

Evaluation of the relationship between method of delivery and breastfeeding characteristics

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ABSTRACT

Objective: Many factors affect breastfeeding such as maternal method of delivery. The objective of this study was to evaluate the relationship between delivery method and breastfeeding characteristics.

Material and Methods: This study was conducted between January and May 2019. A total of 210 mothers were analyzed who were registered in the Child Health and Diseases Outpatient Clinic and were still breastfeeding at the time of enrollment. A 28-item questionnaire survey was administered to the participants regarding their family's socio-demographic characteristics, delivery method, and breastfeeding characteristics.

Results: Of the participants, 79 (37.6%) and 131 (62.4%) gave birth by vaginal delivery (VD) and by cesarean delivery (CD), respectively. A total of 55 (69.6%) mothers had VD breastfed their baby within the first ½ h of birth. The difference between the time of initial breastfeeding and the delivery method was statistically significant ($p<0.001$). A significantly higher proportion of babies born by VD (94.9%) received breast milk as their first food than babies born by CD ($p<0.001$). Moreover, significantly higher proportion of mothers who had VD exclusively breastfed their baby at 6 months than mothers who had CD ($p<0.001$).

Conclusion: This study found that the delivery method has a significant effect on breastfeeding characteristics, such as the time of initial breastfeeding and exclusive breastfeeding.

Keywords: Breastfeeding, breast milk, cesarean delivery, vaginal delivery.

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INTRODUCTION

Breast milk is the only suitable food for healthy babies up to 6 months after birth. Breastfeeding is beneficial in many ways for both the mother and the baby. Mothers are advised to start breastfeeding within 1 h of birth, to continue exclusive breastfeeding for the first 6 months, and to continue breastfeeding for at least 2 years.^[1,2] However, many factors affect breastfeeding; one of these factors is the maternal method of delivery.^[3]

Cesarean delivery (CD) is applied with high frequency in many parts of the world. Its morbidity and side effects are higher than those of vaginal delivery (VD) for both mothers and neonates.^[4] Notably, medically unnecessary CDs are a global concern.^[5] Although a clear consensus on the level of CD frequency is lacking, a consensus that its current frequency is too high to be explained by medical reasons does exist.^[6–8] With the increase in the number of CD procedures being performed, research into the adverse health effects of CD is also increasing. A systematic review and meta-analysis study reported that early initiation of breastfeeding after an elective CD significantly reduced compared with that after VD, although it did not find any difference between emergency CD and VD on this parameter.^[9] By contrast, another study determined that CD was associated with low risk of discontinuation of exclusive breastfeeding before 6 months postpartum.^[10] In addition, a recent study in Turkey showed that the rate of exclusively breastfeeding babies born by CD was significantly higher than that of exclusively breastfeeding babies born by VD at 6 months.^[11] These results show that the relationship between CD and breastfeeding characteristics remains contradictory. The objective of this study was to evaluate the relationship between delivery method and breastfeeding characteristics.

MATERIAL AND METHODS

This study was approved by the Clinical Research Ethics Committee (approval no. 18/347; approval date: 02/10/2019) and was conducted between January and May 2019. We analyzed 210 mothers who were registered at the Child Health and Diseases Outpatient Clinic and were still breastfeeding at the time of enrollment. Babies who did not have any health problems were included in the study.

We administered a 28-item questionnaire survey regarding the participants' family socio-demographic characteristics, delivery method, and breastfeeding characteristics. We recorded demographic data, including age, educational status, employment, and income status of the mothers and fathers. Moreover, we collected information about the delivery method, first food given to the babies, time of initial breastfeeding, duration of exclusive breastfeeding, and total breastfeeding time. Mothers who have not yet completed 2 years of breastfeeding were asked whether they intended to continue breastfeeding up to 2 years. The participants were informed about the research and asked to provide their verbal consent to participate in it, in accordance with the Declaration of Helsinki. They anonymously completed the questionnaire.

Statistical Analysis

Statistical analysis was performed with SPSS 20.0. The Kolmogorov-Smirnov test was used to evaluate normal distribution of the

Table 1: Baseline characteristics of parents

	Mothers	Fathers
Age, mean±SD	27.9±3.3	29.0±3.7
Education (years)		
≤8	61 (29.0%)	48 (22.9%)
≥9	149 (71.0%)	162 (77.1%)
Employment status		
Not working	155 (73.8%)	4 (1.9%)
Working	55 (26.2%)	206 (98.1%)
Income status		
<Minimum wage* TL	17 (8.1%)	
Between minimum wage and 5000 TL	102 (48.6%)	
>5000 TL	91 (43.3%)	

SD: Standard deviation; *: Minimum wage was accepted as 2.020,90 TL; TL: Turkish Liras.

continuous variables. Descriptive data were expressed as number (percentage), mean±standard deviation, or median (range). The Pearson χ^2 test and Fisher exact test were used for categorical variables. $P<0.05$ was considered statistically significant.

RESULTS

The mean age of the 210 mothers was 27.9±3.3 years, while that of the fathers was 29.0±3.7 years. The difference between VD and CD in terms of mean maternal age was not significant ($p=0.329$). The mean age of the babies was 8.06±2.88 months, and 80 (38.1%) of them had at least one sibling. A total of 149 (71.0%) mothers and 162 (77.1%) fathers had high school or higher education. Moreover, 55 (26.2%) mothers were working, while four (1.9%) fathers were not working (Table 1).

Seventy-nine (37.6%) mothers gave birth by VD, and 131 (62.4%) mothers gave birth by CD. Of those who gave birth by CD, 90 (60.4%) had high school or higher education (≥9 years) and 42 (76.4%) were working. The difference between the educational status and income status of the parents and the delivery method was not significant ($p<0.05$).

Seventy-nine (37.6%) mothers had breastfeeding experience. Of all the mothers, 166 (79.0%) stated that the first food given to their baby after birth was breast milk; in contrast, 44 (21.0%) reported that the first food given to their baby was infant formula. A significantly higher proportion of babies born by VD (94.9%) received breast milk as their first food than babies born by CD ($p<0.001$). A higher proportion of mothers who had CD used infant formula than mothers who had VD ($p<0.001$).

Fifty-five (69.6%) mothers had VD breastfed their baby within the first ½ h of birth. In total, 75 (94.9%) mothers had VD and 49 (37.4%) who had CD breastfed their baby within the 1st h of life ($p<0.001$). The difference between the time of initial breastfeeding and the delivery

Table 2: Distribution of breastfeeding characteristics according to delivery type

	VD		CD		p
	n	%	n	%	
Breastfeeding initiation					<0.001
≤One hour	75	60.5	49	39.5	
>One hour	4	4.7	82	95.3	
Infant formula (as first food)					<0.001
No	75	45.2	91	54.8	
Yes	4	9.1	40	90.9	
Exclusive breastfeeding					0.001
<Six months	27	26.0	77	74.0	
≥Six months	52	49.1	54	50.9	
Two years breastfeeding					0.025
<Two years	29	29.6	69	70.4	
≥Two years	50	44.6	62	55.4	
Previous breastfeeding experiences					0.934
No	49	37.4	82	62.6	
Yes	30	38.0	49	62.0	
Feels competent about breastfeeding					0.017
No	27	28.7	67	71.3	
Yes	52	44.8	64	55.2	

VD: Vaginally delivery, CD: Cesarean delivery.

method was significant ($p < 0.001$). One hundred and six (50.5%) infants were exclusively breastfed for the first 6 months of life. Fifty-two (65.8%) mothers who had VD fed their baby only breast milk during the first 6 months after birth, and this rate was significantly higher than that among the mothers who had CD ($p < 0.001$). The difference between breastfeeding experience and delivery method was not statistically significant ($p = 0.934$). Furthermore, 52 (44.8%) mothers who had VD felt competent in terms of breastfeeding ($p = 0.017$) (Table 2).

DISCUSSION

This study investigated whether delivery type affects breastfeeding characteristics. The rates of exclusive breastfeeding at 6 months may differ between countries. According to the 2020 US Centers for Disease Control and Prevention Breastfeeding Report Card, only 25.6% of infants were exclusively breastfed up to 6 months.^[12] Moreover, in 2018 and 2016, the rates of infants exclusively breastfed at 6 months were 25.5% and 22.3%, respectively.^[13,14] Although the rate of breastfeeding at 6 months has shown a tendency to increase, it is still at a very low level. However, a recent study found that the exclusive breastfeeding rate up to 6 months in Turkey increased from 28.2% in 2013 to 46.0% in 2017.^[15] In the present study, half the infants received breast milk exclusively for the first 6 months of life, which is contrary to the findings of the US Centers for Disease Control

and Prevention, whereas it is similar to the findings reported in the above-cited study. Contrarily, it should be considered that the other half of the infants could not be exclusively breastfed up to 6 months. In light of this, issues that prevent breastfeeding for 6 months should be further discussed, and efforts should be made to resolve them. The previous studies have reported that CD has a negative effect on breast milk intake.^[9,16–18] In accordance with the literature, we found that the rate of exclusive breastfeeding up to 6 months among mothers who had VD was higher than that among mothers who had CD.

CD is one of the major hurdles to early initiation of breastfeeding in hospital-born babies.^[19] One study reported that VD was 2.78 times more highly associated with early initiation of breastfeeding than CD.^[20] Delay in breastfeeding initiation causes some health problems in infants. A large cohort study showed that, compared with the risk of death among babies who started breastfeeding within the 1st h of birth, the risk of death among neonates who started breastfeeding between 2 h and 23 h after birth was 41%, whereas that among neonates who started breastfeeding between 24 h and 96 h after birth was 79%.^[21] In a meta-analysis study of data collected from 33 countries, CD was reported to have negative effects on early initiation of breastfeeding.^[22] In the present study, breastfeeding within the first ½ h of birth and that within the 1st h of birth were compared to the delivery method. The results of the present study showed that the frequency of breastfeeding in both the first ½ h and the 1st h of life was higher in the mothers who had VD than in the mothers who had CD.

Mothers' decision to start and continue breastfeeding can be influenced by many factors, and problems encountered in the initial stage of breastfeeding can influence their decision to either continue breastfeeding in the long term or stop breastfeeding completely.^[23,24] Moreover, we evaluated the duration of total breastfeeding for at least 2 years relative to the delivery method. Most mothers who breastfed for <2 years gave birth by CD.

The present study had several limitations. First, maternal indications for CD and type of anesthesia used during CD were not reported. These parameters can affect postpartum breastfeeding characteristics. Second, the intention of mothers who have not yet completed 2 years of breastfeeding was recorded. This could have affected the overall results for the 2-year breastfeeding period that was analyzed.

CONCLUSION

This study found that the method of delivery significantly affects breastfeeding characteristics, such as the time of initial breastfeeding and exclusive breastfeeding. Pregnant women should be informed about all the possible side effects of CD, especially those involving breastfeeding. In addition, all expectant mothers should be encouraged to breastfeed within the 1st h of birth and to exclusively breastfeed for 6 months.

Statement

Ethics Committee Approval: The Bezmialem Vakıf University Clinical Research Ethics Committee granted approval for this study (date: 02.10.2019, number: 18/347).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – SU; Design – SU; Supervision – SU; Resource – SU; Materials – SU; Data Collection and/or Processing – BM; Analysis and/or Interpretation – BM; Literature Search – FUK; Writing – FUK; Critical Reviews – FUK.

Conflict of Interest: The authors have no conflict of interest to declare.

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REFERENCES

- World Health Organization. Infant and Young Child Feeding: Model Chapter for Textbooks for Medical Students and Allied Health Professionals. Geneva, Switzerland: World Health Organization; 2009. Available from: <http://www.who.int/nutrition/publications/infantfeeding/9789241597494/en>.
- Chung M, Raman G, Chew P, Magula N, Trikalinos T, Lau J. Breastfeeding and maternal and infant health outcomes in developed countries. *Evid Rep Technol Assess (Full Rep)* 2007;153(153):1–186.
- Colombo L, Crippa BL, Consonni D, Bettinelli ME, Agosti V, Mangino G, et al. Breastfeeding determinants in healthy term newborns. *Nutrients* 2018;10(1):48.
- Khooshideh M, Mirzarahimi T. The comparison of maternal and neonatal outcomes of normal vaginal delivery versus unplanned cesarean section delivery. *J Ardabil Univ Med Sci* 2017;17(1):122–32.
- Betrán AP, Temmerman M, Kingdon C, Mohiddin A, Opiyo N, Torloni MR, et al. Interventions to reduce unnecessary caesarean sections in healthy women and babies. *Lancet* 2018;392(10155):1358–68.
- Cavallaro FL, Cresswell JA, Ronsmans C. Obstetricians' opinions of the optimal caesarean rate: A global survey. *PLoS One* 2016;11(3):e0152779.
- Betrán AP, Ye J, Moller AB, Zhang J, Gülmezoglu AM, Torloni MR. The increasing trend in caesarean section rates: Global, regional and national estimates: 1990–2014. *PLoS One* 2016;11(2):e0148343.
- Boerma T, Ronsmans C, Melesse DY, Barros AJ, Barros FC, Juan L, et al. Global epidemiology of use of and disparities in caesarean sections. *Lancet* 2018;392(10155):1341–8.
- Prior E, Santhakumaran S, Gale C, Philipps LH, Modi N, Hyde MJ. Breastfeeding after cesarean delivery: A systematic review and meta-analysis of world literature. *Am J Clin Nutr* 2012;95(5):1113–35.
- Ip WY, Gao LL, Choi KC, Chau JP, Xiao Y. The short form of the breastfeeding self-efficacy scale as a prognostic factor of exclusive breastfeeding among mandarin-speaking Chinese mothers. *J Hum Lact* 2016;32(4):711–20.
- Yakar B, Karaca AA, Tanrıöver Ö. Emziren annelerin ilk 6 ay sadece anne sütü verme oranları ve etkileyen faktörlerin araştırılması. *Firat Med J* 2020;25(4):195–202.
- Centers for Disease Control and Prevention. Breastfeeding Report Card: United States; 2020. Available from: <https://www.cdc.gov/breastfeeding/data/reportcard.htm>.
- Centers for Disease Control and Prevention. Breastfeeding Report Card: United States; 2016. Available from: <https://www.cdc.gov/breastfeeding/pdf/2016breastfeedingreportcard.pdf>.
- Centers for Disease Control and Prevention. Breastfeeding Report Card: United States; 2018. Available from: <https://www.cdc.gov/breastfeeding/pdf/2018breastfeedingreportcard.pdf>.
- Hüray K, Şenol E, Keskindemirci G, Selver MB, Gökçay G. Bir çocuk sağlığı izlem polikliniğinde 4. Ve 6. Ay sadece anne sütü ile beslenme oranları ve anne eğitim düzeyi-ön çalışma sonuçları. *Çocuk Dergisi* 2020;20(2):43–7.
- Zanardo V, Svegliado G, Cavallin F, Giustardi A, Cosmi E, Litta P, et al. Elective cesarean delivery: Does it have a negative effect on breastfeeding? *Birth* 2010;37(4):275–9.
- Guala A, Boscardini L, Visentin R, Angellotti P, Grugni L, Barbaglia M, et al. Skin-to-skin contact in cesarean birth and duration of breastfeeding: A cohort study. *ScientificWorldJournal* 2017;2017:1940756.
- Zhao J, Zhao Y, Du M, Binns CW, Lee AH. Does caesarean section affect breastfeeding practices in China? A systematic review and meta-analysis. *Matern Child Health J* 2017;21(11):2008–24.
- Rowe-Murray HJ, Fisher JR. Baby friendly hospital practices: Cesarean section is a persistent barrier to early initiation of breastfeeding. *Birth* 2002;29(2):124–31.
- Taha Z, Ali Hassan A, Wikkeling-Scott L, Papandreou D. Prevalence and associated factors of caesarean section and its impact on early initiation of breastfeeding in Abu Dhabi, United Arab Emirates. *Nutrients* 2019;11(11):2723.
- NEOVITA Study Group. Timing of initiation, patterns of breastfeeding, and infant survival: Prospective analysis of pooled data from three randomised trials. *Lancet Glob Health* 2016;4(4):e266–75.
- Yisma E, Mol BW, Lynch JW, Smithers LG. Impact of caesarean section on breastfeeding indicators: Within-country and meta-analyses of nationally representative data from 33 countries in Sub-Saharan Africa. *BMJ Open* 2019;9(9):e027497.
- Cisco J. Who supports breastfeeding mothers?: An investigation of kin investment in the United States. *Hum Nat* 2017;28(2):231–53.
- Dewey KG, Nommsen-Rivers LA, Heinig MJ, Cohen RJ. Risk factors for suboptimal infant breastfeeding behavior, delayed onset of lactation, and excess neonatal weight loss. *Pediatrics* 2003;112(3):607–19.