

# Risk Factors of Stunting In Pangkalan Kuras 2 Public Health Center at Pelalawan District, Riau Province

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## ARTICLE INFO

### Keywords:

Risk factor,  
Nutrition,  
Stunting.

## ABSTRACT

WHO states that, in the world there are more than 2 million deaths in children aged 6 years old to 12 years old are directly related to nutrition, especially those caused by stunting and about 1 million deaths due to lack of energy and protein, vitamin A and zinc. In the 2013 Riskesdas, Riau is known to have a prevalence of stunting toddler for 30%, so Riau is still in a problematic condition, especially its public health related to nutrition. This study is a descriptive analytic study with a cross-sectional design. Where the sampling technique is total sampling with 57 people in total, namely all infant aged 5-56 months in the Pangkalan Kuras 2 Public Health Center, Pelalawan District, Riau Province. The results of the data analysis that obtained are the correlation between the maternal last education  $p = 0.813$ , correlation of Breastfeeding History  $p = 0.039$ , correlation of Maternal Height History  $p = 0.357$ , and correlation of Infant Weight History  $p = 0.337$ . There is no correlation between a low level of maternal education, a low maternal height history and a low birth weight history on the occurrence of stunting. And there is a correlation between non-exclusive breastfeeding to the occurrence of stunting.

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## 1. Introduction

The development of nutritional status in Indonesia, especially in toddler, is still a problem, including the problem of malnutrition, poor nutrition and stunting. Stunting or it is often referred to a short toddlers is an indication of poor nutritional status and can be used as a long-term indicator for malnutrition in children. WHO states that in the world there are more than 2 million deaths in children aged 6 years old to 12 years old are directly related to nutrition, especially those caused by stunting and about 1 million deaths due to PEM (Protein Energy Malnutrition), vitamin A and zinc (Fitri, 2018).

The occurrence of stunting in toddler is one of the global nutritional problems. Based on UNICEF 2000-2007 data, the prevalence of stunting in the world reach 28%. When it's compared with the limit of "non-public health problem" according to WHO for stunting issue is 20%, so almost all countries in the world experience public health problems. The occurrence of stunting in toddler is more common in developing countries. Indonesia is one of the developing country that has a high stunting occurrence in toddler (Oktarina & Sudiarti, 2013). Based on Riskesdas data in 2013 it seems like the occurrence of stunting according to the territory of Indonesia is divided into 4 low groups, namely (40%). Riskesdas 2013 stated that among 33 provinces, 18 provinces have a prevalence of malnutrition above the national prevalence rate, which ranges from 21.2% to 33.1% (KemenKes, 2013). Riau Province is in the 15<sup>th</sup> position for cases of malnutrition. If we look at the results of Riskesdas in 2013, Riau is known to have a prevalence of stunting toddler for 30%, when we compared to the non-public health limit set by WHO in 2005 for 20%, Riau is still in a state of problems, especially public health related to nutrition (Fitri, 2018).

Stunting is a condition where there is failure to thrive in toddlers caused by chronic malnutrition, causing children to be too short for their age (Kemiskinan, 2017). Stunting is caused by several factors, namely poor parenting practices, limited health services and lack of access to clean water and sanitation. (Pusdatin Kemenkes, 2016) According to the World Health Organization (WHO), breastfeeding is an unrivaled way of providing the right food for a healthy baby's growth and development, it is also an integral part of the reproductive process which has an important effect on maternal health (Organization, 2018). The problem of stunting is mainly caused by the impact of parenting, coverage and quality of health services, the environment and food security. What include in the parenting pattern are Early Initiation of Breastfeeding (EIB), exclusive breastfeeding from the age of 0 months to 6 months and breastfeeding followed by complementary

feeding until the age of 2 years (RI, 2016).

Based on the description of the background above, it can be formulated that the purpose of this study is to determine the risk factors of stunting at the Pangkalan Kuras 2 Public Health Center, Pelalawan District, Riau Province.

## 2. Method

The type of research that I used is descriptive analytic research with a cross-sectional research design. The research was conducted in Terentang Manuk Village, Dundang Village, Palas Village, Beringin Village which is located in Pangkalan Kuras 2 Public Health Center, Pelalawan District, Riau Province.

The sampling technique in this study is a total sampling technique. Where the population in this study are infants aged 5-56 months because at this age is a golden period as well as a critical period for the growth and development of children. The number of infants aged 5-56 months in the research location recorded in the nutrition section of the Pangkalan Kuras 2 Public Health Center was 57 children. Inclusion criteria were infants aged 5-56 months, had checked their nutritional status with the PB/U index, parents were willing to participate in the study, and could be contacted. Meanwhile, the exclusion criteria in this study were children who were not suffering from an infectious/chronic illness at the time of the study.

In this study, the data collection technique used to collect stunting data was by looking at the e-PPBGM data recording the anthropometric nutritional status of PB/U infants aged 5-56 months which had been collected by the nutrition officer of the Public Health Center of Pangkalan Kuras 2. The results of this study were analyzed univariately to determine the risk factors for stunting. Bivariate analysis using Chi-Square statistical test with the independent variable and the dependent variable as ordinal data. The correlation result is significant if the p value <0.05.

## 3. Results

The characteristics of the respondents in this study were mostly male, namely 21 respondents (36.8%) were short and 9 respondents (15.8%) were very short. While the female as many as 12 respondents (21.1%) were short and 15 respondents (26.3%) were very short. The respondent who have an age range of 5-12 months is 1 respondent (1.8%) was short and as many as 2 respondents (3.5%) were very short. In the age range of 13-24 months, 9 respondents (15.8%) were short and 7 respondents (12.3%) were very short. In the age range of 25-36 months as many as 9 respondents (15.8%) were short and 9 respondents (15.8%) were very short. In the age range 37-48 months as many as 9 respondents (15.8%) were short and 5 respondents (8.8%) were very short. In the 49-56 months age range as many as 5 respondents (8.8%) were short and 1 respondent (1.8%) was very short. Low income distribution of parents as many as 10 respondents (17.5%) were short and 13 respondents (22.8%) were very short. While the high income of parents as many as 23 respondents (40.4%) were short and 11 respondents (19.3%) were very short. As shown in table 1 below.

TABLE 1.  
CHARACTERISTICS OF RESPONDENTS BY GENDER, TODDLER AGE, PARENTS' INCOME

No	Characteristics of Respondents	Short		Very short	
		n	%	n	%
1	Gender				
	Man	21	36.8	9	15.8
	Woman	12	21.1	15	26.3
	Total	33	57.9	24	42.1
2	Age				
	5 – 12 months	1	1.8	2	3.5
	13 – 24 months	9	15.8	7	12.3
	25 – 36 months	9	15.8	9	15.8
	37 – 48 months	9	15.8	5	8.8
	49 – 56 months	5	8.8	1	1.8
	Total	33	57.9	24	42.1

3	Income				
	Low (< Rp. 1,572,200)	10	17.5	13	22.8
	High (≥ Rp. 1,572,200)	23	40.4	11	19.3
	Total	33	57.9	24	42.1

The distribution of low maternal education as many as 12 respondents (21.1%) were short and 8 respondents (14.0%) were very short. While higher maternal education as many as 21 respondents (36.8%) were short and 16 respondents (28.1%) were very short. The distribution of non-exclusive breastfeeding history as many as 19 respondents (33.3%) were short and 20 respondents (35.1%) were very short. While the exclusive breastfeeding history as many as 14 respondents (24.6%) were short and 4 respondents (7.0%) were very short. The distribution of low maternal height history as many as 18 respondents (31.6%) were short and 16 respondents (28.1%) were very short. While the higher maternal height history as many as 15 respondents (26.3%) were short and 8 respondents (14.0%) were very short. The distribution of infants with LBW history as many as 18 respondents (31.6%) were short and 10 respondents (17.5%) were very short. While those who did not experience LBW as many as 15 respondents (24.6%) were short and 14 respondents (24.6%) were very short. As shown in table 2 below.

TABLE 2.  
DISTRIBUTION OF RISK FACTORS ACCORDING TO MATERNAL EDUCATION, BREASTFEEDING HISTORY, MATERNAL HEIGHT HISTORY AND BIRTH WEIGHT HISTORY

No	Characteristics of Respondents	Short		Very short	
		n	%	N	%
1	Maternal Education				
	Low (< Junior High School)	12	21.1	8	14
	High (≥ Senior High School)	21	36.8	16	28.1
	Total	33	57.9	24	42.1
2	Breastfeeding History				
	Non-Exclusive (< 6 months)	19	33.3	20	35.1
	Exclusive (≥ 6 months)	14	24.6	4	7.0
	Total	33	57.9	24	42.1
3	Maternal Height History				
	Low (< 145)	18	31.6	16	28.1
	High (≥ 145)	15	26.3	8	14.0
	Total	33	57.9	24	42.1
4	Birth Weight History				
	LBW (< 2500 grams)	18	31.6	10	17.5
	Not LBW (≥ 2500 grams)	15	26.3	14	24.6
	Total	33	57.9	24	42.1

Bivariate analysis using Chi-Square test to explain the correlation of factors that influence the occurrence of stunting. It was found that there was no significant correlation between a low maternal education and the occurrence of stunting, where the p value = 0.813 ( $p > 0.05$ ). And the factor of non-exclusive breastfeeding on the occurrence of stunting in Pangkalan Kuras 2 did have a significant correlation, with the p value = 0.039 ( $p < 0.05$ ). The low maternal height history factor on the occurrence of stunting in Pangkalan Kuras 2 didn't have any significant correlation, with the p value = 0.357 ( $p > 0.05$ ). And the low birth weight history on the occurrence of stunting in Pangkalan Kuras 2 didn't have any significant correlation, with the p value = 0.337 ( $p > 0.05$ ). As shown in table 3 below.

TABLE 3.  
CORRELATION OF MATERNAL LAST EDUCATION, BREASTFEEDING HISTORY, MATERNAL HEIGHT HISTORY AND  
INFANT BIRTH WEIGHT HISTORY TO STUNTING INCIDENTS

Infant Birth Weight History To Stunting Incidents								
		Stunting Incident						p-value
		Short		Very short		Total		
		n	%	n	%	N	%	
Maternal	Last							0.813
Education		12	21.1	8	14.0	20	35.1	
Low (< Junior High School)		21	36.8	16	28.1	37	64.9	
High (≥ Senior High School)		33	57.8	24	42.1	57	100.0	
Total								
Breastfeeding History								
Non-Exclusive (< 6 months)		19	33.3	20	35.1	39	68.4	0.039
		14	24.6	4	7.0	18	31.6	
Exclusive (≥ 6 months)		33	57.9	24	42.1	57	100.0	
Total								
Maternal Height								
History		18	31.6	16	28.1	34	59.6	0.357
Low (< 145)		15	26.3	8	14.0	23	40.4	
High(≥ 145)		33	57.9	24	42.1	57	100.0	
Total								
Birth Weight History								
LBW (< 2500 grams)		18	31.6	10	17.5	28	49.1	0.337
Not LBW (≥2500 grams)		15	26.3	14	24.6	29	50.9	
Total		33	57.9	25	42.1	57	100.0	

#### 4. Discussion

##### The Correlation of Maternal Last Education to Stunting Incidents

Factor analysis of the maternal last education level on the occurrence of stunting there was no significant correlation,  $p = 0.813$  ( $p > 0.05$ ) according to table 3. Based on the education level of parents, it can be seen that the occurrence of stunting mostly showed a high level of maternal education (64, 9%). The results of this study are in line with Okvitatimur Islami & Dasuki, 2018, with the title "Hubungan Asupan Zat Besi (Fe) Dengan Kejadian Stunting Pada Anak Sekolah Dasar di Madrasah Ibtidaiyah Muhammadiyah Kartasurya 2017", the results obtained from 63 children with low maternal education level as many as 27 children (76.6%) were stunted and 36 children (69.2%) were not stunted. The number of low maternal education level was owned more by children who did not experience stunting ( $p$  value = 0, 442) so it can be concluded that low maternal education is not associated with stunting. In this study, low maternal education did not always experience children with stunting problems. The level of maternal education on the occurrence of stunting can occur indirectly, including the behavior of mothers in raising their children. Mother's parenting pattern is the behavior of mothers in raising their children.(Okvitatimur Islami & Dasuki, 2018)

##### The Correlation between Breastfeeding History and Stunting Occurrence

The non-exclusive breastfeeding history had a significant correlation to the occurrence of stunting, it can be seen from table 3, with the  $p$  value = 0.039 ( $p < 0.05$ ). Based on the level of breastfeeding history, the occurrence of stunting mostly shows that non-exclusive breastfeeding for 6 months that given by the mother. The growth and development of children who drink breast milk is better, because the composition of breast milk is very supportive for children's growth. Children rarely get sick, because of the presence of both cellular and humoral antibodies in breast milk. Breast milk is a natural food that is good for babies, practical, economical, easy to digest, has an ideal composition

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of nutrients according to the needs and digestive abilities of babies and breast milk supports infant growth, especially height because breast milk calcium is more efficiently absorbed than breast milk substitutes. The lower the level of breastfeeding rate, the higher the growth rate of children in the malnutrition category, both in terms of the BB/U and PB/U indexes. Breast milk is needed in the baby's growth period to fulfilled his nutritional needs. This is in line with the analysis of the correlation between exclusive breastfeeding and the occurrence of stunting conducted by Larasati & Wahyuningsih (2018) that there is a correlation between exclusive breastfeeding and the occurrence of stunting. (Larasati & Wahyuningsih, 2018)

## The Correlation between Maternal Height History and Stunting Incidents

According to table 3, it shows that the maternal height history did not have a significant correlation with the occurrence of  $p = 0.357$  ( $p > 0.05$ ) at the Kuras 2 Public Health Center. But it's not in line with Putri's research (2018) with the title "Faktor Risiko Kejadian Stunting Pada Balita Usia 25-59 Bulan di Wilayah Puskesmas Kotagede I Kota Yogyakarta 2018 shows that the proportion of toddlers aged 25-59 months with a short maternal height history are 9 toddlers (11.5%) experienced stunting with a p-value of 0.002. This genetic influence is heredo-constitutional which means that the form for a person's constitution is determined by heredity. It is easy to say that a child will be big and tall when his father and his mother are also big and tall. Hereditary factors will affect the rapid growth, bone maturity, nutrition, sexual organs, and nerves. (Putri, 2018)

## The Correlation between LBW History and Stunting Incidents

Analysis of LBW history on the occurrence of stunting there was no significant correlation between toddlers with birth weight <2500 grams (49.1%) with babies 2500 grams (50.1%),  $p$  value = 0.337 ( $p > 0.05$ ) according to Table 3. The results of this study are in line with the research of Meilyasari & Isnawati (2014) which shows that the birth weight of toddler is not a risk factor for stunting ( $p = 0.609$ ), this is because the high influence of birth weight on stunting occurs at the age of 6 months early, then decreased until 24 months. If in the early 6 months the toddler can catch up with the growth, then most likely that the toddler can grow normally. (Meilyasari & Isnawati, 2014)

However, this is not in line with Anisa's research (2012) that there is a significant correlation between birth weight and the occurrence of stunting in toddlers in Kalibaru Village. The impact of babies who have low birth weight will last from one generation to the next generation. Children with Low Birth Weight (LBW) in the future will have less anthropometric measurements in adulthood. Low birth weight babies accompanied by inadequate food consumption, inadequate health services, and frequent infections in children during the growth period cause stunted the growth and produce stunted children. (Anisa, 2012)

## 5. Conclusion

Based on the results of the research, it can be concluded that toddlers who experience stunting in the Pangkalan Kuras 2 Public Health Center Work Area are male in majority between the ages of 24 – 36 months with high parental income, highly educated maternal, non-exclusive breastfeeding history (<6 months), low maternal height history (<145 cm) and LBW birth weight history (<2500 grams). There is no significant correlation between a low level of maternal education, a low maternal height history, and a low birth weight history on the occurrence of stunting. And there is a significant correlation between non-exclusive breastfeeding to the occurrence of stunting.

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