

# The potency of socio-economic family and cultural factor in affecting stunting of Muna ethnic in Batalaiworu, Southeast Sulawesi

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## The potency of socio-economic family and cultural factor in affecting stunting of Muna ethnic in Batalaiworu, Southeast Sulawesi

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**Abstract.** *Almost three of ten children in Indonesia suffered stunting. Cultural food taboos to mothers and children, and socioeconomic family might affect eating patterns in Muna ethnic. The aim of this study was to determine the correlation between family's socio-economic factors and cultural factors with the incidence of stunting. this cross-sectional study applied the qualitative and quantitative methods involved 110 randomly selected children aged 6-24 months. Stunting was categorized by comparing the Body length (cm) with the children age (months). Data of socio-economic and cultural factors were taken using structured questionnaire and in-depth interview. The occurrence of stunting was 32.7%. Education level, dietary restriction during pregnancy, and prelacteal intake significantly correlated with the occurrence of stunting ( $p < 0.05$ ), while the per-capita expenditure, food taboo and the history of exclusive breastfeeding were not significantly correlated with the occurrence of stunting ( $p > 0.05$ ). Multivariate analysis showed prelacteal intake as the most influential factor that affecting the incidence of stunting. The prevalence of stunting in the Batalaiworu district is higher than the national prevalence of stunting. Cultural factors like prelacteal feeding is the most influential factor that affecting the occurrence of stunting.*

**Keywords:** *mother's education, per capita expenditure, food taboo, prelacteal intake, exclusive breastfeeding*

### 1. Introduction

The first two years of the children's age is a critical period that determines the quality of human in the next generation (*window of opportunity*). To get a maximum window of opportunity, nutritional support is necessary, special stimulus, and intervention. The main nutritional problems that occur in children in the first 1,000 days of life are very influential in the process of children's linear growth. [1] Stunting experienced by children before two years old will have an impact on the level of intelligence and learning development as adults [2]. Stunting children have risk for degenerative diseases in adult such as heart disease, hypertension, stroke, and diabetes [3] [4]. Because of the impact of stunting is so strong against deterioration in the status of children's development, World Health Organization targeting a reduction of 40% of stunting among children under five in 2025 [5].

Stunting in Indonesia increased in 2013 (37%) compared with 2010 (35.6%) and 2007 (36.8%). Based on the results of Riskesdas 2007, 2010, and 2013, Southeast Sulawesi included in 15 provinces in Indonesia that tendency of stunting prevalence in serious categories ( $\geq 40\%$ ) [6][7][8]. Based on data from the Nutritional Status Assessment (PSG), the number of stunting in Southeast Sulawesi in 2015 was 22.2% and then increased to 29.6% in 2016. In Muna, based on data from PSG in two consecutive years, the prevalence of stunting was also increased (19.6%) in 2015 and increased to 32.9% in 2016 [9][10].

Cultural factors can affect health status and disruption of growth and development in children.



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Cultural factors related to the habits and behavior of people around who repeatedly and occur as a result of social interaction. The habit of rural society in Nepal who discard colostrum was associated with the incidence of long-term infection that if not get a good handling it will be a risk factor for infant mortality [11]. In the UK, breastfeeding infants known as important for health, but two-thirds of mothers choose to immediately stop breastfeeding because they worried about intake from breast milk is not enough for infant nutrition. This prospective study also revealed correlation to the baby food selection is influenced by socio-cultural factors and attitudes associated with stunting in children [12]. Study that was conducted in East Lo<sup>4</sup>ok society shows that the habit of giving the prelacteal in the beginning of infant's life is closely related to the incidence of stunting. Prelacteal intake is feeding to infant shortly after birth even before infant is breastfed [13].

Muna is one of the ethnic in Southeast Sulawesi. This ethnic dwells in Muna that most of this regions is an archipelago. Cultural and social life in Muna are still influenced to Muna royal kingdom that most associated with Islam [14][15]. In ethnic Muna, there are special rituals that associated with feeding patterns in newborns, dietary restriction during pregnancy and lactation (*food taboo*), and other health behaviors that closely related to culture. The aim of this study was to determine prevalence of stunting and the correlation between family's socio-economic factors and cultural factors with the incidence of stunting state clearly the aim of this study here!

## 2. Method

### 2.1. Subjects and Procedure<sup>30</sup>

The study combined quantitative and qualitative methods on data collection. The quantitative study design was observational with cross-sectional design. The qualitative approach using in-depth interview to obtain data associated to social and cultural that related to the incidence of stunting in Ethnic Muna. Socio-economic factors consist of three variables namely mother's education and per capita expenditure while the cultural factors consist of prelacteal, dietary restriction during pregnancy and food taboo in the family. This study was conducted in February to March 2018 in the District Bataiaworu.

As many as 110 subject were calculated based on the minimal sample size [16] and randomly selected. Criteria for inclusion were children aged 6-24 months, living in the region's study, being a part of ethnic Muna, and children do not have birth defects or in severe pain conditions that willing to sign *informed consent*. In the qualitative data, key informant in this study was mother of child who became the subject of study, while the triangulation informants consisted of husband or parents/parents-in-law, health care worker, and traditional leaders/religious leaders as supporters informants. The instrument that used in this study were infantometer/length board to the nearest 0.1 cm to measure the length of the child, questionnaire, and informed consent.

In this study those who had the z-score < -2 SD was defined as children who did have stunting based WHO Anthro 2005. Mother's education level is a formal education that ever attained by mother based on law number 20 in 2003, are divided into two categories: basic and advanced. Family's socioeconomic is measured by level of per capita expenditure, are classified into two levels, low < Rp. 634,440 and high ≥ Rp. 634,440 [17]. Food taboo in the family is assessment of the foods that are considered taboo and prohibition on lactation cycle so it is avoided to be consumed, can be divided into two categories: yes or no. Dietary restriction during pregnancy was defined the habit of abstinence rated based on the kind of food that is not consumed with mystical reason and not avoidance because of health, can be divided into two categories: yes or no. Prelacteal intake is the provision of other food (not breast milk) in newborns that culturally these foods are considered influential on children's development, can be divided into two categories: yes or no. Exclusive breastfeeding history was defined only breastfeeds breast milk to infants without other food additives even pure water up to the 6 months, unless the medication in the advice of health care worker, can be divided into two categories: yes or no [13]. This study was approved by the Ethics Committee for Health Research, RSUP Dr. Kariadi, Faculty of Medicine University of Diponegoro Semarang with registered number 168/EC/FK-RSDK/IV/2018.

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### 2.2. Statistical Analysis

The test that was used in this study was chi-square test with confidence level 95%. Multivariate analysis used multiple logistic regression because the dependent variable was in the form of categorical variables,

which aimed to determine the most influential variable on the dependent variable. Other variables that had p value less than 0.25 were fulfilled the requirement to enter the multivariate model [18]. The qualitative data were used to support or explain the results of the analysis of quantitative data. The comparison of data were considered as significant at  $p < 0.05$ .

### 3. Results and Discussion

#### 3.1. Characteristic of subjects

The number subjects in this study was 110 children. This study showed that most of subjects aged 12-24 months and were male. Nutritional status based on height or length/age index and most of them were normal subjects. Distribution characteristic of subject can be seen in Table 1.

**Table 1.** Distribution of subject's characteristics.

Characteristics	n	%
Gender		
Male	65	59.1
Female	45	40.9
Group of age		
6-11 months	53	48.2
12-24 months	57	51.8
Nutritional Status (height or length/age)		
Severe stunting	12	10.9
Stunting	24	21.8
Normal	71	64.5
Tall	3	2.7
Mother's education		
Not completed in primary school	1	0.9
Graduated from elementary school	3	2.7
Graduated from junior high school	36	32.7
Graduated from senior high school	40	36.4
Graduated from university	30	27.3
Mother's work		
Government employee	12	10.9
Private employee	7	6.4
Trader	13	11.8
Tailor	2	1.8
Honorary teacher	2	1.8
Household assistant	2	1.8
Housewife	69	67.7
Others	3	2.7
Number of family member		
≤ 2 children	75	68.2
> 2 children	35	31.8
Spending per capita		
< Rp. 634 440, -	44	40.0
≥ Rp. 634 440, -	66	60.0

#### 3.2. Prevalence of Stunting

Table 2 shows that the prevalence of stunting in the District of Batalaiworu was 32.7%. This number was higher than the average number of the national stunting based on the results Nutritional Status Assessment (PSG) in 2015 (29%), but lower than Riskesdas in 2013 (37.2%). According to WHO, prevalence of stunting became public health problem when the prevalence was 20% or more [19]. Based on severity epidemiological criteria of stunting in a population, the prevalence of stunting in the

Batalaiworu was included in the high category. The epidemiological criteria in nutritional status of stunting (height or length/age) was high if the prevalence was in the range of 30 to 39.9% [20].

**Table 2.** Prevalence of stunting in study sites

Nutritional Status (height or length/age)	n	%
Not stunting	74	67.3
Stunting	36	32.7
Total	110	100

### 3.3. Correlation between Variables and Stunting

**Mother's education level with the incidence of stunting.** Table 3 shows that most of stunting children who had mother with basic education level was 22 (61.6%). Based on results,  $p < 0.001$  which meant that there was significant correlation between mother's education with the incidence of stunting in children. The results of this study explained that there was significant correlation between mother's education level with the incidence of stunting ( $p < 0.001$ ). The value of odd ratio (OR) showed that children who had mother with basic education level had a ratio of 3.23 times to experience stunting compared with children who had mother with advanced education level.

This study was in line with study that was conducted by Picauly and Toy in Kupang and Sumba NTT stated that the mother's education level affecting the incidence of stunting. The lower mother's education level attained, the higher chances of children to experience stunting. Healthy lifestyle practice will be more easily carried out by mothers with advanced education level compared with mothers whose background was in basic education level [21].

**Table 3.** The results of bivariate analysis between variables studied with the incidence of stunting.

Variables	Stunting	non-stunting	Total	OR (95% CI)	p
	n (%)	n (%)	n (%)		
Mother's education					
Basic	22 (61.6)	14 (38.9)	36 (32.7)	3.23	<0.001*
Advanced	14 (18.9)	60 (81.8)	74 (67.3)	(1.88-5.54)	
Per capita expenditure					
Low	14 (31.8)	30 (68.2)	44 (40)	0.955	1,000
High	22 (33.3)	44 (66.7)	66 (60)	(0.55-1.66)	
Food taboos in the family					
Yes	34 (36.6)	59 (63.4)	93 (84.5)	3.108	0.052
No	2 (11.8)	15 (88.2)	17 (15.5)	(0.83-11.74)	
Dietary restriction during pregnancy					
Yes	31 (57.4)	23 (42.6)	54 (49.1)	6.43	<0.001*
No	5 (8.9)	51 (91.1)	56 (50.9)	(2.70-15.31)	
Prelacteal feeding					
Yes	34 (53.1)	30 (46.9)	64 (58.2)	12.21	<0.001*
No	2 (4.3)	44 (95.7)	46 (41.8)	(3.09-48.32)	
Exclusive breast feeding history					
Yes	35 (33.3)	70 (66.7)	105 (95.5)	1.667	1,000
No	1 (20)	4 (80)	5 (4.5)	(0.28-9.82)	

\*data significant at  $p < 0.05$

Education is a social factor that contributes indirectly to the nutritional status of stunting in children based on framework of problem causes in stunting by WHO and UNICEF. Mother's education level will make it easier to get the informations to be implemented in whole life everyday. Education is able to capacitate mother to provide proper care, enhances the ability to earn income, ability to appreciate the importance of nurturing, committes to the health of children, uses the facilities and health services are provided so that it becomes benefit to children [22]. Practice in healthy lifestyle will be more easily carried out by mothers with advanced education level compared with mothers who get the basic education level. The higher mother's education level, the nutritional status of children will be better [23].

**Per capita expenditure is one of the factors related to socioeconomic families.** The result of study showed that there was no significant correlation between per capita expenditure and the incidence of stunting in children ( $p=1,000$ ), Table 3. Eating habits are influenced by various factors, including income. The family income affects the level of family expenditure. There is a link between the level of income with eating habits of the household. High income families would give positive contribution to the family eating habits that can affect the nutritional status of the family in the household [23].

It is known that the amount of household expenditure describes the socioeconomic conditions of household income. When the family is not able to meet the economy needs, it will result in purchasing power and malnutrition. According to results of study in Surabaya stated that there was correlation between family income with malnutrition condition in children [24]. World Health Organization noted that the main cause of stunting in developing countries was socioeconomic conditions.[2] Socioeconomic conditions influence eating habits of family. Eating habits in the household need to be considered because of their eating habits affect the selection and use of food, and affect the quality of household food [25].

There are other factors that may be associated with malnutrition in children such as diversity and availability of food [26]. The study in Jakarta showed that families who had a well-established social economy were more likely to eat snack that contained high calorie than family group that had lower socioeconomic only chose the consumption of low calorie snack [27]. This study was not in line with Norlianti which stated that families with low per capita expenditure levels were at risk for stunting three times compared with families with sufficient income level [28].

**Food taboos in the family with the incidence of stunting.** Most of stunting children (36.6%) had mother who practiced food taboos in the family, Table 3. There was no correlation between food taboos in the family with the incidence of stunting,  $p=0,052$ . It was caused by most of respondents (84.5%) did food taboos on breastfeeding cycle either they had stunting children or not. In addition, food taboos in the family performed by mother indirectly played a role in food intake and nutritional status of children. Food taboos in the family there were traditions of eating forbidden and should not be done in the phase of breastfeeding that were still practiced for generations in Muna communities. This tradition was carried almost of all respondents. In a period of 44 days to 90 days postpartum, mother can only eat rice, grilled fish, and clear soup. Moreover, mother also avoid oil, coconut milk, and salt. If we review based on the basic principles of a balanced diet, one of them which is required to consume diverse foods, Muna society did not practice it specifically on breastfeeding phase.

Mothers require adequate intake to meet their needs after giving birth (postpartum). Dietary needs of mother at this stage not only for mother but also for breastfeeding, so that the milk can smooth out. Fat is still needed by the body based on the individual needs to support the organs and physiological needs of the body. Like before, salt is one of iodine sources. If mothers practiced by eating fish on breastfeeding cycle, intake of iodine can be met from fish and vegetables that consumed. But, if mothers avoid fish and choose to eat eggs during a certain period (44-90 days) so the mother's intake of iodine would be less than food. Many food taboos on breastfeeding phase which does not seem sensible. In other way, food taboos had long history so it continued to be alive in society's culture [29].

**Dietary restriction during pregnancy.** It was known that most of stunting children (57.4%) had mother who practiced dietary restriction during pregnancy. Statistical analysis obtained that  $p<0.001$  which meant significant correlation with  $OR = 6.43$ . It showed that children who had mother with history of dietary restriction during pregnancy had risk of 6.43 times to experience stunting compared

with children who had mother with no history of dietary restriction during pregnancy.

Dietary restriction is a ban on eating certain foods because there is a danger to anyone who broke it. Eating foods that are allowed means comply with and obey the existing cultural norms, but also bring "salvation" for them. The food should not be eaten means the food which is considered should not be eaten because it is not permitted by the existing cultural norms. People will not be happy or safety is threatened by eating foods that should not be eaten [30]. According to interviews conducted in ethnic Muna, food taboos during pregnancy do with the reason for their own health and safety of the baby, but the type of food taboos actually contain nutritional value that is needed by mothers and infants, especially proteins. The baby's weight at birth is directly affected by the level of maternal health and nutrition before and during pregnancy. During pregnancy there will be transfer of nutrients from the body of the fetus through the placenta. Growth of the fetus in the womb of the mother is depend on the mother's nutrient intake during pregnancy[25].

Interventions to reduce stunting in children should be started just before birth, prenatal care and maternal nutrition, and continued until two years. The process of stunting in children can be called as growth faltering, begins in the womb until two years. In general, people do not realize the importance of nutrition during pregnancy and the first two years of life. By the time when children passed the age of two years, it was too late to repair the damage in the early years. Maternal health and nutritional status are important determinants of the incidence of stunting in children [31]. This study was not in line with study conducted by Dellu in East Nusa Tenggara that the cultural habits of dietary restriction for pregnant women in the community of South Central Timor was not risk factor for the incidence of stunting ( $r=0.480$ ;  $p<0.05$ ) [22].

**Prelacteal feeding with the incidence of stunting.** Most of stunting children obtained prelacteal feeding at newborn (53.1%). Results obtained  $p<0.001$  which meant that there was significant correlation between history of prelacteal feeding with the incidence of stunting in children. Children who were given prelacteal feeding had risk of 12.21 times to experience stunting compared with children who did not get prelacteal feeding.

Result this study was in line with cross-sectional study to 418 mothers and infants aged 0-24 months showed that infants fed early in life at greater risk of stunting (AOR=1.80;  $p<0.05$ ) [32]. Sara *et al* (2016) in East Lombok, West Nusa Tenggara also showed the same results that there was significant correlation between prelacteal feeding with the incidence of stunting. Feeding the newborn had risk of 3.65 times for experiencing stunting compared with children who were not given birth early meal [13].

Prelacteal feeding is feeding in neonates such as milk powder, milk, sugar water, or honey before the breastfeeding of breast milk. In this study, most of raw food into prelacteal feeding in newborns was honey (71.9%). Feeding the newborn has a bad impact on the growth and development of infants, such as digestive system disorders, invagination, respiratory disorders, and immune system disorders [33]. In this study, almost half of the subjects (48.2%) experienced a disruption in their digestive systems. This is partly caused by feeding on newborn. World Health Organization, UNICEF, and Indonesian Pediatric Association stated that prelacteal feeding may increase the risk of diarrhea because the baby's digestive organs are physiologically not ready to receive food intake. After the birth, infant's immune power is still weak and infant is very susceptible to disease [34]. At the age of 0-1 years, there is high sensitivity to infection as a result of the immature immunological function and clearance of intracellular pathogens is lacking. In the intra-uterine period, there are immunoglobulin G (IgG) transplacental which has an important role to protect infants until 6-12 months. Immunoglobulin M (IgM) can provide protection at the early age of the baby, against the invasion of pathogenic microbes in the mucosa as a nonspecific response [35]. Feeding the right based on age need to be considered properly by mother. It should be emphasized that the best food for newborn until six months is only breast milk alone.

**Exclusive breastfeeding with the incidence of stunting.** The results also showed that children who were not given exclusive breastfeeding were high (955). The result of statistical test to exclusive breastfeeding history obtained  $p=0.000$  which meant that there was no significant correlation between exclusive breastfeeding with the incidence of stunting in children.



The composition and nutritional value of breast milk is known to have appropriate and sufficient baby's needs, exclusive breastfeeding during the first six months early in life is proven to generate an optimal height growth but exclusive breastfeeding is not the only factors that contribute to the incidence of stunting children [36]. In line with study conducted by Paramashanti in the 33 provinces in Indonesia stated that exclusive breastfeeding was protective against the occurrence of stunting in children, but the results did not contribute to the increased incidence of stunting in Indonesia [37].

There are a lot of things encountered that caused the failure of exclusive breastfeeding in Muna like feeding practices in newborns who conducted by more than half of respondents to their children (55.2%). It was found the provision of breastfeeding practices early, where the child had been given food at the age of three months. There were also mothers who feeding their children at the age of six months but had been given formula since first born. The reason of formula feeding such as the milk was not come out, mother working very hard so it was difficult to provide breast milk exclusively, even there was a reason that mothers do the delivery by using the services of a midwife (giving birth in clinic delivery) and when went home, mother had been equipped with a packet of formula for infants and mothers.

Mother's education, dietary restriction during pregnancy, and prelacteal feeding had significant value that had been qualified to do further analysis using logistic regression test. These variables were evaluated and tested the interaction. This test was performed on variables that were expected there had interaction. Table 4 shows that prelacteal feeding had significance or greatest closeness of the correlation with the incidence of stunting in children. It was based on the results of multivariate analysis showed that prelacteal feeding with p value closest to the value of alpha ( $\alpha$ ) = 0.05. The value of OR was 11.35 in prelacteal feeding indicated that children who were given prelacteal feeding had risk of 11.35 times to experience stunting compared with children who were not given prelacteal feeding.

**Table 4.** Result of multivariate analysis between variables studied with the incidence of stunting.

Variables	B	SE	p	OR	95% CI
Mother's Education	2.05	0.61	0,001*	7.80	(2.35-25.91)
Prelacteal feeding	2.43	0.84	0,004*	11.35	(2.18-59.07)
Dietary restriction during pregnancy	2.01	0.65	0,002*	7,51	(2.064-27.33)

\*data significant at  $p < 0.05$

#### 4. Conclusion

The prevalence of stunting in Muna society in the District Batalaiworu was 32.7% higher than national prevalence of stunting. Potential factors significantly affected the incidence of stunting in Ethnic Muna was mother's education level ( $p < 0.001$ ; OR=3.23), history of dietary restriction during pregnancy ( $p < 0.001$ ; OR=6.43) and prelacteal feeding ( $p < 0.001$ ; OR = 12.21). Based on the results of multivariate analysis, prelacteal feeding was the most influential factor affected the incidence of stunting.

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