



RELATIONSHIP OF BIOLOGICAL FACTORS WITH INCIDENCE OF STUNTING AT WEST PASAMAN DISTRICTS

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ABSTRACT

Stunting reflects the failure of child growth (growth faltering) in the long term. The impact of stunting that occurs before children are 2 years old can increase the risk of cognitive decline, that is, they tend to have lower IQs than normal children (Ministry of Village Disadvantaged, 2018). This study aims to determine the relationship between biological factors such as Food Intake, Exclusive breastfeeding, Age of mother, Gender of Child and Low birth weight and the incidence of stunting at west Pasaman Districts. The research design used an observational analytic study with a cross sectional comparative approach. The research was conducted in the working area of Puskesmas Sukamenanti Pasaman Barat from June to July 2020. The sample in this research were mothers who had stunting and normal children aged 6-23 months amount 100 people was taken by consecutive sampling technique. After all samples have been collected, data analysis is performed using statistical tests. The results of the study were categorized as food intake, exclusive breastfeeding, age, gender, low birth weight. The conclusion of this study is a significant relationship between the level of energy intake and a history of low birth weight with the incidence of stunting in West Pasaman Districts.

Keywords: Stunting, Biological Factors, Food Intake, Exclusive Breastfeeding, Age, Gender, Low Birth Weight

INTRODUCTION

Stunting is a condition of failure to thrive in children under five years of age as a result of chronic malnutrition so that the child is too short for his age. Deficiencies occur from the time the baby is in the womb and at the beginning after the baby is born, however, stunting in new children appears when they are 2 years old (Secretariat of the Vice President of the Republic of Indonesia, 2017)

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According to UNICEF in 2013, nearly 200 million children in poor countries have stunted growth and development due to malnutrition. Stunting is a problem because it is associated with an increased risk of illness and death, suboptimal brain development, resulting in delayed motor development and mental growth retardation (Unicef, 2013).

Stunting results in a child's brain being underdeveloped. This means that 1 in 3 Indonesian children will lose better opportunities in terms of education and work for the rest of their life. Stunting is not just a short physical size, but rather the concept that the process of stunting coincides with the process of inhibiting growth and development



of other organs, including the brain (Oktarina, Z, 2013).

The bad effects of stunting in the short term can cause disruption of the brain, intelligence, physical growth disorders, and metabolic disorders in the body. Whereas in the long term the bad consequences that can be caused are decreased cognitive abilities and learning achievement, decreased immunity so that they get sick easily, a high risk of diabetes, obesity, heart and blood vessel disease, cancer, stroke and disability in old age, and quality of work. which is not competitive which results in low economic productivity (Kemenkes RI, 2016).

Two districts in West Sumatra, namely Pasaman and West Pasaman, have a fairly high prevalence of stunted children. The prevalence of children under five with short stature in Pasaman was 55.2% and 51.54% for West Pasaman. "This means, out of 100 toddlers born, there are 50 toddlers who grow with the risk of stunting. This condition affects children's development and cognitive development (Profile of West Sumatra Health Office, 2017).

Basic Health Research data, shows that 15,025 toddlers are at risk of stunting in Pasaman and

23,435 children under five in West Pasaman (Riskasdas, 2018). This is supported by data on the target of the national maritime health program in 2018, there are 10 village stunting and the highest stunting rate is in the working area of the Sukamenanti Health Center, which is 25.1% with 399 baduta. (Data on Mass Weighing of West Pasaman Health Office, 2019). Many factors cause stunting in children under five. The direct cause is a lack of food intake and an infectious disease. Other factors are maternal knowledge, wrong parenting, poor sanitation and hygiene and low health services. (Unicef Indonesia, 2013).

This research is based on the phenomena obtained in Community Service conducted in 10 West Pasaman stunting loci villages regarding the Growth and Development Monitoring Room and with this research it is hoped that it can support and provide data to the West Pasaman Health Office and related agencies in preparing programs for handling stunting. The purpose of this study was to determine the causes of stunting which are categorized as biological factors. Biological factors are food intake, exclusive breastfeeding, age, gender, low birth weight.

MATERIAL AND METHODS

This research is an observational analytic study with a cross sectional comparative approach to see biological factors consisting of food intake, exclusive breastfeeding, age, gender, low birth weight and the incidence of stunting.

The population in this study were mothers who had stunting children aged 6-23 months, while for the control, mothers who had normal children under five were taken and a sample of 100 people was taken by consecutive sampling technique. Data were collected by means of a questionnaire conducted by home visit in the Sukamenanti Health Center working area and also made in the form of a google form. Data collection was carried out by interviewing while still applying the covid 19

health protocol (if possible), if not via WhatsApp video call or by zooming the meeting to find out the characteristics of the respondent and observation after the researcher measured the height using a height measuring device (Microtoise) with accuracy. 0.1 cm. . After all samples have been collected, data analysis is performed using statistical tests. Data analysis was performed by univariate and bivariate. Univariate analysis is presented in the form of frequencies and percentages for the Biological Factors variable consisting of food intake, exclusive breastfeeding, age, gender, low birth weight, while the variable incidence of stunting is presented in mean form. Bivariate analysis was conducted to see the relationship between food intake, exclusive breastfeeding,



low birth weight and the incidence of stunting using the chi-square test.

RESULTS

A. Univariate Analysis

Table 1.
Characteristics of Research Subjects Based on food intake, exclusive breastfeeding, age, gender, low birth weight

Variable	f	%
Food intake		
Good	35	35
Bad	65	65
Exclusive breastfeeding		
Not Exclusive breastfeeding	45	45
Exclusive breastfeeding	55	55
Age of mother		
Less than 20 year	24	24
21 – 35 year	56	56
More than 36 year	20	20
Gender		
Man	66	66
Women	34	34
Low birth weight		
BBLR (BBL < 2.500 gram)	38	38
Normal (BBL ≥ 2.500 gram)	62	62

Table 1. Shows that more than half of the respondents (65%) have a bad food intake, 55% have a history of Exclusive breastfeeding,

56% mother's age are 21-35 years old, with the sex of 66% is male and 62% born with normal weight

B. Bivariat Analysis

Table 2.
Relationship food intake, exclusive breastfeeding, low birth weight with stunting.

Variable	Stunting		Normal		OR (95%CI)	p
	f	%	f	%		
Food intake energy						
Low	29	80,5	7	19,5	7,8	0,001
Enough	12	18,75	52	81,25	(2,5 – 29,7)	



Food intake protein						
Low	5		7		2,9	0,491
Enough	13		42		(0,9 – 7,5)	
Exclusive breastfeeding						
Not Exclusive	10	27	27	73	1,7	0,564
Exclusive	17	26,9	46	73,1	(0,7 – 4,8)	
Low birth weight						
BBLR (BBL < 2.500 gram)	10	58,83	7	41,17	12,5	0,002
Normal (BBL ≥ 2.500 gram)	23	27,71	60	72,29	(1,2 -13,8)	

Table 2 shows that there is a significant relationship between the level of energy intake and a history of low birth weight

DISCUSSION

The result of this study is that there is a significant relationship between the level of energy intake and a history of low birth weight with the incidence of stunting in West Pasaman Regency.

Food insecurity was Associated with child stunting in one cross-sectional study, which found lower odds of stunting (AOR 0.70, 95% CI [0.50, 0.99]) in children 0–23 months in households that consumed more than two meals a day (Ramli et al., 2009). Nutrient-rich or nutrient-poor foods—which are more relevant to the category complementary foods—are discussed in further (Torlesse et al., 2016).

Several studies addressed the micronutrient quality of complementary foods in some way, although most did not directly assess dietary intake of complementary foods. Sari et al. (2010) found that households in the highest quintile of animal-source food

with the incidence of stunting in West Pasaman Regency.

expenditure were associated with a decreased odds of stunting in urban poor children (AOR 0.87, 95% CI [0.85, 0.90]) and rural children (AOR 0.78, 95% CI [0.74, 0.81]) 0–59 months, compared with households in the lowest quintile (Sari et al., 2010)

A recent non-RCT in rural Indonesia showed that consumption of small-quantity lipid-based nutrient supplements (SQ-LNS)—which provide micronutrients and macronutrients—over 6 months considerably reduced stunting incidence (RR 0.35) in infants 6–12 months compared with the control group (Muslihah, Khomsan, Briawan, & Riyadi, 2016).

This study also show that 56% mother's age are 21-35 years old. Three cross-sectional studies showed a moderate association between younger maternal age and child stunting (Best et al., 2008; Semba et al., 2011; Semba, Kalm, et al., 2007). In these studies, the odds of



women ≤ 24 years having a stunted child were between 1.09 and 1.23 greater than women ≥ 33 years.

Sari et al. (2010) found the opposite association but did not report the strength of the relationship. Results from Oddo et al. (2012) suggest maternal and child double burden is more likely to occur in older women than in younger women, but this is likely due to greater body mass index in older women, not necessarily a greater prevalence of child stunting

Exclusive breastfeeding : One study found no association between children 0–23 months who began breastfeeding within 1 hr after birth and reduced stunting (Torlesse et al., 2016). Two recent analyses by Rachmi et al. (2016b); Rachmi, Agho, Li, and Baur (2016a) demonstrated that children weaned before 6 months had much higher odds of stunting (AOR 3.16, 95% CI [1.91, 5.23] and AOR 2.98, 95% CI [1.20, 7.41]). The same studies also observed that prolonged breastfeeding was associated with a higher prevalence of child stunting, but there is insufficient evidence in this cross-sectional study to determine a causal

CONCLUSION

The conclusion of this study is that there is a significant relationship between the level of energy intake and a history of low birth weight

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relationship and adequately account for confounding factors.

Low birth weight : IUGR and preterm birth have been strongly associated with child stunting in Indonesia. In a secondary analysis of data collected between 1995 and 1999 in an RCT in rural Indonesia, premature birth was associated with an RR of 7.11 (95% CI [2.07, 24.48]) of stunting in children 24 months (Prawirohartono, Nurdiati, & Hakimi, 2016).

Rachmi et al. (2016b) found that children 24–59 months were less likely to be stunted if at birth they weighed between 2.5 and 3.9 kg (AOR 0.62, 95% CI [0.39, 0.98]) or ≥ 4 kg (AOR 0.49, 95% CI [0.28, 0.87]), compared with children < 2.5 kg in the IFLS. Schmidt et al. (2002) demonstrated that neonatal weight, and particularly neonatal length, was the strongest negative predictors of HAZ and positive predictors of linear growth in infants 0–12 months.

Lastly, Semba, de Pee, Sun, et al. (2008) found a decreased risk of stunting in children 0–59 months in the NSS with greater birth weight (AOR per 100 g 0.935, 95% CI [0.933, 0.937]).

with the incidence of stunting in West Pasaman Regency.

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