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Determinant Stunting Of Underfive Children In Underworking Community Health Center Of Kopelma Darussalam City Banda Aceh

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Abstract

Stunting or short is an indicator of chronic nutritional status that can describe an un optimal growth due to long-term malnutrition Banda Aceh city health office found prevelency stunting figures in toddlers in 2016 to 27.1%. Stunting in toddlers in Banda Aceh is still a community problem. Objective: To know the factors that influence stunting incidents to toddlers in the working area of Kopelma Darussalam health center city of Banda Aceh year 2018. This study used case control design with the population of all under-fives in the work area of Kopelma Community Health Center, the total sample was 45 toddler case samples and 45 toddler control samples. Sampling technique is a technique of matching and simple random sampling. From the results of the study showed that infants with inadequate energy intake and stunting amounted to 13 children (24.5%). Toddlers with inadequate protein intake and stunting amounted to 38 children (71.7%). Toddlers affected by infectious diseases and stunting amounted to 24 toddlers (45.3%). Toddlers with no history of exclusive breastfeeding were 35 infants (66%). Toddlers with a history of LBW and stunting were 12 (22.6%). The conclusion is Factors affecting stunting incidence in toddlers are Energy Intake (p value = 0,8000), protein intake (p value = 0,000, OR = 0.103), infectious diseases (p value = 0.003, OR = 4,046), exclusive breastfed history (p value = 0.011, OR = 2.963), BBLR (p value = 0,026, OR = 4,878).

Keywords: Stunting, Underfive Children, Energy Intake, Protein Intake, Infectious Diseases, Exclusive Breastfed History, Low Birth Weight.

Introduction

Stunting or short stature is an indicator of chronic nutritional status that reflects suboptimal growth due to long-term malnutrition. According to the Decree of the Minister of Health of the Republic of Indonesia No. 1995/MENKES/SK/XII/2010 concerning Anthropometric Standards for the Assessment of Nutritional Status (PSG) in children, short and very short status are determined based on the length-for-age (PB/U) or height-for-age (TB/U) index. The Z-score for the short category is -3 SD to < -2 SD, while very short is < -3 SD (Kemenkes RI, 2011). Globally, in 2011, more than 25% of children under five around 165 million children experienced stunting. In Asia, between 2005–2011, Indonesia ranked fifth for the highest prevalence of stunting (WHO, 2012). By 2016, the number of stunted children under five decreased to 27.5% (8.5% very short and 19% short) (Dinkes, 2017). The prevalence of stunting among children under five in Indonesia remains above the cut-off value (>20%). Aceh is one of the provinces where the stunting rate among children under five exceeds this threshold (>20%). In 2016, the stunting rate among children under five in Aceh was 26.4% (7.6% very short and 18.8% short). Several districts and cities in

Aceh experienced an increase in stunting prevalence, one of which is Banda Aceh City. In 2016, the prevalence of stunting was 27.1% (Dinkes, 2017).

Based on the 2017 report from the Kopelma Darussalam Community Health Center regarding the nutritional status of children under five, 60 children (16%) were found to be stunted (10% very short and 6% short) out of 347 children measured. The prevalence of stunting in Kopelma Darussalam was still higher than that in Jaya Baru Health Center at 3.17% (ranked first) and Meraxa Health Center at 1.25% (ranked second) (Dinkes, 2017).

Nutrient intake affects a person's health status. Adequate nutrition can reduce the risk of certain diseases and nutrition (Prof. Dr. Hardinsyah, MS, Dewa Nyoman Supariasa, 2016). Infectious diseases are one of the causes and have a significant relationship with the nutritional status of children under five based on weight-for-age (BB/U) and height-for-age (TB/U) indicators (Hidayat et al., 2011). A history of exclusive breastfeeding in children aged 12–36 months increases the risk of stunting by 3.7 times (Marlan Pangkong, A. J. M. Rattu, 2013). Low birth weight (LBW) is an important predictor of newborn health and survival and is associated with a high risk for the child (UNICEF, 2010). The purpose of this study is to identify the factors influencing stunting among children under five in the working area of the Kopelma Darussalam Community Health Center, Banda Aceh City, in 2019.

Method

This study is a quantitative research with a case-control design, which is retrospective in nature. The sample ratio was 1:1. The case sample consisted of 45 children under five with height-for-age (H/A) < –2 SD, and the control sample consisted of 45 children under five with H/A > –2 SD in the working area of Kopelma Darussalam Public Health Center, Banda Aceh City. Matching was conducted based on gender and village of residence. The sampling technique used was simple random sampling.

The dependent variable in this study was stunting incidence, while the independent variables were energy intake, protein intake, infectious diseases (ARI and diarrhea), exclusive breastfeeding, and low birth weight (LBW). The types of data collected included primary and secondary data as supporting information. Primary data were obtained through questionnaire interviews with the mothers of the children under five.

Dietary intake data were obtained from the FFQ form, and nutritional status (H/A) was measured using a microtoise and infantometer with an accuracy of 0.1 cm. This study was conducted in the working area of Kopelma Darussalam Public Health Center, Banda Aceh City, from April 9 to May 5, 2019. Data analysis was performed to determine the association between variables and the magnitude of risk (OR) using the Chi-Square Test with a 95% confidence level ($\alpha = 0.05$).

Result and Discussion

Table 1. Univariate Analysis

Variabel	Total Responden	
Independent Variable	**n**	**%**
Kejadian Stunting		
Stunting	45	50
Normal	45	50
	n	**%**

Dependent Variable			
Asupan Energi			
	Kurang	20	22,2
	Cukup	70	77,8
Asupan Protein			
	Kurang	27	30
	Cukup	63	70
Penyakit Infeksi			
	Kurang	20	22,2
	Cukup	70	77,8
Riwayat ASI Eksklusif			
	Tidak	48	53,3
	Ya	42	46,7
Riwayat BBLR			
	BBLR	14	15.6
	Normal	76	84,4

Table 2. Bivariate Analysis

Variabel	Kejadian Stunting		Total		P Value
	Stunting	Normal	N	OR (95% CI)	
	n (%)	n%			
Asupan Energi				1,294	
Kurang	11 (24,4)	9 (20)	20	(0,477-3,510)	0,800
Cukup	34 (75,6)	36 (80)	80		
Asupan Protein				1,112	1,000
Kurang	14 (31.1)	13 (28,9)	27	(0,451-2,740)	
Cukup	31 (68,9)	32 (71,1)	63		
Penyakit Infeksi				4,343	0,006
Ada	20(44,4)	7 (15,6)	27	(1,601-11,779)	
Tidak Ada	25 (55,6)	38 (84,4)	64		
Riwayat ASI Eksklusif				2,480	0,057
Tidak	29 (64,4)	19 (42,2)	48	(1,060- 5,803)	
Ya	16 (35,6)	26 (57,8)	42		
Riwayat BBLR				7,818	0,009
BBLR	12 (26,7)	2 (4,4)	14	(1,636-37,360)	
Normal	33 (73,3)	43 (95,6)	76		

1. Characteristics of Research Subjects

The survey results from 90 respondents showed that the majority of children under five had adequate energy intake, namely 70 children or 77.8%. Most had adequate protein intake, 63 children or 70%. The majority had no history of infectious diseases, 63 children or 70%. Most did not have a history of exclusive breastfeeding, 48 children or 53.3%. The majority were normal (in height-for-age) with 76 children or 84.4%. The univariate analysis is presented in Table 1.

2. Effect of Energy Intake on Stunting Incidence

Stunting among children with inadequate energy intake was more frequently found in the stunting group

(cases) at 24.4%, compared to the normal group (controls) at only 20%. Statistical test results showed a p-value = 0.800, with OR = 1.294, CI = 0.477–3.510. It can be concluded that there is no significant effect of energy intake on stunting in children under five.

Food intake is not the only factor causing stunting in children. Food intake and illness, especially infectious diseases, are direct factors that influence each other in relation to malnutrition (Trihono et al., 2015). Infection is one of the factors that affect a child's nutritional status, in addition to energy and nutrient intake (Prof. Dr. Hardinsyah, MS, Dewa Nyoman Supariasa, 2016). The results of this study showed that there was no effect of energy intake on the incidence of stunting among toddlers. This is due to the presence of infectious diseases and comorbidities such as fever and cough, which disrupt the body's nutrient absorption process.

These findings are consistent with research conducted by Sari & Medhyna (2019), which found that food intake is not a factor in the occurrence of stunting. Other factors, such as infectious diseases and comorbidities, can disrupt and inhibit the body's energy absorption process. Studies from Bangladesh and the Philippines have shown that a child's energy intake is not associated with child growth (Stephenson et al., 2010). This differs from research conducted by Lestari et al., (2014) which stated that the level of energy adequacy is associated with the incidence of stunting.

3. Effect of Protein Intake on Stunting Incidence

Stunting among children with inadequate protein intake was more frequently found in the stunting group (cases) at 31.1%, compared to the normal group (controls) at only 28.9%. Statistical test results showed a p-value = 1.000, with OR = 1.112, CI = 0.451–2.740. It can be concluded that there is no significant effect of protein intake on stunting in children under five.

Growth in children requires a greater protein intake compared to adults whose growth phase has ended. Children who experience prolonged protein deficiency are at risk of impaired height growth (Fauzi, 2019). The results of this study showed that there was no effect of protein intake on the incidence of stunting in toddlers. This is consistent with the study by Sugiastuti et al (2010) which stated that there was no relationship between protein intake and nutritional status TB/U and BB/TB.

In contrast, a study by Anisa, (2012) reported a significant relationship between protein intake and the incidence of stunting in toddlers. The reason for the lack of influence of protein intake on stunting, according to the researchers' field observations, is that the average protein intake among toddlers has already met the 2013 RDA standard (<80% of the RDA).

4. Effect of Infectious Diseases (ARI or Diarrhea) on Stunting Incidence

The incidence of stunting among toddlers with a history of infectious diseases (ARI or diarrhea) was more frequently found in the stunting group (cases), at 44.4%, compared to only 15.6% in the normal group (controls). Statistical testing yielded a p-value of 0.006 with an OR = 4.343 and CI = 1.601–11.779. This indicates that there is an effect of infectious diseases (ARI or diarrhea) on the incidence of stunting in toddlers. Children with a history of infectious diseases are 4.343 times more likely to become stunted compared to children without a history of infectious diseases (ARI or diarrhea).

Infectious diseases can hinder linear growth by decreasing food intake and nutrient absorption, causing

nutrient loss, increasing metabolic needs, and inhibiting the transfer of nutrients to tissues (Wanda et al., 2021). Infectious diseases can lead to malnutrition in children (Trihono et al., 2015). The results of the study showed that infectious diseases (acute respiratory infections [ARI] or diarrhea) had an effect on the incidence of stunting in toddlers. Children suffering from infectious diseases (ARI or diarrhea) were 4.343 times more likely to become stunted compared to children who did not suffer from infectious diseases (ARI or diarrhea). This finding is consistent with the study by Putra, (2016), which stated that infectious diseases have an effect on the incidence of stunting, with children experiencing infectious diseases being 21 times more likely to suffer from stunting.

However, this differs from the study by Chovinda Ayu Safitri, (2017) which found no significant association between diarrheal disease and stunting. Energy intake is another factor contributing to stunting. Based on field observations, the reason infectious diseases (ARI or diarrhea) influence stunting is that the occurrence of ARI and diarrhea was often worsened by chronically inadequate protein intake among some subjects. Protein, in fact, is a nutrient that plays an important role in the immunity of toddlers.

5. Effect of Exclusive Breastfeeding History on Stunting Incidence

Stunting among children without a history of exclusive breastfeeding was more frequently found in the stunting group (cases) at 64.4%, compared to the normal group (controls) at only 42.2%. Statistical test results showed a p-value = 0.057, with OR = 2.480, CI = 1.060–5.803. It can be concluded that there is an effect of exclusive breastfeeding history on stunting in children under five. Children without a history of exclusive breastfeeding are 2.480 times more likely to be stunted compared to those with such a history.

There is a tendency for infectious diseases such as diarrhea and respiratory illnesses to more easily affect infants who receive insufficient breast milk and are given complementary foods or formula too early, as breast milk functions as an anti-infective agent. This condition can therefore increase the risk of stunting (Flores et al., 2020). The results of the study showed that exclusive breastfeeding had an influence on the incidence of stunting among toddlers. Children who were not exclusively breastfed had a 2.480 times higher risk of becoming stunted compared to children who were exclusively breastfed.

This finding is consistent with Fitri, (2013) study, which revealed that breastfeeding status is a risk factor for stunting. In contrast, research by (Marlan Pangkong, A. J. M. Rattu, 2013) found no significant association between exclusive breastfeeding and stunting among toddlers. Based on the researcher's field observations, one reason for the influence of protein intake on stunting incidence is that some mothers did not provide exclusive breastfeeding, instead combining breast milk with formula milk, and in some cases, complementary feeding (MP-ASI) was introduced at an early age.

6. Effect of Low Birth Weight (LBW) on Stunting Incidence

Stunting among children with LBW was more frequently found in the stunting group (cases) at 26.7%, compared to the normal group (controls) at only 4.4%. Statistical test results showed a p-value = 0.009, with OR = 7.818, CI = 1.636–37.360. It can be concluded that there is a significant effect of LBW on stunting in children under five. Children with LBW are 7.818 times more likely to be stunted compared to normal birth weight children.

Birth weight is associated with long-term growth and development. Therefore, the impact of low birth weight (LBW) is growth failure (UNICEF, 2010). A baby born with LBW will have difficulty catching up with early growth.

This delayed growth can lead to stunting (Aridiyah et al., 2015). The study results show that LBW has an effect on the incidence of stunting in toddlers. Children with LBW are 4.878 times more likely to become stunted compared to children with normal birth weight.

This study is in line with Putra, (2016) who stated that LBW is associated with stunting in toddlers aged 12–60 months, with LBW children having three times the risk of stunting. However, it differs from other studies stating that LBW is not a factor in stunting among toddlers. Adequate nutritional intake and an environment that supports growth can prevent LBW children from experiencing stunting in the future(Sundari & Nuryanto, 2016)

Conclusion

There is an influence of infectious diseases, history of exclusive breastfeeding, and low birth weight (LBW) on the incidence of stunting among toddlers in the working area of Kopelma Darussalam Public Health Center, Banda Aceh City, in 2019. Mothers are encouraged to pay close attention to their toddlers' growth and development by providing adequate nutrition, especially protein, to meet their needs. Additionally, community health workers and Posyandu cadres in the Kopelma Public Health Center area are expected to intensify Posyandu programs, such as promoting and educating about exclusive breastfeeding.

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