

## The relationship between low birth weight and the incidence of stunting in children aged 24-59 month in Wonomerto sub district

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### Abstract

Stunting is a condition of short toddlers with a height z-score according to age less than -2 SD. Stunting can be caused by direct factors such as lack of nutritional intake, as well as factors not directly like the environment and family, one of which is low birth weight. Wonomerto sub-district occupies the second position top with the highest incidence of stunting. The purpose of this study was to analyze the relationship between body weight low birth with the incidence of stunting in children aged 24-59 month in Wonomerto sub-district. This research uses quantitative methods with the type of research that conducted observationally with a cross-sectional study design. Population in the study are all mothers and toddlers aged 24-59 months in Wonomerto District that is 2,441 toddlers. While the size of the study sample was 97 toddlers which is taken with a multistage random sampling technique. Dependent variables namely the incidence of stunting, while the independent variable is low birth weight. The data collected was obtained from the results of measurements, visits to the puskesmas and respondent interviews. The data analysis used was univariate and bivariate were tested using frequency distribution as well as the chi-square test. The results showed that more than one-third of children (toddlers) stunted (39.2%), most children (toddlers) are born severely normal body is more than 2500 grams (83.5%), and more than a third of mothers toddlers have a short stature that is less than 150 cm tall (38.1%). Statistical tests show that there is a significant relationship between weight low birth body ( $p = 0.008$ ) with incidence stunting. Therefore, the nutrition of pregnant women needs to be considered.

**Keywords:** Stunting; Low birth Weight; Mother; Children

### 1. Introduction

Stunting is a major nutritional problem faced by many countries developing in the world, including Indonesia (1). Stunting often is associated with greater mortality and morbidity rates so that it can affect the quality of human resources, therefore this condition becomes one indicator of health problems that have an impact on the progress of a country. According to WHO, stunting is a condition of failure to thrive in toddlers who caused by chronic lack of nutrient intake and infectious diseases that occurs repeatedly. The condition of stunting can be indicated by a z-score height according to age (TB / U) which is below -2 SD (2).

Stunting can become a health problem if its prevalence reaches 20% or more, it becomes a severe problem if the prevalence is 30% to 39%. While if the prevalence has reached or exceeded 40%, it can be very serious health problems (2). The prevalence of stunting in the world in 2017 it reached 22.2%, which is around 150.8 million children under five experienced stunting, where more than half of stunted children are from Asia (55%) and more than a third of them are from Africa (39%)(3). Although numbers this has decreased compared to 2000, the prevalence was 32.6%, but stunting is still a problem health that needs special attention because stunting rates are higher than other nutritional problems such as underweight (BB/U), wasted (BB/TB), and overweight (4).

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Indonesia is a developing country with a stunting rate that is still tall. In 2017, WHO ranked Indonesia 3rd the largest contributor to stunting rates in the South East Asia Regional (SEAR) with an average stunting prevalence in 2005-2017 of 36.4%. The year 2021 shows that the stunting rate in Indonesia it is currently 24.4% (4). The figure is already decreased when compared to data in 2019, namely by 27.7% (5). From the average achievement per year, it is known that the decrease in stunting rates by 2.0% per year from 2013-2021. To achieve the RPJMN target (Plan National Medium-Term Development) of 14% needs to be achieved reduction in stunting by 2.7% per year with all interventions that carried out, especially in 27 provinces with Acute-Chronic (stunted) nutrition problems  $\geq 20\%$  and wasted  $\geq 5\%$  including East Java province.

The incidence of stunting in East Java province is inseparable from the 38th contribution regencies and cities with high stunting cases, one of which is Probolinggo Regency. In 2021, the prevalence of stunting in Probolinggo district decreased to 23.3%, slightly lower than the figure stunting in East Java. Nonetheless, the figure puts Probolinggo Regency is in the top 15 highest stunting rates in East Java (4). One of the sub-districts that has high stunting cases in Probolinggo Regency is Wonomerto. Wonomerto District is the sub-district with the 2nd highest stunting rate in Probolinggo Regency after Kuripan District. According to the data, the prevalence of stunting in Wonomerto sub-district amounted to 28.08%, which is around 893 children under five experiencing stunting of 3180 children under five measured (6).

Stunting can be caused by direct factors such as lack of nutritional intake, as well as factors not directly like the environment and family, one of which is low birth weight. Low Birth Weight is a condition where babies are born with a body weight of  $< 2500$  grams. In 2021, prevalence low birth weight in Indonesia is 6.6% and East Java is at 6.4% (4). Although the prevalence of low birth weight in East Java is below the national figure However, the difference between the two is only 0.2%, so special attention needs to be paid about low birth weight incident in East Java.

Low Birth Weight can be caused by many factors such as the condition of the mother during pregnancy (pregnancy adolescents, malnutrition), twins, fetal abnormalities, congenital conditions, and placental disorders (7). In Probolinggo Regency as much as 5.38% or about 974 babies were born with low birth weight from 18,097 babies weighed (6). According to Rahmady in Sinaga's research, babies who born with less weight than should experience delay in growth and development in the period after the baby born compared to babies born with normal weight (8). Therefore, researchers are interested in examining the relationship between low birth weight and the incidence of stunting in Children Aged 24-59 Month in Wonomerto Sub District.

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## 2. Material and methods

This research uses quantitative methods with the type of research that conducted is observational, so respondents are not given intervention or any treatment. This study used a cross sectional design to study the relationship of risk factors to effects. Population in the study are all mothers and toddlers aged 24-59 months in Wonomerto District Probolinggo Regency which has a birth record in Wonomerto District that is 2,441 toddlers. While the size of the study sample was 97 toddlers which is taken with a multistage random sampling technique. Dependent variables namely the incidence of stunting, while the independent variable is the low birth weight. The data collected was obtained from the results of measurements, visits to the puskesmas and respondent interviews. The data analysis used was univariate and bivariate were tested using frequency distribution as well as the chi-square test.

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## 3. Results and discussion

### 3.1. The Relationship between Low Birth Weight with the Incidence of Stunting in Children Aged 24-59 Month in Wonomerto Sub District

Based on the results of the study, it can be seen that there were 11 (28.9) children who had a history of low birth weight stunting and 5 (8.5%) low birth weight children are not stunted. In addition, there are 27 (71.1%) children stunting but have a history of birth with normal weight conditions.

Based on the results of the analysis using the chi-square test in this study  $P \text{ value} = 0.008 < \alpha = 0.05$ . This indicates that  $H_0$  is rejected while  $H_1$  is accepted, meaning that there is a significant relationship between history low birth weight with the incidence of stunting in children aged 24-59 months in Wonomerto sub-district.

**Table 1** Distribution the Incidence of Stunting by Low Birth Weight in Children Aged 24-59 Month

Low Birth Weight	Incidence of Stunting				Total	
	Yes		No		n	%
	n	%	n	%		
Yes	11	28.9	5	8.5	16	16.5
No	27	71.1	54	91.5	81	83.5
Total	38	39.2	59	60.8	97	100

Source: Primary Data, 2022

**Table 2** The Relationship between Low Birth Weight and the Incidence of Stunting in Children Aged 24-59 Month

	Value	df	Asymp. Sig (2-sided)
Pearson Chi-Square	7.033	1	0.008
Continuity Correction	5.625	1	0.018

Source: Primary Data, 2022

These results are in line with research conducted in the same district namely Probolinggo, precisely in Maron District, that there is a relationship between low birth weight with stunting in Maron Kidul Village Maron Subdistrict, Probolinggo Regency with p value = 0.042 and OR = 0.157, This means that children who are low in weight are at risk of 0.157 stunting (9). Another study that has aligned results is one that conducted by Indrianti and Fayasari, in their article it is mentioned that the proportion of stunting events in toddlers 24-59 months is more found in LOW BIRTH WEIGHT toddlers compared to toddlers with a history of normal birth weight with p value = 0.001, besides that LOW BIRTH WEIGHT children have the opportunity to stunting around 6,152 times compared to normal birth children (10).

Recent research in Brebes district, found that there are relationship between low birth weight and stunting incidence with p value = 0.045 (11). Two studies in the same year are in line with this result, namely in the Bantul area states that there is a strong relationship between birth weight with the incidence of stunting in children aged 24-59 months in the region Girirejo Bantul Village (12). There are also a significant relationship between low birth weight and the incidence of stunting in toddlers aged 2-5 years in Umbulrejo Village, Gunungkidul with a value of p = 0.000 and OR 0.056 (13). But the results of the research discussed earlier contrary to research conducted in Minahasa Regency which shows that there is no relationship between birth weight and the incidence of stunting in toddlers in the working area of the Sonder District Health Center Minahasa with p value = 0.411 (14). The results this contradictory is also supported by research in Langkat district that it is not there is a relationship between low birth weight and the incidence of stunting in toddlers In Perlis Village, Langkat Regency because it has a p value = 0.891 (8).

Being born in conditions of low weight in children can affect growth and development of children both in the present and the present coming. Children who have a history of low birth weight can be a trigger stunted growth so that children have short stature (stunting) in the future, besides in the present low birth weight can be a major factor mortality and morbidity. The majority of low birth weight events are caused by maternal factors such as maternal age, nutritional status before and during pregnancy, pregnancy history, family income, hygiene and sanitation, and care during pregnancy (15). According to the Indonesian Ministry of Health, there are 4 groups individuals who are prone to nutritional problems, one of which is pregnant women. Therefore pregnant women need to get adequate and quality health services so that mothers can undergo pregnancy healthily until childbirth (16).

#### 4. Conclusion

Based on this study, it can be concluded that birth weight on children (toddlers) have a relationship with the incidence of stunting. By therefore, there is a need for public awareness to increase awareness towards nutritional status as preparation for becoming a capable mother-to-be give the child the life it deserves. In addition, it is necessary to have optimization of nutritional status in terms of quality and quantity is good long before the mother pregnant, during pregnancy, or after the child is born to minimize the risk the occurrence of stunting.

## Compliance with ethical standards

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### *Conflict of interest statement*

No potential conflict of interest was reported by the authors.

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## References

- [1] UNICEF. Improving child nutrition, the achievable imperative for global progress. New York: United Nations Children's Fund.; 2013.
- [2] World Health Organization. Nutrition Landscape Information System (NLIS) Country Profile Indicators: Interpretation Guide. Geneva: World Health Organization; 2010.
- [3] World Health Organization. World Health Statistics: Monitoring Health for The SDGs. World Health Organization; 2019.
- [4] SSGI. Hasil SSGI Tingkat Nasional, Provinsi, dan Kabupaten/Kota Tahun 2021. 2021.
- [5] SSGBI. Studi Status Gizi Balita terintegrasi Susenas 2019, Balitbangkes Kemenkes RI. 2020.
- [6] Probolinggo District Health Office. Profil Kesehatan Kabupaten probolinggo. Probolinggo: Pemerintah Kabupaten Probolinggo. 2020.
- [7] Ministry of Health. Profil Kesehatan Indonesia. 2021.
- [8] Sinaga. Berat Badan Lahir Rendah Dengan Kejadian Stunting Pada Batita. J Ilm Permas J Ilm STIKES Kendal. 2021;11(3).
- [9] Dewi NT, Widari D. Hubungan Berat Badan Lahir Rendah dan Penyakit Infeksi dengan Kejadian Stunting pada Baduta di Desa Maron Kidul Kecamatan Maron Kabupaten Probolinggo. Amerta Nutr. 2018.
- [10] Indriati, Fayasari. Berat Badan Lahir Dan Pemberian Asi Berhubungan Dengan Stunting Balita Di Jakarta. 2019;1(2).
- [11] Ratnasari, Endriani. Hubungan Status Berat Badan Lahir Rendah (BBLR) Dengan Kejadian Stunting. Syntax Idea. 2020;2(1).
- [12] Romadhoni, Kustiningsih. Hubungan Berat Badan Lahir (BBLR) Dan Pola Asuh Dengan Kejadian Stunting Pada Anak Usia 24-59 Bulan Di Wilayah Desa Girirejo Bantul. Yogyakarta; 2020.
- [13] Murti FC, Suryati, Oktaviano. Hubungan Berat Badan Lahir Rendah (BBLR) Dengan Kejadian Stunting Pada Balita Usia 2-5 Tahun Di Desa Umbulrejo Kecamatan Ponjong Kabupaten Gunung Kidul. J Ilm Kesehat Keperawatan. 2020;16(2).
- [14] Winotawan. Hubungan Antara Berat Badan Lahir Anak Dengan Kejadian Stunting Pada Anak Batita Di Wilayah Kerja Puskesmas Sonder Kabupaten Minahasa. Skripsi. Fakultas Kesehatan Masyarakat Universitas Sam Ratulangi; 2017.
- [15] Hartiningrum, Fitriyah. Berat Badan Lahir Rendah (BBLR) di Provinsi Jawa Timur tahun 2012-2016). J Biomedika Dan Kependud. 2018;7(2).
- [16] Ministry of Health. Pokok-pokok Peraturan Pemerintah No.33 Tahun 2012: Pemberian Air Susu Ibu Eksklusif. Jakarta.