

## Factors Associated with Breastfeeding in the First Hour after Birth, in Baby Friendly Hospitals, Shiraz-Iran

\*Mahnaz Haghighi<sup>1</sup>, Ensiyeh Taheri<sup>2</sup>

<sup>1</sup>Department of Pediatrics, Medical Sciences School, Kazerun Branch, Islamic Azad University, Kazerun, Iran.

<sup>2</sup>Department of Medicine, Medical Sciences School, Kazerun Branch, Islamic Azad University, Kazerun, Iran.

### Abstract

#### Introduction

Clinical policies of “10 steps of breastfeeding” proposed by World Health Organization (WHO) can promote breastfeeding. The goal of this study was to evaluate breastfeeding in the first hour after birth and factors affecting on, in Shiraz baby friendly hospitals.

#### Materials and Methods

In this cross-sectional study, the data is related to mothers and infants referring to two baby friendly hospitals in Shiraz-Southwest of Iran. The data were selected through convenience sampling method by interview, questionnaires and reviewing of medical records. The collected data was analyzed using SPSS 13 software.

#### Results

In this study 257 mothers and infants were studied. Most of the mothers were breastfeeding (94%); 63.8% of the infants had started breastfeeding an hour post delivery. 79% of the infants had been given to their mothers post delivery, 68.9% of mothers given birth in public hospitals, 75.5 % of mothers having gestational age greater than 37 weeks, 60.1% of infants weighing more than 2,500 grams. 88% of mothers with vaginal delivery and all of these mothers had started breastfeeding in the first hour after birth.

#### Conclusion

Breastfeeding in the first hour after birth has been associated with mother's educational level, gestational age greater than 37 weeks, previous history of breastfeeding, vaginal delivery, infant weighing more than 2,500 grams, lack of infant disease, lack of hospitalization in NICU, rooming in, lack of prelacteal feeding to newborns and delivery in public hospitals.

**Keywords:** Affecting factors, Baby friendly hospital, Breastfeeding, Initiation.

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#### \*Corresponding Author:

Mahnaz Haghighi, MD, Assistant Professor of Pediatrics, Medical Sciences School, Kazerun Branch, Islamic Azad University, Kazerun, Iran.

Email:Haghighi.mahnaz@yahoo.com

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## Introduction

Given the proven health benefits of breastfeeding for mother and infant, it is an ideal food for infant. Clinical policies of “10 steps of breastfeeding” proposed by World Health Organization (WHO) and United Nations Children’s Fund (UNICEF) can promote breast feeding. One of these proposed steps is to start breastfeeding in the first hour after birth (1-3). Breastfeeding of infant in the first hour after birth has positive effects on biological and emotional health and safety and reduces child mortality. Breastfeeding in the first hour after birth leads to sense of and stability of heart and breathing. Baby learns to recognize his mother's smell. Baby's sucking reflex is active immediately after birth and the infant is more alert in 30-60 minutes after birth. If the baby is placed against his mother's breast in this period, the probability of exclusive breastfeeding might be increased. Breastfeeding in the first hour after birth increases early lactation and keeps blood glucose level high in the first 90 minutes (4-7).

Based on the studies conducted by Control of Diseases Center (CDC), a significant number of activities had been carried out in the united states of America that interfered with breastfeeding including: distribution gift bags containing sample of infant milk powder, limiting the duration of breastfeeding, using pacifier, and using supplements other than milk (3,6). In the national survey carried out in 2009, promotion in breastfeeding in many hospitals in the United States has changed as follow:

93% of the hospitals made breastfeeding possible, 89% of them taught postpartum breastfeeding techniques, 82% of them conducted nutritional training, 14% of them implemented breastfeeding laws, 22% of them restricted supplements use and 27% of them support breast feeding after discharge (5,6). A study carried out in Alhasay in

Saudi Arabia showed that 91.9% of mothers were breastfeeding after birth among which only 11.4% started breastfeeding in the first hour after birth (8). While in Nigeria among 500 mothers only 33% were breastfeeding in the first hour after birth (9). In a study conducted in India, 36.4% of mothers were breastfeeding in the first hour after birth (10). A study carried out in Pakistan, on the effectiveness of skin contact between mother and infant on early breastfeeding (the first hour after birth), showed that the cause of decline (29%) of breastfeeding in the first hour after birth in 2007 in comparison to 58.8% in 2009 was the separation of mother and infant after birth. This study specifically showed that mothers and infants who had skin to skin contact after birth, had breastfeeding 26% earlier than mothers who did not have skin to skin contact (11).

According to the importance of breastfeeding in the first hour after birth and lack of similar researchers in Shiraz, Iran, we decided to carry out a study in this field. The goal of this study was to evaluate breastfeeding in the first hour after birth in baby friendly hospitals in Shiraz- Iran and detect the influential factors of breastfeeding initiation.

## Materials and Methods

This was a prospective cross-sectional analytical study. Our target population was mothers who referred to Shahid Beheshti Hospital and Shiraz Central Hospital in the time of study for delivery. This study was carried out in Shiraz, Southwest of Iran from January to June, 2015. Shahid Beheshti Hospital is a public referral center and Shiraz Central Hospital is a private center. The sample size for the purpose of this study was based on the previous studies (9, 12) by taking to the account the assumption of error of 5% and finally 257 cases were selected. By convenience sampling, samples were selected by convenience sampling and a

questionnaire was designed by the researcher on the basis of variables.

In this study, the interviewees were fully consent and data were extracted from medical records by researchers. Data analysis was done through descriptive statistics, independent t-test and chi-square test at 5% level of significance. Logistic regression analysis was used to determine influencing factors. Logistic regression was used for multivariate analysis. Those variables that were considered significant in one variable analysis and seemed that affect breastfeeding in the first hour after birth were entered in logistic regression model. Both qualitative and quantitative independent variables entered into the model and qualitative variables of one level were considered as reference. The results were shown in the format of statistics of chance Odds ratio (OR) with confidence level of 95%.

Those variables which had linear effect on other variables were excluded from the model. Finally, the regression model became valuable in which  $R^2=51\%$ . A binary variable was defined as 1=lack of efficient breastfeeding and 0= efficient breastfeeding. So, the chance of various factors on lack of suitable breastfeeding was determined. The statistical software used to analyze the data were Excel and SPSS (version 20).

## Results

In this study 257 infants and their mothers were studied. Average age of mothers was  $28.41\pm 5.67$  years. Most of mothers had high school diploma (42%) and 38.9% of them were university graduated and a majority of them (86.4%) were housewives. The majority of father infants were employed. 68.9% Of mothers were hospitalized in public hospitals and 31.1% of them were hospitalized in private hospitals. 79% of them had rooming in immediately after birth. 94.2% of mothers were nursing mother and 5.8% of them were not able to breastfeed. 63.8% of the infants had started breastfeeding an hour after birth.

The results revealed that there was a significant relationship between mother's education and the time of first breastfeeding. As if, mothers who lacked university education had started breastfeeding in a suitable time (less than one hour). Other demographic variables did not have any significant relationship with the time of first breastfeeding ( $P>0.05$ ) (Table. 1). There was a significant relationship between first breastfeeding and gestational age. As if, the mother whose gestational age was greater than 37 weeks (75.5%) had mostly started breastfeeding in the first hour after birth in comparison to mother whose gestational age was less than 37 weeks (38.9%).

Furthermore, there was a significant relationship between history of previous breastfeeding and the time of first breastfeeding ( $P<0.05$ ). A smaller percentage of mothers, who had infants with birth weight of less than 2,500 grams, had started breastfeeding in the early hours (43.5% of infants less than 2,500 grams vs. 65.1% of infants more than 2,500 grams).

Another important factor was type of delivery which had a highly significant relationship with first breastfeeding. 88.8% of mothers who had vaginal delivery had started first breastfeeding in a suitable time (less than one hour) in contrast to mothers who were under cesarean section (40.2%). This finding revealed that delivery type is an important factor in the first breastfeeding and mothers who have vaginal delivery start their first breastfeeding sooner. But mothers who go under cesarean section stay in recovery room after operation or gain consciousness later and huge their infants later too. So, they miss breastfeeding in the first hour after birth which is a suitable time for breastfeeding.

There was not any significant relationship among parity, birth rank, type of pregnancy, infant gender and first breastfeeding ( $P>0.05$ ) (Table. 1). According to the results, there was a significant relationship among first breastfeeding and infant disease, the Neonatal intensive-care unit (NICU) hospitalization,

mother and infant shared room but there was not any significant relationship among other factors. Health infants and those who did not have a history of NICU hospitalization had started first breastfeeding in a suitable time. Rooming in was an influential factor in first breastfeeding. Mothers who did not start prelacteal feeding had initiation of breastfeeding in less than one hour after birth. 68.9% of mothers who gave birth in public hospital had started first breastfeeding in less than one hour after birth. This index was 25.5% in private hospital which had significant difference (P=0.011) (Table. 2).

This study showed, there was not a significant relationship among initiation of breastfeeding, mothers knowledge (P= 0.255), training before (P= 0.447) and after delivery (P= 0.111), family support (P= 0.914 ) and tendency of breastfeeding(P= 0.798).

Based on logistic regression analysis, hospital type, history of previous breastfeeding, type of delivery, NICU hospitalization and prelacteal feeding were predicted as other influential factors on first breastfeeding (less than one hour) (Table. 3) and (Figure. 1).

**Table 1:** Comparing the demographic characteristics of mothers and infants in both breastfeeding and non breastfeeding groups in the first hour after birth

Variables		Breastfeeding in the first hour after birth		Statistical index	P value
		Mean + Standard deviation			
		Yes (n=164)	No (n=93)		
Mother's age		28.34±6.04	28.54±4.9	t=0.274	0.847
Mother's education	<i>Below Diploma</i>	54(32.9)	16(17.2)	X <sup>2</sup> =7.42	0.024
	Diploma	63(38.4)	45(48.4)		
	University education	47(28.7)	32(34.4)		
Mother's occupation	House wife	140(85.4)	82(89.2)	X <sup>2</sup> =0.397	0.529
	others	24(14.6)	11(11.8)		
Father's education	<i>Below Diploma</i>	45(27.4)	24(25.8)	X <sup>2</sup> =0.236	0.889
	Diploma	57(34.8)	31(33.3)		
	University education	62(37.8)	38(40.9)		
Living place	Urban area	136(82.9)	88(89.2)	X <sup>2</sup> =1.88	0.170
	Rural area	28(17.1)	10(10.8)		
Parity		1.67±0.76	1.53±0.81	-1.3	0.179
Gestational age	Less or equal to 37 weeks	21(38.9)	33(61.1)	19.7	<0.001
	Greater than 37 weeks	143(71.5)	57(28.5)		
Birth rank		1.62±0.90	1.73±0.90	-0.92	0.358
History of previous breastfeeding	Yes	76(71)	31(29)	4.36	* 0.037
	No	82(58.2)	59(41.8)		
Type of pregnancy	One twin	156(64.7)	85(35.3)	2.54	0.111
	Twin	4(40)	6(60)		
Type of delivery	Vaginal	111(88.8)	14(11.2)	65.80	* <0.001
	Cesarean	53(40.2)	79(59.8)		
Infant gender	Boy	87(64.6)	48(35.6)	0.562	0.755
	Girl	71(64)	40(36)		
Infant weight	< 2500 g	10(43.5)	13(56.5)	4.14	0.042
	> 2500 g	136(65.1)	73(34.9)		

**Table 2:** Comparing the prevalence of mother and infant diseases according to the type of first nutrition type

Diseases and problems	Breastfeeding in the first hour after birth Mean + Standard deviation		Statistical index	P value
	Yes	No		
<b>Infant disease</b>				
Yes	0(0)	13(100)	Fissure test	* < 0.001
No	160(66.9)	79(33.1)		
<b>NICU hospitalization</b>				
Yes	2(7.4)	25(92.6)	X <sup>2</sup> =41.03	* < 0.001
No	158(70.2)	67(29.8)		
<b>Mother disease</b>				
Yes	5(45.5)	67(29.8)	X <sup>2</sup> =1.62	0.203
No	157(64.3)	6(54.6)		
<b>Delivery problems</b>				
Yes	6(50)	6(50)	X <sup>2</sup> =0.95	0.330
No	154(63.9)	87(36.1)		
<b>Sleeping infant near to his/her mother</b>				
Yes	158(77.8)	45(22.2)	X <sup>2</sup> =82.22	* < 0.001
No	6(11.1)	48(88.9)		
<b>First nutrition with other drinks</b>				
Yes	4(25)	12(75)	X <sup>2</sup> =10.71	* < 0.001
No	156(65.5)	81(34.1)		
<b>Breast problems</b>				
Yes	23(63.7)	10(30.3)	X <sup>2</sup> =0.548	0.459
No	140(63.1)	82(36.9)		

**Table 3:** Results of regression analysis that investigate the factors influencing breast-feeding in the first hour after birth

Variables	Factors	SE	P value	OR	CI 95%
<b>Mother education</b>					
< Diploma	Ref	-	-	1	-
Diploma	0.702	0.514	0.171	2.02	0.73-5.53
University	0.859	0.609	0.159	2/36	0.71-7.79
<b>Hospital</b>					
Private	Ref	-	-	1	-
Public	-1.27	0.502	0.011	0.28	0.10-0.75
Gestational age	-0.56	0.067	0.402	0.946	0.83-1.07
<b>Previous history of breastfeeding</b>					
Yes	Ref	-	-	+	-

No	0.810	0.379	0.033	2.24	1.06-4.72
NICU hospitalization					
Yes	Ref	-	-	-	-
No	-3.4	0.913	<0.001	0.03	0.006-0.199
Type of delivery					
Vaginal	Ref	-	-	-	-
Cesarean	3.07	0.48	<0.001	21.6	8.43-55.3
Nutrition with other drinks					
Yes	Ref	-	-	-	-
No	-1.9	0.803	0.016	0.14	0.03-0.70

SE: Standard Error ; OR: Odds Ratio; CI: Confidence Interval; Ref: Reference

## Discussion

Due to the proven health benefits of breastfeeding for both mother and infant, it is known as a good nutrition for all infants. The world health organization (WHO), American Academy of Pediatrics (AAP) and American College of Obstetricians and Gynecology (ACOG) recommends breastfeeding in the first six months of life, specially, starting breastfeeding in the first hour after birth (1). So, in this study we decided to study the influencing factors affecting initiation of breastfeeding.

257 mothers referred to Shahid Beheshti and Shiraz Central hospitals were studied during six months (January to June, 2015). Final result showed that 94.2% of mothers were breastfeeding and 5.8% of them were not successful in breastfeeding. 3.8% of infants started breastfeeding within an hour after birth. Among the studied variables in this study, the influencing factors affecting initiation of breastfeeding in the first hour of birth included: mother's educational level, gestational age greater than 37 weeks, vaginal delivery, infant weight greater than 2,500 grams, lack of NICU hospitalization, rooming in, lacking of using prelacteal feeding, and delivery in public hospitals. But the most influential factors were type of hospital, history of breast feeding, type of delivery, NICU hospitalization and prelacteal feeding. The factors that did not have any significant relationship with breastfeeding in the first hour after birth were mother's age, mother's

job, place of living, parity, birth rank, type of pregnancy, infant gender, mother's illness, delivery problems, breast problems, training before and after delivery, mother's knowledge about breastfeeding and family support.

A study carried out in Alhasay, Saudi Arabia, showed that 91.9% of infants had started breastfeeding after birth among which 11.4% had started breastfeeding in an hour after birth, 35.5% in 1-23 hours, 35% in 27-72 hours, 10% more than 72 hours and 8.17% did not have breastfeeding at all. The influencing factors of successful breastfeeding were living in rural area, being second child or more, lack of breast problems, gestational age of more than 37 weeks, normal birth weight, giving birth in public hospital, vaginal delivery, lack of NICU hospitalization, lack of prelacteal feeding and having a shared room for mother and infant. The predictors which had the most important impact were lack of prelacteal feeding, living in urban area, breast problems and birth rank (8).

In Nigeria about 500 mothers and infants were studied. 33% of mothers had started breastfeeding in the first hour after birth. Factors affecting the initiation of breastfeeding were mother's age (less than 25 years), contact between mother and infant after birth, the number of delivery room personnel and breastfeeding training by delivery room nurses. Factors that had negative impact on breastfeeding initiation were routine activities such as cleaning infant

and measuring height and weight. Factors that had no effect on initiation of breastfeeding were birth rank, registered Mothers, enough information about breastfeeding, using analgesic drug during delivery and place of delivery. In this study the main reason for reducing the prevalence of breastfeeding after birth was delay in aid to early delivered mothers especially in cesarean sections and ward routine activities (9).

In India, initiation of breastfeeding after birth was 36.4%. Factors that led to the development of early breastfeeding were mother's education, gestational age, training and consultation before pregnancy. Factors that cause delay in the initiation of breastfeeding were delivery problems and cesarean section (10).

In Ethiopia, about 608 mothers and infants were studied. 91.1% of mothers were breastfeeding among which 52.4% had started breastfeeding in the first hour after birth. Factors affecting breastfeeding initiation within an hour after birth were living in rural area and mother's education. The predictors were place of living and training after birth (11).

The success rate of breastfeeding in the first hour after birth in other countries were: Canada (67.6%) (13), Lebanon (18.3%) (14), East Europe and central Asia (17%), Asian countries around the Pacific Ocean (33%), Latin America and North Africa and Asia (50%), South Asia (24-26%), Sudan (54.2%), Sri Lanka (75%) and Nepal (72%) (15-18).

In a study carried out in Pakistan, the effectiveness of skin contact between mother and infant on early breastfeeding was studied. The results showed that the cause of breastfeeding reduction in an hour after birth (29%) in 2007 in comparison to 2009 (58.8%) was separation of mother and infant after birth. This study specifically showed that mothers who had skin contact with their infants after delivery had started breastfeeding an hour after birth 26% more than mothers lacked skin contact. The results

revealed that the positive and successful effect of skin contact on breastfeeding in an hour after birth (12).

In this research study we concluded that skin contact and rooming in play important roles in initiation of breastfeeding as if 77.8% of infants who were near their mothers had started breastfeeding in an hour after birth. Hence, in order to increase the successful rate of breastfeeding in the first hour after birth, we recommend scientific and practical workshops for mothers rather than superficial education, encouraging vaginal delivery, increasing the number of trained personnel in hospitals to improve mothers' knowledge about breastfeeding, helping mothers in breastfeeding in the first hour after birth, recommending anesthesiologists to use spinal anesthesia in cesarean sections to preserve mothers' consciousness after birth, faster discharge from recovery room, lack of using prelacteal feeding in first hour after birth, promotion of mother and infant shared room in order to increase contact and communication.

## Conclusion

As we observed in this study, initiation of breastfeeding in an hour after birth is significantly related to maternal education, gestational age, history of breastfeeding, type of delivery, infant weight, infant disease, NICU hospitalization, rooming in, prelacteal feeding and hospital type.

Furthermore, initiation of breastfeeding in an hour after birth is more prevalent in the following cases: mothers who had high school diploma, gestational age of more than 37 weeks, history of previous breastfeeding, vaginal delivery, infant weight greater than 2500 grams, lack of infant disease, lack of NICU hospitalization, rooming in, lack of prelacteal feeding, delivery in public hospitals.

**Conflict of interests:** None.

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