

## Risk factors for non-optimal breastfeeding practices in low birth weight infants

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### Abstract

**Background** Low birth weight infants are ongoing problems since they are likely to have high risks of morbidity, mortality and feeding problems. American Academy of Pediatrics recommends breastfeeding practice for infants with low birth weight, yet some problems have occurred.

**Objective** To determine risk factors for non-optimal breastfeeding practices in low birth weight infants.

**Methods** In this historical cohort study we included mothers with 6-month-old infants, single birth with weight of 2000-2499 grams and the pregnancy period of  $\geq 34$  weeks, and excluded mothers with infants who had a major congenital disorder, labioschizis, labiognatopalatoschizis, or history of admission in NICU. Data were collected using standard longitudinal surveillance form for breastfeeding mothers. Analyses were performed using chi-square test and logistic regression.

**Results** The percentage of low birth weight infants breastfed optimally were 42.7%. Working mothers presented the highest risk for non-optimal breastfeeding. The onset of lactation for more than 6 hours was the second factor (81.8%). The results of multivariate logistic regression analysis showed that mothers who worked (RR 2.79; 95% CI 1.84 to 4.23) and onset lactation of more than 6 hours (RR 2.34; 95% CI 1.57 to 3.50) were the risk factors for non-optimal breastfeeding practices in low birth weight infants.

**Conclusion** Mother's working status and onset of lactation for more than 6 hours were the risk factors for non-optimal breastfeeding in low birth weight infants. [Paediatr Indones. 2010;50:86-91].

**Keywords:** *low birth weight, breastfeeding, risk factor*

Breast milk is the best, natural and ideal nutrition for infants and provides the biological and emotional bases for infant development. However formula milk administration has been frequently used instead.<sup>1,2</sup> Breastfeeding in low birth weight infants is not as easy as in those with normal weight. This is related to some conditions of infants with low birth weight, such as weak muscle to suckle, small stomach, and immature digestive tract. In addition, sucking, swallowing, and breathing are not well coordinated yet, which make infants unable to suck breastmilk directly from their mothers.<sup>3</sup>

Up to these days, much information has reported breastfeeding practice, especially for exclusive breastfeeding, but not many studies determined factors that causes non-optimal breastfeeding practice in low birth weight infants.<sup>4</sup> The objective of this study was to investigate the patterns of breastfeeding in low birth weight infants and the risk factors causing non-optimal breastfeeding in such infants.

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## Methods

This was a historical cohort study conducted by distributing questionnaires to mothers having 6-month-old infants with low birth weight in RSUP Dr Sardjito and Maternity Hospitals in Yogyakarta from January 2008 to December 2008. We included mothers who delivered single baby with weight of 2000-2499 grams and gestational age of  $\geq 34$  weeks. We excluded mothers having babies with labioschizis or labiognatopalatoschizis, history of asphyxia, severe illness, hospitalized in neonatal intensive care unit (NICU), major inherited disorder; inaccessible address, and disagreement in participating in the study. The breastfeeding status was grouped according to *Algorithm for Breastfeeding Data Collection for Infants Birth < 6 Months of Age*. 5 Surveillance longitudinal form for breastfeeding mothers from Health and Mass Nutrition Study Center, Medical Faculty of Gadjah Mada University was used as an instrument of the study. Statistical analysis used bivariate analysis and logistic regression with significant level of  $P < 0.05$ .

## Results

There were 149 mothers who gave birth to low birth weight infants involved in this study and who were tracked retrospectively from the time of giving birth to the time when the infants were 6 months old. As many as 25 mothers were excluded; three mothers had babies with major disorders, 13 had babies with history of hospitalization in NICU because of asphyxia, and nine with inaccessible address. Totally, the number of participants in this study was 124 mothers. The basic characteristics of subjects are shown in **Table 1**.

On bivariate analysis, working mothers, onset of lactation more than 6 hours and primipara were the risk factors for non-optimal breastfeeding practice in infants with low birth weight. The RR values were 2.79, 2.34 and 1.53 respectively, whereas the other variables did not have affect significant as shown in statistics (**Table 2**).

Logistic regression analysis showed that working mother and onset of lactation of more than 6 hours were the risk factors for non-optimal breastfeeding

**Table 1.** Basic characteristic of study

Characteristics	n= 124	%
Status of breastfeeding practice		
Non-optimal	71	57.3
Optimal	53	42.7
Status of mother		
Working	66	53.2
Not working	58	46.8
Onset of lactation		
> 6 hours	69	55.7
< 6 hours	55	44.4
Breast problem		
Yes	15	12.1
No	109	87.9
Mother's educational level		
Low	25	20.2
High	99	79.8
Mother's knowledge of breastfeeding		
Low	21	16.9
High	103	83.1
Mother's age		
<20 or >35 years	48	38.7
20-35 years	76	61.3
Parity		
Primipara	55	44.4
Multipara	69	55.7
Partner's support		
No	7	5.7
Yes	117	94.4
Medical staff's support		
No	13	10.5
Yes	111	89.5
Method of delivery		
Spontaneous	75	60.5
Spontaneous-action	6	4.9
Caesarian Section	43	34.7

practice in infants with low birth weight, with RR value 8.69 (95% CI 3.48 to 15.70) and 5.03 (95% CI 2.02 to 9.51) respectively (**Table 3**).

## Discussion

Our study found that more than 50% of respondents practiced non-optimal breastfeeding, which means that the achievement of breastfeeding practice is still considered lower than what *Healthy People 2010* at giving exclusive breastmilk up to 50-75% has targeted.<sup>6</sup>

Working mother was the major cause of non-optimal breastfeeding practice and a potential risk that is eight times higher for the same cause. Many mothers believed that breastfeeding practice and working outside home were two separable things. In the United

**Table 2.** Characteristics of subjects according to the prevalence distribution of breastfeeding practice

Characteristics	Status of Breastfeeding practice		95% CI	P
	Non-optimal	Optimal		
	n (%)	n (%)		
Working Status				
Working	54 (81.8)	12 (18.2)	2.79 (1.84-4.23)	< 0.0001
Not working	17 (29.3)	41(70.7)		
Breast Problem				
Yes	11(73.3)	4 (26.7)	1.33 (0.94-1.89)	0.179
No	60 (55.0)	49 (45.0)		
Onset of lactation				
> 6 hours	53 (76.8)	16 (23.2)	2.34 (1.57-3.50)	< 0.0001
< 6 hours	18 (32.7)	37 (67.3)		
Education				
Low	15 (60.0)	10 (40.0)	1.06 (0.74-1.53)	0.75
High	56 (56.6)	43 (43.4)		
Mother's knowledge of breastmilk				
Low	14 (66.7)	7 (33.3)	1.21 (0.85-1.71)	0.4
High	57 (55.3)	46 (44.7)		
Age				
<20 or >35 years	28 (58.3)	20 (41.7)	1.03(0.76-1.41)	0.85
20-35 years	43 (56.6)	33 (43.4)		
Parity				
Primiparous	39 (70.9)	16 (29.1)	1.53 (1.25-2.33)	0.04
Multiparous	32 (46.38)	37 (53.6)		
Support/husband				
No	4 (57.1)	3(42.9)	1 (0.52-1.93)	0.99
Yes	67 (57.3)	50 (42.7)		
Support/medical staff help				
No	8 (61.5)	5 (38.5)	1.1 (0.69-1.72)	0.74
Yes	63 (56.8)	48 (43.2)		

**Table 3.** Result of multivariate logistic regression analysis

Variable	RR	95%CI ‡
Mother's working status	8.69	3.48-15.70
Onset of lactation > 6 hours	5.03	2.02-9.51
Primipara	2.43	0.97-6.11

‡ multivariate logistic regression

States, the increasing number of working mothers is assumed as the cause of low breastfeeding practice.<sup>7</sup> A study by Kurzewski showed that 50% mothers, who went back to work, faced problems in continuing breastfeeding practice, and would stop breastfeeding within 12 weeks after giving birth.<sup>8</sup> Taveras et al also reported that mothers who were back to work within 12 weeks after giving birth were likely to risk 2.4 times of stopping practicing breastfeeding.<sup>9</sup>

Some other studies showed that chances to breastfeed earlier would develop the sucking reflex of babies in which they could suck the breastmilk properly and continuously.<sup>10</sup> Our study showed that

onset of lactation of more than 6 hours occurred in 76.8% respondents and had potential risk five times of non-optimal breastfeeding practice. A study by Bautista showed that the hindrance in practicing breastfeeding as early as possible was mothers with low birth weight infant. It might happen because of the low knowledge and support of medical staff that babies with low birth weight were able to be trained to suck mother's breastmilk as early as possible. Also the inadequate counseling for mothers in giving breastmilk extract if their babies were unable to suck breastmilk directly from their mother's breast.<sup>11</sup> Not every medical staff give information about early breastfeeding. Support from the medical services for mothers during admission in hospital and after discharging as well as the support from medical staff about lactation management were the factors that affected breastfeeding practice.<sup>12,13</sup> Furman et al reported that extracting the breastmilk as early and often as possible would increase mother's ability in practicing breastfeeding to their low birth weight

infants. If the mothers gave breastmilk to their babies less than 6 hours after giving birth, it would reduce the inability of breastfeeding practice to 49%.<sup>14</sup>

Mothers's breast condition had an important role in determining the success or failure of breastfeeding practice. Incorrect method of breastfeeding practice can cause problem such as nipple's abrasion, swollen breast, and mastitis or abscess.<sup>15</sup> In our study as many as 12% of mothers had breast problems. Similar result shown in a study by Kurzewski found that 20% of mothers had breast problems. However, the breast problem in our study was not the risk for non-optimal breastfeeding practice. Different result was found by Taveras et al<sup>9</sup> when the breast problem such as nipple's abrasion and flattened condition risked 1.5 times higher of stopping breastfeeding practice within 2 weeks after giving birth.

Bivariate analysis from our study showed that there was no correlation between knowledge and optimal breastfeeding practice. High knowledge was not strong enough to urge mothers to practice optimal breastfeeding. Fikawati and Syafiq explained that high knowledge of mothers about breastmilk did not support the optimal breastfeeding practice. Therefore, mother's knowledge about breastmilk did not influence the optimal breastfeeding practice.<sup>16</sup>

In our study, the most common mothers' age was 20-35 years old (62%), in average they were 27 years-old. Therefore, the respondents in our study were generally mature mothers who were physically and psychologically able to properly integrate the self-decision value and judgment including the decision to initiate breastfeeding. Binns et al revealed that mothers over 20 years old were the potential factor for continuous breastfeeding practice. The mothers under 20 years old risked 1.3 times higher of stopping practicing breastfeeding 2 months after giving birth.<sup>17,18</sup> Nonetheless, in our study mother's age did not influence the optimal breastfeeding practice. Kurzewski reported that about 49% mothers over 30 years old gave breastmilk fully compared to mothers under 30 years-old even though this difference was statistically insignificant.

The number of children born and weaned by their own mother was a rough picture of mother's experience in breastfeeding practice. Mothers previous breastfeeding experience would increase the ongoing breastfeeding practice in low birth weight infants

as much as 1.7 times compared to mothers without any experience in breastfeeding. This was similar to Narayan's study in which primipara had risk of stopping breastfeeding practice. Therefore, mothers with first time breastfeeding needed more support from the medical staff.<sup>14,19</sup> Primipara had 1.5 times risk, by bivariate analysis, for non-optimal breastfeeding practice compared to multipara even though it was not statistically significant in multivariate analysis. Similar to Scott et al,<sup>20</sup> parity was not correlated with the breastfeeding pattern.

Formal education would help mothers in obtaining knowledge, insight, and other values, which would encourage them to think rationally. Taveras et al<sup>9</sup> mentioned that one of the factors of stopping breastfeeding practice was low educational status of mothers. Those with higher educational level were more likely to work outside home, which affected the pattern of breastfeeding practice. Mother's education < 12 years had 1.7 times risk of stopping breastfeeding practice in low birth weight babies.<sup>9,21</sup> The result of that statistic test by bivariate analysis between mother's education and optimality of breastfeeding practice showed no significant relation. Similar to a study by Ertem et al<sup>22</sup> and Kurzewski,<sup>8</sup> the educational level of mothers did not influence the pattern of breastfeeding practice. It was inconsistent with the theory that the ones with higher education will accept and understand messages or information more easily than those with lower education, and that the better educated mothers will help consider opinion and respond to a stimulus, which thereafter determining their attitude and action in infant's treatment particularly in breastfeeding. Soenarto et al<sup>23</sup> in their study in Purworejo reported that mothers with both high and low education generally knew about the benefit of breastfeeding. It was possible since they had received much information about mother's and child's health particularly in breastfeeding practice from the medical staff's counselings and readings.

Some other observational studies showed that husband played an important role in making decision and choice for mothers in a way that breastfeeding was practiced. In addition, the husband's support during breastfeeding practice would increase mother's satisfaction, breastfeeding duration, and adaptation process between parents and children. Other study showed that husband's support would increase

breastfeeding as much as 1.5 times higher. In our study, almost all respondents received support from their husbands, yet only half of them did optimal breastfeeding practice, and it was not a significant risk factor.

The medical staff involved in the treatment of babies with low birth weight and their mothers need more knowledge and ability concerning the issue of breastfeeding practice and specific intervention, which can improve breastfeeding practice in the population. Up to recent times, the things related to extracting breastmilk and practicing breastfeeding for mothers during admission in hospital are given more concern than the ones after discharging from hospital. This imbalance focus for some medical staff has become the factor supporting the declining number of breastfeeding practice. Some evidences show that lack of information to mothers, low knowledge of medical staff, disqualified medical staff in giving advice have contributed to improper breastfeeding practice. The increasing way of counseling and knowledge of medical staff along with the written instruction for mothers has been proved to increase the number of breastfeeding practice. Mother's stressful condition risks for stopping breastfeeding practice within 12 weeks after giving birth. Encouragement by medical staff is therefore needed at such condition. Our study found that almost all respondents received support from medical staff, yet it did not affect the optimal breastfeeding practice. The educational level, mother's knowledge about breastfeeding practice, husband and medical staff support in our study did not affect the optimal breastfeeding practice.

The limitation of our study was that it was a retrospective study. Therefore it was likely that systematic mistakes were made, which causes the study result to be inconsistent with the reality or was biased. The bias that possibly happens in our study was recall-bias even though the recall-bias about the onset of practicing breastfeeding was controlled by limiting the infant's age to 6 months old, and the recall-bias about the pattern of breastfeeding practice was controlled by inquiring the last one-week practice of breastfeeding. Therefore further study is recommended to use a better method in order to find the risk factors for non-optimal breastfeeding practice among low birth weight infants.

We concluded that working mother and onset of lactation of more than 6 hours were independent risk factors for non-optimal breastfeeding practice among low birth weight infants.

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