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**Assessment of The Impact of Mother-Infant Skin-to-Skin Contact at Childbirth on Breastfeeding****ABSTRACT****Aim:** The study was conducted to assess the effects of mother-infant skin-to-skin contact (SSC) on breastfeeding.**Method:** The study samples were included 50 SSC and 50 control group which individuals selected by simple random sampling. All infants in the study group were placed on the naked breast of the mother in a prone position at birth and remained there for an average of 45-60 min under the supervision of the midwife. All mothers of this study and control groups were allowed at least 4 breastfeeding sessions at the postnatal 12-24 hour period then the LATCH Breastfeeding Charting System was completed.**Results:** The study and control groups included subjects similar in age, education, employment and obstetric characteristics. Statistically significant differences were determined between the study and control groups in respect of breastfeeding start time, to colostrum visibility after birth, problems experienced in breastfeeding, feeding the infant with nutrients other than breastmilk, and breastfeeding frequency ( $p<0.001$ ). The LATCH Breastfeeding Charting System scores were meaned  $9.70 \pm 0.64$  points in the study group and mean  $7.80 \pm 1.29$  points in the control group, with a statistically significant difference between the groups ( $p<0.000$ ).**Conclusion:** These findings showed that skin-to-skin contact at birth had positive effects on breastfeeding.**Key words:** skin-to-skin contact in childbirth, breastfeeding, LATCH Breastfeeding Charting System, midwife**Doğumda Anne-Bebek Ten Temasının Emzirme Üzerine Etkileri****ÖZET****Amaç:** Bu çalışma, doğum sonu erken dönem anne-bebek ten temasının emzirme üzerine etkilerini değerlendirmek amacıyla yapılmıştır.**Yöntem:** Araştırmanın örneklemini basit rastgele örnekleme yöntemiyle belirlenen, doğumda ten teması uygulanan 50 çalışma grubu gebe ve uygulanmayan 50 kontrol grubu gebe oluşturmuştur. Çalışma grubunda yer alan tüm bebekler, doğumda annenin çıplak göğsüne kordon kesilmeden önce, prone pozisyonunda yerleştirilerek 45-60dk, ebe gözetiminde bekletilmiştir. Çalışma ve kontrol grubunda yer alan tüm gebeler, doğum sonu 12-24 saat içinde, en az 4 emzirme geçtikten sonra emzirme sırasında gözlenerek, LATCH Emzirme Tanılama Ölçeği doldurulmuştur.**Bulgular:** Araştırmada çalışma ve kontrol grubu yaş, eğitim, çalışma durumu ve obstetrik özellikler açısından benzerlik göstermektedir. Çalışma ve kontrol grubu arasında ilk emzirmeye başlama zamanı, doğumdan sonra anne sütünün gelmesi, emzirmede sorun yaşama durumu, bebeğe anne sütü dışında yiyecek içecek verme, emzirme sıklığı değişkenleri açısından istatistiksel olarak anlamlı farklılıklar bulunduğu belirlenmiştir ( $p<0.001$ ). Gruplar LATCH Emzirme Tanılama Ölçeğinden alınan puanlar açısından incelendiğinde; çalışma grubunun ortalama  $9.70 \pm 0.64$  puan, kontrol grubunun ortalama  $7.80 \pm 1.29$  puan aldığı ve gruplar arasında istatistiksel olarak anlamlı farklılık bulunduğu belirlenmiştir ( $p<0.000$ ).**Sonuç:** Araştırma bulguları, doğumda ten temasının emzirme üzerine olumlu etkileri olduğunu göstermektedir.**Anahtar kelimeler:** Doğumda anne-bebek ten teması, emzirme, LATCH Emzirme Tanılama Ölçeği, ebe

## INTRODUCTION

Skin-to-skin contact(SSC) is the placement of the infant immediately after birth on the bare chest of the mother in the prone position. According to the evolutionary approach, this application is standard, urgent and continuous. However, as most births currently occur in hospitals, this is not implemented as is thought that it could delay routine procedures and first care of the newborn (1).

SSC at birth does not alter the newborn care, only alters the location of this care to the mother's chest. Consequently, the newborn is more easily able to adapt to extra-uterine life.

With delivery, the newborn leaves the warm, dim and rhythmic intrauterine environment where all its needs have been perfectly met. When the infant is placed on the mother's chest, the familiar heartbeat, smell and the warmth of the mother can again be felt (1,2,3). In both mother and infant, oxytocin release is stimulated, anxiety is reduced, tranquility and social sensitivity are enhanced and the body temperature of the infant is preserved via the stimulants of contact, warmth and smell (1,4,5).

It is known that newborns are sensitive to smell cues that derive from the mother's nipple areola. It has been considered that the mother's areola smell matches the amniotic fluid smell and the infant placed on the mother's breast would perceive this smell. Thus, the infant would direct itself towards the familiar smell and find the nipple more easily, suck on it more easily and would complete the initial breastfeeding successfully. Healthy initial breastfeeding would facilitate lactation and positively affect the sustainability of breastfeeding (1,3).

Breastfeeding is a non-expensive, natural and healthy nutritional method. The World Health Organisation (WHO) and the American Academy of Pediatrics (AAP) recommend that the infant should be fed only with mother's milk and should receive no other nutrients including water. In addition to the numerous benefits of breastfeeding on the infant health, neurodevelopmental results improve and intelligence and intellectual structure are positively affected in breastfed infants. Furthermore, postnatal uterine involution of breastfeeding females occurs rapidly, postpartum bleeding frequency is reduced, increasing endorphine levels after breastfeeding leads to the mother feeling greater self-confidence, and there is a decrease in the frequency of abandoning the child and postpartum depression (6,7,8,9). Therefore it is very important that breastfeeding is supported.

Breastfeeding is known to be an unrivalled nutritional method which has on the health of both mother and infant. Therefore, that all implementations supporting breastfeeding are made more widespread is a very important subject. Skin-on-skin in the first hour improves breastfeeding rates and is included in the Baby Friendly Hospital Initiative(BFHI) criteria. The updated BFHI Step 4 is now interpreted as: Place babies in skin-to-skin contact with their mothers immediately following birth for at least an hour. Encourage mothers to recognize when their babies are ready to breastfeed and offer help if needed.

Almost all births in Turkey take place in hospitals and state maternity hospitals generally have the title of "Baby Friendly Hospital". However, SSC is a little-known and infrequently applied approach. The BFHI certification in Turkey does not always translate to offering important skin-on-skin time, not even for the original half hour described in the WHO original 4th Step. In the original step 4 (1992), breastfeeding support for the mother is given within half an hour of birth, irrespective of skin contact. This study was conducted to compare the WHO current interpretation of Step 4 with the interpretation of the original Step 4.

## MATERIALS AND METHODS:

**Location and Time of the Study:** The study was conducted between January 15 and November 31, 2015 in a public hospital with a "Baby-Friendly" appellation. Within the context of the hospital breastfeeding policy, all pregnant women are informed about breastfeeding, and mothers are encouraged to breastfeed during the first postnatal half hour and as long as there is no medical reason to prevent it, newborns are only breastfed.

**Participants:** The study sample included pregnant females who accepted in the delivery room for normal birth, did not have any chronic disease, on 37<sup>th</sup> gestation week or later, with no position and presentation anomaly or breastfeeding contraindication, with no congenital anomaly or low birth weight (2500 kg or lower) in the infant and who consented to participate in the study. Of the pregnant females that conformed to the sampling criteria, a total of 50 were included in the study group as 25 multiparous and 25 primiparous. A further 50 females as 25 multiparous and 25 primiparous, that conformed to the sampling criteria were included as the control group.

**Data Collection Tools:** Data were collected through observation and interviews using a data collection form designed by the author and the LATCH breastfeeding diagnostic scale. In the data collection form, socio-demographic, obstetric characteristics and variables that were considered to affect breastfeeding were recorded.

The breastfeeding behavior of the mothers was assessed with the LATCH Breastfeeding Charting System. This scale was developed by Jensen, Wallace and Kelsay (1994) to enable healthcare providers to objectively diagnose breastfeeding and to determine breastfeeding problems. The name of the scale is an acronym for the assessment criteria used in the scale. Accordingly, "L" stands for latch on breast by the infant, "A" stands for audible swallowing, "T" stands for the type of nipple, "C" is for mother's comfort in breast/nipple, and "H" stands for the holding position of the baby and the need of the mother for help during the latch of the baby on the breast. Scale items are scored between 0 – 2 points by observing the breastfeeding behavior of the mother. Higher scores obtained in the scale reflect breastfeeding success<sup>9</sup>. In the present study, the scale Cronbach alpha coefficient was determined as 0.93.

**Data Collection and Analysis:** Data were collected after approval for the study was granted by the Ankara Numune Research and Education Hospital,

Clinical Research Ethics Committee (Date: 29/01/2015, number: E-15-405). Data were collected in three stages for the study. At the first stage, initial interviews were conducted with all the pregnant women, in which information about the research was provided and their consent for participation was obtained.

In second stage, the infants of the study and control group mothers were rapidly assessed based on emergency resuscitation steps. No infant in either group needed resuscitation. One infant in the study group was born with thin meconium aspiration syndrome. Thus, SSC was conducted after the nasogastric aspiration, when the general condition of the infant had improved. The study

group newborns were placed on the bare chest of their mothers in a prone position immediately after birth before the umbilical cord was broken, they were dried and tactile stimulant was applied. Later on the infant was covered including its head. The umbilical cord was cut while the baby was on the mother's chest. First and fifth minute Apgar scores of the infant were assessed and initial care was given on the mother's bosom. During the implementation of SSC, the infants were not forced to feed and started as they wished and remained until finished. The newborns were kept on the mothers' chest for an average of 45 – 60 minutes under the supervision of the midwives until the first breastfeeding was completed.

**Table 1.** Demographic, Clinical and Intervention Characteristics

Variables	SSC* Group (n=50) (X±Sd)	Control Group (n=50) (X±Sd)	Analysis	
<b>Maternity</b>				
Age	27.94±6.26	27.16±5.57	z=1.14	p=0.450
Parity	2.1±1.1	1.8±1.0	z=1.11	p=0.264
Number of alive children	2.1±1.1	1.8±0.8	z=1.20	p=0.282
Education Status				
	<b>n (%)</b>	<b>n (%)</b>		
Primary School	10(20)	13(26)		
Middle School	20(40)	19(38)	X <sup>2</sup> =.52	p=0.77
High School and higher	20(40)	18(36)		
Employment Status				
No	46(92)	45(90)		
Yes	4(8)	5(10)		
Breastfeeding Intent for First 6 Month				
No	4(8)	2(4)		
Yes	46(92)	48(96)		
Concern about their breasts losing form due to breastfeeding				
No	47(94)	47(94)		
Yes	3(6)	3(6)		
<b>Newborn</b>				
Gender	<b>n(%)</b>	<b>n(%)</b>		
Female	26(52)	27(54)	X <sup>2</sup> =0.84	p=0.50
Male	24(48)	23(46)		
The color of the baby during first postpartum minutes				
Whole body were in pink	49(98)	18(36)		
Bodies were in pink and extremities were in purple	1(2)	21(42)		
Bodies were in pale	-	11(22)		
	<b>(X±Sd)</b>	<b>(X±Sd)</b>		
Birth Weight	3290±340	3253±383	t=.517	p=0.60
1 <sup>st</sup> minute Apgar Score	9.12±0.38	8.96±0.19	z=2.55	p=0.01
5 <sup>st</sup> minute Apgar Score	9.98±0.14	9.92±0.27	z=1.37	p=0.17
<b>Birth</b>	<b>n(%)</b>	<b>n(%)</b>		
Episiotomy	No	10(29)	8(16)	
Yes	40(80)	42(84)		
Induction	No	29(58)	29(40)	
Yes	21(42)	30(60)		

\*SSC: Skin-to-skin Contact

Routine hospital procedures were applied to the pregnant women in the control group. This routine included showing of the baby after its umbilical cord was cut without skin-to-skin contact, followed by the initial care procedures under a radiant heater. Infants in the control group were clothed and given to the mother in about 20 minutes – 1 hour after the birth for breastfeeding.

In the third phase, all the women in the study and control groups were visited in the postpartum period within 12 – 24 hours after at least 4 breastfeeding sessions and breastfeeding was observed and the LATCH scale was filed.

The evaluation of breastfeeding of both the study and control group was made by a single observer who was

not blinded. The observer visited all the women in both groups in the postpartum period and after receiving information about breastfeeding from the observer, the observation was completed silently by LATCH, without further communication. This observation lasted an average of 15 – 20 minutes. Then the appropriate sections of the data collection form were completed.

Analysis of the data collected in the present study was conducted using frequency and percentage distributions. Mann Whitney U, Student’s t-test and Chi-square test were used in comparison of parametric and non-parametric group data.

**RESULTS**

In the study, the parameters of mean age, education status, parity and number of alive children were similar in

the study and control groups ( p>0.05). It was determined that 92% of the study group and 96% of the control group planned to breastfeed their infants during the first 6 months and 94% of the women in both groups had no concerns about their breasts losing form (Table 1).

Variables related to delivery of the infants demonstrated that episiotomy and induction application ratios were similar and there were no deliveries with intervention and no postpartum hemorrhage or other complications were observed. The groups were similar based on newborn gender and birth weight (p>0.05). A statistically significant difference was determined between the groups based on 1<sup>st</sup> minute Apgar score. There was no significant difference based on the 5<sup>th</sup> minute Apgar scores (p>0.05) (Table 1).

**Table 2.** Breastfeeding Experiences in Study and Control Groups

Variables	SSC* Group n(%)	Control Group n(%)	Analysis
<b>Time of breastfeeding</b>			
1. First 30 min.	17 (81)	6 (17)	$\chi^2=51.92$ <b>p&lt;0.01</b>
2.			
3. 31 min. and higher	8 (16)	44 (88)	
4.			
<b>Colostrum was seen in the first hour</b>			
6. No	-	17(34)	fisher <b>p&lt;0.01</b>
7. Yes	50(100)	33(66)	
<b>The Problems in First Breastfeeding</b>			
No	48 (96)	39(78)	fisher <b>p&lt;0.01</b>
Yes**	2(4)	11(22)	
<b>The need to feed the baby with nourishment other than the mother’s milk</b>			
No	48(96)	27(54)	-
Yes	2(4)	23(46)	
<b>Self-sufficiency for breastfeeding</b>			
I am sufficient	43(86)	35(70)	-
I am <u>partially</u> sufficient	7(14)	13(26)	
I am not sufficient	-	2(4)	
<b>The frequency of breastfeeding during the first 24 hours</b>			
Whenever baby wanted	50(100)	36(72)	-
<u>once per hour</u>	-	4(8)	
Every 2-3 hours	-	10(20)	

\*SSC skin-to-skin contact

\*\* The problems in first breastfeeding included nipple pain and infant rejecting the nipple

The mothers were asked about the color of the infant in the first postpartum minutes and 98% of the study group and

36% of the control group were reported to be pink. That the infant bodies were pink and the extremities were

purple in color was stated by 2% of the study group and 42% of the control group. When the groups were analyzed based on postpartum breastfeeding characteristics, there was a highly statistically significant difference between the groups ( $p < 0.001$ ). Furthermore, it was determined that colostrum was seen in all individuals in the study group and in only 66% of the control group.

While 22% of the women in the control group experienced problems such as nipple pain, or infant rejecting the nipple, this ratio was only 2% in the study group

Within the first 24 hours, skin contact was applied without any nourishment for the infant other than maternal breast milk (water, formula etc) in 4% (n=2) of the study group and 46% (n=23) of the control group. When it was questioned whether the women felt themselves to be sufficiently capable on the subject of breastfeeding, 78% of the study group and 68% of the control group responded as 'sufficient', 14% of the study group and 26% of the control group responded as 'partially sufficient', and 0%

of the study group and 4% of the control group responded as 'insufficient'. A statistically significant difference was determined between the groups, with the women in the study group stating that they felt more capable ( $p < 0.000$ ).

All women in the study group breastfed their children whenever they wanted and this ratio was 72% in the control group (Table 2).

In this study, breastfeeding was assessed using the LATCH Breastfeeding Charting System. It was observed that primiparous, multiparous and total scores ( $p < 0.01$ ) differed statistically significantly between the groups. When the scores obtained in the scale are examined based on the factors, traced that there were significant differences between the study and control group total scores and primiparous and multiparous mean scores based on "L," latch on breast by the infant, "A," audible swallowing, "C," mother's comfort in breast/nipple factors ( $p < 0.001$ ), while there was no significant difference based on "T" the type of nipple and "H," holding and help ( $p > 0.05$ ) (Table 3).

**Table 3.** LACTH Breastfeeding Charting System Points in Study and Control Groups

İtem of Scale		SSC Group X ± Sd	Control Group X ± Sd	Analysis
L	Primipara	1.94±0.22	1.33±0.57	z=3.6* p=0.000
	Multipara	2.00±0.00	1.34±0.61	z= 04.89 p=0.000
	Total	1.98±0.14	1.34±0.59	z=6.21 p=0.000
A	Primipara	1.94±0.22	1.42±0.59	z=3.20 p=0.001
	Multipara	2.00±0.00	1.24±0.57	z=5.50 p=0.000
	Total	1.98±0.14	1.32±0.58	z=6.37 p=0.000
T	Primipara	1.73±0.65	1.90±0.30	z=0.68 p=0.404
	Multipara	1.96±0.17	1.89±0.40	z=0.63 p=0.524
	Total	1.88±0.43	1.90±0.36	z=0.029 p=0.977
C	Primipara	1.84±0.37	1.38±0.58	z=2.69 p=0.007
	Multipara	1.96±0.17	1.41±0.50	z=4.57 p=0.000
	Total	1.92±0.27	1.4±0.53	z=5.29 p=0.000
H	Primipara	1.89±0.31	1.66±0.48	z=1.70 p=0.089
	Multipara	1.96±0.17	1.96±0.18	z=0.02 p=0.981
	Total	1.94±0.23	1.84±0.37	z=1.59 p=0.112
LATCH Total	Primipara	9.36±0.89	7.71±1.23	z=3.99 p=0.000
	Multipara	9.90±0.30	7.86±1.35	z=6.16 p=0.000
	Total	9.70±0.64	7.80±1.29	z=7.33 p=0.000

L: Latch on Breast; A: Audible Swallowing; T:Type of Nipple; C:Comfort of Breast/Nipple H: Hold/ Help

## DISCUSSION

Breastfeeding, which is known to have innumerable benefits on the health of both mother and infant, is affected by various factors. To reveal the effects of skin-to-skin contact at birth on breastfeeding, exclusion of these factors, even if not completely excluded, control of these factors is important for the reliability of the study.

Socio-economic factors such as maternal age, education and previous experiences have an impact on breastfeeding<sup>8</sup>. In this study, the mean age, education, parity and alive number of children of the participating women in control and study and control groups were similar (Table 1). These findings were significant since they demonstrate that certain variables that could affect breastfeeding could be controlled.

Another factor which could affect breastfeeding is the intention to breastfeed of the mother. It has been reported that the intentions of women to breastfeed can be affected by the thought that during breastfeeding, their breasts may sag and this could reduce their sexual attractiveness in the long term (Gabbe et al, 2009). In the current study, 92% of the mothers in the study group and 96% in the control group have planned to breastfeed for the first 6 months and in 94% of both groups there were no concerns about spoiling the breasts during breastfeeding (Table 1).

High breastfeeding intent rates were related to the high level of breastfeeding tendencies among women in Turkey. This finding was significant since it demonstrated that the groups were also similar for breastfeeding intent.

Conditions such as induction, elective episiotomy and childbirth with intervention could disrupt the hormonal cycle and delay lactation and initial breastfeeding time. Studies have shown that women who gave birth without any intrapartum interventions have longer breastfeeding periods and a low ratio of feeding their children with extra nutrients<sup>10,11</sup>.

The findings of the current study demonstrated that episiotomy and induction rates were similar in the study and control groups; there were no intrapartum interventions, and no postpartum problems were experienced (Table 1).

Skin-to-skin contact at birth could promote the adaption of the newborn to extra-uterine life and affect breastfeeding positively. During the initial postpartum minutes, the color of the infant is one of the best indicators of its heartbeat and respiration rate and oxygen saturation. While the whole bodies of 98% of the infants in the study group and 36% of the control group were pink in color, 2% of the infants in the study group and 42% of the control group had a pink body color with purple extremities. Furthermore, it was determined that there was a significant difference between the groups based on 1<sup>st</sup> minute Apgar score. Infants in the study group had higher 1<sup>st</sup> minute Apgar scores and there was no significant difference between the 5<sup>th</sup> minute Apgar scores (Table 1).

In a study conducted by Takahashi et al.<sup>12</sup> (2010) which examined heartbeat, oxygen saturation and saliva cortisol levels in infants that received skin-to-skin contact at birth, it was found that newborn cardiopulmonary consistency was better in the skin-to-skin contact applied group. Nimbalkar et al.<sup>13</sup> (2014) reported that one hour of

kangaroo care in preterm infants regulated maternal blood pressure and the newborn's respiratory rate. The data of current study on newborn color and Apgar scores during the initial postpartum minutes, are consistent with literature, and showed that extra-uterine adaptation could have developed more rapidly in newborns that received skin-to-skin contact at birth. Breastfeeding can facilitate rapid adaptation to extra-uterine life for the newborn.

The first postpartum half-hour, which is the most important part of the "sensitive period" is the time when the infant is the most awake and active for breastfeeding<sup>8,14,15</sup>. Postpartum early breastfeeding solely affects the mother's lactation period, while late initial breastfeeding is a significant obstacle for sufficient and quality breastfeeding<sup>15</sup>. The findings of this research demonstrated that breastfeeding and lactation started earlier in infants that received skin-to-skin contact<sup>16, 17,18</sup>. In the present study, the existence of a significant difference between the groups based on the time of starting breastfeeding and the fact that colostrum was seen in all the study group women immediately after the birth, but only in 66% of the control group seem to support this finding.

Within the first 24 hours, skin contact was applied without any nourishment for the infant other than maternal breast milk (water, formula etc) in 4% (n=2) of the study group and 46% (n=23) of the control group. After completion of the breastfeeding observation, the mothers were questioned as to whether or not the infant had received any nourishment other than the maternal breast milk in the first 24 hours. In addition to maternal milk, any water or formula given to the infants by the mother or family had been done so without referral to the healthcare personnel. This was thought to have been due to the milk coming later in the control group and that they felt they had insufficient knowledge about breastfeeding. This finding confirms that mother-infant skin contact has a positive effect on breastfeeding outcomes.

Total scores obtained in the LATCH Breastfeeding Charting System in the study demonstrated that women in the study group had higher scores compared to the control group and the comparison of the groups showed that there were significant differences between the groups based on primiparous, multiparous and total scores. When the scale scores were analyzed based on the items, it was found that there were significant differences between primiparous, multiparous and total scores based on "L," latch on breast by the infant, "A," audible swallowing, "C," mother's comfort in breast/nipple factors. The fact that there were no significant differences based on "T" the type of nipple and "H," holding and help scale items was considered a reinforcing factor for the view that skin-to-skin contact at birth had an effect on breastfeeding.

In a meta-analysis conducted by Moore et al.<sup>1</sup> (2012) on mother – infant skin-to-skin contact at birth, it was reported that scores used to assess breastfeeding were higher. Similar studies conducted using the Infant Breastfeeding Assessment Tool (IBFAT) also reported higher scale scores in groups that received skin-to-skin contact<sup>15,17,19</sup>.

The explanation related to help with breastfeeding in Step 4 of the BFHI, updated by the WHO in 2009, is as follows: The babies were placed in skin-to-skin contact with them immediately or within five minutes after birth and that this contact continued without separation for an hour or more, unless there were medically justifiable reasons. *Also the mothers* were encouraged to look for signs for when their babies were ready to breastfeed during this first period of contact and offered help, if needed.

The findings obtained in this study related to breastfeeding were consistent with literature and confirm the interpretation of the importance of SSC in the support of breastfeeding, to which attention is drawn in the updated BFHI Step 4.

### CONCLUSION

It was determined in the study that newborns showed better adaptation to extra-uterine - life, mothers lactated early, breastfeeding problems were observed less

frequently and the rate of feeding the baby nutrients other than mother's milk during the first 24 hours decreased in the skin-to-skin applied group. Furthermore, total scores obtained in the LATCH Breastfeeding Charting System in the study demonstrated that women in the study group had higher scores compared to the control group and the comparison of the groups showed that there were significant differences between the groups based on primiparous, multiparous and total scores. There were significant differences between primiparous, multiparous and total scores obtained in the scale by the groups based on "L, "A," "C," scale items. The fact that there were no significant differences based on "T" and "H," scale items was considered a reinforcing factor for the view that skin-to-skin contact at birth had an effect on breastfeeding. The study findings supported the information that skin-to-skin contact application at birth was related to positive breastfeeding outcomes.

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