



Breastfeeding and Its Effect on Weight Gain, Nutritional Status, and Illness Incidence among Infants Aged 1 – 5 Months

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Abstract

Background: The prevalence of exclusive breastfeeding among infants aged 0-6 months in 2014 was 52.3%, then the prevalence of exclusive breastfeeding among infants aged 0-6 months in DKI Jakarta in 2014 was 67.1%. The low level of exclusive breastfeeding has an effect on the inadequate nutrition intake for infants that can cause growth and development disorder. This study was conducted to determine the association between breastfeeding with weight gain, nutritional status and illness incidence among infants aged 1-5 months in Grogol, West Jakarta.

Methods: It was cross sectional study design, the population in this study were 96 infants aged 1-5 months recorded in all Posyandu in the area of Grogol, West Jakarta. The sample in this study were 47 infants selected by purposive sampling. Data were analyzed with chi-square and fisher exact tests.

Results: The results showed that there were no association between breastfeeding with weight gain ($p = 0.989$), nutrition status based on weight/age ($p=1.000$), length/age ($p=0.237$), and weight/length ($p=0.352$). There was association between breastfeeding with illness incidence ($p<0.01$).

Conclusion: There is significant association between breastfeeding with illness incidence among infant aged 1 – 5 months.

BACKGROUND

Breast milk is the first, main, natural, and best for infants. Exclusive breastfeeding means infants are only breastfed for 6 months without additional foods, such as formula milk, oranges, honey, tea and water, and without added solid foods, such as bananas, milk porridge, biscuits, rice porridge, except vitamins, minerals and medicines.

The 4th target for the Millennium Development Goal (MDG's) is to reduce infant and under-five mortality to 2/3 in the period 1990 - 2015. The main causes of infant and under-five mortality are diarrhea and pneumonia and more than 50% of under-five deaths are based on malnutrition. Adequate provision of exclusive breastfeeding is proven to be one of the effective interventions that can reduce the infant mortality rate.

This infant mortality rate does not stand alone but is related to other factors, especially nutrition, breastfeeding which means providing nutrients that contain high nutritional value that are good for avoiding malnourished infants and which nutritional status of these children can affect children's cognitive development (Amalia, 2016).

The prevalence of exclusive breastfeeding among infants aged 0-6 months nationally in 2014 was 52.3% while the prevalence of exclusive breastfeeding among infants aged 0-6 months in DKI Jakarta in 2014 was 67.1% (Kementerian Kesehatan RI, 2015). Based on the results of the LB3 Nutrition report at the Primary Healthcare Center of Grogol Petamburan, the percentage of exclusive

breastfeeding coverage among infants aged 0-6 months in Grogol Petamburan Subdistrict in 2017 was 76.7% and the percentage of exclusive breastfeeding among infants aged 0-6 months in Grogol in 2017 was 77.6%.

Based on the results of the Nutritional Status Assessment in 2016 showed that the percentage of nutritional status (Weight/Age) of severely underweight, underweight, and overweight in children aged 0 -23 months at the national level were 3.1%, 11.8%, and 1.5% and the percentage of nutritional status (Weight/Age) of severely underweight, underweight, and overweight in children aged 0-23 months in DKI Jakarta were 2.9%, 9.1%, and 3.5%, where only overweight issues have a percentage exceeding the percentage of overweight for 0-23 month children at the national level (1.5%).

Based on the Primary Healthcare Center of Grogol medical record report from January to March 2018, Acute Respiratory Infection (ARI) disease and diarrhea were included in the 10 most diseases in the Grogol area of 49 infants and 9 infants. Exclusive breastfeeding for at least 6 months without food and other fluids will protect the infants against infection and also stimulate the normal growth. This study aimed to determine the association between breastfeeding with weight gain, nutritional status and illness incidence among infants aged 1-5 months in Grogol, West Jakarta.

METHODS

This study used cross sectional design that was carried out in Primary Healthcare

Center of Grogol, West Jakarta. The inclusion criteria for the sample was all infants aged 1-5 months 29 days who lived in the Grogol West Jakarta area that came to the posyandu in July and August 2018. Instruments used in this study were questionnaire, weight scale, and infantometer. Data were analyzed with chi square and fisher exact test.

RESULTS AND DISCUSSION

Based on table 1, it can be concluded that the majority of the samples were male (52.6%) and aged 2 months (29.8%), out of 47 samples in Grogol had been given additional foods other than breast milk (53.3%), and of 47 samples in Grogol, the majority of infants experienced weight gain were 68.1%.

Table 1. Distribution of sample characteristics

Characteristics	n	%
Gender		
Male	27	57.4
Female	20	42.6
Total	47	100
Age		
1 month	8	17.0
2 months	14	29.8
3 months	9	19.1
4 months	8	17.0
5 months	8	17.0
Total	47	100
Breastfeeding		
Breast milk only	22	46.8
Breast milk + other foods and drinks	25	53.2
Total	47	100
Minimum Weight Gain Status		

Increase	32	68.1
Not increase	15	31.9
Total	47	100

Table 2 shows that of the 47 samples in Grogol, there were infants with over nutrition status (2.1%) based on the Weight/Age nutritional status index, stunted (6.4%) based on the Length/Age nutritional status index and overweight is (10.6%) based on the nutritional status index Weight/Length.

Table 2. Frequency of sample nutritional status

Nutritional Status Indicator	n	%
Weight/Age		
a. Severely underweight	0	0
b. Underweight	0	0
c. Normal	46	97.9
d. Overweight for age	1	2.1
Total	47	100
Length/Age		
a. Severely stunted	0	0
b. Stunted	3	6.4
c. Normal	44	93.6
Total	47	100
Weight/Length		
a. Severely wasted	0	0
b. Wasted	0	0
c. Normal	42	89.4
d. Overweight	5	10.6
Total	47	100

Table 3 shows that of the 47 samples in Grogol, most of the samples (63.8%) were never sick while the samples that had been sick were 36.2%. The results of this study are in line with the results of previous studies which showed a significant correlation between exclusive

breastfeeding and the incidence of illness (Hardjito, Wahjurini, & Linda W, 2011; Rahman & Fahira Nur, 2015). As many as 55% of infant deaths in Latin America and Caribbean caused by diarrhea and ARI can be prevented by exclusive breastfeeding where the respondents are children <12 months old (Mihirshahi et al., 2007).

Table 3. Frequency distribution of the illness incidence of samples

Incidence of Illness	N	%
Had sick	17	36.2
Never had sick	30	63.8
Total	47	100

Infants who have been fed food and drinks other than breast milk will be at risk of diarrhea and infection (ARI) in infants. This is in line with research by (Rahmadhani, Lubis, & Edison, 2013) that exclusive breastfeeding for 6 months must be increased because it has a correlation with the incidence of acute diarrhea $p=0.001$. With the occurrence of infection, the body will experience a fever so that nutritional and energy needs increase while food intake will decrease which results in a decrease in the immunity.

In table 4 shows that of the 25 infants fed breast milk + other foods and drinks there were 32% infants whose did not experience weight gain and there were 68% infants who gained weight. Then from 22 infants who were fed breast milk alone there were 31.8% infants whose whose did not experience weight gain and there were 68.2% infants who gained weight. Statistical results show that there was no

significant correlation between breastfeeding and weight gain (p value: 0.989; OR = 1).

The results of this study are not in line with the research conducted by (Norma, Machfoedz, & Maharani, 2015) that there was a 210 gram increase in weight in infants who were exclusively breastfed compared to infants who received partial breastfeeding. While research conducted by (Park & Lee, 2018) states that exclusive breastfeeding and partial breastfeeding both had the same effect in preventing overweight children in Korea.

The increase in sample weight can be seen if the sample weight is equal or more than the minimum weight gain standard (KBM), but based on table 4 data shows the tendency that only breastfed infants and breastfed + other foods and drinks infants had more experienced in weight gain compared to no weight gain. So, this shows that infants who are breastfed only with infants breastfed + foods and other drinks have the same weight gain, but are not statistically significant.

The results of this study are not significant, it can be caused by factors that influence the increase in infant weight, which allows it to obtain non-significant results in this study. According to the research of (Fitriyani & Indrawati, 2013) the factors that influence infant growth are influenced by two main factors, namely internal factors such as biology, including genetics, and external factors such as nutritional status and disease history.

This study was only limited to the infants's body weight during the study compared to the infants's weight a month ago. For example, a infants's nutritional status or a

history of a disease that a infants has had made it possible to influence infants's weight gain, so when doing research, the weight of a infants who had good nutritional status will be different from a infants who had a poor nutritional status. Then the position and placement factor of the infants while breastfeeding can affect the increase in infants's weight, the position and placement of the infants that is not right when breastfeeding will result in the infants lacking energy intake and causing the infants's weight not to increase.

Table 4 shows that out of 25 infants fed breast milk + other foods and drinks, there were 4% infants having overweight for age (Weight/Age) and there were 96% infants having normal nutritional status (Weight/Age). From 22 infants who were fed breast milk alone, there were 100% infants having normal nutritional status (Weight/Age). Based on statistical result, there was no significant association between breastfeeding with nutritional status based on Weight/Age ($p=1.00$).

The insignificant results of this study can be caused by the condition of the nutritional status (Weight/Age) of infants who were equally good for infants who were fed breast milk alone or infants who were fed breast milk + other foods and drinks. Infants who were fed breast milk alone had a body weight with a normal weight range according to the WHO NCHS Standard (Nutritional Status Category Standard) based on the Body Weight Index according to Age (Weight/Age) (Wijayanti & Meilisa, 2011).

Weight gain in infants who get exclusive breastfeeding is slower than infants who get formula milk, infants who were fed breast milk regulate their energy at a lower level than infants with formula milk, the growth pattern of infants with exclusive breastfeeding reflects better physiological reactions to adequate intake and good nutritional status.

The results of this study are in line with the research conducted by (Ginanti, Pangestuti, & Rahfiludin, 2015) which shows that there was no correlation between breastfeeding and infant nutritional status (Weight/Age) with a p value of 1.000.

The study conducted by (Pangestuti, 2018) also mentioned similar results that there was no significant difference between exclusive and non-exclusive breastfeeding with nutritional status, nutritional adequacy and hemoglobin levels in 4 month old infants. However, there is a tendency that infants fed breast milk + other foods and drinks have a risk of the incidence of fat nutritional status by Weight/Age even though it is not statistically significant.

Infants who get non breast milk nutrition tend to be overweight, feeding and drinking other than breast milk too early is not always good for infants, there is threat of obesity when given excessively. While infants who got breast milk have a more ideal body weight, meaning that the body length is in accordance with the infants's weight, the infants has a proportional body weight and length.

The insignificant results of the study can be caused by nutritional status factors (Length/Age) that can affect the nutritional

status (Weight/Length), as stated in the study breastfed and not exclusively breastfed, this is (Fitriyani & Indrawati, 2013) found obese because the children is stunted. children in children who were exclusively

Table 4. Distribution of breastfeeding with weight gain, nutritional status, and incidence of illness

Breastfeeding	Weight Gain						<i>p value</i>	OR
	Not increase		Increase		Total			
	n	%	n	%	n	%		
Breast milk + other foods and drinks	8	32	17	68	25	100	0.989	1
Breast milk only	7	31.8	15	68.2	22	100		
Total	15	31.9	32	68.1	47	100		
Breastfeeding	Nutritional Status (Weight/Age)						<i>p value</i>	OR
	Overweight		Normal		Total			
	n	%	n	%	n	%		
Breast milk + other foods and drinks	1	4	24	96	25	100	1.000	-
Breast milk only	0	0	22	100	22	100		
Total	1	2.1	4.6	97.9	47	100		
Breastfeeding	Nutritional Status (Length/Age)						<i>p value</i>	OR
	Stunted		Normal		Total			
	n	%	n	%	n	%		
Breast milk + other foods and drinks	3	12	22	88	25	100	0.237	-
Breast milk only	0	0	22	100	22	100		
Total	3	6.4	44	93.6	47	100		
Breastfeeding	Nutritional Status (Weight/Length)						<i>p value</i>	OR
	Overweight for Age		Normal		Total			
	n	%	n	%	n	%		
Breast milk + other foods and drinks	4	16	21	84	25	100	0.352	4
Breast milk only	1	4.5	21	95.5	22	100		
Total	5	10.6	42	89.4	47	100		
Breastfeeding	Illness Incidence						<i>p value</i>	OR
	Had Sick		Never Had Sick		Total			
	n	%	n	%	n	%		
Breast milk + other foods and drinks	15	60	10	40	25	100	0.001	0.067
Breast milk only	2	9.1	20	90.9	22	100		
Total	17	36.2	30	63.8	47	100		

Table 4 shows that of the 25 infants fed breast milk + other foods and drinks, there were 12% infants having stunted (Length/Age) and there were 88% infants having normal nutritional status (Length/Age). Then from 22 infants who were fed breast milk alone, there were 100% having normal nutritional status (Length/Age). Based on statistical result, there was no significant association between breastfeeding with nutritional status based on Length/Age ($p = 0.237$).

The results of this study are not in line with the research (Giri, Muliarta, & Wahyuni, 2013) which shows that there is a correlation between exclusive breastfeeding and nutritional status of children aged 6-24 months based on the Infant Red Line index. However, table 4 shows that there is a tendency for infants fed breast milk + other foods and drinks to have a risk of nutritional status Length/Age (Stunted) even though it is not statistically significant.

Children under five who do not get exclusive breastfeeding have a greater risk of stunting compared to children who are given exclusive breastfeeding. Children who are not given exclusive breastfeeding have a 3.7 times greater risk of stunting than children with exclusive breastfeeding.

Exclusive breastfeeding is one of the factors that can prevent stunting but besides breastfeeding there are several factors not examined in this study that can cause stunting, one of them is the history of low birth weight in infants where a low birth weight will affect subsequent growth of children including child's length. In addition, mothers who have a history of chronic energy deficiency during pregnancy have an effect on subsequent growth

and are at risk of stunting. This causes the results of this study to be insignificant.

Table 4 shows that of the 25 infants fed breast milk + other foods and drinks there were (16%) infants who were overweight based on nutritional status (Weight/Length) and there were (84%) infants having normal nutritional status (Weight/Length). Then from 22 infants who were fed breast milk alone, 4.5% infants were obese based on nutritional status (Weight/Length).

There were (95.5%) infants had normal nutritional status (Weight/Length). Based on statistical result, there was no significant association between breastfeeding with nutritional status based on Weight/Length ($p=0.232$; OR=4).

Table 4 shows that out of 25 infants fed breast milk + other foods and drinks, 60% infants who have been infected with infection and there were 40% infants who have never had an infection. Then of the 22 infants who were fed breast milk alone, there were (9.1%) infants who had been infected with an infection and there were 95.5% infants who had never had an infection. Based on statistical result, there was significant association between breastfeeding with illness incidence ($p<0.01$; OR=0.067).

This is in line with previous research that breast milk has more substances that is useful for brain growth and development which play a role in the growth of children and has the ability to help the formation of new cells so that they can be more optimal in maintaining children's immunity compared to formula milk (Kramer et al., 2008).

CONCLUSION

There is no significant association between breastfeeding with weight gain and nutritional status among infant aged 1-5 months. Meanwhile, there is significant association between breastfeeding with illness incidence among infant aged 1-5 months.

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