

# Does Early Breastfeeding Decrease the Duration of the Third-Stage of Labor and Enhance the Infant-Mother Interaction?

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## Abstract

**Objective:** Hospital practices seem to have encouraged health professionals to view the mother and baby entirely separately after the moment of delivery for their wellbeing. Support for early breastfeeding provides short-term benefits for the mother and baby as well as long-term advantages for the successful feeding. The aim of this study was to evaluate the effect of early breastfeeding on the duration of third stage of labor and the mother-infant interaction.

**Materials and Methods:** Eighty five eligible subjects were divided into early-breastfeeding (n =43) and control (n = 42) groups. In early-breastfeeding group, the newborns were fed after the five minutes of postpartum period (early breastfeeding). We recorded the time of placental delivery in the study groups. Then they were fed again in the first 30 minutes of the fourth stage of labor (first breastfeeding). In control group, mothers fed their infants during the first 30 minutes of fourth stage. In both groups, they fed during their first alert period (second breastfeeding). We applied mother-infant interaction tests to all participants during first and second breastfeedings.

**Results:** The rate of placental delivery at the first 5-10 minutes of the third stage was significantly higher (83.3% vs. 16.7%) in the early-breastfeeding group (p<0.05). This rate in the group of mothers who prefer to feed their infants with early-breastfeeding during first 2-9 minutes was found higher (92.6% vs. 7.4%) than those of preferring breastfeeding after more than 10 minutes (p<0.05). During both the first and second breastfeedings, verbal interaction scores were significantly higher in the early breastfeeding group (26.5 ± 4.4 and 28.1 ± 4.4, respectively) than those of the control group (13.9 ± 3.6 and 17.0 ± 2.8, respectively) (p<0.05).

**Conclusions:** Initiation of breastfeeding by well-trained delivery room staff, usually within the first hour, is very important for increased rate of early placental delivery and enhanced mother-infant interaction.

**Keywords:** breastfeeding, placenta, mother-infant interaction

## Özet

### Erken Emzirme Doğumun Üçüncü Evresinin Süresini Azaltır ve Anne Bebek Etkileşimini Artırır mı?

**Amaç:** Günümüzde hastanelerin çoğunda anne ve bebek, doğumdan sonra iyiliklerine olacağı düşünülerek ayrı yerlerde tutulmaktadır. Erken emzirmenin desteklenmesi anne ve bebeğe kısa dönemde fayda sağlamanın yanında uzun dönemde de emzirmenin başarılı olmasını sağlar. Bu çalışmanın amacı, erken emzirmenin doğumun üçüncü evresine ve anne-bebek etkileşimine olan etkisini değerlendirmektir.

**Materyal ve Metot:** Çalışmaya 43 erken emzirme grubu ve 42 kontrol grubu olmak üzere 85 kişi alındı. Erken emzirme grubuna doğumdan 5 dakika sonra bebekleri emzirtildi (erken emzirme). Her iki grubun (erken emzirme ve kontrol grupları) doğumun üçüncü evresinde plasentalarının doğma süresi kaydedildi. Sonra doğumun dördüncü evresinin ilk 30 dakikası içinde erken emzirme grubunun bebekleri tekrar emzirtildi (ilk emzirme). Kontrol grubundaki annelere de bebekleri doğumun dördüncü evresinin ilk 30 dakikası içinde emzirtildi (ilk emzirme). Her iki grup, bebeklerinin uyanık olduğu bir dönemde tekrar emzirdi (ikinci emzirme). Birinci ve ikinci emzirmeler süresince tüm katılımcılara anne- bebek etkileşim testi uygulandı.

**Sonuçlar:** Erken emzirme grubunda plasental evrenin ilk 5-10 dakikası içerisinde plasentalın doğma oranı önemli derecede (erken emzirme grubu %83.3'e karşılık kontrol grubu %16.7) yüksek bulundu (p<0.05). Erken emzirme grubunda bebeklerini 2-9 dakika emziren annelerin plasentalarının doğma oranı, 10 dakika emziren annelerin plasentalarının doğma oranından daha yüksek (%92.6'ya karşılık %7.4) bulundu (p<0.05). Bir ve ikinci emzirmeler sırasında sözlü iletişim puanı erken emzirme grubunda (26.5±4.4 ve 28.1±4.4) kontrol grubuna oranla (13.9±3.6 ve 17.0±2.8) önemli derecede yüksek bulundu (p<0.05).

**Tartışma:** Genellikle postpartum ilk 1 saat içinde iyi eğitilmiş personel tarafından emzirmenin başlatılması, plasentalın doğma süresini azaltması ve anne- bebek etkileşimini artırması açısından oldukça önemlidir.

**Anahtar sözcükler:** emzirme, plasenta, anne bebek etkileşimi

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## Introduction

Breastfeeding provides health, nutritional, immunologic, developmental, psychological, social, economic, and environmental benefits for infants. Breastfeeding has also important implications for women's health, and increasing research supports the benefit for women who breastfeed (1-3). Labor and delivery management may affect breastfeeding initiation in several ways. Early breastfeeding may also change the progress of labor, especially the third stage of labor. The third stage of labor is the part of labor from the birth of the baby until the placenta and fetal membranes are delivered. After 30 minutes, the third stage of labor is considered to be prolonged, indicating a potential problem. After the uterus has been emptied and the placenta has been delivered, the primary mechanism by which bleeding control is achieved at the placental site is vasoconstriction produced by a well-contracted myometrium. The amount of blood lost depends on how quickly this occurs. If the uterus is atonic and does not contract normally, the blood vessels at the placental site do not adequately constrict and severe bleeding results. Postpartum hemorrhage as a consequence of uterine atony represents a leading cause of maternal morbidity and mortality and generally occurs during the third and fourth stage of labor. For this reason, the hour immediately after delivery of the placenta is often referred to as the fourth stage of labor.

Breastfeeding is clearly enhanced by keeping mothers and infants together (4-6). This starts right at birth; the first feed happens soonest and most successfully if newborns stay skin-to-skin with mothers beginning immediately after birth. Newborns recognize the smell of their mothers' breasts and root toward it. If left alone, skin-to-skin, infants can find their way to the breast and attach for sucking. Mother-baby bonding is enhanced by breastfeeding (7). Much of the interaction that goes on between any two people is non-verbal. Early mother-infant attachment has been shown to have a lasting effect on interactions between the pair and on the child's later development and well-being via increased breastfeeding period.

The aim of this study was to evaluate the effect of early breastfeeding on the duration of third stage of labor and the mother-infant interaction. We tested the two hypotheses that mothers beginning early breastfeeding would have significantly shorter duration of placental delivery and they also would have significantly higher degree of mother-infant interaction.

## Materials and Methods

### *Participants and Procedure*

This clinical study was conducted at Sivas Maternity Hospital. The protocols and procedures described below were reviewed and approved by the local ethics committee of the hospital. All subjects were fully informed about the study, and those who agreed to participate signed an informed consent.

All women admitted to the obstetric service who presented for vaginal delivery in latent phase of first-stage of labor we-

re invited to participate to the study. Inclusion criteria were singleton pregnancy with a live fetus, well-documented gestational age, gestational age between 37 and 41 weeks. Exclusion criteria were as follows: systemic and psychiatric disorders, inverted nipple, placental disorders, fetal major malformation, intrauterine growth restriction, postpartum hemorrhage, exposure to narcotic analgesia and general anesthesia during first-and second- stage of labor, labor dystocia, and 1-min Apgar score of less than 7.

Eighty five eligible subjects were divided into two groups in a randomized manner: early-breastfeeding group (n =43) and control group (n = 42). In early-breastfeeding group, all mothers informed about early breastfeeding and its technique for 20 min during latent phase of first-stage of labor. In early-breastfeeding group, the newborns were fed during the first five minutes of postpartum period before the placental delivery after the initial nursing care. The duration of breastfeeding was adjusted according to the mother's request. This was defined as early breastfeeding. Then they were fed again in the first 30 minutes of the fourth stage of labor. This was defined as first breastfeeding. After first breastfeeding, the infants were fed repeatedly during awaken. First of them was defined as second breastfeeding. In control group, mothers fed their infants during the first 30 minutes of fourth stage. This was defined as first breastfeeding. They fed repeatedly if the infants were alert. First of these breastfeedings was defined as second breastfeeding. We applied mother-infant interaction tests to all participants during first and second breastfeedings. The mother-infant interaction test used in this study developed by modification of previously suggested tests for this purpose (8,9). Mother-infant interaction observed during breastfeeding can be categorized by verbal and nonverbal interaction tests. Scores of these tests were recorded as percentage of their total point. Seven-point verbal interaction test was defined as follows: mother's tone of speech is affectionate, mother uses infant's name when addressing baby, mother uses lovely words when talking to baby, mother talks about baby's characteristics, mother uses positive behavior, mother considers baby as a member of the family, mother does not talk about her disturbances.

Nine-point nonverbal interaction test was also defined as follows: mother kisses baby, mother pats baby, mother embraces baby, mother holds eye-to-eye contact with baby, mother smiles baby, mother is happy during contact, mother interests only in baby, mother does not pull back her nipple from her baby's mouth, and mother does not show inverted behavior.

### *Statistical Analysis*

The following variables were identified and recorded on each participant's data sheet: maternal age, gravidity, parity, education, work status, and duration of placental delivery. We also recorded the mother-infant interaction test results of both groups for the first and second breastfeedings. Data were presented as mean $\pm$ SD, median (min-max), and percentage as appropriate. Data were analyzed by t test, Mann-Whitney U test, and chi-square test as appropriate.  $P < 0.05$  was considered as significant.

## Results

Seven pregnant women in the early-breastfeeding group and six in the control group were excluded according to the exclusion criteria. Table 1 presents the demographic and selected clinical findings of the early-breastfeeding and control groups. There was no significant difference between these findings of the study groups. Table 2 shows the duration of placental delivery of the study. In our study, in the early-breastfeeding group, the rate of placental delivery at the first 5-10 minutes of the third stage was significantly higher (83.3% vs. 16.7%) ( $p < 0.05$ ), but in control group the rate of placental delivery at the 11-20 minutes of the third stage was significantly higher (58.3% vs. 41.7%) ( $p < 0.05$ ). Duration of placental delivery from the beginning of early breastfeeding is shown in Table 3. The rate of placental delivery at the first 5-10 minutes of the third stage in the group of mothers who prefer to feed their infant's by the way of early-breastfeeding for 2-9 minutes was found higher (92.6% vs. 7.4%) during the study ( $p < 0.05$ ). However, in the group of mothers who prefer to feed their infant's for more than 10 minutes, the rate of placental delivery at the first 5-10 minutes and at the 11-20 minutes (55.5% vs. 44.5%) was not significantly different ( $p > 0.05$ ).

Table 4 lists mother-infant interaction scores during the first and second breastfeedings. During both the first and second breastfeedings, verbal interaction scores were significantly higher in the early breastfeeding group ( $26.5 \pm 4.4$  and  $28.1 \pm 4.4$ , respectively) than those of the control group ( $13.9 \pm 3.6$  and  $17.0 \pm 2.8$ , respectively) ( $p < 0.05$ ); but nonverbal interaction scores of first and second breastfeedings of the early-breastfeeding group were not significantly different from those of the control group ( $p > 0.05$ ).

**Table 1.** Demographic data of the early-breastfeeding and control groups

	Early-breastfeeding (n = 36)	Control (n = 36)
<b>Maternal age</b>		
15-19	5 (13.9%)	3 (8.3%)
20-24	19 (52.8%)	23 (63.9%)
>24	12 (33.3%)	10 (27.8%)
<b>Gravidity</b>		
Nulligravid	19 (52.8%)	14 (38.9%)
Multigravid	17 (47.2%)	22 (61.1%)
<b>Parity</b>		
Nullipar	21 (58.3%)	15 (41.7%)
Multipar	15 (41.7%)	21 (58.3%)
<b>Education</b>		
Primary school	30 (83.3%)	31 (86.2%)
High school	6 (16.7%)	5 (13.8%)
<b>Work</b>		
Housewife	35 (97.2%)	34 (94.4%)
Employed	1 (2.8%)	2 (5.6%)

**Table 2.** Duration of placental delivery of the early-breastfeeding and control groups

Duration of placental delivery	Early-breastfeeding (n = 36)	Control (n = 36)
5-10 min	30 (83.3%) <sup>a</sup>	15 (41.7%) <sup>a</sup>
11-20 min	6 (16.7%)	21 (58.3%)

<sup>a</sup>Significantly different from 11-20 min ( $p < 0.05$ ).

**Table 3.** Duration of placental delivery from the beginning of early breastfeeding

	Duration of placental delivery	
	5-10 min	11-20 min
<b>Duration of early-breastfeeding</b>		
2-9 min	25 (92.6%) <sup>a</sup>	2 (7.4%)
>10 min	5 (55.5%)	4 (44.5%)

<sup>a</sup>Significantly different from >10 min ( $p < 0.05$ ).

**Table 4.** Mother-infant interaction during the first and second breastfeeding

Mean interaction score	First breastfeeding	Second breastfeeding
<b>Verbal interaction</b>		
Early-breastfeeding group	$26.5 \pm 4.4$ <sup>a</sup>	$28.1 \pm 4.4$ <sup>b</sup>
Control group	$13.9 \pm 3.6$	$17 \pm 2.8$
<b>Nonverbal interaction</b>		
Early-breastfeeding group	$50.8 \pm 2.8$	$61.7 \pm 3.1$
Control group	$45.0 \pm 2.8$	$55.0 \pm 2.9$

<sup>a,b</sup>Significantly different from control ( $p < 0.05$ ).

## Discussion

In the present study, we found that early breastfeeding increases frequency of early placental delivery. Early breastfeeding for 2-9 min provided optimal effect for early placental delivery in the first 5-10 minutes of the third stage. Management of the third stage of labor can usually be facilitated by the use of oxytocin that reduces the incidence of postpartum hemorrhage by up to 40% when it is administered after fetal or placental delivery (10). Many more newborns are exposed to oxytocin during labor management, although little information is available about its effect on lactation. It is known that oxytocin is important for milk let-down, but it is secreted physiologically in a pulsatile manner. Theoretically, continuous high levels of the drug could change milk production and let-down, but this theory has not been documented (11). It is, however, accepted as a safe medication to use in labor management and its use is not a contraindication to breastfeeding. Matthiesen et al (12) investigated the effects of infant hand massage and sucking on the level of oxytocin in maternal blood. They found that the newborns use their hands as well as

their mouths to stimulate maternal oxytocin release after birth, which may have significance for uterine contraction, milk ejection, and mother-infant interaction. Breastfeeding through increased release of oxytocin results in faster uterine involution and less postpartum blood loss (13) and the incidence of postpartum anemia may be reduced.

Success of breastfeeding is also clearly enhanced by keeping mothers and infants together. This starts right at birth; the first feed happens soonest and most successfully if newborns stay skin-to-skin with mothers beginning immediately after birth. They recognize the smell of their mothers' breasts and root toward it (14,15). If left alone, skin-to-skin, newborns can find their way to the breast and attach for suckling. All of the initial care, unless an infant needs significant resuscitation after delivery, can take place without removing newborns from mothers (6). Mothers and newborns must stay together after the birth, with rooming-in and unlimited access to each other during hospitalization.

Initiation of breastfeeding by well-trained delivery room staff, usually within the first hour, is very important for increased success rate of breastfeeding (4,6). Immediately following delivery, the healthy infant should be placed on the mother's chest or upper abdomen. Early skin-to-skin contact between the mother and infant can facilitate breastfeeding and improve maternal-infant bonding (16,17,25). The newborn can be dried by delivery room personnel at the bedside to help lessen evaporative heat loss. Further, newborns who have early maternal contact have been found to nurse more effectively at the first feeding; in some cases, if the newborn is left alone on the mother's chest, it has crawled spontaneously to the breast and suckled.

In developing countries mothers living in rural areas were more inclined to breastfeed than those living in urban areas. Women with higher levels of education and higher social status tended to breastfeed less, but in industrialized countries mothers with higher educational levels and higher social status were more likely to breastfeed. The delay in the initiation of breastfeeding, a lack of professional support, contradictory advice from professionals, and the presence of free samples of formula (with or without a request from the mother) can make breastfeeding failures more common. Although breastfeeding is almost universal in some developing countries, the early use of complementary foods is quite common. In some countries, particularly in Asia, it is common for infants not to receive maternal colostrum, with the initiation of breastfeeding delayed until after 24 hours of life (18-20).

The postpartum period is referred to as the fourth trimester of pregnancy. It is a time of transition for mothers and fathers. Although classes for childbirth and books about breastfeeding are available, little attention is typically paid to new families when infants have been born (1). New mothers should initiate breastfeeding as soon as possible after childbirth. When mothers initiate breastfeeding within one-half hour of

birth, the baby's suckling reflex is strongest, and the baby is more alert. Early breastfeeding is associated with fewer nighttime feeding problems and better mother-infant communication (2).

In our study, during both the first and second breastfeeding sessions, it was consistently found that early-breastfeeding improved the verbal mother-infant interaction significantly. Our results also confirmed that early-breastfeeding may affect nonverbal mother-infant interaction insignificantly. These findings were generally in agreement with those of Widstrom et al (4) who demonstrated that early-breastfeeding constructively affected the postpartum mother-infant interaction. Brandt et al (21) demonstrated that optimal maternal-infant interactions were found related to longer breastfeeding duration and difficulties in maternal-infant interaction were related to weaning earlier than planned. De Chateau et al (22) have investigated a group of 21 mothers with early contact and 19 control mothers, all of whom were provided 24 hours rooming-in breastfeeding after 2 hours postpartum, the only difference in management in the study group was the first 30 minutes of early contact. The study group displayed more attachment behavior, fondling, caressing, and kissing than the controls. Sosa et al (23) conducted a study in Brazil, in which each mother nursed immediately on delivery and the infant was kept beside the mother's bed until they went home. The control had traditional therapy. At two months, 77% of the early-contact mothers and only 27 % of the controls were successfully nursing. The report of a similar study was published by Norr et al (24) demonstrating a significantly improvement on the mothers' anxiety, breastfeeding behavior, and mother-infant interaction when the infants were fed more than 5 minutes and roomed in at the early postpartum period.

In conclusion, initiation of breastfeeding by well-trained delivery room staff, usually within the first hour, provides important benefits for early placental delivery and enhanced mother-infant interaction. Increased mother-infant interaction is one of the most important factors for successful breastfeeding, for this reason, mothers should be encouraged for early breastfeeding to improve the health of mother and child.

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