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RELATIONSHIP OF BIRTH WEIGHT AND BIRTH LENGTH WITH THE INCIDENCE OF STUNTING

Yulia Rahmawati Wibowo Putri[1]*, Sri Mulyani[2], Budiyanti Wiboworini[1]
[1]Nutrition Science Department, Postgraduate Program, Universitas Sebelas Maret, Jl. Ir. Sutarmi 36A, Surakarta, Central Java 57126, Indonesia
[2]Faculty of Medicine, Universitas Sebelas Maret, Jl. Ir. Sutarmi 36A, Surakarta, Central Java 57126, Indonesia
*yuliarahmawwp26@gmail.com

ABSTRACT
Stunting is a malnutrition problem that is often found in children under five. Stunting can cause a decrease in endurance, intelligence and can cause growth disorders. Objective: This study aims to determine the relationship between the history of birth weight and birth length of children aged 6-24 months with the incidence of stunting at Purwosari Health Center, Surakarta. Method: Analytical observational research with a cross sectional approach using secondary data sourced from nutritional status data of children aged 6-24 months at Purwosari Health Center, Surakarta. Results: The results of the analysis of the relationship between birth weight and the incidence of stunting obtained a p-value = 0.025, the relationship between birth length and the incidence of stunting obtained a p-value = 0.001. Conclusions: There is a significant relationship between birth weight and birth length with the incidence of stunting.

Keywords: birth weight; birth length; stunting

INTRODUCTION
Stunting is a condition of toddlers who have a body length or height less than their age. Stunting shows a picture of growth failure of toddlers characterized by a z-score value of height for age or length for age (TB/U or PB/U) less than -2 SD (Kementrian Kesehatan RI, 2020). Stunting is a chronic nutritional problem in which inadequate nutrition for toddlers during the womb until the age of 24 months or often known as the first 1000 days of life (Aditianti et al., 2021; Sutarto et al., 2018). Stunting is associated with acute health complications, which can lead to increased child morbidity and mortality, obesity and an increase in non-communicable diseases (Voth-Gaeddert et al., 2018). Stunting in children will cause metabolic disorders, impaired intelligence development and stunted physical growth (Wulandari et al., 2019).

In 2020, a reported 149.2 million children in the world under the age of 5 suffered from stunting (WHO, 2022). Based on a report from the Asian Development Bank (ADB), Indonesia has the second highest number of stunted children in Southeast Asia with a prevalence of 31.8% in 2020. The results of the Indonesian Nutrition Status Survey (SSGI) in 2022, the national stunting percentage has decreased to 21.6% from 27.7% in 2019. Although it has decreased, the prevalence of stunting in Indonesia is still a problem because the prevalence is still above 20% (Kementerian Kesehatan RI, 2020). SSGI data in 2022, shows that Central Java Province ranked 20th regarding stunting cases nationally with a prevalence of 20.8%. The prevalence of stunting in Surakarta City based on SSGI 2022 data is 16.2%, ranking 18th in the Central Java region.

Stunting is caused by many factors, one of the factors closely related to the incidence of stunting in children aged 0-24 months is birth weight and length (Svefors et al., 2020). ow birth weight babies (LBW) are babies born weighing less than 2,500 grams. LBW babies have a 5.87 times risk of stunting. LBW babies are at greater risk of experiencing growth disorders and will continue if not balanced with providing more stimulation (Devriany et al., 2018). Babies born with low body

weight are at greater risk of malnutrition (Illahi, 2017). In infancy to toddlerhood, body weight and length are useful as benchmarks for monitoring physical growth and nutritional status which are closely related to infant growth (Elsira, 2019; Vargas-Terrones et al., 2019).

In addition to birth weight, birth length is another risk factor for stunting. Birth length is one of the factors that describe the nutritional status of babies while in the womb. Low body length indicates a nutritional deficiency due to energy and protein deficiencies suffered in the past (Sawitri et al., 2021). In addition, the mother's condition during pregnancy includes stress factors, nutritional adequacy also affects fetal growth and development (Dorélien, 2015). Infants with short birth length have a 3 times greater risk of stunting (Amaliah et al., 2016). Stunting has an impact on the country's economy and development, because the potential of human resources with stunting is lower in quality than those without stunting (Oktarina & Sudiarti, 2013). Stunting affects children's long-term and short-term health (Vonaesch et al., 2017). The short-term impact of stunting is that children under five are susceptible to illness due to decreased endurance, physical growth is disrupted and affects intelligence and mental development. Failure of child growth in the first two years of life can lead to decreased intelligence, psychomotor disorders, motor skills and increased susceptibility to infection (Pehlke et al., 2016). After two years, stunted toddlers have a low likelihood of catching up with their delayed height growth (Desmond & Casale, 2017). Birth weight and birth length of children are the dominant factors in influencing the incidence of stunting. This study aims to determine the relationship between birth weight and birth length with the incidence of stunting in children aged 6-24 months at Purwosari Health Center, Surakarta.

METHOD

This study is an analytic observational study with a cross sectional design. This study uses secondary data from reports on the nutritional status of children aged 6-24 months in the Purwosari Health Center working area. The data taken were birth weight, birth length, age, gender, and TB/U nutritional status data.

RESULTS AND DISCUSSION

Table 1.
Characteristics of Respondent (n= 105)

Characteristics	f	%
Age		
6-11	28	26,7
12-24	77	73,3
Gender		
Female	54	51,4
Male	51	48,6
Birth weight		
Low	2	1,9
Normal	103	98,1
Birth length		
Short	61	58,1
Normal	44	41,9
Stunting		
Stunting	15	14,3
Not stunted	90	85,7

Table 1 shows the distribution of respondent characteristics of children aged 6-11 months as many as 28 (26.7%) and children aged 12-24 months as many as 77 (73.3%). Children with female

gender were 54 (51.4%) and boys were 51 (48.6%). Children with a history of low birth weight were 1.9% and children with a history of normal birth weight were 98.1%. Children with a history of short birth length were 58.1% and children with a history of normal birth length were 41.9%. And children who experienced stunting were 15 children (14.3%), children who did not experience stunting were 90 children (85.7%).

Table 2.
Spearman Test Results of the Relationship between Birth Weight and Birth Length with the Incidence of Stunting at Purwosari Health Center, Surakarta (n=105)

Variable	Stunting	Description
	P	
Birth weight	0,025	there is a relationship
Birth length	0,001	there is a relationship

Table 2 shows the results of the analysis of the relationship between birth weight and the incidence of stunting obtained a p-value = 0.025 which means there is a relationship between birth weight and the incidence of stunting and the relationship between birth length and the incidence of stunting obtained a p-value = 0.001 which means there is a relationship between birth length and the incidence of stunting.

Body weight is one of the indicators of newborn health. It is a commonly used parameter to describe fetal growth during pregnancy. Low birth weight (LBW) is a health indicator related to malnutrition, stunting, disease and death. LBW is defined as a baby with a birth weight < 2500 grams (WHO, 2014). Reduced body weight causes nutrient deficiencies, over a long period of time resulting in nutrient stores being depleted to meet needs resulting in stunting (Nainggolan & Sitompul, 2019). Babies born below standard weight will have difficulty catching up with growth. Lagging growth will result in children experiencing stunting (Murti et al., 2020). According to Nainggolan and Sitompul (2019), stunting research, toddlers with LBW have a 25 times risk of stunting. Other studies have also shown that toddlers born with normal weight are at lower risk of stunting (Murti et al., 2020; Nasution et al., 2014). The results of the analysis with the Spearman test of the relationship between birth weight and the incidence of stunting obtained a p-value = 0.025, which means that there is a relationship between birth weight and the incidence of stunting. The results of research by Akib et al., (2022) show that there is a relationship between birth weight and the incidence of stunting in toddlers. The results of this study are also in line with research conducted Sawitri et al., (2021), which states that birth weight and birth length are related to the incidence of stunting in toddlers.

A baby's weight at birth affects the child's subsequent growth. Children with a history of low birth weight are at risk of developmental disorders (Akbar et al., 2023). Babies who are born with low body weight will have a risk of growth disorders, especially in the incidence of stunting. This statement is supported by Rachmi et al., (2016), that low birth weight babies are closely related to the incidence of stunting. So it is very important to pay attention to the fulfillment of nutritional intake in 1000 HPK children in order to prevent LBW and reduce cases of stunting. If children with low birth weight receive adequate nutritional intake, normal growth can be pursued (Nainggolan & Sitompul, 2019). Birth length is also another contributing factor to stunting. Children's height is influenced by birth length and affects child development (Indriani et al., 2021). The birth length of a normal baby is around 48-52 cm, if <48 cm, it is considered short (Trihono et al., 2015). Short toddlers have a 2.47 times risk of stunting (Indriani et al., 2021; Islam et al., 2018).

The results of the Spearman test of the relationship between birth length and the incidence of stunting obtained a p-value = 0.001, which means that there is a relationship between birth length and stunting at Purwosari Health Center, Surakarta. The results of this study are in line with Amaliah et al., (2016) dan Rahmawati, (2020), that birth length is associated with the incidence of stunting. According to Partap et al., (2019), infant birth length is influenced by maternal age at delivery, comorbidities and maternal nutritional intake during pregnancy. Children whose birth length is short are at 3 times greater risk of stunting and developmental delays. Birth length can affect the incidence of stunting because babies experiencing growth faltering from an early age show the risk of experiencing growth faltering in the next age period so that they are unable to grow optimally (Wellina et al., 2016).

CONCLUSION

There is a significant association between birth weight and birth length with the incidence of stunting in children aged 6-24 months at Purwosari Health Center, Surakarta.

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