

Research article

Factors Affecting Stunting in Saguling Community Health Centers, West Bandung

Rika Nurhasanah*, and Indria Astuti

Midwifery Program, The University of Jenderal Ahmad Yani

Abstract.

Stunting is one of the most common nutritional problems experienced by toddlers around the world. When exclusive breastfeeding is not given for six months the risk of stunting in toddlers may be higher because breast milk is important in the baby's growth period. The knowledge of mothers about nutrition affects the mother's behavior in providing the right food to support the growth and development of children. Pregnant women who have suffered from chronic energy deficiency (CED) are more likely to have babies born with a low weight, affecting their health. If they cannot grow properly, low birthweight (LBW) babies will most likely suffer from stunting. This study was conducted to determine the factors that affect stunting in toddlers aged 24-36 months in Saguling community health centers in West Bandung. Observational methods were used with a cross sectional approach. The sample consisted of 82 mothers who had toddlers aged 24-36 months. The Chi-square test was used to analyze the data. Bivariate results showed that exclusive breastfeeding was a factor that influenced the occurrence of stunting ($p < 0.001$, PR = 2.353), as was LBW ($p = 0.001$, PR = 1.760). Other factors related to the incidence of stunting were a history of CED ($p = 0.007$, PR = 1.657) and the mother's knowledge ($p = 0.005$, PR = 1.679).

Keywords: stunting, exclusive breastfeeding, LBW, CED, mother's knowledge

Corresponding Author: Rika Nurhasanah; email: rika_dot@yahoo.com.au

Published: 3 June 2022

Publishing services provided by Knowledge E

© Rika Nurhasanah, and Indria Astuti. This article is distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use and redistribution provided that the original author and source are credited.

Selection and Peer-review under the responsibility of the ISGH4 Conference Committee.

1. Introduction

Stunting is one of the nutritional problems experienced by toddlers in the world. Globally, in 2019 there were around 21.9% or 149 million children under five in the world experiencing stunting. This figure has decreased when compared to the stunting rate in 2017 which was around 150.8 million or 22.2% of children under five. However, according to WHO, if the stunting problem is above 20%, it becomes a public health problem [1].

WHO states that the prevalence of stunting under five in Indonesia (36.4%) is included in the third country with the highest prevalence in the Southeast Asia Region after Timor Leste (38.4%) and India (38.4%) [2].

This stunting problem is experienced by 1 in 3 Indonesian children. More than 1/3 of children under 5 years old in Indonesia are below the average height. Based on

OPEN ACCESS

the results of the Integrated Toddler Nutrition Status (SSGBI) survey by the Indonesian Ministry of Health's Balitbangkes in 2019, it is known that the proportion of stunting in Indonesia is 27.67. The highest proportion of stunting was found in NTT, West Sulawesi, and NTB. For the province of West Java, it is below the average proportion of Indonesia, which is 26.21 [3]. In 2018, the percentage of very short and short toddlers aged 0-59 months in Indonesia was 11.5% and 19.3%, respectively. This condition increased from the previous year, namely 9.8% and 19.8%. West Java Province occupies stunting rates with a percentage incidence of 13.2% very short toddlers and 15.9% short toddlers. West Bandung Regency is one of the districts with a fairly high incidence of stunting, namely 10,487 stunting events [3].

Stunting is a chronic condition that describes stunted growth due to long-term malnutrition. Stunting according to the WHO Child Growth Standard is based on an index of body length compared to age (PB/U) or height compared to age (TB/U) with a limit (z-score) of less than -2 SD [4]. Stunting is caused by two factors, namely directly and indirectly. Directly, namely exclusive breastfeeding, infectious diseases, food intake, and birth weight. And which is an indirect factor of parental education, parental occupation, and family economic status.

Growth and development in infancy requires a balanced and relatively large intake of nutrients. However, a baby's ability to eat is limited by the state of his digestive tract which is still in the maturation stage. The only food that suits the condition of the baby's digestive tract and meets the needs for the first months is breast milk [5]. One of the causes of stunting in toddlers is unbalanced food intake. Unbalanced food intake is included in exclusive breastfeeding that is not given for 6 months. Children who do not get exclusive breastfeeding are at higher risk for lack of nutrients needed for the growth process. Impaired growth will result in the occurrence of stunting in children [6]. According to Fitri's research, there has been a significant correlation between exclusive breast milk and the stunting of toddlers in Lima Puluh Community Health Center, in which 41.8% of those not exclusively breast-milk children stunting [7].

Pregnant women during pregnancy need special attention at this important period. Pregnant women are one of the groups that are vulnerable to nutrition. Nutritional intake of pregnant women is very influential on fetal growth. Good nutritional status in pregnant women can prevent the occurrence of low birth weight (LBW) and stunting (short). The high rate of malnutrition in pregnant women has contributed to the high number of LBW in Indonesia which is estimated to reach 350,000 babies every year. Malnutrition that occurs in first trimester pregnant women can cause the fetus to die and the baby to be born prematurely. If malnutrition occurs in the second and third trimesters, the fetus can

be stunted and do not develop according to the gestational age of the mother. Poor fetal growth of pregnant women with CED will produce babies with low birth weight (LBW). A pregnant woman will give birth to a healthy baby if the level of health and nutrition is in good condition [8]. According to Fitri's research, there has been a significant correlation between LBW and the stunting, in which 72,7% of LBW have stunting [7]. Pregnant women with malnutrition cause the fulfillment of nutrition to the fetus to be reduced so that children born can be at risk of stunting. Ruaida & Soumokil's research showed that mothers with a history of 57.89% CED resulted in stunting in children and were 4.85 times more likely to cause stunting in children compared to mothers who did not [8].

Another factor that affect of stunting is mother's knowledge. Based on the results of Septamarini's research in the Journal of Nutrition College in 2019 said that mothers with low knowledge had a 10.2 times greater risk of children experiencing stunting compared to mothers with sufficient knowledge. Knowledge is the result of "knowing" and this occurs after people have sensed a certain object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste, and touch. Most of human knowledge is obtained through the eyes and ears [9].

Based on the description above, it showed that the factors for stunting are not giving exclusive breastfeeding, low birth weight, mothers with a history of CED, and mother's knowledge. Therefore, in an effort to find out and understand how these factors affect stunting, the researchers are interested in conducting research on the relationship between exclusive breastfeeding, low birth weight, history of CED, and mother's knowledge with the incidence of stunting in toddlers. The aim of the study was to determine the factors that affect the incidence of stunting in toddlers aged 24-36 months at the Saguling Community Health Center, West Bandung.

2. Methods

2.1. Study design

The design of this study is a survey method with a cross sectional approach which was carried out at the Saguling Community Health Centers in March-August 2021.

Sample

The sample used in this study were 82 respondents, namely mothers who have toddlers aged 24-36 months. Inclusion criteria were children with stunting, aged 24-36 months, born at term, mothers were willing to be respondents. The sampling technique used is purposive sampling.

2.2. Instrument

Toddlers with exclusive breastfeeding are seen from exclusive breastfeeding for 6 months. Toddlers with LBW are seen from birth weight less than 2500 g.

Data collection procedure

Samples were obtained from mothers with stunting toddlers who came to the puskesmas, were willing to become respondents by filling out the questionnaire given. Respondents are guaranteed the confidentiality of their data.

2.3. Data analysis

Univariate data analysis to see the description of respondent characteristics and frequency distribution, the magnitude of the proportion of each variable. Data is normally distributed. Bivariate analysis using chi square to see the relationship between exclusive breastfeeding, low birth weight, history of CED, and mother's knowledge with the incidence of stunting. Data were analyzed using SPSS.

3. Results

3.1. Univariate Analysis

Based on table 1 above, it can be seen that the toddlers based on gender in this study were mostly female as many as 49 toddlers (59.8%) and toddlers with male sex as many as 33 toddlers (40.2%). The characteristics of the work of most of the mothers are not working as many as 47 people (57.3%) and working mothers as many as 35 people (42.7%).

The frequency distribution of children under five who were not exclusively breastfed (64.6%) was higher than that of children who were given exclusive breastfeeding (35.4%). The distribution of the frequency of toddlers who are not LBW (64.6%) is more than that of toddlers who are LBW (35.4%). The frequency distribution of mothers with CED (56.1%) was higher than mothers without CED (43.9%). The frequency distribution of low maternal knowledge (53.7%) is more than high maternal knowledge (46.3%). The distribution of the frequency of stunting (64.6%) was higher than that of non-stunted (35.4%).

TABLE 1: Frequency Distribution of Respondents' Characteristics and Research Variables.

No	Variable	f	%
1	Toddler Gender		
	Male	33	40.2
	Female	49	59.8
2	Mother's Job		
	Work	35	42.7
	Does not work	47	57.3
3	Exclusive Breastfeeding		
	No Exclusive Breastfeeding	53	64.6
	Exclusive breastfeeding	29	35.4
4	LBW		
	LBW	29	35.4
	Non LBW	53	64.6
5	CED history		
	CED	46	56.1
	Non CED	36	43.9
6	Mother's Knowledge		
	Low	44	53.7
	High	38	46.3
7	Stunting		
	Stunting	53	64.6
	Non Stunting	29	35.4

3.2. Bivariate Analysis

TABLE 2: The Relationship between Exclusive Breastfeeding and Stunting.

Exclusive breastfeeding	Stunting				Total		P-value	PR
	Stunting		Non Stunting					
	f	%	f	%	f	%		
No Exclusive Breastfeeding	43	52.4	10	12.2	53	64.6	0.000	2,353
Exclusive breastfeeding	10	12.2	19	23.2	29	35.4		
Total	53	64.6	29	35.4	82	100		

Based on table 2 above, it can be seen that toddlers who experience stunting are more common in toddlers who are not given exclusive breastfeeding, which is 52.4% compared to toddlers who are given exclusive breastfeeding (12.2%) with a p-value of 0.000 and a PR of 2.353. This shows that exclusive breastfeeding has an effect on the incidence of stunting. Toddlers who were not given exclusive breastfeeding were

2,353 times more likely to experience stunting compared to toddlers who were given exclusive breastfeeding.

TABLE 3: The Relationship between LBW and Stunting.

LBW	Stunting				Total		P-value	PR
	Stunting		Non Stunting					
	f	%	f	%	f	%		
LBW	26	31.7	3	3.7	29	35.4	0.001	1,760
Non LBW	27	32.9	26	31.7	53	64.6		
Total	53	64.6	29	35.4	82	100		

Based on table 3 above, it can be seen that toddlers who experience stunting are more common in toddlers who are not LBW, which is 32.9% compared to toddlers who are LBW (31.7%) with a p-value of 0.001 and a PR of 1.760. These results indicate that children with low birth weight have an effect on the incidence of stunting. Toddlers with LBW are 1,760 times more likely to experience stunting than toddlers who are not LBW.

TABLE 4: The Relationship between CED History and Stunting.

CED history	Stunting				Total		P-value	PR
	Stunting		Non Stunting					
	f	%	f	%	f	%		
CED	36	43.9	10	12.2	46	56.1	0.007	1,657
Non CED	17	20.7	19	23.2	36	43.9		
Total	53	64.6	29	35.4	82	100		

Based on table 4 above, it can be seen that children under five who experience stunting are more common in mothers with a history of CED, which is 43.9% compared to mothers with no history of CED (20.7%) with a p-value of 0.007 and a PR of 1.657. These results indicate that mothers with a history of CED have an effect on the incidence of stunting. Mothers with CED during pregnancy were 1,657 times more likely to have children with stunting than mothers who did not.

TABLE 5: The Relationship between Mother's Knowledge and Stunting.

Mother's Knowledge	Stunting				Amount		P-value	PR
	Stunting		Non Stunting					
	f	%	f	%	f	%		
Low	35	42.7	9	11	44	53.7	0.005	1,679
High	18	22	20	24.3	38	46.3		
Total	53	64.6	29	35.4	82	100		

Based on table 5 above, it can be seen that under-fives who experience stunting are more common in mothers with low knowledge, namely 42.7% compared to mothers with high knowledge (22%) with p-value of 0.005 and PR 1.679. These results indicate that mothers who have low knowledge have an effect on the incidence of stunting. Toddlers with mothers with low knowledge are 1,679 times more likely to experience stunting than mothers with high knowledge.

4. Discussion

The results of this study indicate that there is a relationship between exclusive breastfeeding and the incidence of stunting in toddlers. This result is in accordance with research conducted by Lestari which stated that there is an effect of exclusive breastfeeding on the incidence of stunting with a p value of 0.000 with an OR of 3.375 which means that toddlers who not given exclusive breastfeeding has a 3.375 times greater risk of experiencing stunting [10]. This study is also the same as the research conducted by Rilyani which stated that exclusive breastfeeding had an effect on stunting with a p-value of 0.001 OR 3.375 [11]. Breast milk is the best food for babies immediately after birth. According to WHO, exclusive breastfeeding is breastfeeding only for infants up to the age of 6 months without additional fluids or other foods. Breast milk can be given until the baby is 2 years old.

The results showed that LBW affected the occurrence of stunting in toddlers, this was in line with research conducted by Fitri which showed that 72.7% of LBW toddlers experienced stunting. And there is a significant relationship between LBW and the incidence of stunting where p-value $0.000 < 0.05$ [7]. Other studies also show that children with LBW have a 29.4 times greater chance of experiencing stunting compared to children who are not LBW [8]. Poor nutritional status of mothers during pregnancy can cause toddlers to be born with low birth weight (LBW). Babies born with LBW often have difficulty catching up with their growth (inadequate catch up growth). The risk of growth restriction will be exacerbated if the incidence of malnutrition in the fetus is followed by inadequate food intake in the first two years of life. The period in the womb and the first two years of life is very decisive for the incidence of stunting in adulthood [12].

The results showed that mothers who had a history of CED had an effect on the incidence of stunting in toddlers, this is in line with the another research which showed that mothers with a history of CED 57.89% resulted in stunting in children and were 4.85 times more likely resulted in stunting in children compared to mothers who did not

have CED [8]. Other studies also show that CED has a significant relationship with the incidence of stunting with a p-value of 0.03 and a 2 times greater risk of increasing the incidence of stunting compared to non-CED [13]. Chronic Energy Deficiency (CED) is a condition where the mother suffers from a chronic (chronic) lack of food which results in health problems for the mother. CED is the nutritional status of mothers in the past who experienced chronic malnutrition which can cause toddlers to grow up with a short body (stunting) or thin (wasting) as adults [2]. CED is formed due to the failure of the mother to gain weight during pregnancy. Maternal weight gain during the 1st trimester of pregnancy has a very important role, because during this period the fetus and placenta are formed, but failure to gain maternal weight in the 2nd and 3rd trimesters will increase the baby with low birth weight (LBW). This is what causes CED which results in a small placental size and a lack of food supply to the fetus. Malnutrition in the mother that is prolonged and sustained during pregnancy will have a worse impact on the fetus than acute malnutrition [14].

The results showed that mothers who had low knowledge had a relationship with the incidence of stunting in toddlers, this is in line with Hapsari's research which states that Mother's knowledge of low nutrition is a risk factor for stunting in toddlers with a risk of 3,801 [15]. Other studies also show that there is a relationship between attitudes and knowledge of mothers on the incidence of stunting in children who have just entered elementary school with p value $0.000 < 0.05$. Mothers who have children aged 1-2 years show as many as 60% of mothers with sufficient knowledge, 30% of mothers with less knowledge, and 10% of mothers with less knowledge [16]. Knowledge is very closely related to education, where it can be assumed that with higher education, people will have wider knowledge. Mother's knowledge about nutrition is the initial process in changing behavior to increase nutrition, so knowledge is an internal factor that influences behavior change. Mother's knowledge about nutrition will determine the mother's behavior in providing the right food to support the growth and development of children.

In this study, there are limitations that can be taken into consideration, not all factors that influence stunting are studied such as genetics, parenting patterns, environmental sanitation, household income. The data are only examined in a limited time and only to prove the conditions that occurred at the time of the study and changes that may have occurred and will not occur can not be observed.

5. Conclusions

Factors that influence stunting are exclusive breastfeeding, low birth weight, history of CED, and mother's knowledge. It is recommended for health workers to provide counseling to the community, especially pregnant women about knowledge related to stunting, exclusive breastfeeding for children, prevention of CED which can lead to low birth weight babies through improving nutritional status by consuming balanced nutrition. Families are expected to provide balanced nutritional intake for children and well-applied parenting patterns to prevent stunting.

Acknowledgment

We thank our study staff and participants from the Saguling Community Health Centers who have toddlers aged 24-36 months.

References

- [1] Vaivada T, Akseer N, Akseer S, et al. Stunting in childhood: an overview of global burden, trends, determinants, and drivers of decline. *The American journal of clinical nutrition*. 2020 Sep;112(Supplement_2):777S-91S.
- [2] Center for Data and Information of the Indonesian Ministry of Health. The situation of stunting toddlers in Indonesia. Jakarta: Indonesian Ministry of Health; 2018. Available from: <https://pusdatin.kemkes.go.id/article/view/18102500001/situasi-balita-pendek-di-indonesia.html>
- [3] Indonesian Ministry of Health. Indonesia health profile 2019. Jakarta: Ministry of Health RI; 2020. Available from: <https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-indonesia-2019.pdf>
- [4] Loya RR, Nuryanto N. Pola asuh pemberian makan pada bayi stunting usia 6-12 bulan di Kabupaten Sumba Tengah, Nusa Tenggara Timur. *Journal of Nutrition College*. 2017;6(1):84-95.
- [5] Maryunani, A. Child health sciences in midwifery. Jakarta: Media Info Trans; 2010.
- [6] Al-Anshori H, Nuryanto N. Faktor risiko kejadian stunting pada anak usia 12-24 bulan (Studi di Kecamatan Semarang Timur). *Journal of Nutrition College*. 2013;2(4):675-81.

- [7] Fitri L. Relationship between LBW and exclusive breastfeeding with stunting incidence at Lima Puluh Pekanbaru health center. *Journal of Endurance*. 2018;(3):131-137.
- [8] Ruaida N, Soumokil O. Relationship between CED status of pregnant women and LBW with stunting incidence in toddlers at Tawiri Health Center, Ambon City. *Jurnal Kesehatan Terpadu* 2018;9(2):45-51.
- [9] Notoatmodjo S. *Health promotion and behavioral science*. Jakarta: Rineka Cipta; 2007.
- [10] Lestari EF, Dwihestie LK. Exclusive breastfeeding is associated with the incidence of stunting in toddlers. *National Scientific Journal: Journall Scientific Sticket Kcontrol*. 2020;10(2):129-136.
- [11] Rilyani & Trismilyani E Factors related to the incidence of stunting in toddlers at the Panjang Bandar Lampung health center in 2016. *Holistic Journal of Health*. 2016;10(3):105-114.
- [12] Sholiha H, Sumarmi S. Risk analysis of low birth weight (LBW) in Primigravida. *Indonesian Nutrition Media*. 2015;10(1):57–63.
- [13] Bove I, Miranda T, Campoy C, Uauy R, Napol M. Stunting, overweight and child development impairment go hand in hand as key problems of early infancy: Uruguayan case. *Early Human Development*. 2012 Sep 1;88(9):747-51.
- [14] Soetjiningsih & Ranuh IN. *Tumbuh Kembang Anak Edisi 2*. Jakarta. Buku Kedokteran EGC. 2016.
- [15] Hapsari W. Relationship between family income, mother's knowledge of nutrition, parents' height, and father's level of education with stunting in children aged 12-59 months. Surakarta. University of Muhammadiyah Surakarta; 2018.
- [16] Olsa ED, Sulastri D, Anas E. Hubungan sikap dan pengetahuan ibu terhadap kejadian stunting pada anak baru masuk Sekolah Dasar di kecamatan Nanggalo. *Jurnal Kesehatan Andalas*. 2018 Feb 20;6(3):523-9.