

Original Article**The effects of post-birth mother-infant skin to skin contact on first breastfeeding**

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**Abstract**

**BACKGROUND:** This study aimed to determine the effects of immediate and continues skin-to-skin contact in first two hours post-birth on breastfeeding initiation and the infant success in first breastfeeding.

**METHODS:** 92 pairs of primi-gravid women and their neonates were randomly divided into two groups, in Om-ol-banin hospital of Mashhad in 2007. In "routine care" group, after performing neonatal primary care and repairing mother's perineum, mother and infant were connected and breastfeeding was started. In "intervention" group, mother-infant skin to skin contact performed in the first two hours post-birth and feeding was started as soon as the infant's pre-feeding behaviors were appeared. The duration of feeding was calculated based on infant tendency to feed. Infant Breast Feeding Assessment Tool (IBFAT) was used to measure infant success in breastfeeding.

**RESULTS:** The rate of infants initiated breastfeeding in the first 30 minutes post birth was 89.4% in intervention and 2.2% in control group ( $p = 0.000$ ). Duration from birth to first breastfeeding was lower ( $p < 0.001$ ) and the rate of success and duration of first feeding was significantly higher in intervention group ( $p < 0.05$ ).

**CONCLUSION:** Early and continues skin-to-skin contact in the first two hours post-birth eases the first experience of successful breastfeeding that can promote breastfeeding success in the future. So, immediate and continues skin to skin contact between mother and infant and continuing it during repair of mother's episiotomy, is recommended. If it is possible, usual cares of infant should be done after establishing the first successful breastfeeding.

**KEY WORDS:** Skin to skin contact, infant, mother, Success in first breastfeeding, exclusively breastfeeding.

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In new millennium, breastfeeding has an important place in general health, baby survival, mother's health and national and international policies.<sup>1</sup> As World Health Organization (WHO) reported, more than 1.5 million baby deaths per year are happened because of proscription of or insufficient intake of breast milk.<sup>2,3</sup> Non-breastfed infants compared to breastfed infants are at least, 2.5 times more prone to diseases.<sup>4</sup> According to the report of Iranian Ministry of Health and Medical Education, the amount of breastfeeding, especially exclusive breastfeeding, has been decreased in Iran during recent years.<sup>5</sup> United Nations International Children's Emergency Fund (UNICEF) and WHO provided ten basic solutions in 1991

to increase the rate of breastfeeding and recommended utilizing these solutions to baby-friendly hospitals. Breastfeeding initiation in the 30 minutes post birth was the forth solutions of these package.<sup>6-8</sup> On-time effective and successful initiation of breastfeeding has special benefits for mother and infant.<sup>1,6,9</sup> Due to the importance of breastfeeding in the first hour of life, WHO announced "Initiation of breastfeeding within the first hour of life" and "exclusive breastfeeding saves life of more than one million infants" as the themes of Breast Feeding Week for the year of 2007.<sup>10,11</sup>

Previous studies have shown that the infant environment before, during and immediately after birth and also, actions performed during

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prenatal and child-birth period, and the hospital policies have important effects on successful feeding initiation and feeding duration.<sup>12-14</sup> In some studies, separating infant and mother at birth, even shortly, for doing routine cares such as neonatal assessment, vitamin K injection and repairing mothers' episiotomy, could lead to less interaction between mother and infant, decrease mother's self confidence in successful breastfeeding, decrease the mother's learning about infant feeding and postpone the stage 2 of lacto-genesis.<sup>1,7,12</sup> In these studies, separating infant from mother had unwanted physiologic effects such as maternal stress, higher infant's crying that can be followed by energy loosing, lower rates of success in starting pre-feeding behaviors, decrease in interaction between stimulus and responses needed for development of infants' sucking skill, and decrease in perfect feeding and feeding duration.<sup>12,15-17</sup>

First two hours post birth is a critical period for stabilizing breastfeeding and is the time in which the infants' feeding behaviors such as rooting and sucking are strongly exist. During this period, most of the infants responses to the touching, thermal and smell instigations received from their mother's body; and even, can start breastfeeding by themselves, so it seems that using infant innate behaviors for initiating breastfeeding, is a logic step to start interventions aimed increasing the successful breastfeeding.<sup>12,15</sup>

In Moore and Anderson study, success in first breastfeeding in early skin-to-skin contact group, was significantly more than usual care group<sup>15</sup> but there was no significant difference in Carfoot et al study.<sup>18</sup> Temporary separation of infant and mother, had negative effects on success of the first feeding and stopping skin-to-skin contact and moving infant from mother's breast in first twenty minutes post-birth disturbed infant pre-feeding behaviors; also human infant, innately creeps to breast after birth like other mammal infants. It seems, separating infant and mother in this step will have an important role in making disturbance in breastfeeding initiation.<sup>1,15,19</sup>

Despite the administered changes in infant care methods during recent years in Iran, breastfeeding indices have been decreasing in recent years.<sup>5</sup> So, it is necessary to identify proper strategies of promotion and continuation of breastfeeding. In most hospitals, even in baby-friendly hospitals, in which skin-to-skin contact is done, this contact is delayed due to performing routine infant care and repairing mother's perineum. This problem especially happens in primi-gravid mothers that their success in breastfeeding requires more support. Considering the lack of randomized clinical trials in this regard, this study was conducted to evaluate the effects of skin to skin contact in first two hours post-birth on breastfeeding initiation and the rate of success in first breastfeeding compared to routine method of infant care in delivery room.

## Methods

This study was a randomized controlled trial on 92 primi-gravid mothers who had referred to Om-ol-banin hospital of Mashhad, Iran in the year 2007. Inclusion criteria were: age equal or more than 18 years, tendency to have natural child-birth and breastfeeding, and having no history of medical problems, mental disease or using banned drugs. Sample size was determined based on findings from a pilot study.

Mothers randomly divided into two groups of "skin-to-skin contact" and "routine care". Exclusion criteria were: infants' birth weight of less than 2500 g, gestational age of less than 37 weeks, first and 5<sup>th</sup> minute APGAR score of less than 7, and existence of medical problems in infants which interfered with skin-to-skin contact and breastfeeding. In "skin-to-skin contact" group, immediately after birth, infant was put in prone position between mother's breasts in skin-to-skin contact with her. To avoid heat wastage, the infant was dried and his/her head was covered with a hat and his/her back was covered with a warm blanket.

Mother-infant skin-to-skin contact continued for 2 hours up to the time of transferring to the obstetrics ward. Meanwhile, immediately after appearing infants' pre-feeding behaviors such

as lips movement and moving fingers to the mouth, infant was closed to the mother's breast to start breastfeeding and Infant Breast Feeding Assessment tool (IBFAT) was completed by one of the researchers to measure the "success in first breastfeeding". Infant's APGAR score was determined while mother and infant were in skin to skin contact. Neonatal weight, height and head circumference were measured and vitamin K was injected, after the end of 2 hours post birth and before transferring to the obstetric ward.

In routine-care group, immediately after cutting navel cord, as usual in delivery rooms, infant was dried and APGAR score was determined. Infant then was shown to mother and put under radial warmer to perform actions like physical assessment and vitamin K injection. After repairing mother's rupture of perineum or episiotomy, infant was handed to mother in a blanket and as routine of hospital, mother was persuaded to start breastfeeding.

The IBFAT evaluates four parameters of infant suckling competence including readiness to feed, rooting reflex, latch-on, and suckling pattern. The infant can receive a score of 0-3 on each item for a maximum total score of 12. Achieving scores between 10 to 12 from IBFAT tool showed success and scores less than 10 showed failure in first breast-feeding. IBFAT is a reliable tool for assessing infant success in first breastfeeding which has been used in several studies.<sup>15,18</sup> Reliability of this tool was assessed by observing 20 cases of breastfeeding in a pilot study, in which Kapa coefficient was 0.92.

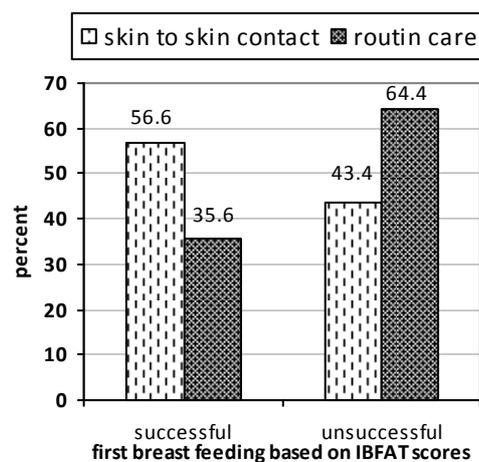
Breastfeeding in both groups was continued until infants gave up the breast. This time was measured using chronometer and recorded. Both groups were received usual routine educations about breastfeeding. To equalize the effect of the researcher's attendance, she was stayed beside the mothers in control group also, in first 2 hours post birth.

Independent t-test and nonparametric Mann-Whitney test was used in analyzing qualitative data with normal and abnormal distribution and chi-square test was used for comparing qualitative data via SPSS software.

## Results

There was no significant difference between two groups in parents' education, parents' job, level of family income, mother's opinion about breastfeeding, receiving prenatal cares, teaching mother about breastfeeding, mother body mass index, infant sex and weight, and husband's support of breastfeeding (Table 1). As chart 1 shows, success in first breastfeeding was significantly higher in intervention group ( $p = 0.02$ ). Also according to Mann-Whitney test, there was a significant difference between "skin-to-skin contact" group and "routine care" group in the average of duration from birth to first breastfeeding ( $21.98 \pm 9.10$  min. vs  $66.55 \pm 20.76$  min,  $p < 0.001$ ). In this study 89.4% of infants in intervention group and only 2.2% of infants in control group were breastfed during the first 30 minutes post birth ( $p < 0.001$ ).

According to Man-Whitney test results, duration of breastfeeding in skin-to-skin contact group had a increase nearly three folds more than routine care group ( $57.59 \pm 14.23$  min vs  $17.81 \pm 8.41$  min,  $p = 0.0001$ ). In intervention group, mother's feelings about skin-to-skin contact were assessed. 76.6% of mothers reported "very good feeling", 19.1% had "good feeling", 4.3% had no feeling and non of the mothers had "bad" or "very bad" feelings about skin to skin contact with their infant during first two hours post-birth.



**Chart 1.** Frequency of successful and unsuccessful first breast feeding in skin to skin contact group and routine care group

**Table 1.** Specifications of mothers and infants in "skin-to-skin contact" and "usual care" groups

Variable	Group	Skin to skin <i>contact</i>	Routine Care	p
<b>Qualitative variables</b>		N(Percent)	N(Percent)	
<b>Education</b>				
Elementary school		13(27.7)	6(13.3)	0.59
Guidance school		12(25.5)	19(42.2)	
High school		20(42.6)	18(40)	
Higher Education		2(4.3)	2(4.4)	
<b>Job</b>				
Housewife		2(97.90)	44(97.80)	0.97
Employed		1(2.1)	1(2.2)	
<b>Husband's literature</b>				
Illiterate		2(4.3)	0(0)	0.27
Elementary school		9(19.10)	9(20)	
Guidance school		26(55.3)	21(46.7)	
High school		9(19.10)	15(33.3)	
Higher Education		1(2.10)	0(0)	
<b>Opinion about breastfeeding</b>				
Completely agree		37(78.7)	33(73.3)	0.54
Agree		10(21.3)	12(26.7)	
<b>Infant sex</b>				
Girl		27(57.4)	25(55.6)	0.85
Boy		20(42.6)	20(44.4)	
<b>Quantitative variables</b>		<b>Mean (SD)</b>	<b>Mean (SD)</b>	
Mother's age		22.02 (2.84)	21.62 (2.73s)	0.49
Duration of active phase of first stage of labor (min)		267.68 (85.65)	244.75 (78.43)	0.18
Duration of second stage of labor (min)		37.28 (17.92)	35.95 (19.14)	0.73
Infant weight		3123.73 (509.55)	3237.55 (347.34)	0.2

## Discussion

In this study, skin-to-skin contact between mother and infant was along with decreasing the time between birth and breastfeeding initiation, more success in the first breastfeeding and longer duration of first breastfeeding. "Success in first breastfeeding" according to achieved scores from IBFAT scale, which reflect the infant's preparation to start breast feeding and his/her performance in sucking breast, was higher in skin-to-skin contact group compared to control group. In Moor and Anderson study,<sup>15</sup> success in first breastfeeding in skin-to-skin contact group was significantly more than routine care group which supports the results of present study. In Carfoot et al study,<sup>18</sup> the frequency of success in first breastfeeding has no significant difference in skin-to-skin contact and routine care groups. It is probable that the difference between these two studies be related to different skin-to-skin contact methods and the

kind of the tools applied for assessing breastfeeding success, which in the present study was as the same as Carfoot et al study. In Carfoot study,<sup>18</sup> the scores of 8 to 12, considered as success and scores less than 8 considered as failure in first breastfeeding.

In spite of the changes performed in the methods of neonatal care post-birth during recent years, in many cases, the first mother-infant contact and first breastfeeding are postponed to after doing the routine neonatal cares and repairing the mother's perineum seen in routine care group in this study too. This method causes a considerable delay in starting breastfeeding, so the rate of breastfeeding initiation during 30 minutes post-birth was 2.2% in this group.

In this study, the average time of starting breastfeeding after birth in skin to skin contact group was about 20 minutes; whereas, in control group this time was about one hour. According to previous studies, WHO and UNICEF

emphasized on starting the breastfeeding during the first 30 minutes after birth as the fourth action of baby-friendly hospitals to promote breastfeeding.<sup>6</sup> Also in this study, duration of first breastfeeding, in skin to skin contact group was nearly one hour -nearly 3 times more than control group (nearly 17 minutes)- which shows the high level of infant's preparation for starting breastfeeding and better skill in sucking the breast in this group that may play a significant role in continuing successful breastfeeding in the future. Healthy and term infants, immediately after skin-to-skin contact with their mothers, show some species specific innate behaviors which is necessary for their nutrition and survivals. During skin-to-skin contact between mother and infant, touching and verbal interactions are increased that led to increasing response to stimulus received from mother's body and advancing pre-feeding infants' behaviors. Due to these stimulations, infant begins searching for mother's breast and sucking.<sup>1,12,15,20-22</sup> Human infants experience a catecholamine surge immediately after birth due to compression of the fetal head and periodic hypoxia during uterine contractions. These high levels of catecholamines in blood flow cause the olfactory bulbs in the infant's nares to be extremely sensitive to the smells that guide the infant towards the mother's nipple.

After the first 2 hours post-birth, many infants enter a sleepy phase, which is presumed to be the result of a decrease in circulating catecholamine levels. They may be difficult to arouse for up to 3 to 4 hours.<sup>15,23</sup> These facts show the necessity of skin-to-skin contact between mother and infant as soon as possible after birth when infant is completely conscious.

In a study, 38 infants who immediately put on mother's breast, move toward mother's breast during 20 minutes and 63.15% of them, spontaneously start breastfeeding during 50 minutes post-birth.<sup>19</sup>

Nowadays, many of hospitals claim that skin-to-skin contact is their routine method of neonatal care, even in these hospitals, infants remove from mother's breast before 20 minutes of contact (the time that is needed for infants to

get ready for breastfeeding). Despite of the common concern and opinions of some of hospital personnel that mothers reject the skin to skin contact with their infant during first 2 hours post-birth, in our study, this caring method was along with a high level of mother's satisfaction.

This study showed that early and continuous skin-to-skin contact between mother and infant during two hours post birth improves breastfeeding initiation and facilitates the first successful experience of breastfeeding compared to routine method of infant care in delivery rooms, which can be related to more continuous and successful breastfeeding in the future.

To facilitate breastfeeding initiation and administering the fourth of ten steps of baby-friendly hospitals, it is recommended to start skin-to-skin contact between mother and infant immediately after birth and continue it up to 2 hours. Skin-to-skin contact between mother and infant must be continued during the repair of perineum post delivery. If possible, routine infant's care should be delayed until establishing of first successful breastfeeding. It also, must be considered that findings of present research can be generalized only to the healthy mothers and neonates.

Considering the decelerating trend of breastfeeding in our country, it is needed to explore most effective solutions for this problem. Because of lack of similar researches, more studies about the effectiveness of this caring method on the rate of exclusive breastfeeding and breastfeeding duration is necessary. In the other hand, this caring method needs more trained personnel in delivery room to help mother in caring their infant which may increase hospital costs. Study on cost-effectiveness of this caring method is suggested.

The Author declares that have no conflict of interest in this study and they have surveyed under the research ethics.

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