

EXCLUSIVE BREASTFEEDING AND COMPLEMENTARY FEEDING HISTORIES IN STUNTING AMONG CHILDREN AGED 24–59 MONTHS AT POSYANDU SIRSAK

Maya Rosvita Adi Jayanti^{1*}, Mina Yumei Santi², Nur Djanah³

^{1,2,3*}Department of Midwifery, Poltekkes Kemenkes Yogyakarta
Corresponding author email address : maya.rosvitaaj@gmail.com/ cellphone number : +62 898-9233-497

ABSTRACT

Background: Sleman Regency has a high prevalence of stunted toddlers because it is still above the national target of 14%. **Objective:** To determine the relationship between the history of exclusive breastfeeding and complementary feeding with the incidence of stunting in toddlers aged 24-59 months at Posyandu Sirsak. **Method:** The type of this research is observational analytic with a cross-sectional design. The sample consisted of 30 individuals, employing a total sampling technique. **Results:** There is a relationship between the history of exclusive breastfeeding with a p-value of 0.026 and the history of complementary feeding with a p-value of 0.025 with the incidence of stunting. There is no relationship between maternal age (p-value 0.443), education level (p-value 0.228), employment status (p-value 0.427), low birth weight (p-value 1.000), and family income (p-value 0.665) with the incidence of stunting. The research results indicate that the history of providing complementary feeding is more significantly statistically related than the history of exclusive breastfeeding in children aged 24-59 months, marked by a p-value of 0.038. **Conclusion:** A relationship exists between the history of exclusive breastfeeding and complementary feeding and the incidence of stunting, where the history of complementary feeding is more significantly statistically related to stunting.

Keywords: *exclusive breastfeeding, toddlers, complementary feeding, stunting*

INTRODUCTION

The current nutritional problems in Indonesia continue to affect the quality of human resources. Stunting is a persistent nutritional issue that remains a priority in Indonesia (Fitriani et al., 2022). Stunting affected 30.8% of Indonesians in 2018 but dropped to 27.7% and 24.1% in 2019 and 2020, respectively, according to the Indonesian Nutrition Status Study (Kemenkes RI, 2019). In 2021 and 2022, the proportion of children who

were stunted was 24.4% and 21.6%, respectively (UNICEF Indonesia, 2022). Comparing this number to the 2024 target of 14%, it is still extremely high. Based on the available data, measures are required to decrease toddler health problems.

Meanwhile, Yogyakarta's Special Region is one of the provinces that has successfully lowered the stunting rate. According to data from 2018, 12.37% of toddlers were stunted. However, the most recent data from 2022 revealed a rate of

16.40% (DIY Health Office, 2020). In the province, Sleman Regency has the third-highest rate of stunting cases. Data from 2022 showed that 6.88% of stunting cases occurred in Sleman Regency. The prevalence of stunting is significant at 8.03% at the Mlati II Health Center (Sleman Regency Government, 2023). This suggests that the number of stunting patients in this region continues to be higher than that in Sleman Regency.

According to the World Health Organization, newborn stunting may be caused by inappropriate supplemental feeding and exclusive breastfeeding. Infants should only be fed breast milk until they are six months old, as per Government Regulation No. 33 of 2012 (Government Regulation of the Republic of Indonesia, 2012). It has been demonstrated that breast milk can save lives by shielding kids from a variety of illnesses that are common in youngsters, including stunting. This is because breast milk provides all the nutrients that babies require in the proper amounts until they are six months old. Breast milk's nutritional value plays a significant role in avoiding stunting. TGF (transforming

growth factor) Beta is an anti-inflammatory agent that promotes cell growth and maturation. Breast milk contains lactoferrin, which can inhibit the growth of lactobacillus bacteria and peroxidase enzymes that can destroy pathogens (Arbain et al., 2022; Sujiyatini et al., 2023).

In Indonesia, almost 50% of children suffer from malnutrition during their first two years of life because over 40% of babies do not receive exclusive breastfeeding during the first six months of their lives, and only 5% of children continue to receive breast milk until they are 23 months old. The percentage of newborns nationwide who were exclusively breastfed fell from 69.7% in 2021 to 67.96% in 2022 (World Health Organization, 2020). In contrast, Sleman Regency has an 87.30% exclusive breastfeeding coverage rate, whereas Yogyakarta's Special Region has an 83% coverage rate (Dinas Kesehatan D.I Yogyakarta, 2023). Data from Puskesmas Mlati II indicates that 82% of women were exclusively breastfeeding in 2022, which is less than the regency's goal (Puskemas Mlati II, 2022). To maintain the

process of optimal child development and growth, newborns should receive supplemental feeding (MPASI) as soon as possible after the first six months of nursing. The MPASI offered must meet the child's age-appropriate dietary requirements in terms of frequency, texture, quantity, and diversity. The 24-59 month age particularly relevant on stunting because impaired linear growth due to chronic malnutrition over a long period of time. While the effects of malnutrition can begin in the womb, most children who experience stunting are in the 24-59 month age. This is particularly important because the effects of stunting are largely permanent and difficult to reverse once they manifest (Rachmawati et al., 2021).

RESEARCH DESIGN

This research has a cross-sectional design and is an observational analytical study. This study was conducted on 22 April 2024 at Posyandu Sirsak due the high rate of stunting in this location. The study's population comprises all women at Posyandu Sirsak who have toddlers

between 24 and 59 months of age. This study was conducted in conjunction with the posyandu schedule in one day and obtained 30 respondents. The sampling strategy used was total sampling. The research tool employed a questionnaire format that has been tested for validity and reliability which were filled out through direct interviews by researchers, and the weight and height measuring devices were taken directly by researchers using tools that meet Ministry of Health requirements. Three levels of analysis were then applied to the collected data: univariate, bivariate, and multivariate analysis. To determine which factors are most significantly associated with the dependent variable ($p\text{-value} < 0.05$), logistic regression is employed, and the chi-square test is used to analyze the association between the independent variables (exclusive breastfeeding and complementary feeding histories) and the dependent variable (stunting). The Ethics Committee of Poltekkes has approved this study. Yogyakarta Kemenkes with No. DP.04.03/e-KEPK.1/177/202

RESULT

Table 1. Frequency Distribution of Mothers with Toddlers Aged 24-59 Months Based on Characteristics

Characteristic	Frequency (n)	Percentage (%)
Mother's Age		
At risk (< 20 years or >35 years)	9	30
Not at Risk (20-35 years)	21	70
Level of Education		
Basic Education	7	23,3
Secondary Education	20	66,7
High Education	3	10
Job Status		
Working	7	23,3
Not Working	23	76,7
BBLR		
Yes	3	10
No	27	90
Family Income		
Low (<1.500.000)	3	10
Currently (1.500.000- 2.500.000)	23	76,7
High (2.500.000-3.500.000)	3	10
Extremely High (> 3.500.000)	1	3,3

Based on Table 1, it shows that out of 30 mothers with toddlers aged 24-59 months at Posyandu Sirsak, 21 (70%) had a non-risk pregnancy age (20-35 years), 20 (66.7%) of the mothers completed their education at the secondary level,

most of the mothers were not working, totaling 23 (76.7%), almost all toddlers were not low birth weight (LBW), totaling 27 (90%), and most family incomes were in the moderate category, totaling 23 (76.7%).

Table 2. Proportion of Stunting Incidence in Children Aged 24-59 Months

Characteristic	Frequency (n)	Percentage (%)
Incidence of Stunting		
Stunted	13	43,3
Not Stunted	17	56,7
Total	30	100

Based on Table 2, it can be seen that the prevalence of stunting among children aged 24-59 months at Posyandu Sirsak is 13 (43.3%). This

figure is considered quite high as it nearly represents the majority of the children.

Table 3. Cross-tabulation Results of Stunting Incidence Based on Exclusive Breastfeeding History in Children Aged 24-59 Months

History of Exclusive Breastfeeding	Incidence of Stunting				Total		<i>p-value</i>
	Stunted		Not Stunted				
	f	%	f	%	n	%	
Not Exclusive Breatfeeding	4	100	0	0	4	100	0,026
Exclusive Breastfeeding	9	34,6	17	65,4	26	100	
Total	13	43.3	17	56.7	30	100	

Based on Table 3, it shows that all toddlers with a history of non-exclusive breastfeeding, amounting to 100%, experience stunting, unlike toddlers with a history of exclusive breastfeeding, where 65.4% do not experience stunting. This is in line

with the analysis results, which indicate a relationship between the history of exclusive breastfeeding and the incidence of stunting in toddlers aged 24-59 months, with a p-value of 0.026.

Table 4. Cross-tabulation Results of Stunting Incidence Based on the History of Complementary Feeding in Children Aged 24-59 Months

History of Complementary Feeding	Incidence of Stunting				Total n	p- value	
	Stunted		Not Stunted				
	f	%	f	%	%		
Not Suitable	6	85,7	1	14,3	7	100	0,025
Suitable	7	30,4	16	69,6	23	100	
Total	13	43,3	17	56,7	30	100	

The results of the statistical test in Table 4 show that 85.7% of toddlers with an inappropriate history of complementary feeding experience stunting, while 69.6% of toddlers with an appropriate history of complementary feeding do not experience stunting. Based on correlation analysis, there is a relationship between the history of complementary feeding and the incidence of stunting in toddlers aged 24-59 months with a p-value of 0.025. Table 5. Cross-tabulation Results of Stunting Incidence Based on Maternal Characteristics in Children Aged 24-59 Months

Characteristic		Incidence of Stunting				Total		p-value
		Stunted		Not Stunted				
		f	%	f	%	n	%	
Mother's age	At risk (< 20 years or >35 years)	5	55,6	4	44,4	9	100	0,443
	Not at Risk (20-35 years)	8	38,1	13	61,9	21	100	
Total		13	43,3	17	56,7	30	100	

Level of education	Basic education	5	71,4	2	28,6	7	100	
	Secondary	7	35,0	13	65	20	100	
	High	1	33,3	2	66,7	3	100	
	Education							
Total		13	43,3	17	56,7	30	100	

Characteristic		Incidence of Stunting				Total		p-value
		Stunted		Not Stunted				
		f	%	f	%	n	%	
Job status	Working	2	28,6	5	71,4	7	100	
	Not Working	11	47,8	12	52,2	23	100	
Total		13	43,3	17	56,7	30	100	
BBLR	Yes	1	33,3	2	66,7	3	100	
	No	12	44,4	15	55,6	27	100	
Total		13	43,3	17	56,7	30	100	
Family Income	Low	1	33,3	2	66,7	3	100	
	Currently	11	47,8	12	52,2	23	100	
	High	1	33,3	2	66,7	3	100	
	Extremely High	0	0	1	100	1	100	
Total		13	43,3	17	56,7	30	100	

Based on Table 5, the statistical test results show that there is no relationship between maternal age, education level, employment status,

low birth weight (LBW), and family income with the incidence of stunting because all variables have a $p\text{-value} > 0.05$.

Table 6. Candidates Included in the Multivariate Model

No	Variable	<i>p-value</i>
1.	Education Level	0,228
2.	History of Exclusive Breastfeeding	0,026
3.	History of Complementary Feeding	0,025

Based on Table 6, it shows that all external variables that have undergone bivariate analysis with a $p\text{-value} < 0.25$ and are homogeneous are

candidates for the multivariate model, as follows the results of the logistic regression analysis:

Table 7. Results of the Logistic Regression Test

Variabel	B	Sig.	Exp (B)	95% C.I.	
				Lower	Upper
History of Exclusive Breastfeeding	21,54	0,999	2,277	0,00	9,99
History of Complementary Feeding	2,549	0,038	12,8	1,149	142,5
Constant	47,02	0,999	0,00		

Based on Table 7, it shows that the variable most related to the incidence of stunting is the history of

complementary feeding with a p-value of 0.038.

DISCUSSION

According to the study's findings, not all cases of stunting are caused by abnormal maternal traits, as most maternal traits are within normal ranges. This is because maternal traits are a secondary factor contributing to stunting. According to Ahmed et al. (2021), maternal features are part of the proximal context of stunting occurrence. This finding is consistent with their research, which indicates that maternal characteristics are an indirect factor influencing other factors that can cause stunting (Ahmed et al., 2021).

Stunting affects 43.3% of toddlers at Posyandu Sirsak between the ages of 24 and 59 months. Although the history of non-exclusive breastfeeding and complementary feeding (MPASI) that is inappropriate

for the child's age is one of the primary reasons for stunting, maternal features also play a part. Inappropriate MPASI and a history of non-exclusive breastfeeding can cause stunting in toddlers, which can impede future mental and motor skills development and raise the chance of less-than-ideal brain development. Toddlers at the Posyandu may have a lower quality of life as a result. This is consistent with statistics on stunted toddlers from the Mlati II Community Health Center's Working Area, which indicates an 8.03% prevalence rate of stunting. This number is fairly high because it surpasses Sleman Regency's goal of 6.88%.

According to the study's statistical tests, all stunted children had a history of not receiving only breast milk. This is because breast

milk is crucial for brain development and provides children with the energy they need until they are six months old. A child's brain does not develop correctly due to inadequate nourishment from birth, which can lead to delays in motor abilities. This is exacerbated by the fact that breast milk contains nutrients not found in any other diet. According to studies by Sampe et al. (2020), toddlers who are not exclusively breastfed had a 98% chance of stunting, or 61 times the likelihood of stunting, compared to toddlers who are exclusively breastfed (Sampe, Toban, and Madi, 2020). Breast milk's innate immunity is crucial, as it shields children from a variety of bacterial and viral diseases, thanks to its antibodies and bioactive components. This supports the findings of a study by Suyanto et al. (2024), which found that exclusive breastfeeding is thought to offer protection by promoting the growth and development of toddlers.

According to the results of this investigation, toddlers with a history of improper supplemental feeding accounted for 85.7% of stunting cases. This is because the child's dietary demands for both physical and cognitive growth are not being met in

terms of both quality and quantity. Since complementary foods are supposed to be high in nutrients to help brain development, their provision has a significant impact on toddlers' development. This finding is consistent with the results of Rukmawati et al. (2020), who reported a significant correlation ($p\text{-value} = 0.002$) between the occurrence of stunting and the administration of supplemental feeding (Rukmawati, Astutik, and Slamet, 2020). With a $p\text{-value}$ of 0.025 (<0.05), the statistical test findings indicate a significant correlation between the occurrence of stunting in children aged 24-59 months and the history of administering supplemental feeding.

A $p\text{-value}$ of 0.038 indicates that, according to the multivariate analysis in this study, the history of MPASI has a higher influence on the incidence of stunting than the history of exclusive breastfeeding. While parental factors, such as extreme prenatal stress and a ketogenic, high-fat diet, can affect the number of bacteria like *Lactobacillus* and *Bacteroides*, which impact the production of short-chain fatty acids, toddlers who have received

exclusive breastfeeding but still exhibit stunting may be stunted due to the gut microbiota that forms during development. Furthermore, the balance of bacteria in the digestive system and microbiota during pregnancy may be impacted by vitamin and mineral deficits. This is because the microbiota triggers the production of IGF, which impacts growth and can lead to the infant remaining stunted even after receiving only nursing (Arbain et al., 2022; Sujiyatini et al., 2023). To achieve a balanced nutritional intake, the diversity of supplemental feeding (MPASI) is crucial. One of the elements of supplemental feeding that is crucial in preventing stunting, particularly during the growth transition phase, is protein. Protein requirements will influence the development of a child's IQ. Essential amino acids found in protein can be used to create growth hormones, which will accelerate toddlers' growth rate. In the meantime, children's growth is influenced by their calorie consumption. According to Gibson's research, at least one-third of daily requirements (350–400 calories of energy and 10–15 grams of protein)

must be met in order for nutrition to be fulfilled (Gibson & Ferguson, 1998). Children aged 6–24 months receive supplemental meals in a timely, diverse, frequent, and safe manner in addition to breast milk.

CONCLUSION AND SUGGESTIONS

The history of exclusive breastfeeding and supplemental feeding are correlated with stunting; among toddlers in Posyandu Sirsak, the history of supplemental feeding is statistically substantially more associated with stunting. To ensure that related programs continue to be implemented and improved, the coordinator midwife at Puskesmas Mlati II is advised to educate mothers on the value of exclusive breastfeeding and appropriate supplemental feeding from the time of pregnancy preparation until delivery. In addition, Sirsak Posyandu cadres should assist nursing mothers and continually develop new ideas for the variety of supplemental feeding options available to mothers in their community who have children. Other researchers encouraged to conduct further research to reinforce findings on stunting, particularly the role of gut microbiota. This will help in developing more effective interventions.

REFERENCE

- Ahmed, K.Y. *et al.* (2021) 'Mapping Geographical Differences And Examining The Determinants Of Childhood Stunting In Ethiopia: A Bayesian Geostatistical Analysis', *Nutrients*, 13(6). Available at: <https://doi.org/10.3390/nu13062104>.
- Arbain, T. *et al.* (2022) *Buku Ajar Stunting Dan Permasalahannya*, Universitas Lambung Mangkurat. Yogyakarta: CV Mine.
- Dinas Kesehatan D.I Yogyakarta (2023) *Profil Kesehatan D.I Yogyakarta Tahun 2022*. Yogyakarta: Dinas Kesehatan D.I Yogyakarta.
- Dinas Kesehatan DIY (2020) 'Profil Kesehatan D.I Yogyakarta tahun 2020', *Profil Kesehatan Daerah Istimewa Yogyakarta tahun 2020*, p. 76.
- Fitriani *et al.* (2022) 'Cegah Stunting Itu Penting!', *Jurnal Pengabdian Kpd Masyarakat*, 4(2).
- Gibson, R.S. and Ferguson, E.L. (1998) *Nutrition intervention strategies to combat zinc deficiency in developing countries*, *Nutrition Research Reviews*. Available at: <https://doi.org/10.1079/nrr19980008>
- Kemenkes RI (2019) 'Laporan Pelaksanaan Integrasi Susenas Maret 2019 dan SSGBI Tahun 2019', *Badan Pusat Statistik, Jakarta - Indonesia*, pp. 1–69.
- Pemerintah Kabupaten Sleman (2023) *Dinilai Sukses Tekan Angka Stunting, Kalurahan Sidoluhur Menjadi Percontohan Praktik Baik Desa Bebas Stunting*, Pemerintah Kabupaten Sleman.
- Peraturan Pemerintah RI (2012) 'Peraturan Pemerintah No. 33 Tentang Pemberian ASI Eksklusif'. Jakarta, pp. 37–39.
- Puskemas Mlati II (2022) *Cakupan ASI Eksklusif Tahun 2022*, Puskesmas Mlati II.
- Rachmawati, R. *et al.* (2021) 'Literature Review : Pengaruh Pemberian ASI Eksklusif Dan MP ASI Dini Terhadap Stunting Pada Balita', *Seminar Nasional Hasil Riset dan Pengabdian Ke-III*, pp. 54–64.
- Rukmawati, S., Astutik, P. and Slamet, P.R. (2020) 'The Relationship Between Complementary Feeding And Stunting Eventsin 2 to 5 Years Of Age', *Journal for Quality in Public Health*, 4(1), pp. 27–32. Available at: <https://doi.org/10.30994/jqph.v4i1.146>.
- Sampe, S.A., Toban, R.C. and Madi, M.A. (2020) 'Hubungan Pemberian ASI Eksklusif Dengan Kejadian Stunting Pada Balita', *Jurnal Ilmiah Kesehatan Sandi Husada*, 11(1), pp. 448–455. Available at: <https://doi.org/10.35816/jiskh.v10i2.314>.
- Sujiyatini *et al.* (2023) 'Determinan Penyebab Kejadian Stunting pada Balita Usia 12-59 Bulan di DIY tahun 2023', in *Kajian Kebijakan Strategis*. Yogyakarta: Poltekkes Kemenkes Yogyakarta, p. 353 KKS.
- Suyanto, S. *et al.* (2024) 'Understanding Stunting Risk Factors In Kampar Regency: Insights From Mothers With Stunted Children (Qualitative Study)', *SAGE Open Medicine*, 12(1). Available at: <https://doi.org/10.1177/20503121241244662>.
- UNICEF Indonesia (2022) 'Laporan Tahunan 2021 UNICEF Indonesia', *United Nations Children's Fund World Trade Centre 2*, pp. 16–16.
- World Health Organization (2020) *Pekan Menyusui Dunia: UNICEF dan WHO Menyerukan Pemerintah dan Pemangku Kepentingan Agar Mendukung Semua Ibu Menyusui di Indonesia Selama COVID-19*, World Health Organization.