothers were not breastfeeding at the 1st and 6th weeks were having breast problems and the thought that they did not have enough milk. **Conclusion:** The findings indicated that it is inevitably necessary to support mothers in the pre- and postpartum periods to start early breastfeeding and to continue exclusively breastfeeding. Support strategies need also to be re-evaluated.

Key Words: Postpartum period; breast feeding; dietary supplements

ÖZET Amaç: Ulusal ve uluslararası birçok kuruluşun önerilerine ve yoğun desteğine rağmen emzirmenin erken dönemde başlaması ve önerilen süreçte devam ettirilmesi halen dünya çapında önemli bir problemdir. Bu prospektif araştırma Bolu'daki annelerin ve bebeklerinin emzirme durumlarını etkileyen faktörleri belirlemek amacıyla gerçekleştirilmiştir. **Gereç ve Yöntemler:** Örnekleme bir yıl içinde doğum yapmış, bebeği yaşayan ve postpartum birinci haftasında olan 160 anne alınmıştır. Veriler doğumdan sonra 1. ve 6. haftalarda gerçekleştirilen ev ziyaretlerinde yüz yüze görüşme yöntemiyle ve annelerin sosyodemografik özellikleri, doğum şekli, bebeklerin özellikleri, beslenme şekli ve durumuna yönelik 30 sorudan oluşan anket formu ile toplanmıştır. Veriler yüzdelik, ki-kare, Fisher kesin ki-kare ve korelasyon analizi ile değerlendirilmiştir. **Bulgular:** Doğum şekli ve gebelik yaşı birinci haftadaki besleme şeklini etkilemiştir ($p< 0.05$). Annelerin eğitim düzeyi, evlilik süresi, yaşadıkları yer, aile tipi, parite, gebelikler arası süre ve Apgar skoru emzirmeye başlama zamanını ve besleme şeklini etkilememiştir ($p> 0.05$). Annelerin 1. ve 6. haftalarda bebeklerini sadece anne sütüyle besleyememelerinin en önemli nedenleri meme problemleri ve sütlerinin yetersiz olduğu düşüncesidir. **Sonuç:** Bulgular annelerin bebeklerini emzirmeye erken başlaması ve sadece anne sütü ile beslemeye devam etmesi için doğum öncesi ve sonrası dönemde desteklenmelerinin oldukça önemli olduğuna işaret etmektedir. Destek stratejilerinin de tekrar değerlendirilmesi gerekmektedir.

Anahtar Kelimeler: Postpartum dönem; emzirme; ek gıdalar

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World Health Organization (WHO) and UNICEF emphasize that there is a significant decrease in the morbidity and mortality rate of infants when they are fed with mother's milk.[1,2] For this reason it is recommended that infants would be given exclusively breast milk for the first 6 months of life.[2,3] Breastfeeding has also a variety of other benefits for infants, mothers or families including infant's cognitive and psychological improvements, attachment of the infants and mothers as well as economic benefits which are of great importance especially for resource poor families. In addition, effective and total breastfeeding ensures postpartum contraception and decreases the cancer risk of the breast, ovary and endometrium.[4,5]

Despite the known benefits, mother's milk is still not given to the infants due to various reasons.[1-3,6-9] Although the majority of mothers begin breastfeeding their infants immediately after birth, as high as 50-70% continue it not and begin with supplemental feeding, partly while they are still in the hospital.[10-14] Studies have shown that 17 to 70% of mothers no longer carry on breastfeeding 1 to 2 months after delivery.[13,15] This situation is also true for the Turkey.[3] Evidences suggest that stopping breastfeeding can have different reasons originating from mothers, infants and/or health care personals.[12,13] A significant part of all these causes occur generally within the first 1 to 2 weeks after delivery.

Problems that may interfere with the initiation and continuation of breastfeeding before and after birth can be prevented in quality and quantity by regular and adequate measures.[16] Information and counseling given in the pre- and postnatal periods are the most significant factors for the continuity of breastfeeding.[4,17] Because the initiation and continuation of breastfeeding are known to have some cultural characteristics and show geographical differences even in the same country, it is necessary to document the breastfeeding status of mothers and factors affecting it from different populations. This study aimed to determine the characteristics of mothers and their infants in relation to the breastfeeding status in the early postpartum period in Bolu, Turkey.

MATERIAL AND METHODS

The study was conducted at the health centers #1 to #5 in Bolu, a city inhabited primarily by people living on agriculture and forestry in north-western part of Turkey. The study sample included all 238 pregnant women who were registered at these centers. Permission was obtained from mothers to participate in the study and to obtain necessary information from their hospital records. Women were told that information they gave would be kept confidential, their participation in the study was voluntary and that they could withdraw from the study at any time, and whenever they required they could visit or call health centers and get counseling from the midwives. Only 9% of women refused to participate and 26% of women accepted to participate could not be found at their addresses. In addition, 33 women were moved and delivered outside of the province, 4 women had stillbirths and 6 women had early infant deaths were excluded from the study. For this reason, data from 160 mothers could be used for statistical evaluations.

A questionnaire prepared by the researchers based on information in the literature was used for data collection. Its content and understandability was reviewed by four nurse scholars, and if necessary, revised according to their recommendations. It was then used in a pilot study at # 2 health center with 20 mothers who delivered a live infant and were in their 1st week postpartum, and final revisions were made. The questionnaire included 30 questions about the mothers' demographic characteristics, mode of the delivery, the time of breastfeeding initiation, the type and state of infants' feeding and factors affecting them. Data collection was carried out in the 1st and 6th weeks postpartum by a researcher *via* home visits by face-to-face interviews, which took approximately 30 minutes.

RESULTS

Mothers participated in the study were primarily in the 20-29 years age group (70%), housewives (94.4%), newly married (43.1%), in nuclear famili-

es (61.3%) and had low levels of education (72.5%, primary school or less). The half of these mothers (53.8%) lived the longest period of time in a village or town. The majority of the mothers were multipar (60%) and 41.7% had less than a 2-year interval between pregnancies. In general, these mothers delivered at the hospitals (97.5%) and vaginally (76.9%). The majority of their infants was normal weight (83.1%) and term (70%).

Only a small percentage of mothers (9.4%) breastfed their infants within the first hour after delivery, while 90.6% began thereafter.

Other data gathered at the 1st and 6th weeks were summarized in Tables 1 to 4.

DISCUSSION

WHO and UNICEF recommend that infants have to begin breastfeeding within the first 30 minutes after delivery and that only mother's milk should be given in the first 6 months of live.[1,2] Evidences suggest, however, that mothers begin to breastfeed later, and start supplemental feeding and stop breastfeeding earlier from different reasons.[3,6,9,12,13,18] Dinç and Karanisoğlu found that only 17.3% of all mothers breastfed their infants within one hour after delivery in İstanbul, while Saka et al found this as 37.8% in Diyarbakır.[19,20] The percentage of mothers who breastfed their infants within the first hour as 9.4% in this study was far lower than that found in other studies including that of Saka et al. in which a traditional belief -in a population characterized as a more feodalist, strong traditional oriented population fraction in southeastern Turkey, which culturally do not breastfeed their babies within the first one to three days after birth- was found one of the main reasons for initiation of the breastfeeding late. This is very interesting, and indicates that other resons than tradional health beliefs may take more dominance for not starting breastfeeding early in western part of the country. Self the beliefs and attitudes of the health personnel should be questioned in this sense.

Studies generally indicate that 25-50% of mothers are feeding their infants exclusively with breast milk.[11,15,16] Ertem et al. found that 37% of infants were breastfed after delivery, but this rate was dropped to 27% in the first week because of starting supplemental feeding.[13] DiGirolamo et al found that 17% of mothers stopped breastfeeding within the 6th week.[12] In this study, the percentages of mothers feeding their babies exclusively with mother's milk at the 1st and 6th weeks were 70% and 53.1% ($p< 0.001$), and were higher than those previously reported (Table 1).

Ad modum Novotny et al, the majority of infants who were fed only with breast milk in the first week after birth were also exclusively breastfed in the following months.[11] Maternal and infant-related factors such as the mother's nipple size being appropriate, the infant being born at term and healthy and being calm and not tired help the infants to easily and immediately suckle. This ensures a sufficient amount of breast milk and leads to exclusive breastfeeding in the first week.[13] Also in this study, factors such as mothers having sufficient milk ($r= .880$, $p< 0.001$) and a normal sized nipple ($r =.626$, $p< 0.001$), and infants being able to grasp the breast ($r= .764$, $p< 0.001$) and being quiet ($r= 0.491$, $p< 0.001$) affected feeding only with breast milk in the 1st week. However, no significant correlation could be found between all these factors and exclusively breastfeeding at the 6th week postpartum. However, feeding only with mother's milk in the 1st week had a positive effect on the conti-

TABLE 1: The forms of feeding the mothers gave to their infants at the 1st and 6th weeks postpartum (n= 160).

	1st Week		6th Week				
Form of Feeding	n	%	n	%	**df**	**X^2**	**P**
Exclusively breastfeeding	112	70.0	85	53.1			
Breastfeeding plus supplements	48	30.0	73	45.6			
Exclusively formula	-	-	2	1.3	1	15.806	0.000

TABLE 2: Factors affecting the time for beginning breastfeeding.

	Time for beginning breastfeeding						
	Within first 1 h		After 1 h				
Factors	**n**	**%**	**n**	**%**	**df**	**X^2**	**P**
Mother's age (n= 160)							
≤ 19 year	1	6.7	18	12.4			
20-34 years	13	86.6	125	86.2			
≥ 35 year	1	6.7	2	1.4			
Mother's educational level (n= 160)							
≤ Primary school	10	66.7	106	73.1			
≥ Secondary school	5	33.3	39	26.9			0.558
Length of time married (n= 160)							
≤ 5 year	10	66.7	99	68.3			
≥ 6 year	5	33.3	46	31.7			1.000
Longest place of residence (n= 160)							
Village, City	10	66.7	76	52.7			
State	5	33.3	69	47.6	1	0.434	0.611
Family type (n= 160)							
Nuclear	11	73.3	87	60.0			
Large	4	26.7	58	40.0	1	0.465	0.534
Parity (n= 160)							
Primigravida	4	26.7	60	41.4			
Multigravida	11	73.3	85	58.6	1	0.406	0.690
Pregnancy interval (n= 96) *							
< 2 years	6	54.5	34	40.0			
≥ 2 years	5	45.5	51	60.0			0.517
Method of delivery (n= 160)							
Vaginal	14	93.3	109	75.2			
Ceserean	1	6.7	36	24.8			0.195
Gestational age (n= 160)							
< 37 week	1	6.7	16	11.0			
38-42 weeks	12	80.0	100	69.0			
≥ 43 week	2	13.3	29	20.0			
Newborn's weight (n= 160)							
≤ 2499 g	-	-	9	6.2			
2500-3999 g	12	80.0	121	83.5			
≥ 4000 g	3	20.0	15	10.3			
Apgar score (n= 63) †							
< 7 point	-	-	2	3.4			
≥ 7 point	5	100.0	56	96.6			1.000

* Primigravidas were not included.

† Because only Apgar scores of 63 babies of mothers could be achieved in hospitals, "n" is variable.

nuity of breastfeeding at the 6th week (r= .314, p< 0.001).

The age of mothers has been reported to be an important factor affecting breastfeeding.[3,21] Increasing mother's age plays also a positive role in its continuity.[22,23] In this study, the majority of mothers who started breastfeeding in the first hour after delivery and exclusively breastfed at the 1st and 6th weeks were in the 20-34 years age group (Tables 2, 3). These findings are consistent with the literature.

TABLE 3: Factors affecting the form of infants feeding.

	Form of Feeding							
	First Week				Sixth Week			
	Breast milk		Breast milk + Supplement*		Breast milk		Breast milk + Supplement*	
Factors	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Mother's age (n= 160)								
≤ 19 years	13	11.6	6	12.5	9	10.6	10	13.3
20-34 years	96	85.7	42	87.5	74	87.1	64	85.4
≥ 35 years	3	2.7	-	-	2	2.3	1	1.3
Mother's educational level (n= 160)								
≤ Primary school	82	73.2	34	70.8	58	68.2	58	77.3
≥ Secondary school	30	26.8	14	29.2	27	31.8	17	22.7
		df= 1	X^2= 0.096	p= 0.757		df= 1	X^2= 1.654	p= 0.198
Length of time married (n= 160)								
≤ 5 year	78	69.6	31	64.6	61	71.8	48	64.0
≥ 6 year	34	30.4	17	35.4	24	28.2	27	36.0
	df= 1	X^2= 0.396	p= 0.529	df= 1	X^2= 1.106	p= 0.293		
Longest place of residence (n= 160)								
Village, City	63	56.3	23	47.9	43	50.6	43	57.3
State	49	43.7	25	52.1	42	49.4	32	42.7
		df= 1	X^2= 0.939	p= 0.333		df= 1	X^2= 0.729	p= 0.393
Family type (n= 160)								
Nuclear	67	59.8	31	64.6	51	60.0	47	62.7
Large	45	40.2	17	35.4	34	40.0	28	37.3
		df= 1	X^2= 0.321	p= 0.571		df= 1	X^2= 0.119	p= 0.730
Parity (n= 160)								
Primigravida	46	41.1	18	37.5	34	40.0	30	40.0
Multigravida	66	58.9	30	62.5	51	60.0	45	60.0
		df= 1	X^2= 0.179	p= 0.673		df= 1	X^2= 0.000	p= 1.000
Pregnancy interval (n= 96) †								
< 2 year	25	37.9	15	50.0	22	43.1	18	40.0
≥ 2 year	41	62.1	15	50.0	29	56.9	27	60.0
		df= 1	X^2= 1.247	p= 0.264		df= 1	X^2= 0.097	p= 0.756
Method of delivery (n= 160)								
Vaginal	93	83.0	30	62.5	64	75.3	59	78.7
Cesarean	19	17.0	18	37.5	21	24.7	16	21.3
		df= 1	X^2= 7.971	p= 0.005		df= 1	X^2= 0.255	p= 0.614
Gestational age (n= 160)								
< 37 week	9	8.0	8	16.7	7	8.2	10	13.3
38-42 weeks	85	75.9	27	56.3	63	74.1	49	65.4
≥ 43 week	18	16.1	13	27.0	15	17.7	16	21.3
		df= 2	X^2= 6.311	p= 0.043		df= 2	X^2= 1.693	p= 0.429
Newborn's weight (n= 160)								
≤ 2499 g	4	3.6	5	10.4	5	5.9	4	5.3
2500-3999 g	94	83.9	39	81.3	68	80.0	65	86.7
≥ 4000 g	14	12.5	4	8.3	12	14.1	6	8.0
		df= 2	X^2= 3.346	p= 0.188				
Apgar score (n= 63) ‡								
< 7 point	-	-	2	11.8	-	-	2	7.4
≥ 7 point	46	100.0	15	88.2	36	100.0	25	92.6
				p= 0.070				p= 0.180

* Only mothers who were exclusively formula feeding considered in the group who give supplement.

† Primigravidas were not included in the evaluation.

‡ Because only Apgar scores of 63 babies of mothers could be achieved in hospitals, "n" vary.

TABLE 4: The reasons why mothers were not breastfeeding their infants.

	First Week		Sixth Week	
Reasons	**n= 48***	**%**	**n= 75***	**%**
Reasons related to the mothers				
Their thinking that they did not have enough milk	42	87.5	72	96.0
Problems with the breast †	23	49.7	25	33.3
Pain-related immobilization	11	24.0	-	-
Not wanting to breastfeed	-	-	4	5.5
Reasons related to the infants				
Not grasping the breast	32	66.7	10	13.6
Being irritable	15	32.6	14	18.7
Being in incubator	7	15.3	-	-
Reasons related to the health personals				
Recommendation of physician/nurse/midwife	9	19.1	4	5.5

* Only mothers who were exclusively formula feeding considered in the group who give supplement. Because mothers had given more than one answer, "n" is variable.
† Breast problems include small nipple, engorgement, nipple pain and sore nipples.

It was reported that cesarean and interventional deliveries delay infants' breastfeeding initiation and cause to start supplemental feeding early.[3,21,24] In this study, however, no difference was found between normal and cesarean deliveries regarding the time of initiating breastfeeding ($p > 0.05$, Table 3). This may be a result of insufficient preparation or support of mothers on the subject of breastfeeding in the pre- and postpartum periods. The majority of mothers who fed their infants with only mother's milk in the postpartum first week had in particular normal deliveries ($p < 0.01$). Similarly, a high percentage of mothers who fed their infants with only mother's milk at the 6th week had normal deliveries, while the percentage of those who had cesarean deliveries was quite low ($p > 0.05$, Table 3). Cesarean deliveries had a negative effect on the time of initiating breastfeeding ($r = -.334$, $p < 0.001$) and the form of feeding at the 1st week ($r = .223$, $p < 0.01$). These findings are consistent with the literature.

Smithers et al found that 80% of preterm infants received some breast milk, similar to the initiation rates of breastfeeding of term infants.[25] However, the percentage of term infants who were fed exclusively with breast milk was higher than that of premature infants, in general.[26] Ertem et al reported that the percentage of term infants who stopped breastfeeding at the 1st week was 27%, and it increased to 70% between the 2nd week and 2nd month.[13] The study from Fewtrell et al revealed that most of the preterm and term infants received solid foods before 4 months of age, and only 2% of term infants were exclusively breastfeed at the sixth month.[27] In this study, the majority of 15 infants initiated the breastfeeding within the postpartum first hour was term. However, the majority of infants who started breastfeeding later than one hour were also term (Table 2). This result is not in agreement with the literature, and suggests that term infants and their mothers need also urgent support to initiate breastfeeding earlier. Gestational age affected also feeding infants exclusively with mother's milk in the first week; the percentage of infants being exclusively breastfed was high in the first week, but it was quite low with premature and post-term infants ($p < 0.05$, Table 3). There was a weak, but significant relationship between gestational age and the form of the feeding in the 1st week ($r = .189$, $p < 0.05$). However, the gestational age had no effect on the form of feeding at the 6th week ($p > 0.05$). This finding was consistent with the literature cited above, and reinforces the fact that like premature infants, term infants and their mothers should also be supported in this respect.

Shepherd et al could not find a significant relationship between infant's birth weights and breastfeeding statues.[28] In this study, the majority of infants being fed with only mother's milk had normal birth weights, and the percentage of large or low birth weight infants was quite small ($p > 0.05$). The findings at the 1st and 6th weeks were similar (Table 3), and supported the findings by others, in general.[22,28]

The health and feeding of infants born with low Apgar scores as a result of difficult and interventional deliveries are negatively affected.[29] However, Shepherd et al.[28] could not find a significant correlation between Apgar scores and breastfeeding and starting supplemental feeding.[28] The results of this study revealed also no significant relationship between the breastfeeding initiation time and Apgar scores ($p > 0.05$, Table 2). However,

at the 1st week there were significant correlations between Apgar scores and infant's status of grasping the breast (r= .355, p< 0.001), form of feeding (r= .298, p< 0.05), and supplemental feeding recommendation by health care personnel (r= .695, p< 0.001). The positive correlation found between Apgar scores and supplemental feeding recommendations is an important finding suggesting that health care personnel recommend supplemental feeding regardless of the infants' Apgar scores.

The mothers' income level, educational level, place of longest residence, family structure and length of marriage has not been shown to affect the time to initiate and continue breastfeeding.[15] Similarly, the mothers' educational level, length of marriage, place of longest residence, family type, parity, pregnancy interval, method of delivery and Apgar scores did not affect the time when breastfeeding began as well as the form of feeding at the 1st and 6th weeks in this study (p> 0.05) (Tables 2 and 3).

Mothers start supplemental feedings because of their frequent concern in the inadequacy of their milk, and breast problems have a negative effect on breastfeeding duration.[13,30] Breastfeeding was not continued in the first two weeks after delivery primarily because of infant-related problems, the thought of having insufficient milk and breast problems, while preferring supplemental feeding, infant's discomfort, small nipple, inadequate milk production, experiencing difficulty with breastfeeding, tiredness and breast swelling were the major reasons after 6 weeks.[13,16,31] The thought of having insufficient milk and breast problems were also most important factors that negatively affected breastfeeding at the1st and 6th weeks postpartum in this study (Table 4). There were also maternal and infant-related causes of not continuing exclusive breastfeeding. These causes included mothers' discomfort from pain, and infants' not grasping the breast, irritability and being in the incubator at the 1st week, and mothers not wanting to breastfeed her infants, infant's irritability and not grasping the breast at the 6th week (Table 4).

Mothers who deliver by cesarean are facing with important health problems in the early postpartum period.[29,31] Such mothers need help taking care of their infants and support in breastfeeding because of anesthesia and pain at the incision site.[29] In this study, a significant number of mothers with cesarean delivery stated that they were not able to breastfeed their infants early because they were immobilized from pain (Table 4).

Information given to mothers about breastfeeding affects both their beginning to breastfeed and length of breastfeeding time.[32] However, health care personnel do not give women adequate information or do not support the subject "continuity of breastfeeding".[12,17] Instead, they recommend that infants must be given supplemental feeding in the postpartum period while still in the hospital.[3,15] Also in this study, mothers were given supplemental feeding recommendations by health care personnel (Table 4). This may indicate that health care givers still need to be encouraged in this respect. Atıcı et al. suggested that mothers shold be consultated and supported in respect to breastfeeding starting in antenatal period, and to do this, health care personnel should primarily be educated about this issue.[33]

CONCLUSION

The co-existance of high rates of late initiation of breastfeeding and short duration of exclusive breastfeeding with the misinformation by health personnel in this study indicates the insufficiency of all actual precautions to start breastfeeding early and continue it for the first six months of life exclusively. Thus, there is a need to check up the support system at each level to achieve behavioral modifications from health personnel to the patient itself.

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