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Determinants of Toddlers' History with Stunting Incidence in the Coastal Community

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ABSTRACT

The primary nutritional issue affecting toddlers worldwide is stunting, a chronic issue caused by prolonged malnutrition. Therefore, this study aimed to investigate the correlation between toddlers' history and stunting incidence in the coastal community of Kamarian Village. Using an analytical survey with a cross-sectional design, data collection occurred from June 1st to 31st, 2022. A total of 113 toddlers aged 2-5 years were selected through total sampling, and data were analyzed using the chi-square test. The results showed that about 22.9%, equivalent to 27 toddlers, experienced stunting. The analysis also showed a correlation between stunting and factors such as birth weight (ρ=0.000), exclusive breastfeeding (ρ=0.013), infectious diseases (ρ=0.000), and complementary feeding (ρ=0.002). Specifically, low birth weight (LBW), exclusive breastfeeding, infectious diseases, and early introduction of complementary feeding (MP-ASI) were found to influence stunting incidence among toddlers. Factors such as LBW, lack of exclusive breastfeeding, infectious diseases, and early introduction of complementary feeding contributed to stunting in toddlers.

Keywords : Stunting; exclusive breastfeeding; complementary feeding; infectious diseases; birth weight

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INTRODUCTION

The primary nutritional issue affecting toddlers worldwide is stunting, a chronic issue caused by prolonged malnutrition. Stunting arises due to a combination of factors, including infectious diseases and insufficient nutrient intake. Toddlers with with chronic nutritional issues often experience early developmental behavioral diseases, have lower cognitive scores, and have decreased motor skills. They also have lower Intelligence Quotient (IQ) scores, experience suboptimal mental development, encounter frequent health disturbances during early childhood, and face increased vulnerability to coronary heart diseases, obesity, hypertension, and osteoporosis.(1) Stunting affects approximately one-third of toddlers under five years of age in developing countries, contributing to 14% of toddler deaths.(2) According to data from the WHO, UNICEF, and World Bank Group, in 2020, approximately 149.2 million toddlers under the age of 5 suffered from stunting globally.(3) The prevalence of chronic nutritional issues varied across regions, with 61.4 million cases in Africa, 2.7 million in Central America, 1.8 million in Europe, and 21.8 million in Asia.(4) In Indonesia, a 2021 Nutrition Study showed that 24.4% of toddlers were affected by stunting.(5) Specifically, in Maluku Province in 2019, stunting incidence was 30.38%,(6) while data from the West Seram Regency Health Office in 2021, reported that 1106 (14%) toddlers experienced stunting.(7)

A significant factor that contributes to stunting is low birth weight (LBW). Toddlers born with LBW are more likely to experience chronic nutritional issues compared to those with normal birth weight.(8) Those weighing less than 2500 grams at birth may experience hindered growth, thereby leading to intellectual impairment and increased susceptibility to diseases and hypothermia. In addition to LBW, exclusive breastfeeding plays a crucial role in stunting. The study conducted by Beal (2017) showed that non-exclusive breastfeeding during the first six months and premature birth are factors contributing to stunting among Indonesian toddlers.(8) Additionally, the duration of breastfeeding, exclusive breastfeeding, and the timing of complementary feeding significantly correlate with chronic nutritional issues.(9) Early initiation and exclusive breastfeeding for six months tend to protect toddlers against gastrointestinal diseases. Infectious diseases are another factor that can influence stunting among toddlers. Diseases such as diarrhea and parasitic diseases disrupt nutrient absorption in the digestive system, leading to malnutrition.(10)

An initial observation conducted on April 8-9, 2022, at the nutrition room of Kamarian Health Center showed that the proportion of stunting among toddlers in the center's work area was 430. Among toddlers aged 2-5 months, the number of stunted toddlers was 24 in 2021,

which later turned 27 in 2022. Therefore, this study investigates the relationship between toddlers' history and stunting incidence in the coastal community of Kamarian Village, West Seram Regency.

METHOD

This analytical survey, using a cross-sectional design, was conducted in Kamarian Village, West Seram Regency, selected due to its inclusion in the stunting locus in 2022. The study population consisted of 113 parents of toddlers aged 2-5 months, with the sample comprising an equal number of parents. Scales and microtomes were used to measure toddlers' weight and height, facilitating the calculation of their anthropometric values based on the height-for-age index. Univariate data analysis showed the frequency distribution of independent and dependent variables, while bivariate analysis aimed to establish the relationship between birth weight, exclusive breastfeeding, infectious diseases, early complementary feeding, and stunting. Data analysis used univariate and bivariate analysis.

RESULT

Table 1. Distribution of Respondents Based on Parental Characteristics

Parental Characteristics	N	%
Parent's Age (Years)		
20-30	44	38,9
31-40	47	41,6
41-50	22	19,5
Occupation		
Contract Worker	6	5.3
Housewife	95	84.1
Civil Servant	12	10.6
Total	113	100

Table 1 showed that the predominant age group among parents was 20-30 years (41.6%), with the majority being housewives (84.1%).

Table 2 provided that the majority of toddlers were male (54.9%), primarily aged four years (31.9%). In terms of height, the majority fell within the range of 81-90 cm (35.4%), while their weight typically ranged from 9-15 kg (71.7%). Table 3 showed that 62.5% of toddlers with a birth weight of <2500 grams experienced stunting, surpassing those with a birth weight of ≥2500 grams. The analysis showed a correlation between birth weight and stunting incidence in the coastal community of Kamarian Village, West Seram Regency (p=0.000). Among the 42 toddlers who were not exclusively breastfed, 38.1% experienced stunting, significantly higher than the 15.5% of exclusively breastfed ones.

Table 2. Distribution of Respondents Based on Todders Characteristics

Toddlers' Characteristics	n	(%)
Gender		
Male	62	54.9
Female	51	45.1
Age (Years)		
2	25	22.1
3	28	22.1
4	36	31.9
5	24	23.9
Height (cm)		
60-80	17	15,0
81-90	40	35,4
91-100	28	24,8
101-110	28	24,8
Weight (Kg)		
9 - 15	81	71,7
16 - 20	24	21,2
21 - 25	8	7,1
Total	113	100

The analysis showed a correlation between exclusive breastfeeding and stunting incidence in the coastal community of Kamarian Village, West Seram Regency (p=0.013).

Table 3. Relationship Between Birth Weight, Exclusive Breastfeeding, Infectious Diseases, and Complementary Feeding with Stunting

Variable	Stunting				Total		*p*
	Yes		No				
	n	%	n	%	n	%	
Birth Weight							
<2500 gram	20	62.5	12	37.5	32	100	0,000
≥2500 gram	7	8.6	74	91.4	81	100	
Exclusive Breastfeeding							
No	16	38.1	26	61.9	42	100	0.013
Yes	11	15.5	60	84.5	71	100	
Infectious Diseases							
Yes	16	57.1	12	42.9	28	100	0.000
No	11	12.9	74	87.1	85	100	
Complementary Feeding							
Early (< 6 Bulan)	12	50	12	50	24	100	0.002
According to the Age (≥ 6 Bulan)	15	16.9	74	83.1	89	100	
Total	27	23,9	86	76.1	113	100	

Based on the history of infectious diseases, 57.1% of toddlers experienced stunting, significantly higher than the 12.9% of toddlers who did not suffer from the condition. The results showed a correlation between infectious diseases and stunting incidence in Kamarian Village, West Seram Regency (p=0.000).

Among the 24 toddlers who received early complementary feeding, 50% experienced stunting, compared to 16.9% of 89 who received it according to age. This suggested a correlation between early complementary feeding and stunting incidence in the coastal community of Kamarian Village, West Seram Regency (p=0.002).

DISCUSSION

The Relationship Between Birth Weight and Stunting

Birth weight, the weight of toddlers at birth, typically measured 2500 grams. When the measurement for birth weight fell below 2500 grams, it was categorized as LBW, often attributed to inadequate maternal nutrition during pregnancy, thereby leading to intrauterine growth retardation. LBW could disrupt toddlers' growth, and when coupled with inadequate food intake and poor healthcare, it might contribute to stunting.

Toddlers with LBW experience inadequate digestive system functioning, such as reduced fat absorption and protein digestion, resulting in insufficient nutrients reserved in the body. Therefore, the growth of those with LBW might be compromised, particularly when this condition persists alongside inadequate food intake, frequent infections, and poor healthcare, potentially increasing the risk of stunting.[8]

The results of the analysis showed a relationship between birth weight and stunting incidence in the coastal community of Kamarian Village, West Seram Regency. Halli explained that toddlers with LBW have a 19% higher likelihood of developing stunting compared to those with normal birth weight.[11] Additionally, Nshimyiryo *et al*. found that toddlers with LBW were 2.12 times more likely to experience stunting than those with normal birth weight.[12]

LBW posed a multifaceted public health issue, often linked to maternal malnutrition, poor health, hard work, and inadequate prenatal care. Additionally, it represented an important predictor of newborn health and survival, having significant risks for toddlers. The enduring effect of LBW could result in growth faltering because birth weight was strongly correlated with long-term growth. Toddlers with LBW faced challenges in catching up with early growth deficits, potentially leading to stunting.

The Relationship Between Exclusive Breastfeeding and Stunting

Exclusive breastfeeding covered providing toddlers with breast milk alone for the first six months of life, without introducing any other foods or beverages. It served as the most important source of nourishment for toddlers during this developmental period. Exclusive breastfeeding refers to the sustained practice of breastfeeding without adding formula milk or solid foods.

The benefits of exclusive breastfeeding were manifold, including the protection of both maternal and toddler health, the facilitation of healthy growth and optimal development, the fortification of the immune system, and the mitigation of the risk of infectious diseases. Furthermore, exclusive breastfeeding fostered optimal physical and cognitive development in toddlers, helped prevent malnutrition, and mitigated the risk of stunting.[13]

The analysis showed a correlation between exclusive breastfeeding and stunting incidence. Previous reviews reported that toddlers who were not exclusively breastfed were at a higher risk of stunting, with a risk 7.86 times greater than their exclusive breastfed counterparts.[14] Additionally, Sumiyati reported that toddlers who received exclusive breastfeeding have a 3.429 times lower risk of stunting.[15] Stunting could be attributed to suboptimal breastfeeding during the first months of life and a deficiency or imbalance in the intake of essential vitamins and micronutrients required for the body.

The Relationship Between Infectious Diseases and Stunting

In this study, infectious diseases covered various diseases experienced by toddlers, including Acute Respiratory Infections (ARI), diarrhea, helminthiasis, and Tuberculosis (TB). The history of diseases among toddlers aged 12-60 months was closely related to the development of stunting. Infectious diseases significantly affected their growth, which often increased body temperature, increasing the need for nutrients. Toddlers might face malnutrition and growth setbacks without sufficient food intake and adequate nutrition.

Infectious diseases directly contributed to stunting, particularly when nutritional intake was lacking. Malnourished toddlers were more susceptible to such diseases, showing the importance of promptly addressing them to ensure appropriate nutrition.[16] Prolonged exposure to infectious diseases increases the risk of stunting and might leave residual symptoms (sequelae), further compromising toddlers' physical well-being. Hygiene practices also played a crucial role, as poor hygiene could increase the likelihood of contracting diseases. These infectious diseases were characterized by loss of appetite and vomiting, leading to inadequate nutrient intake and exacerbating growth challenges.

The analysis showed a correlation between infectious diseases and stunting incidence. The study by Novikasari (2021) showed that toddlers who had experienced diarrhea in the last

two months faced a 5.04 times higher risk of developing stunting compared to those who had not. [17] Similarly, Solin *et al*. identified diarrhea and respiratory diseases as primary contributors to stunting among toddlers aged 12-48 months in poor rural and urban areas. Stunting in toddlers was mainly attributed to a combination of inadequate nutrition and infectious diseases, showcasing the significance of protein, zinc, and iron in its prevention.

The Relationship Between Complementary Feeding and Stunting

Complementary feeding, easily consumed and digested by toddlers, was crucial for providing additional nutrition to meet their growing needs. It included various foods and drinks specifically introduced to toddlers, categorized as homemade or commercially manufactured. Furthermore, complementary feeding supplemented breast milk for toddlers older than six months but did not substitute it, serving to fulfill the nutritional needs.

The analysis results showed that 24 toddlers received complementary feeding prematurely. This occurred when exclusive breastfeeding ceased due to the perception among mothers that breast milk was insufficient and did not flow adequately. The condition led to toddlers' fussiness, thereby making mothers introduce additional foods. Early introduction of complementary feeding could increase the risk of diseases such as diarrhea, respiratory issues, allergies, and growth diseases due to the underdevelopment of toddlers' digestive systems, potentially leading to stunting.

Early introduction of complementary feeding, particularly before the age of four months, correlated with heightened susceptibility to gastrointestinal diseases, thereby leading to growth diseases, micronutrient deficiencies, and vulnerability to various diseases during the first two years of life.[18] The introduction of solid food to toddlers under six months of age posed a risk of causing intestinal motility diseases. Given that the immune system was not fully developed, introducing complementary feeding early could expose toddlers to various pathogens, specifically when the food lacked hygiene. The analysis results showed a correlation between early introduction of complementary feeding and stunting incidence. In a study conducted by Khasanah, toddlers who received complementary feeding not in accordance with the recommended timing had a 2.8 times higher risk of stunting.[19]

CONCLUSION AND RECOMMENDATIONS

In conclusion, the analysis results showed that there were 27 stunting toddlers (22.9%) in the coastal community of Kamarian Village, West Seram District. Factors such as LBW, lack of exclusive breastfeeding, infectious diseases, and early introduction of complementary feeding contributed to stunting in toddlers. Therefore, health workers need to intensify awareness campaigns regarding stunting to mitigate its incidence.

REFERENCES

1 N. Khairani and S. U. Effendi, "Family characteristics as risk factors of stunting among children age 12-59 month," *J. Aisyah J. Ilmu Kesehat.*, vol. 4, no. 2, pp. 119–130, 2019.

2 G. Danaei *et al.*, "Risk Factors for Childhood Stunting in 137 Developing Countries: A Comparative Risk Assessment Analysis at Global, Regional, and Country Levels," *PLoS Med.*, vol. 13, no. 11, pp. 1–18, 2016.

3 UNICEF, WHO, and W. Bank, "Levels and trends in child malnutrition; UNICEF/WHO/World Bank Group-Joint child malnutrition estimstes 2021 edition," p. 32, 2021.

4 World Health Organization, "Stunting prevalence among children under 5 years of age (%) (model-based estimates)," 2022. [Online]. Available: https://www.who.int/data/gho/data/ indicators/indicator-details/GHO/gho-jme-stunting-prevalence.

5 Kementerian Kesehatan RI, *Buku Saku Hasil Studi Status Gizi Indonesia (SSGI) Tingkat Nasional, Provinsi, dan Kabupaten/Kota Tahun 2021*. Jakarta: Kementerian Kesehatan RI Badan Penelitian dan Pengembangan Kesehatan, 2021.

6 Kemenkes RI, *Profil Kesehatan Indonesia Tahun 2019*. 2020.

7 Dinas Kesehatan Kabupaten Seram Bagian Barat, *Publikasi Hasil Pengukuran Balita Tingkat Kabupaten*. Piru, 2021.

8 E. Nasution, Darwin, Detty Siti Nurdiati, Huriyati, "Berat badan lahir rendah (BBLR) dengan kejadian stunting pada anak usia 6-24 bulan," *J. Gizi Klin. Indones.*, vol. 11, no. 1, pp. 31–37, 2014.

9 L. M. García Cruz, G. González Azpeitia, D. Reyes Súarez, A. Santana Rodríguez, J. F. Loro Ferrer, and L. Serra-Majem, "Factors associated with stunting among children aged 0 to 59 months from the central region of Mozambique," *Nutrients*, vol. 9, no. 5, pp. 1– 16, 2017.

10 S. G. Ria Astuti, Neneng Martini, M. Wijaya, and A. Mandiri, "Risiko Faktor Ibu terhadap Kejadian Stunting," *J. Kebidanan Malahayati*, vol. 7, no. 4, pp. 842–850, 2021.

11 S. S. Halli, R. A. Biradar, and J. B. Prasad, "Low Birth Weight, the Differentiating Risk Factor for Stunting among Preschool Children in India," *Int. J. Environ. Res. Public Health*, vol. 19, no. 7, 2022.

12 A. Nshimyiryo *et al.*, "Risk factors for stunting among children under five years: A cross-sectional population-based study in Rwanda using the 2015 Demographic and Health Survey," *BMC Public Health*, vol. 19, no. 1, pp. 1–10, 2019.

13 M. L. K. Addinia, Nida, "ASI Eksklusif Sebagai Pencegahan Stunting di Kabupaten Flores Timur," *J. Penelit. Kesehat. Suara Forikes*, vol. 13, no. 3, pp. 694–698, 2022.

14 M. R. Permadi, D. Hanim, K. Kusnandar, and D. Indarto, "Risiko Inisiasi Menyusu Dini Dan Praktek Asi Eksklusif Terhadap Kejadian Stunting Pada Anak 6-24 Bulan (Early Breastfeeding Initiation and Exclusive Breastfeeding As Risk Factors of Stunting Children

6-24 Months-Old)," *Penelit. Gizi dan Makanan (The J. Nutr. Food Res.*, vol. 39, no. 1, 2017.

15 S. Sumiyati, "Berat bayi lahir rendah dan ASI eksklusif terhadap kejadian stunting pada balita," *J. Ris. Kebidanan Indones.*, vol. 6, no. 1, pp. 1–5, 2022.

16 T. Subroto, L. Novikasari, and S. Setiawati, "Hubungan Riwayat Penyakit Infeksi Dengan Kejadian Stunting Pada Anak Usia 12-59 Bulan," *J. Kebidanan Malahayati*, vol. 7, no. 2, pp. 200–206, 2021.

17 E. Lidia Fitri, "Hubungan Pemberian Asi Eksklusif dan Mp Asi Dini dengan Kejadian Stunting pada Balita," *Al-Insyirah Midwifery J. Ilmu Kebidanan (Journal Midwifery Sci.*, vol. 8, no. 1, p. 2024, 2019.

18 et al. Kuchenbecker J, Jordan I, Reinbott A, Herrmann J, Jeremias T, Kennedy G, "Exclusive breastfeeding and its effect on growth of Malawian infants: results from a cross-sectional study," *Paediatr. Int. Child Health*, vol. 35, no. 1, pp. 14–23, 2015.

19 D. P. Khasanah, H. Hadi, and B. A. Paramashanti, "Waktu pemberian makanan pendamping ASI (MP-ASI) berhubungan dengan kejadian stunting anak usia 6-23 bulan di Kecamatan Sedayu," *J. Gizi dan Diet. Indones. (Indonesian J. Nutr. Diet.*, vol. 4, no. 2, p. 105, 2016.