

Original Article

History of Birth Weight and Birth Length with The Incidence of Stunting in Children Aged 0-59 Months in Cinangka Depok

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ABSTRACT

In Indonesia, the frequency of child stunting has remained high over the last decade, with an estimated 37 percent of children stunted at the national level. The prevalence of stunting in Depok accounted for 3.5% of the incidence of stunting, which means that as many as 3,675 of 105,127 children under five experienced stunting in Depok. Data from the Cinangka Primary Health Center, Depok, in 2022 showed 158 children experiencing stunting. This study aims to see whether there is a relationship between birth weight and body length with the frequency of stunting in children aged 0-59 months. With a cross-sectional study approach, primary data were obtained directly from 56 samples of children aged 0-59 months who were stunted by anthropometric examination and interviews with questionnaires. The analysis used Chi-Square statistical test. The result showed that the prevalence of stunting, low birth weight, and low birth length were 80.4%, 25%, and 48.2%. The study found no relationship between birth weight and birth length with the incidence of stunting in children aged 0 to 59 months at the Cinangka Primary Health Center, Depok. Stunting was caused by a complex set of circumstances that included not just the child's birth weight and length but also their nutritional intake, disease exposure, and therapy. The study's outcomes show that comprehensive treatments are needed to improve the stunting incidence in Cinangka Primary Health Center, Depok. Multilevel approaches should be used in interventions to address numerous elements at all levels, from the community to the individual.

Keywords: Birth Length, Birth Weight, Stunting

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INTRODUCTION

Stunting is still a significant source of nutritional problems in Indonesia. The flow of stunting travel rates fluctuates in several health data research results. According to the Basic Health Research Data, in 2007, the prevalence of stunting in Indonesia was 36.85, in 2010, it was 35.6%, in 2013, it was 37.2%, and in 2018 it was 30.8%. It is estimated that after the first year of the Covid-19 pandemic, the incidence of stunting worldwide will increase by 15% (7 million children).¹ Based on the Indonesian Nutrition Status Study (SSGI) survey, the target of stunting prevalence in Indonesia in 2024 is to decrease to 14%. Based on the latest data on stunting by SSGI, the prevalence in 2021 is 24.4%, which means that the stunting rate in Indonesia for the next two years needs to be reduced by approximately 10% to reach the targeted figure

Based on SSGI data, the prevalence of stunting under five in West Java Province was 24.5% when compared to the prevalence of stunting under five in the previous year; it was found that there was a downward trend which was initially 26.2% in 2019. However, there was a downward trend, but this figure still did not reach the stunting reduction target in West Java Province. The prevalence of stunting in the city of Depok in 2021 is 3.5 percent, which is 3,675 out of 105,127 toddlers.² Based on data obtained by e-PPGBM in the Cinangka Primary Health Center, Depok City, 158 children aged 0-59 months experience stunting. Although there is a trend of decreasing stunting rates in West Java Province, the Depok City government still makes stunting one of the issues that need to be addressed by the performance of the Depok City government.

Stunting is caused by various variables, not limited to inadequate nutrition encountered by pregnant women and children under five. Factors that cause stunting can be classified into direct and indirect factors. According to UNICEF 2012, the direct factors causing stunting are insufficient food intake and children's history of infectious diseases.³ The direct cause of children experiencing stunting is because the child is already given colostrum and exclusive breastfeeding but not yet balanced with adequate complementary feeding.⁴

According to Proverawato and Isnawati 2010, babies with Low Birth Weight (LBW) are defined as babies born with a weight of fewer than 2,500 grams regardless of gestational age.⁵ Ideally, the baby's weight at birth is not less than 2500 grams, and the baby's body length is not less than 48 cm. Every newborn baby will be measured for body weight and length and monitored continuously, especially in the golden period of growth, which is 0 to 2 years.⁶ Based on research conducted by Atikah Rahayu, children with a past LBW have a 5.87 times greater chance of stunting.⁷

Stunting can occur due to indirect factors such as maternal height, participation in preschool education, parental separation, number of family members, health insurance, socioeconomic status, parental education level, alcoholic father, and water and sanitation facilities. Socioeconomic status is the most common indirect factor in all countries, followed by the education of mothers and fathers that affects knowledge of optimal nutritional intake for child growth.⁸ The goal of this study, which will take place in 2022 at the Cinangka Primary Health Center in Depok City, is to evaluate the association between birth weight and birth length and the occurrence of stunting in children aged 0 to 59 months.

METHOD

This research is a quantitative research using a cross-sectional study design. This research is sourced from primary data collected directly using anthropometric measurements and interviews with questionnaires. The population in this study was 158 children registered in the integrated healthcare center data. Data on stunting children was obtained from the e-PPGBM (Community Based Nutrition Recording and Reporting) at the Cinangka Primary Health Center. The sample in this study was taken by purposive sampling,

where the research subjects are children with stunting category based on e-PPGBM data and visited Integrated Health Post during the data collection process. The data collection process was carried out directly at 8 out of 11 Integrated Health Posts in the working area of the Cinangka Primary Health Center. The inclusion criteria in this study were stunting children aged 0-59 months who visited the Integrated Health Post during the data collection process and were willing to be interviewed. Based on the inclusion criteria, a sample of 56 children was obtained.

The independent variables are age, birth weight, and birth length. Meanwhile, the dependent variable is weight and height at the measurement time. The chi-square test with a 95 percent Confidence Interval (CI) value was used for univariate and bivariate data analysis. The level of significance used is 0.05 or 5%. In addition, data analysis is also assisted by using data analysis software.

RESULTS

Univariate Analysis

This study involved 56 children aged 0-59 months who were indicated to be stunting in the Primary Health Center, Depok City, in 2022. Based on the results of the univariate analysis, in table 1 shows the distribution characteristics and frequencies related to nutritional status according to the height for age index of children aged 0-59 months.

Table 1. Distribution of the frequency of nutritional status, birth weight, and birth length according to the Height for Age index of children aged 0 to 59 months

Variable		n	%
Nutritional Status	Normal	11	19,6
	Short	23	41,1
	Very Short	22	39,3
Birth Weight	< 2500 gram	14	25
	≥ 2500 gram	42	75
Birth Length	< 48 cm	27	48,2
	≥ 48 cm	29	51,8

The nutritional health of children aged 0-59 months at the Cinangka Primary Health Center, Depok City in 2022 was classified as poor based on the height for age index. (41.1%) was in a short category, as many as (39.3%) were in the very short category, and as many as (19, 6%) was categorized as usual. Thus, at the

Cinangka Primary Health Center, the prevalence of stunting in children aged 0 to 59 months is 80.4 percent, or 45 children.

Based on the study's results, the distribution of birth weight for children aged 0-59 months at the Cinangka Primary Health Center, Depok City, in 2022 is presented explicitly in table 1. 14 children were born with a birth weight of fewer than 2500 grams. Thus, in 2022, the Cinangka Primary Health Center in Depok City will have a 25% prevalence of low birth weight (2500 grams) in children aged 0 to 59 months. Based on the results of the study, the distribution of birth length for children aged 0 to 59 months at the Cinangka Primary Health

Center, Depok City in 2022 is specifically presented in table 1. There are 27 children with a child's birth length category < 48 cm. Thus, the prevalence of low birth length (< 48 cm) in children aged 0 to 59 months at the Cinangka Primary Health Center, Depok City in 2022 is 48.2%.

Bivariate Analysis

The bivariate analysis results on the incidence of stunting are presented explicitly in table 2. A proportion of 11 children having a history of low birth weight, and 34 children having a history of normal birth weight.

Table 2. Distribution of Birth Weight dan Birth Length by Incidence of Stunting in Children Age 0 to 59 Months

Variable	Incidence of Stunting				Total		p	OR (95% CI)	
	Yes		No		N	%			
	n	%	n	%					
Birth Weight	<2500gr	11	78.6	3	21.4	14	100	1.000	0.863 (0.194-3.832)
	≥2500gr	34	81	8	19	42	100		
Birth Length	<48 cm	24	88.9	3	11.1	27	100	0.225	3.048 (0.715-12.998)
	≥48 cm	21	72.4	8	27.6	29	100		

The Chi-Square statistical test for indicator birth weight generated a p-value of 1,000 ($P > 0.05$) for the results. Thus, the null hypothesis was not rejected, implying any link between birth weight and the frequency of stunting in children aged 0 to 59 months at the Cinangka Primary Health Center in Depok City in 2022.

The distribution of birth length by stunting incidence is presented explicitly in table 2. According to our data analysis, 45 out of 56 children aged 0 to 59 months at the Cinangka Primary Health Center, Depok City in 2022 were stunted, with a proportion of 24 children having a low birth weight and 21 children having a normal birth length history. Furthermore, the Chi-Square statistical test yielded a p-value of 0.225 ($P > 0.05$). As a result, it is possible to conclude that the null hypothesis was not rejected, which means that there is no relationship between birth length and stunting in children aged 0 to 59 months at the Cinangka Primary Health Center, Depok City in 2022.

DISCUSSION

Relationship of Birth Weight to Stunting Incidence

According to the findings of this study, there is no link between birth weight and the

incidence of stunting in children aged 0 to 59 months at Depok City's Cinangka Primary Health Center. Table 4 shows that 45 children aged 0 to 59 months experienced stunting. This happens because the incidence of stunting is measured when the child is 0 to 59 months old. Meanwhile, the baby's weight was measured at the time the baby was born, of which children aged 0 to 59 months at the Cinangka Health Center at the time of birth had a normal weight (≥ 2500 grams) as many as 42 children. In line with Antun Rahmadi's research, he found no relationship between birth weight and stunting in Lampung Province, with a p-value of 0.966. Stunting is a condition of lack of nutritional status based on the height for age index (TB/U) thus, birth weight is not directly related to the incidence of stunting.⁹ Although in this study, birth weight had no relationship with the incidence of stunting, birth weight was generally associated with fetal, neonatal, and long-term morbidity, growth, and development. Children with low birth weight usually have abnormal anthropometric measurements during their development.⁷

Meanwhile, other research also mentions a significant relationship (p-value = $0.00 < 0.05$) between low birth weight babies and the incidence of stunting.¹⁰ Factors that cause babies to be born with low birth weight

conditions are parity, gestational distance, and maternal age.¹¹ The factor causing LBW is the mother's anemia condition, which causes insufficient iron to be absorbed from the daily diet to form red blood cells, which will reduce tissue metabolism and hinder fetal growth.¹² If LBW is not treated, babies born will experience growth and development delays such as stunting, and in the long term, LBW babies are at a higher risk of suffering from diabetes or heart disease.

Relationship of Birth Length to Stunting Incidence

According to the findings of this study, there is no link between birth length and the incidence of stunting in children aged 0 to 59 months at Depok City's Cinangka Primary Health Center. Table 5 shows that 45 children aged 0 to 59 months experienced stunting. In fact, if you look at table 3, the proportion of children born shortly is only 27, while the proportion of children born with normal body length is 29. Based on these data, it means that there is an increase in the incidence of stunting from birth to 59 months of age. From birth to 59 months of age, other indications affect the child's growth and development so that the child experiences stunting. This is because the use of the height for age index is not optimal as an indicator in monitoring child growth. This results in a lack of attention to the development of the child's height.

The length of the baby's birth impacts subsequent growth, such as the incidence of stunting. One of the risks of children experiencing stunting is that babies are born with low body lengths. The results show that 39 toddlers (46.4%) in Jombang Regency experienced stunting with chi-square analysis $p = 0.001 < 0.005$.¹³ Babies with low birth length have small body proportions so that the volume capacity of the child's brain will also decrease, which causes the child to have less intelligence.¹⁴ Babies born shortly can be caused by various factors, such as stunted fetal growth this is due to a poor economy, disease, and malnutrition experienced by pregnant women from the beginning to the end of pregnancy.¹⁵

Besides that, the incidence of stunting in children is caused by multiple factors, including household and family factors, inadequate complementary feeding, non-exclusive breastfeeding, and a history of infectious

diseases. Therefore, the solution to reducing the stunting rate needs to be carried out in a multi-sectoral manner. Based on this research, the researcher suggests that the Cinangka Primary Health Center health workers provide the best services, such as monitoring toddlers' growth and providing additional food at every Integrated Services Post activity. In addition, the Cinangka Primary Health Center needs to work with health cadres to coordinate with parents to ensure that every child gets good parenting to fulfill the nutrition.

CONCLUSION

According to research, the prevalence of stunting in children aged 0 to 59 months at the Cinangka Primary Health Center in Depok City in 2022 will be 80.4 percent, with a prevalence of LBW (2500 gram) of 25 percent and a prevalence of low birth length (48 cm) of 48.2 percent. At the Cinangka Primary Health Center in Depok City in 2022, statistical analysis results suggest no significant relationship between birth weight and birth length and the frequency of stunting in children aged 0 to 59 months.

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CONFLICT OF INTEREST

The authors declared that there is no conflict of interest.

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