

The Influence of Maternal and Child Characteristics with a History of Low Birth Weight (LBW) on Stunting Incidence in Toddlers in East Nusa Tenggara Province (Analysis of Riskesdas 2018 Data)

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KEYWORDS

Stunting; LBW; Toddlers; East Nusa Tenggara

ABSTRACT

Stunting is a chronic nutritional problem in children under five years of age characterized by shorter height than their peers. Low birth weight (LBW) is a public health indicator because it is closely related to mortality, morbidity and the incidence of malnutrition in children, one of which is stunting. Reducing the prevalence of stunting is one of the goals in the Sustainable Development Goals (SDGs). The prevalence of stunting in East Nusa Tenggara Province is 42.6% and the highest in Indonesia. This research aims to determine socio-demographic factors, especially maternal characteristics and child characteristics, on the incidence of stunting with a history of LBW in toddlers aged 6-59 months in East Nusa Tenggara Province. The sample of this study was toddlers with a history of LBW who came from the 2018 riskesdas data. Data were analyzed using bivariate analysis with chisquare test and multivariate with binary logistic regression. Logistic regression results revealed that toddlers aged 12-36 months had a 0.27 times higher risk of stunting, while mothers working as farmers had a 0.29 times higher risk compared to other occupations. The research found significant associations between the mother's education ($p=0.048$), mother's occupation ($p=0.023$), and toddler's age ($p=0.006$) with stunting incidence. Maternal age and child gender showed no significant effects. These findings highlight the need for targeted nutritional interventions focusing on identified socio-demographic risk factors.

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Introduction

Malnutrition stunts child development and has a long-term negative impact, even increasing the risk of death. Investing in children's health and nutrition is like investing in the progress of a nation because it prepares better human resources early on (Hunt, 2001). Malnutrition can be identified by various indicators. These indicators are underweight measured by weight for age (BB/U), wasting measured by weight for height (BB/TB) and stunting measured by height for age

(TB/U). Of the three indicators above, underweight and wasting are the result of acute malnutrition, while stunting is a manifestation of chronic malnutrition (Kementeria Kesehatan, 2010).

Stunting is a developmental disorder due to poor nutrition, repeated infections and psychosocial stimulation that affects brain development. Children can be categorized as stunted if the height z-score value is less than -2 median standard deviations based on WHO standards (World Health Organization, 2010). Stunting in children under five years of age (toddlers) is generally less recognized because in plain sight the difference in height with normal age children is less visible. Stunting begins to appear when children enter puberty or adolescence, so it needs to be handled early so that it is easier to overcome (Candra et al., 2011). In addition to stunted height growth and lagging brain development, children with stunting conditions have a tendency to have low cognitive abilities and are more susceptible to various diseases. This situation has been interpreted as a state of acute malnutrition (Gibney, 2008).

Stunted children are at greater risk of lower health status and lower socioeconomic status. Stunting causes long-term effects on the economy including low work capacity leading to lower per capita income, lower economic productivity and more prone to poverty. Poor posture and poorly developed cognitive abilities and physical stamina mean that people with a history of stunting receive 8-46% lower wages (McGovern, et al., 2017).

Referring to child growth based on WHO standards, globally there are approximately 162 million infants under the age of five (under five) who are stunted (World Health Organization, 2014). Asia and Africa have the highest prevalence of stunted children in the world (UNSC, 2004). According to data on the prevalence of stunted children under five years old collected by the World Health Organization (WHO) Indonesia is the third country with the highest prevalence in the South-East Asia Region (SEAR).

Stunting is a serious multifactorial problem, so reducing the risk of stunting is one of the Sustainable Development Goals (SDGs) 2015-2030 agenda. Since 2016, the SDGs are a follow-up agenda to the Millennium Development Goals (MDGs) that have been implemented since 2000. SDGs is a sustainable development program in accordance with the agreement and shared vision of UN member states on world problems that are targeted to be achieved in 2030 with 17 goals and 169 targets. Stunting reduction is the second target contained in the SDGs along with other nutrition and health problems. (Ministry of Health, 2018).

A public health problem is considered severe if the prevalence is 30-39% and serious if the prevalence is more than 40%. With this reference, the national stunting prevalence rate is classified in the severe category (WHO, 2010). Indonesia is ranked 108 out of 132 countries with regard to stunting prevalence based on the 2018 Global Nutrition Report. As for the Southeast Asian region, Indonesia's stunting prevalence is the second highest after Cambodia. Results from Riskesdas show that the national stunting prevalence rate has decreased by 6.4% from 37.2% in 2013 to 30.8% in 2018. This figure is still far from the standard set by WHO that a country's stunting prevalence should not exceed 20%. Reducing stunting rates has been established as a national priority program. The government through the 2020-2024 National Medium-Term Development Plan (RPJMN) set a target for the national stunting rate to reach 14% (Kemepppa, 2020).

The trend of stunting prevalence tends to decrease in most provinces in Indonesia. Except for East Kalimantan Province, which experienced an increase of 1.6%. There were 20 provinces with stunting prevalence above the national rate (37.2 percent) in 2013. East Nusa Tenggara had the

highest stunting rate at 51.7%, meaning that more than half of the children under five in the area were stunted. Meanwhile, the lowest stunting prevalence based on Riskesdas 2013 was Riau Islands at 26.3%. (Riskesdas, 2018).

Research conducted by Budiastutik and Rahfiludin (2019) highlighted that the incidence of stunting in developing countries is influenced by maternal education, as highlighted by Budiastutik et al (2019). Research shows that the higher the education of parents, the better the protection of children (Semba et al., 2008). Maternal literacy (Chopra, 2003), maternal formal education (Sakisaka et al., 2006) and completion of primary education (Wamani et al., 2006) are associated with reduced risk of stunting.

Stunting is also associated with poverty, lack of nutritious food, poor sanitation, and parental mental state (Grantma, 2017). Teenage pregnancy increases the risk of stunting due to competition for nutrients between mother and fetus (Stephenson & Schiff, 2019). Non-working mothers are at higher risk of having stunted children (Agustiningrum, 2016; Laksono & Megatsari, 2020)..

Low birth weight (LBW) increases the risk of stunting up to 3 times, with the prevalence of stunting in LBW infants reaching 75% (Anisa, 2012). Less than normal birth length also increases the risk of stunting by up to 2.4 times (L. S. Rahayu & Sofyaningsih, 2011)..

The age of toddlers influences the incidence of stunting, with the highest prevalence at 6-23 months. (Riskesdas, 2018; Sekarini, 2022). Males are more at risk of stunting than females, with a prevalence of 12.1% very short and 19.6% short in males (Febriani et al., 2018; Riskesdas, 2018).

The prevalence of stunting in East Nusa Tenggara is the highest in Indonesia based on the 2018 Basic Health Research data. Stunting results in a decline in the quality of Indonesian human resources, both in productivity and the nation's competitiveness. (Ministry of Village, 2017). This will hamper economic growth, increase poverty and widen inequality. International experience has shown that stunting can reduce labor market productivity (Tnp2k, 2017).

Chronic nutritional problems, especially in the high-risk group of under-fives, are caused by various factors. One of them is the increasingly complex socio-demographic factors. According to data from the Central Bureau of Statistics, the education level in East Nusa Tenggara Province is low. Most of the population has an elementary to junior high school education (BPS, 2021). This includes the last education completed by a mother. Referring to the WHO in the first international conference on Health promotion held in Ottawa 1986, it was stated that in general, educational status is one of the important aspects in the concept of healthy prerequisites. Including the incidence of stunting, the aspect of maternal education plays an important role in its prevention.

The causes of stunting in East Nusa Tenggara are complex and multifactorial. Stunting is not only influenced by factors directly related to health but is also influenced by socio-demographic issues in this case related to maternal characteristics and child characteristics.

Based on the problem description above, this study formulates two main questions. First, what are the characteristics of mothers and children with a history of low birth weight (LBW) in East Nusa Tenggara Province? Second, how do these characteristics affect the incidence of stunting among children under five in the region? This question was raised to understand the factors that influence stunting, especially those related to LBW, which is one of the indicators of child health risk.

The purpose of this study was to determine the characteristics of mothers and children with a history of low birth weight (LBW) in East Nusa Tenggara Province. In addition, this study also aims to analyze the influence of these characteristics on the incidence of stunting in children under five

years of age in the region. By understanding these two aspects, it is hoped that the study can provide a comprehensive picture of the risk factors for stunting associated with LBW conditions, so that it can be a reference in public health prevention and intervention efforts.

Research Methods

Data Source

This research uses secondary data from the 2018 Basic Health Research (Riskesdas) conducted by the Research and Development Agency of the Indonesian Ministry of Health with a sampling frame from the Central Bureau of Statistics. The independent variable was the incidence of stunting, while the independent variables included maternal and child characteristics such as mother's education, mother's occupation, mother's age, toddler's age, gender, and history of low birth weight.

Riskesdas 2018 collects public health data such as nutritional status, maternal and child health, communicable and non-communicable diseases, and socioeconomic characteristics. This data is used to calculate the Community Health Development Index (CHI) which reflects the achievement of national health development.

Unit of Analysis

The unit of analysis of this study was children aged 6-59 months in East Nusa Tenggara Province with the inclusion criteria of having a history of LBW (birth weight < 2500 grams) and biological mothers aged 18-45 years. From the initial 3,862 data, screening was carried out according to the inclusion criteria so that the final number of respondents was 139 children.

Analysis Method

This research uses descriptive and inferential analysis. Descriptive analysis describes the research variables without drawing broad conclusions, while inferential analysis tests the relationship between variables based on hypotheses.

1. Univariate analysis provides an overview of variables such as the incidence of stunting, characteristics of mothers (education, occupation, age) and children (age, sex) in the form of percentage distribution and data tables.

2. Bivariate Analysis

The chi-square test was used to test the association between the independent variable and the dependent variable (incidence of stunting). The hypotheses tested were:

- H0: There is no relationship between the independent variables and stunting.
- H1: There is a relationship between the independent variables and stunting.

H0 is accepted if Sig. \geq 0.05 and rejected if Sig. $<$ 0.05.

3. Multivariate Analysis, Logistic regression models are used to analyze binary dependent variables (stunting: stunted/normal) with categorical or continuous independent variables. This model helps identify factors that influence the incidence of stunting.

Results and Discussion

Relationship between Maternal and Child Characteristics with a History of Low Birth Weight (LBW) and the Incidence of Stunting in East Nusa Tenggara Province

1. The Relationship between Education of Mothers with LBW Children and the Incidence of Stunting in East Nusa Tenggara Province

The statistical test used was Chi-square, with a 0.05 percent confidence level. If the p-value is smaller than 0.05, it means that there is a significant relationship from the independent variable to the dependent. If the p-value is greater than 0.05, it means that there is no significant relationship between the independent variable and the dependent variable. Table 4.3 shows that the mother's education variable in children with a history of low birth weight in East Nusa Tenggara who did not graduate from high school had a stunting toddler of 60.7% with a frequency of 51 and a normal toddler of 39.3% with a frequency of 33.

Mothers who graduated from high school had 43.6% stunted toddlers with a frequency of 24 and normal toddlers of 55.4%. The significance value of maternal education is 0.048 which means that there is a significant relationship between maternal education and the incidence of stunting in toddlers aged 6-49 months with a history of low birth weight in East Nusa Tenggara Province. The results of this study are in accordance with research conducted by Nadiyah et al. (2014), both mother's education and father's education are significantly associated with stunting in children ($p < 0.05$). Rahayu, et al. (2014) explained that mothers with low education levels had a 5.1 times greater risk of having stunted children. Research conducted by Fitri (2013) showed that the incidence of stunting in toddlers on the island of Sumatra was more prevalent in low maternal education than in high maternal education.

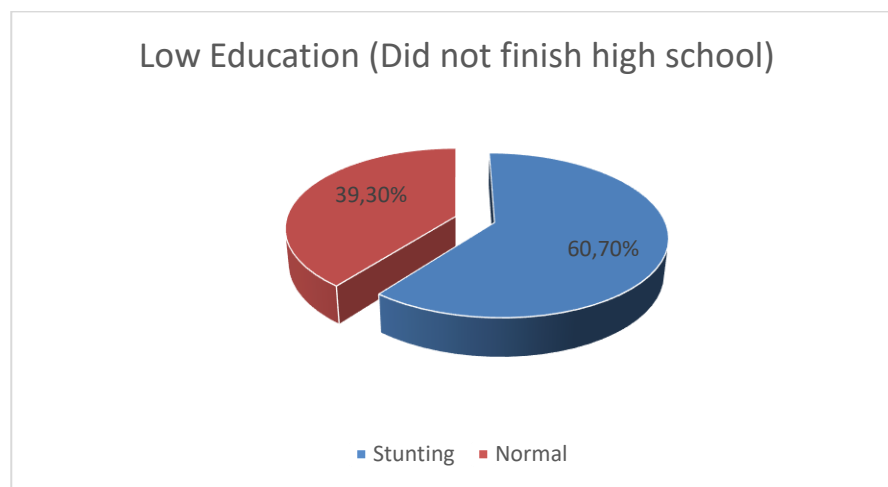


Figure 2. Maternal Education on the Incidence of Stunting in Toddlers Aged 6-59 Months with a History of LBW (<2500grams) in East Nusa Tenggara Province

Source: Riskesdas 2018 (processed)

Toddlers with low education mothers have a risk of being stunted by 1.4 times compared to toddlers who have high maternal education. Education is needed to get information such as health-related matters so as to improve the quality of life. The higher a person's level of education, the better

the knowledge that will be obtained. In addition, education greatly influences both a person's behavior and knowledge of lifestyle such as in preparing nutritious food for his family (Notoadmodjo, 2014). Research conducted by Hizni et al. (2010) in Cirebon showed that mothers who have low education are at risk of having stunted children 2.22 times greater. The level of education, especially the mother's education level, affects health status.

2. The Relationship between the Occupation of Mothers with LBW Children and the Incidence of Stunting in East Nusa Tenggara Province

Maternal occupation shows that children with a history of low birth weight aged 6-49 months in East Nusa Tenggara whose mothers are housewives have stunted toddlers 48.1% with a frequency of 25 and normal toddlers 51.9% with a frequency of 27. This can be interpreted that housewives have a lower potential to have stunted toddlers. Mothers who work as farmers have stunted toddlers by 69.4% with a frequency of 34 and normal toddlers by 30.6% with a frequency of 15. Mother's work as a farmer has a higher chance of stunting in toddlers.

Research by Astuti et al (2021) found that there is a relationship between maternal work and the incidence of stunting and mothers who work have a risk of 2.6 times stunting compared to mothers who do not work. This is in line with the research of Afzwar et al (2021) showed that there is a relationship between work and the incidence of stunting. The factor of working mothers is not the main cause of nutritional problems in children but this work is more referred to as an influencing factor in feeding. This is because not all working mothers can divide their time between work and time to care for children and tend to mothers who work outside the home have little time for their children so that parenting is given to other people such as grandmothers, other relatives who do not necessarily have good enough knowledge about parenting and nutritional status.

Table 1. Relationship between Maternal and Child Characteristics with a History of Low Birth Weight (LBW) and the Incidence of Stunting in East Nusa Tenggara Province (<2500grams) in East Nusa Tenggara Province

Variables	Stunting		Normal		Pearson χ^2	Sig.
	n	%	n	%		
Mother's education					3,902	0,048
Not graduated from high school	51	60,7%	33	39,3%		
High school graduate	24	43,6%	31	56,4%		
Mother's Occupation					7,569	0,023
Housewife	25	48,1%	27	51,9%		
Farmers	34	69,4%	15	30,6%		
More	16	42,1%	22	57,9%		
Mother's age					0,139	0,710
At risk (<20 and >35 years old)	17	50%	17	50%		
Not at Risk (20-35 years old)	58	55,2%	47	44,8%		
Age of child					10,249	0,006
Infants (<12 months)	8	40%	12	60%		

Toddler (12-36 months)	45	68,2%	21	31,8%		
Pre-school (37-59 months)	22	41,5%	31	58,5%		
Gender					0,224	0,636
Male	37	56,1%	29	43,9%		
Female	38	52,1%	35	47,9%		

Source: Riskesdas 2018 (processed)

Working mothers have fewer stunted children than non-working mothers, this is because working mothers will help the economic status so that family needs are met and can also be influenced by mothers who can carry out dual roles such as mothers can divide time between working and caring for children so that both roles can run well. Work is an important factor in determining the quality and quantity of food, because work is related to income, if income increases, health and family problems related to nutritional status will improve, but a child aged 0-5 years is still very dependent on his mother. Toddlers still need help from their parents to do their personal tasks so that work can be referred to as an influencing factor in the provision of food, nutrients, care and child care.

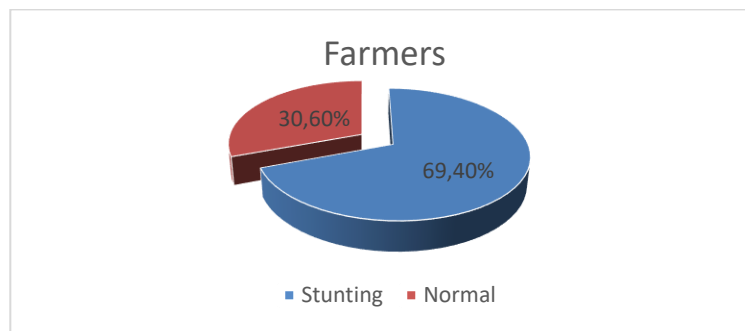


Figure 2. Maternal Occupation on the Incidence of Stunting in Toddlers Aged 6-59

Source: Riskesdas 2018 (processed)

Months with a History of LBW (<2500grams) in East Nusa Tenggara Province

Other maternal occupations (non-agricultural) the incidence of stunting in toddlers is 42.1% with a frequency of 16 and normal toddlers 57.9% with a frequency of 22. The significance value in maternal occupation is 0.023 which means that there is a significant relationship between maternal occupation and the incidence of stunting in toddlers aged 6-49 months with a history of low birth weight in East Nusa Tenggara Province.

3. The Relationship between the Age of Mothers with LBW Children and the Incidence of Stunting in East Nusa Tenggara Province

Based on table 1 shows that the variable age of the mother in children with a history of low birth weight in East Nusa Tenggara has a risk age of less than 20 years and above 35 years of stunting toddlers by 50% with a frequency of 17 and normal toddlers by 50% with a frequency of 17. This means that mothers who are at risk age have the same chance of having stunted or normal toddlers.

The age of mothers who are not at risk, namely between the ages of 20-35 years, has stunted toddlers with a percentage of 55.2% with a frequency of 58 and normal bslits 44.8% with a frequency of 47. The significance value in maternal work is 0.710, which means that there is no significant

relationship between maternal age and the incidence of stunting in toddlers aged 6-49 months with a history of low birth weight in East Nusa Tenggara Province. This is in line with research conducted in Bandar Lampung where no significant relationship was found between maternal age and the incidence of stunting. (Sumardilah & Rahmadi, 2019). Likewise, it can also occur because the nutritional status of the mother is good so that it requires additional calories in small amounts because there will be natural adjustments such as increasing the body's metabolic efficiency and reducing physical activity during pregnancy. (Dattilo, 2017; Saavedra, 2017). In addition, young mothers do not necessarily have poor parenting because in this age of technology, young people are more adept at finding information than older people.

4. Relationship between Age of Children with LBW History and Incidence of Stunting in East Nusa Tenggara Province

The age variable of children with a history of low birth weight in East Nusa Tenggara who are categorized as infants or less than 12 months has a chance of stunting by 40% with a frequency of 8 and normal by 6% with a frequency of 12. In the toddler age category, the risk of stunting in toddlers reached 68.2% with a frequency of 45 and normal was 31.8% with a frequency of 21. At pre-school age, namely between the ages of 37-59 months, the risk of stunting in toddlers was 41.5% with a frequency of 22 and normal toddlers was 58.5% with a frequency of 31. The significance value at the age of the child is 0.006, which means that there is a significant relationship between the age of the child and the incidence of stunting in toddlers aged 6-49 months with a history of low birth weight in East Nusa Tenggara Province.

Supriyanto, Y., et al. (2018), where the number of 6-11 month olds who were stunted was less than 12-24 month olds. This may occur because the Basal Metabolic Rate (BMR) is higher in older children than younger children (Kleinman & Coletta, 2016).

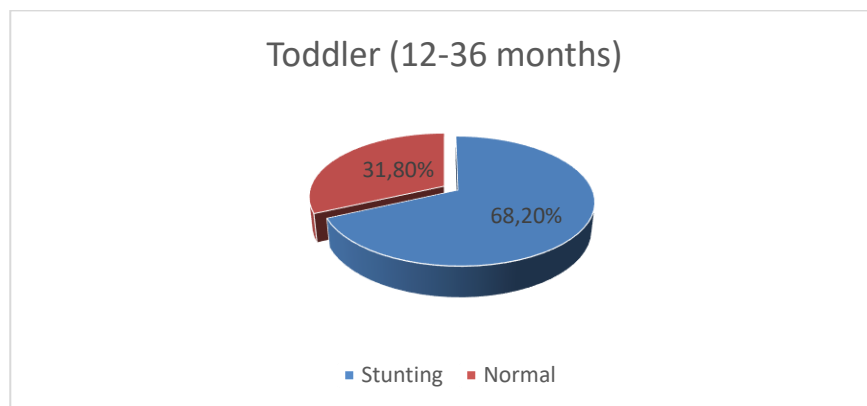


Figure 3. Age of the Child on the Incidence of Stunting in Toddlers Aged 6-59 Months with a History of LBW (<2500grams) in East Nusa Tenggara Province

Source: Riskesdas 2018 (processed)

5. Relationship between Sex of Children with LBW History and Incidence of Stunting in East Nusa Tenggara Province

The gender variable in children with a history of low birth weight in East Nusa Tenggara in toddlers with male gender the risk of stunting is 56.1% with a frequency of 37 and normal toddlers are 43.9% with a frequency of 29. In female toddlers the risk of stunting is 52.1% with a frequency of 28 and normal is 47.9% with a frequency of 35. The significance value at the age of the child is 0.224 which means that there is no significant relationship between the gender of toddlers and the incidence of stunting in toddlers aged 6-49 months with a history of low birth weight in East Nusa Tenggara Province.

This is in line with research conducted by Wurisastuti and Suryaningtyas (2017), the significance of the chisquare test is 0.056, indicating that there is no difference in the level of stunting against gender differences. Similarly, Devi's research showed that there was no significant relationship between gender and the nutritional status of toddlers (Devi M, 2010).

Influence of Maternal and Child Characteristics with a History of Low Birth Weight on the Incidence of Stunting in East Nusa Tenggara Province

A binary logistic regression model was used to analyze the effect of independent variables on the probability of a toddler being stunted, with normal toddlers as the comparison group. The independent variables used were those that were significant in the chi-square test (p-value <0.05), such as mother's education, mother's occupation, and child's age.

The analysis was conducted using SPSS 25 to facilitate data processing and determine the variables that most significantly affect stunting. The G statistical test was used to test the effect of variables jointly, while the Wald test measured the significance of each variable partially. The results of the analysis yielded the best model that fit the research data.

$$\ln \left[\frac{\pi(x)}{1-\pi(x)} \right] Z = 1.271 + 0.215 \text{ Umur_Balita}(1) - 1.1316 \text{ Umur_Balita}(2) \\ - 0.0458 \text{ Education_Mother}(1) - 0.407 \text{ Occupation_Mother}(1) \\ - 1,256 \text{ Job_Mother}(2)$$

Where:

Z	: The probability of a toddler experiencing a stunting event
Age_Infant(1)	: Infant (<12 months)
Age_Infant(2)	: Toddler (12-36 months)
Education_Mother(1)	: Not graduated from high school
Job_Mother(1)	: Housewife
Job_Mother(2)	: Farmer

The G test results show that the independent variables together or simultaneously significantly affect the tendency of stunting. Next is the partial test using the Wald test. To interpret each statistically significant variable in the equation is through the coefficient value (B) and the Exp(B) value of each variable. The Exp(B) value or also known as the odd ratio is used to show the difference in the risk of stunting according to each category in the independent variable, so that it can explain the tendency of toddlers to experience stunting. After the G test is carried out, the wald test is then carried out.

1. The Effect of Education of Mothers with a History of LBW on the Incidence of Stunting in East Nusa Tenggara Province

In the partial test of the last education completed by the mother, namely in the category of not graduating from high school, the result of the wald test significance value is 0.272 where the value is higher than the significance level of 0.05 so that education does not graduate from high school partially or separately does not have a significant effect on the incidence of stunting with a history of low birth weight in toddlers aged 6-59 months in East Nusa Tenggara Province. The education of mothers who have toddlers with a history of low birth weight does not affect the incidence of stunting among toddlers in NTT. High maternal education does not guarantee that a mother has sufficient knowledge to properly care for and fulfill the nutrition of toddlers. Likewise, low maternal education will not always have stunted toddlers.

The era of advanced technological development with information that is increasingly accessible through smartphones, makes it easier for mothers to increase understanding and knowledge about good parenting and nutrition for toddlers. So that mothers with low education can also have good knowledge and good parenting as long as the mother wants to continue to learn and seek information.

Table 2. Logistic Regression Multivariate Analysis Results

	B	S.E	Wald	df	Sig.	Exp(B)
Age of toddler			12,576	2	0,002	
Infants (<12 months)	0,215	0,566	0,144	1	0,704	1,240
Toddler (12-36)	-1,316	0,413	10,136	1	0,001	0,268
Not graduated from high school	-0,458	0,417	1,204	1	0,272	0,633
Mother's occupation			5,913	2	0,052	
Housewife	-0,407	0,473	0,739	1	0,390	0,666
Farmers	-1,256	0,535	5,509	1	0,019	0,285
Count	1,272	0,468	7,397	1	0,007	3,568

Source: Riskesdas 2018 (processed)

2. The Effect of Maternal Occupation with a History of LBW on the Incidence of Stunting in East Nusa Tenggara Province

Based on table 2 partial test results mother's work obtained the results of the wald test significance value of 0.052 where the value is higher than the significance level of 0.05 so that the mother's work partially or separately does not have a significant effect on the incidence of stunting with a history of low birth weight in toddlers aged 6-59 months in East Nusa Tenggara Province. The results of the partial test of maternal employment category housewives obtained the results of the wald test significance value of 0.390 where the value is higher than the significance level of 0.05 so that maternal employment category housewives partially or individually does not have a significant effect on the incidence of stunting with a history of low birth weight in toddlers aged 6-59 months in East Nusa Tenggara Province.

Table 2 shows the results of the partial test of the work of mothers of toddlers as farmers, the result of the wald test significance value is 0.019 where the value is lower than the significance level of 0.05 so that the work of mothers of toddlers as farmers partially or individually has a significant effect on the incidence of stunting. The Exp(B) or odd value is 0.285. This means that the work of

mothers of toddlers as farmers will tend to have stunted toddlers by 0.285 compared to other jobs with a history of low birth weight in toddlers aged 6-59 months in East Nusa Tenggara Province. This is in accordance with research by Ningrum (2019) which examines stunting toddlers in rural agricultural areas in Klaten. The mother's work as a farmer, especially farm laborers with an average of 8 hours spent working per day so that the care of toddlers is left to the closest family who lives in the same village. But even though they work for a long duration, the ability to fulfill nutrition in toddlers is not sufficient because the income from the agricultural sector is relatively low even with a long duration of work. So that mothers are busy working as farm laborers, toddlers do not get proper care coupled with nutrition related to the economy.

3. The Effect of Age of Children with LBW History on the Incidence of Stunting in East Nusa Tenggara Province

In the results of the partial test of the age of toddlers in the infant category (<12 months) showed a wald test significance value of 0.704 where the value is higher than the 0.05 significance level so that the age of infants (<12 months) partially or individually does not have a significant effect on the incidence of stunting with a history of low birth weight in toddlers aged 6-59 months in East Nusa Tenggara Province. The results of the partial test of toddler age obtained the results of the wald test significance value of 0.002 where the value is lower than the significance level of 0.05 so that the age of toddlers partially or individually has a significant effect on the incidence of stunting with a history of low birth weight in toddlers aged 6-59 months in East Nusa Tenggara Province.

The results of the partial test of the age of toddlers in the toddler age category (12-36 months) obtained the results of the wald test significance value of 0.001 where the value is lower than the significance level of 0.05 so that the age of toddlers in the toddler age category (12-36 months) partially or individually has a significant effect on the incidence of stunting. The Exp(B) or odd value is 0.268 . These results indicate that toddler age children (12-36 months) will tend to experience stunting by 0.268 compared to infant and pre-school age groups with a history of low birth weight in East Nusa Tenggara Province. Schoenbuchner (2016) also showed similar results that the peak incidence of wasting occurred at the age of 10-12 months as much as 12-18%, while 37-39% at the age of 24 months experienced stunting. This means that the incidence of stunting is more prevalent at toddler age (12-36 months). As age increases, the incidence of stunting decreases.

Research conducted by Narendra et al. (2002), this condition is due to the fact that children under three years of age (toddlers) are more susceptible to infections and recurrent infections, making them more likely to experience malnutrition. Although pre-school children are less stunted, at this age they experience more stable growth and development than children under three years old. Increased physical and motor abilities cause these children to experience a decrease in appetite, making them prone to malnutrition, although not as much as children under the age of three. The results of Wahdah et al. (2016) research risk factors for stunting at the age of 6-36 months in the Inland Region of Silat Hulu District, Kapuas Hulu, West Kalimantan. The results showed the highest prevalence of stunting at the age of 25-36 months (57.9%) and a little at the age of 6-36 months (46.7%). The same study showed that the great chance of stunting in Bangladesh at the age of 36-47 months and in rural areas (38.1%) compared to the age of 6-12 months. (Akram et al., 2018).

The incidence of stunting in toddlers is likely due to the age of 24-59 months. Children have become active consumers, they can already choose the food they like such as random snacks without

paying attention to the type of food chosen and the cleanliness of the food. Toddlers aged > 24 months also do not understand about personal hygiene and in an environment that does not apply healthy living behavior. Lack of hygiene can cause toddlers to become easily ill, if a toddler is sick, there can be a decrease in appetite and that can result in a lack of nutrients entering the body, thus causing toddler growth to be disrupted resulting in stunting. The process of becoming short or stunting in children in a poor area starts from the age of about 6 months and appears mainly in the first 2 to 3 years of life. Stunting that occurs within the first 36 months of life is usually accompanied by long-term effects (Wahdah et al., 2016).

The findings of this study underscore the significance of socio-demographic factors in predicting stunting incidence among toddlers with a history of LBW. Specifically, maternal education, occupation, and child age were identified as key risk factors. Public health interventions must focus on improving maternal education, providing economic alternatives to farming mothers, and ensuring adequate child nutrition during early childhood.

Limitations of the research

This research has several limitations. First, the use of secondary data from Riskesdas 2018 may limit the depth of variable measurement and accuracy due to potential reporting biases. Second, the cross-sectional design restricts the ability to establish causality between socio-demographic factors and stunting. Finally, certain socio-economic and environmental variables, such as household income and access to healthcare services, were not included in the analysis, which could have provided a more comprehensive understanding of stunting determinants.

Conclusion

The results of the analysis have shown that socio-demographics in the form of maternal and child characteristics affect the incidence of stunting in toddlers aged 6-59 months with a history of low birth weight (LBW) in East Nusa Tenggara Province. These results are in accordance with the results of previous studies that have been conducted. The summary of the results of research on factors that influence the incidence of stunting in children under 5 years of age 6-59 months with a history of low birth weight (LBW) in East Nusa Tenggara Province is as follows: Based on univariate analysis, the percentage of stunting reached 54 percent or more than half of toddlers suffered from stunting. There are differences in the magnitude of the incidence of stunting. The percentage of stunting is greater in mothers of toddlers who do not finish high school or have low education, mothers of toddlers who work as farmers, the age of mothers of toddlers is not at risk (20-35 years), the age of toddlers (12-36 months) and in toddlers who are female. Maternal education, maternal occupation and age of toddlers have a significant relationship with the incidence of stunting in East Nusa Tenggara Province. The results of the binary logistic regression analysis are toddler age (12-36 months) has a tendency to be stunted 0.27 percent compared to other ages. In addition, mothers of toddlers who work as farmers have a tendency to be stunted 0.28 percent compared to other occupations.

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