



Historical Relationship of Feeding with Stunting Events of Children Under Two Years of Age 6-23 Months in District Malili, Luwu Timur Regency

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Abstract

Stunting reflects chronic malnutrition during the most critical period of growth and development in early life, namely ages 0-24 months. Giving inappropriate intake in this early period will have an impact on conditions in the form of stunting nutritional status in children. The purpose of this study was to analyze the relationship between feeding history and the incidence of baduta (children under two years of age) stunting (6-23 months) in Malili District, East Luwu Regency. This type of research is a quantitative study with cross-sectional study design. The population of the study was all 738 baduta in the Malili district. The research sample was 260 baduta and mother baduta as respondents who were taken by simple random sampling. Data were analyzed using chi-square and logistic regression. The results showed that 31.9% of baduta (children under two years of age) were stunted. The results of the Chi-square test showed that colostrum ($p = 0.000$), prelactal ($p = <0.000$), and exclusive breastfeeding ($p = <0.000$) were associated with the incidence of stunting. The results of the logistic regression test showed that there was a significant effect of giving colostrum ($p = 0.035$) and exclusive breastfeeding ($p = 0.008$) on the incidence of stunting. The variable with the greatest influence on the incidence of stunting was exclusive breastfeeding with an OR = 2.533. It is suggested to increase counseling about breastfeeding in the early stages from pre-marriage to pregnancy.

Keywords: *Stunting; Colostrum; Prelactal; Exclusive Breastfeeding*

Introduction

Globally, in 2017 as many as 151 million children under 5 years of age (22%) were stunted whereof these children were in the Southeast Asia and Africa region (WHO, 2018). Children who are stunted will have an impact on the development of a country which will result in high morbidity and mortality of children, learning abilities, and the risk of non-communicable diseases in the future (Ministry of Health of the Republic of Indonesia, 2018). Height for age reflects linear growth achieved before and after birth, and deficits represent long-term cumulative effects of inadequate health, diet, and care. It is

associated with higher morbidity and mortality, delayed mental development, poor educational achievement, and reduced intellectual capacity, and is a strong predictor of human capital and social progress (Prendergast & Humphrey, 2014).

One of the direct causes of stunting is intake. Own intake is largely determined by the pattern of feeding the baby from the womb to the birth of the baby. Even though food is available in sufficient quantities, wrong feeding patterns can lead to insufficient nutrient intake for toddlers. Early birth where the baby can only consume breast milk is an important period and the role of the mother and family will greatly determine that the baby only consumes breast milk until the age of 6 months.

In Indonesia, Basic Health Research data shows stunting under five in 2013 was 37.2% and decreased in 2018 to 30.8%, where this figure is still below the expected national figure of 20% (Basic Health Research, 2018). South Sulawesi is ranked the fourth highest stunting under five in Indonesia in 2018 with a prevalence of 35.7% consisting of 23.2% short and very short children under 12.5%, while for children under two years of age (baduta), stunting in South Sulawesi is 33.9%, namely very short 13.3% and short 20.6% (Ministry of Health of the Republic of Indonesia, 2019).

In East Luwu Regency in 2018 the prevalence of stunting for children under five was 4.9% and for baduta was 8.7%. Even though the stunting rate for children under five is below the 2016-2021 Health Office Strategic Plan target, which is 7%, the stunting rate for baduta is still above the target to be achieved. For Malili sub-district, the stunting rate is 8.8% for baduta and 10% for toddlers (East Luwu District Health Office, 2017). This figure is still above the target of the 2016-2021 East Luwu Health Service Strategic Plan where one of the goals is to reduce the stunting rate from 10% to 7% (East Luwu Regency Strategic Plan, 2015).

Methods

This type of research is a quantitative study with a cross sectional study approach. This research was conducted in Malili District, East Luwu Regency. The population in this study were 738 children under two years of age (baduta) aged 6-23 months in Malili sub-district with a sample size of 260 baduta and mothers baduta as respondents. The sample size is determined using the Slovin formula and proportionally calculates the sample size in each village. The samples were determined based on the inclusion and exclusion criteria and the sampling was done using a simple random technique. Data collection using questionnaires and anthropometric measurements.

The data in this study used univariate analysis to get an overview by describing each variable used in the study. Bivariate analysis was conducted to see the relationship between two variables, namely between the independent variable and the dependent variable using the chi-square test. Multivariate analysis was conducted to determine which independent variables tended to have more influence on the dependent variable by using the binary logistic test.

Results and Discussion

Table 1.
Characteristics of Respondents in Malili District, Luwu Regency, 2020

Respondent Characteristics	n (=260)	%
Age		
≤ 20 years	26	10,0
21-34 years	158	60,8
≥ 35 years	76	29,2
Latest Education		
Did not go to school	1	0,4
Elementary school	69	26,5
Junior school	62	23,8
High school	97	37,3
Bachelor/Higher Education	31	11,9
Employment		
House Wife	224	86,2
Entrepreneur	12	4,6
Civil Servant/Officer	10	3,8
Others	14	5,4

Source: Primary Data, 2020

Based on table 2.1, it is known that the age of most respondents was 21-34 years (60.8%), and the age group that was the least respondent was mothers aged ≤ 20 years (10%). Then based on the last education of the respondents, the highest proportion were high school graduates (37.3%), and the least number had never attended school (0.4%). Distribution of respondents by occupation, most of the respondents work as housewives (86.2%), and the least work as civil servants/police (3.8%).

Table 2.
Characteristics of Baduta in Malili District, East Luwu Regency

Baduta Characteristics	n (=260)	%
Sex		
Male	139	53,5
Female	121	46,5
Age		
6 – 11 months	26	16,9
12 – 23 months	234	83,1
Birth Weight		
Normal (≥ 2500 gram)	238	91,6
Low birth weight (< 2500 gram)	22	8,4
Nutritional status (PB/U)		
Very Short	19	7,3
Short	64	24,6
Normal	173	66,6
Hight	4	1,5

Source: Primary Data, 2020

Based on table 2, it is known that most baduta sexes were male (53.5%) and female (46.5%). Most of the age of baduta were at the age of 12-23 months (83.1%). Then baduta with a history of normal birth weight (91.6%) was more than baduta with low birth weight (8.4%). The distribution of baduta based on the body length indicator according to age (PB / U) showed that the most baduta had normal nutritional status (66.6%) and the least had high nutritional status (1.5%).

Table 3.
Distribution of Respondents Based on Feeding History of Baduta (Giving Colostrum, Prelactal and Exclusive Breastfeeding in Malili District, East Luwu Regency in 2020

Food History	n (=260)	%
Colostrum administration		
No	43	16,5
Yes	217	83,5
Prelactal		
Yes	56	21,5
No	204	78,5
Exclusive breastfeeding		
No	98	37,7
Yes	162	62,3

Source: Primary Data, 2020

Based on table 4, the results of the feeding history were obtained where the baduta who did not receive colostrum was less (16.5%) than the baduta who were given colostrum (83.5%). Meanwhile, fewer baduta received prelactal (21.5%) than baduta who did not receive prelactal (78.5%). For exclusive breastfeeding, fewer women who were not exclusively breastfed (37.3%) were less than baduta who received exclusive breastfeeding (62.3%).

Table 4.
Analysis of the Relationship between Feeding History and Baduta Stunting in Malili District, East Luwu Regency in 2020.

Food history	Stunting Case				Amount		p-value
	Stunting		Normal		n	%	
	n	%	n	%			
Administration of Colostrum							
No	24	55,8	19	44,2	43	100	0,000
Yes	59	27,2	158	72,8	217	100	
Prelactal							
Yes	29	52,0	27	48,0	56	100	0,000
No	54	26,5	150	73,5	204	100	
Exclusive breastfeeding							
No	47	47,9	51	52,1	98	100	0,000
Yes	36	22,2	126	77,8	162	100	

Source: Primary Data, 2020

Based on table 4 above, it is found that the baduta who were not given colostrum had the most nutritional status of stunting (55.8%) compared to the baduta with normal nutritional status (44.2%). Meanwhile, baduta given colostrum had the least nutritional status of stunting (31.9%) compared to normal nutritional status (72.8%). The results of the chi-square test showed the value of $p = 0,000$,

meaning that there was a relationship between colostrum administration and the incidence of stunting in baduta.

Prelactal Baduta had more stunting status (51.8%) than Baduta with normal nutritional status (48.2). Meanwhile, poor women who were not prelactal had less nutritional status with stunting (26.5%) than those with normal nutritional status (73.5%). The results of the chi-square test showed a value of $p = 0.000$, meaning that there was a relationship between pre-lactal and the incidence of stunting in baduta.

Baduta who did not receive exclusive breastfeeding had less stunting nutritional status (47.9%) than normal nutritional status (52.1%). Meanwhile, baduta who received exclusive breastfeeding had less nutritional status with stunting (26.5%) than baduta with normal nutritional status (73.5%). The results of the chi-square test showed a value of $p = 0.000$, meaning that there was a relationship between exclusive breastfeeding and the incidence of baduta stunting.

Table 5.
Logistic Regression Analysis of Variable Feeding History with Stunting in Baduta in Malili District, East Luwu Regency in 2020

Variable	Sig.	Exp(B)	95% CI for Exp(B)	
			Lower	Upper
Administration of Colostrum	0,035	2,291	1,062	4,942
Prelactal	0,808	1,110	0,480	2,565
Exclusive breastfeeding	0,008	2,533	1,279	5,013

Source: Regression Analysis

Based on table 5, it can be seen that the significant variables and risk factors for the incidence of stunting are colostrum and exclusive breastfeeding, where poor women who do not receive exclusive breastfeeding are 2.533 times more likely to experience stunting than those who receive exclusive breastfeeding. Meanwhile, for the variable giving colostrum, baduta who did not receive colostrum were 2.291 times more likely to experience stunting than baduta who received colostrum. The variable that most influences the incidence of stunting is exclusive breastfeeding.

Administration of Colostrum

Colostrum is the first milk that comes out on the first day of birth. The content of important nutrients and antibodies in colostrum is needed by babies for the protection of the digestive tract, intestinal growth and protects the baby from infection so that it is beneficial for the baby's survival. The content of protein and immunoglobulin A is very high in colostrum, where immunoglobulin A is useful for protecting the gastrointestinal tract from bacterial and viral infections. Colostrum contains leukocytes as much as 5×10^6 cells per mL, and will decrease with the length of breastfeeding. Leukocytes in the form of macrophages and neutrophils, which can fight pathogenic microbes. Lymphocytes contain t cells and β cells that produce antibodies, 10 percent of the leukocytes. In addition, colostrum produces immunity cells that contain lysozyme enzymes to inhibit the growth of various kinds of bacteria (Jackson & Nazar, 2006). Therefore colostrum can prevent the occurrence of chronic diseases including nutritional problems with stunting. Children who are stunted tend to be prone to infectious diseases and vice versa, stunting nutritional problems originate from an infectious disease that lasts quite a long time.

The results showed an association between colostrum administration and the incidence of stunting ($p = 0.000$) and the prevalence of stunting in children not given colostrum (55.8%) was greater than

normal children (44.2%). The multivariate test results also showed that colostrum administration was a risk factor for the incidence of stunting and children who did not receive colostrum were 2.291 times more likely to experience stunting than children who received colostrum. This study is in line with studies in Ethiopia which showed that children who did not receive colostrum were at a higher risk of stunting. Study findings show that children who did not receive colostrum were 2.1 times stunted as compared to children who had received colostrum (Teshome *et al.*, 2009). A different study in Ethiopia also found that children who did not receive colostrum were 5 times more likely to be stunted (Desalegn *et al.*, 2016). The reason for the mother not giving colostrum is because the child was born prematurely, the milk does not come out and the mother's nipple problem so the child does not want to breastfeed.

Prelactal

Prelactal is the provision of food and drinks to babies at the beginning of birth (1 - 3 days after birth) because the milk has not come out or the milk that comes out is small. These prelacteal foods are in the form of honey and some provide water or formula milk. The reasons for giving prelacteal feeding include so that the baby feels sweet at the beginning of the meal, the baby learns to swallow so that the baby can easily receive food intake and the milk has not come out so the baby is given formula milk this is in line with the research of Juwitra *et al* (2020). In this study, the prevalence of stunting in children who received prelactals (52%) was greater than those with normal nutritional status, meanwhile, there was a relationship between pre-lactal and the incidence of stunting ($p = 0.000$).

The multivariate test results showed that precalactal was not a risk factor for the incidence of stunting. Research conducted in Purwokerto, states that age at first feeding is a risk factor for the incidence of stunting in toddlers (Friska, 2014). Prelactal foods are not good for babies because they can replace colostrum as the earliest food for babies. A newborn who is given prelactal food means not receiving exclusive breastfeeding. In line with this study, a study conducted in West Nusa Tenggara also showed an association between pre-lactal administration and the incidence of stunting (Sara *et al.*, 2016). Other studies in Bali, West Java and East Nusa Tenggara also show the same results that the incidence of stunting is related to the provision of prelactals and children who are given prelactals have a 3.8 times risk of experiencing stunting (Nurdin *et al.*, 2014). Prelactal feeding has a bad systemic impact in the form of delaying initiation of breastfeeding, early complementary feeding, colostrum loss and inhibiting the success of breastfeeding so that the child is susceptible to infection. The emergence of infectious diseases will have an impact on increasing the need for energy, while decreased appetite, resulting in impaired absorption of nutrients which lead to nutritional problems with stunting if it occurs continuously and for a long time.

Exclusive Breastfeeding

Exclusive breastfeeding is breast milk given to babies from birth for six months without adding and or replacing with other foods or drinks (Kementrian Kesehatan RI, 2013). Exclusive breastfeeding helps prevent malnutrition in children aged 0-24 months such as preventing stunting or failure to thrive (WHO, 2013). Exclusive breastfeeding can increase a child's height growth. As shown by research conducted in 20 developing countries, there are differences in growth between children who are exclusively breastfed and not exclusively breastfed (Kamudoni *et al.*, 2015). The results of the study by Giri *et al* (2013) show that there is a relationship between exclusive breastfeeding and the nutritional status of children aged 6-24 months. Likewise, research in Indramayu where exclusive breastfeeding was associated with the incidence of stunting (Chyntaka & Putri, 2020).

This study shows that there is a relationship between exclusive breastfeeding and the incidence of stunting ($p = 0.000$), and the multivariate results show that exclusive breastfeeding is the most influential variable and a risk factor for stunting. Children who are not exclusively breastfed have a 2.5 times chance

of being stunted compared to children who are exclusively breastfed. In line with this, the research conducted by Anita Sampe et al showed that there was an association between exclusive breastfeeding and the incidence of stunting with an OR = 61, which means that the chance of children who are not exclusively breastfed to experience stunting is 61 times greater. In this study, the reasons for mothers not giving exclusive breastfeeding were because of working mothers, breast milk that did not come out, nipple problems and early Mp-ASI before the baby was 6 months old. Some mothers have milk production problems at the beginning of breastfeeding which causes the mother to rush to help with formula milk, the absence of family support is also the cause of formula feeding in the early breastfeeding period.

Conclusion

Based on the results of the study, it can be concluded that the history of feeding as an independent variable consisting of 3 factors, namely colostrum, pre-lactal feeding, and exclusive breastfeeding are associated with the incidence of stunting. Of the three factors, giving colostrum and exclusive breastfeeding are risk factors for stunting. Exclusive breastfeeding is the most influencing factor in the incidence of baduta stunting in Malili District, East Luwu Regency. It is suggested that the reduction in the prevalence of stunting is carried out by increasing exclusive breastfeeding through breastfeeding counseling starting from pre-marriage to pregnancy. The need for the assistance of pregnant women in the early stages of birth so as to increase colostrum administration and prevent prelactal feeding to babies.

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