

Relationship between Exclusive Breastfeeding and Nutritional Status of Infants Aged 12 months

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Abstract

Background: Exclusive breastfeeding has a high nutrient content to fulfill the nutritional needs of infants aged 0–6 months. The aim of this study was to describe the nutritional status of infants aged 12 months and to determine the relationship of exclusive breastfeeding and nutritional status of infants aged 12 months in Pos Pelayanan Terpadu (Posyandu) Cipacing Village Jatinangor.

Methods: A cross sectional study was carried out to 102 mothers with infants aged 12 months in Posyandu Cipacing Village from September to October 2013. The infants' body weight were weighed with weight scales which had been calibrated and the body length were measured with the Seca 210 baby length measuring mat, then the mother was interviewed with a questionnaire which had been validated to inquire about the exclusive breastfeeding history. The Fisher exact test was used to assess relationship between both variables.

Results: There were 81.3% of infants with good nutritional status and 83.3% of infants who did not get exclusive breastfeeding. The analysis test showed that the p-value of relationship between exclusive breastfeeding and nutritional status was 0.458 with odds ratio 3.343.

Conclusions: Most of the infants are in good nutritional status although they do not get exclusive breastfeeding. Consequently, there is not a significant relationship between exclusive breastfeeding and nutritional status. [AMJ.2015;2(4):534–40]

Keywords: Infants aged 12 months, exclusive breastfeeding, nutritional status

Introduction

The nutritional status indicates if an adequate state of nutrition needs food intake, both in quantity and quality. It will determine the growth process in the body which occurs in a normal state or not, especially in childhood.^{1,2} The infant's nutritional status is affected by various factors, one of which can affect the infant's growth is the nutritional factor.³ Infants have a unique characteristic which is always growing and evolving since the time of conception until the end of adolescence so that an infant cannot be treated like a small adult, thus infants need appropriate nutrition.³

Breast Milk (Air Susu Ibu/ ASI) is the primary nutrition intake for newborn infants which have appropriate nutrition, especially for infants aged 0–6 months.^{2,3} As a developing country, Indonesia still has problems

concerning impaired nutritional status which can lead to growth disorder, failure to thrive, and obesity in children. According to the 'Basic Health Research' (Riset Kesehatan Dasar/ Riskesdas) 2010, there were 17.9% of infants under five with underweight and severely underweight status and 14% of infants with obese status in Indonesia.⁴ Furthermore, exclusive breastfeeding in Indonesia is still low, only 15.3% of mothers are still exclusively breastfeeding when the baby is 5 months old.⁴

Out of 6.874 infants who were weighed in 2012 in Jatinangor Sub district, 7.65% of infants under five suffered malnutrition.⁵ Cipacing Village was a region with the highest malnutrition in the Jatinangor Sub district in 2012.⁵ There were 5.52% infants who were severely underweight and 4.2% infants who were underweight in the Cipacing Village.⁵ The aim of this study was to describe the nutritional status of infants aged twelve

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months and to determine the relationship of exclusive breastfeeding on the nutritional status of infants aged twelve months in Pos Pelayanan Terpadu (Posyandu) Cipacing Village Jatinangor.

Methods

A cross sectional study was performed to mothers with infants aged twelve months in Posyandu of Cipacing Village Jatinangor Sumedang Indonesia from September to October 2013. The inclusion criteria were mothers who had infants aged 12 months, the history of a full term gestational age, infant's birth weight was ≥ 2500 grams, infant was born without birth defects, and mothers who could follow the stages of the study and signed an informed consent. Infants who were sick or mothers who refused to continue the data collection process had been excluded from this study.

The cluster sampling technique was used to select a number of posyandu in Cipacing Village.⁶ The sample size in the study was calculated using the formula of an analytical study of an unpaired-dichotomous variable.⁶ The minimum sample size for this study was 93 respondents

The instrument which was used in this study were infant weight scales which had been calibrated, Seca 210 baby length measuring mats, the International World Health Organization (WHO) Growth Charts in 2006, questionnaires, and informed consent forms. Researchers measured the body weight and length of the infants. Results of measurement data on weight and body length were plotted into the WHO Growth Charts to determine the nutritional status of infants. Then, researchers conducted interviews with the mothers using a questionnaire which had been validated to inquire about the exclusive breastfeeding history when the infant was aged 0–6 months. All steps of this study were approved by the Health Research Ethics Committee of the Faculty of Medicine Universitas Padjadjaran.

The nutritional status (dependent variable) is measurements of weight and height and are compared to the WHO growth charts. Good nutritional status have Z score Weight for Age (W/A), Length for Age (L/A), and Weight for Length (W/L) between ≥ -2.0 and ≤ 2.0 .⁷ Bad nutritional status have Z score W/A, L/A, and W/L < -2 SD or > 2 SD.⁷ Exclusive breastfeeding (independent variable) is the baby who was only given breast milk from the age of 0–6 months without additional fluid or food,

except for vitamins, minerals, medications, and Oral Rehydration Solution (ORS).⁸

To determine the relationship between exclusive breastfeeding and infant's nutritional status, the Fischer exact test with significant level (α) <0.05 and $\beta=0.20$ two-tailed was used.⁹

Results

The total number of respondents in this study was 102 pairs of mother and infants aged twelve months from 13 out of 18 Posyandu in Cipacing Village, Jatinangor Subdistrict.

The mean of mother's age was 28.99 ranging from 19–50 years. Most of them had graduated from junior and senior high schools. Only few of them were working mothers so that most of them had a family income of $<Rp1,500,000.-$ (Table 1).

Most of the respondents were with normal nutritional status. There were 83.3% infants with good nutritional status (Table 2). Moreover, most of the infants with malnutrition status had a mother with low

Table 1 Sociodemographic Characteristic of Respondent

Variable	n (%)
Mother's Age	
<20	2 (2)
20–35	85 (83.3)
>35	15 (14.7)
Mother's Level of Education	
Non-formal school	1 (1)
Elementary School	10 (9.8)
Junior High School	49 (48)
Senior High School	38 (37.3)
Higher Education	4 (3.9)
Mother's Occupation	
Employee	3 (2.9)
Laborer	4 (3.9)
Entrepreneur	1 (0.9)
Housewife	88 (86.3)
Family Income	
>Rp1,500,000.-	41 (40.2)
<Rp1,500,000.-	61 (59.8)

Table 2 Distribution of Infant's Nutritional Status

Nutritional Status Criteria	n (%)
Weight for age	
Overweight	2 (2.0)
Underweight	7 (6.8)
Severely underweight	0 (0.0)
Normal	93 (91.2)
Length for age	
Stunted	11 (10.7)
Severely stunted	3 (2.9)
Normal	88 (86.4)
Weight for length	
Obese	3 (2.9)
Overweight	1 (0.9)
Wasted	2 (2.0)
Severely wasted	1 (0.9)
Normal	95 (93.2)

educational level, low family income and were housewife (Table 3).

The result of the analysis test indicates that exclusive breastfeeding were not significantly related to infant's nutritional status. The odds ratio in this study showed that infants

who did not get exclusive breastfeeding had 3.343 times risk to become infants with bad nutritional status (Table 4).

Most of the infants got formula feeding or thawed food as complement to breastfeeding when the infants were aged 0–6 months.

Maternal factors were the cause infants got other intake when aged 0–6 months, which was not appropriate for the infants' nutritional status. Meanwhile, a number of mothers already gave appropriate complementary feeding to their infants when the infants were 6 months old (Table 5).

Discussions

An exclusive breastfeeding program was launched in the world, including in Indonesia, where newborn infants should have sufficient intake of breast milk until the age of 6 months, subsequently infants can be given complementary food in addition to breast milk after the infants age are 6 months to meet body nutritional needs.^{8,10,11} This program was established to become one of the solutions to prevent infants from malnutrition, both undernutrition as well as overnutrition.

The number of underweight and severely underweight infants based on W/A criteria in Cipacing Village (6.8%) was lower than in West Java (13%) and Indonesia (17.9%).⁴ Additionally, the number of underweight and severely underweight infants in Cipacing village had decreased since 2012 (9.72%).⁵

Table 3 Distribution of Infant's Nutritional Status and Sociodemographic Characteristics of Respondents

Characteristics	Nutritional Status		P-value
	Good	Bad	
Mother's Age			0.049
>mean	1	1	
<mean	67	18	
Mother's Level of Education			0.259
Basic Education 9 Years	38	6	
Non-Basic Education 9 Years	45	13	
Mother's Occupation			1.000
Working mother	12	2	
Housewife	70	17	
Family Income			0.396
< Rp 1.500.000,-	48	13	
> Rp 1.500.000,-	35	6	

Table 4 Relationship between Infant’s Nutritional Status and Breastfeeding Status

Variable	Nutritional Status		CI 95%	OR	P-value
	Good	Bad			
Exclusive Breastfeeding			0.410 – 27.267	3.343	0.458
Yes	13	1			
No	70	18			

Meanwhile, the number of excess nutrients in Cipacing village was lower than in West Java (14.6 %).⁴ Most of the infants with bad nutritional status were underweight based on W/A criteria. Furthermore, the number of infants with stunted status based on L/A criteria in Cipacing Village was lower than in West Java and Indonesia (17.9%).⁴ Distribution of nutritional status in W/L was similar. The number of children with bad nutritional status based on W/L was lower in Cipacing Village than in West Java (24.6%) and Indonesia (27.3%).

The mother’s education is one of the important factors that can improve the infant’s nutritional status.³ Mothers with higher education may have better knowledge regarding health which can affect the way mothers raise the the infants, such as providing the best nutrition and creating a healthy home environment, so infants are not often attacked by diseases that can interfere growth process.¹² The number of infants with bad nutritional status in this study was more than in infants

who had mothers with no education criteria of completed basic education for 9 years.

The total revenue of Rp 1,500,000.- is close to the amount of the Regional Minimum Wage (UMR) in Jatinangor District which is Rp 1,300,000. Working mothers have more infants with good nutritional status than mothers who do not working.^{13,14} Mothers who do not work are able to freely monitor the growth and development of children however this is contrary to the readiness and good knowledge to provide appropriate nutrition for the children.¹⁴ Mothers who do not work in certain circumstances affect the monthly family income that can be used to meet infant’s nutritional needs.

Most of the mothers in this study did not breastfeed immediately after delivery since they thought that the breast-milk should come out first before the early initiation of breastfeeding. The mothers tended to wait without obtaining directly assistance from the pumping process nursing techniques. A caesarian delivery was another condition

Table 5 Complementary Feeding

Variable	N	(%)
Complementary feeding <6 months		
Breastfeeding + others	48	54.5
Breastfeeding + formula feeding	37	42
Formula feeding	1	1.1
Formula feeding + others	12	11.8
Reason to Stop Exclusive Breastfeeding		
Infant	20	22.70
Mother	57	64.80
Others	11	10.70
Complementary feeding >6 months		
Appropriate	89	87.3
Non-appropriate	13	12.7

that made mothers did not perform the early initiation of breastfeeding because mothers would meet the infant the next day, so the medical staff gave formula feeding to infants who cried.

There were only few mothers who exclusively breastfed their infants aged 0–6 months. Data of exclusive breastfeeding in Cipacing Village showed the mothers' lack of knowledge regarding the definition of exclusive breastfeeding correctly (Table 4). Mothers who did not exclusively breastfeed their infants usually give water to their infant for the reason that the breast milk had not come out, the tongue of the infant appeared white and dirty from drinking milk or mothers thought that the infant was thirsty.

The percentage of exclusive breastfeeding in Cipacing village was higher than the percentage of exclusive breastfeeding in Indonesia⁴ (15.3%)⁴. This percentage is lower than the percentage of exclusive breastfeeding in West Java⁴ (17.6%). The number of mothers who were breastfeeding exclusively in Cipacing village dropped dramatically compared to the data in 20125 (82.4%)⁵. This indicated that education on exclusive breastfeeding was still urgently needed since the definition of exclusive breastfeeding was still not understood well by the public.

The most common reason of mothers who did not give exclusively breastfeeding was that they felt that the quantity of breast milk could not fulfill the needs of the baby. This could occur because of the lack of attention from the local medical personnel to provide education or encourage mothers to breastfeed exclusively, and also of the widespread formula advertisements which were being marketed intensely.

Some of the reasons that mothers did not breastfeed exclusively were the infant's situations who were often crying for unknown reasons or at the sight of food when they were feeling hungry. It was supposed to be prevented by the mother since mother was a decisive factor in this respect who had to control the nutrient intake and types of food that could be given to infants.

Another reason of the mother who did not breastfeed exclusively was the factors of hospitals or midwives. Hospitals and midwives were providing nutritional advice contrary to the provisions that had been defined. The medical personnel should support every mother who had a delivery to give exclusive breastfeeding to the infant until the infant was 6 months old.

The number of mothers who gave mineral water to their infants before aged 6 months in Cipacing Village were more than those in Indonesia based on Riskesdas 2010⁴ (24.8%). The number of mothers who gave formula to their infants in Cipacing Village was fewer than those in Indonesia⁴ (68.1%). This could be due to the lack of knowledge of mothers about the benefits of exclusive breastfeeding for infants (Table 5).

The mother's awareness to give complementary feeding (Makanan Pendamping Air Susu Ibu/ MP-ASI) according to the age of the infant was good. Most of the mothers were able to distinguish the type of food that could be given to children at a certain age range. There were 12.7 % of mothers who gave complementary feeding which was not age-appropriate. This occurred because the most common type of infant refused the kind of food given at that time. Complementary feeding will help the growth of infants after the age is more than 6 months since the nutrients milk has decreased.

The result of this study showed that exclusive breastfeeding did not have significant relation with the nutritional status of infants. Results of this study were similar with results of studies in Senuro Village (South Sumatra, Indonesia), Depok City (Indonesia) and others places.^{11,12,15} On the other hand, the results of this study showed differences with others studies.¹⁶⁻¹⁹

In this study, here was only one infant out of 19 infants with bad nutritional status who got exclusive breastfeeding when the infants were 0–6 months old (5.26%). Meanwhile, there were 18 infants out of 88 infants with bad nutritional status who did not get exclusive breastfeeding (20.5%). This result showed that exclusive breastfeeding affected the infant nutritional status and exclusive breastfeeding had important benefits for keeping the infant nutritional status. The analysis test showed that children who did not get exclusive breastfeeding have 3.343 times risk to become infants with bad nutritional status in the future (Table 4).

Exclusive breastfeeding is one of the important factors for infants' growth.² Exclusive breastfeeding in infants aged 0–6 months is already sufficient to fulfill the nutritional needs of the body.² Meanwhile, other food can cause infants' intake become less than exclusive breastfeeding. It can cause the infant get involved in bad nutritional status, get lower Intelligence Quotient (IQ) or bad immunity so that infants often become sick or

died.²

Infants' nutritional status is affected by many factors. One of the factor is mother's nutritional status and mother's food intake which will affect the quality of mother's milk.³ The quantity and quality of mother's milk will affect infants' growth and nutritional status. The quality and frequency of breastfeedings have to be maintained. There is a need for more education which can give information about benefits of exclusive breastfeeding and infants' nutritional status to mothers.

The complementary food which is given to infants aged 6–12 months is one of the important factors. Complementary food can fulfill the infant's body needs for growth process of those who did not get exclusive breastfeeding. Introducing a kind of food is an important factor to fulfill infant's body needs. It can be anticipation for infants with malnutrition.

This cross sectional study collected information once based on mother's memories so it might cause a biased recall. Meanwhile, the size of this study could not be representative because it was conducted only in one village. Thus, other studies should be conducted with cohort or case control study design and more number of respondents. Infants aged twelve months who were included in this study already has got other food intake in addition to breast feeding so there were others factors which affect their nutritional status. Thus, other studies can be conducted to find other factors which can affect infants' nutritional status

In conclusion, the result in this study indicates that most of the infants aged twelve months in Cipacing Village have good nutritional status (81.3%) and do not get exclusive breastfeeding (83.3%). Statistical evidence shows that there is not a significant relationship between exclusive breastfeeding and nutritional status ($p=0.458$; $OR=3.343$).

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