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UNRAVELING STUNTING RISK FACTORS IN TODDLERS: A CASE STUDY AT KLAMPOK 1 PUBLIC HEALTH CENTER, BANJARNEGARA

[1]Arum Ratih Febriana [2] Untari Fajar Utami, [3]Linda Yanti, [4]Refania Ayund Friska
[1,2,3,4,5]Universitas Harapan Bangsa
Email : arummfebri22@gmail.com, untarifajar@uhb.ac.id, Lindayanti@uhb.ac.id, Refaniaayunda6422@gmail.com

ABSTRACT

Stunting is a manifestation of chronic linear growth disorders in toddlers triggered by long-term nutritional deficiencies and recurrent infections. Preliminary data from early 2024 at the Klampok 1 Public Health Center in Banjarnegara recorded a fairly high figure, with 295 toddlers diagnosed with stunting. This study aims to map the risk factors for stunting among toddlers in the working area of the Klampok 1 Public Health Center, Banjarnegara. The research design is descriptive quantitative with a cross-sectional approach. Using a purposive sampling technique, a sample of 200 toddlers aged 0–59 months was obtained from secondary data and analyzed univariately. The analysis showed that the average age of stunted toddlers was 33.77 months, with a slightly higher proportion of boys (53.0% / 106 children). Based on the height-for-age (HAZ) indicator, the majority of toddlers were in the stunted category (84.5% / 169 children). Meanwhile, 36.7% (62 children) were underweight (WAZ), and 87.0% (147 children) of stunted toddlers had a normal weight-for-height (WHZ). Furthermore, most mothers who did not participate in the toddler-mother class program (76.3% / 129 people) had stunted toddlers. These conditions indicate that stunting is influenced not only by current nutritional status but also by the history of nutritional intake, parenting practices, and the long-term health condition of the child.

Keywords: Stunting; Toddlers; Risk Factors; Toddler-Mother Class.

INTRODUCTION

Stunting is a condition of growth and development impairment in children due to chronic malnutrition and recurrent infections. This condition is characterized by a child's height being below the standard for their age, specifically more than two standard deviations below the median of the WHO growth curve. Stunting is a serious nutritional problem because it can permanently affect brain development, lower intelligence levels (IQ can drop by 10–13 points), hinder academic achievement, and increase the risk of degenerative diseases and obesity in adulthood.

Globally and nationally, stunting reduction is a top priority. In Indonesia, data from the Indonesian Nutritional Status Survey (SSGI) showed that the national stunting prevalence stood at 21.5% in 2023 and decreased to 19.8% in 2024. At the regional level, Central Java recorded a prevalence of 20.7% (2023). Meanwhile, Banjarnegara Regency recorded a stunting rate of 17.5% according to e-PPGBM data and 19.9% according to the 2023 Indonesian Health Survey (SKI) data. Despite experiencing a downward trend, this figure still requires special attention to achieve national targets.

Based on a preliminary study in 2024 at the Klampok 1 Public Health Center, Banjarnegara, it was found that as many as 295 toddlers experienced stunting. This significant figure underlies the urgency of conducting descriptive quantitative research to map the specific characteristics and sociodemographic as well as clinical risk factors underlying the occurrence of stunting in the region.

METHODS

This study uses a descriptive quantitative design with a cross-sectional study approach. The research was conducted to identify the characteristics of stunted toddlers without providing treatment or altering the situation in the field.

The population of this study consisted of all toddlers registered in the working area of the Klampok 1 Public Health Center, Banjarnegara. Through a purposive sampling technique, a sample of 200 toddlers aged 0–59 months was obtained using secondary data from medical records and public health center logs. The variables studied included characteristics of age, sex, nutritional status based on three anthropometric indicators—Height-for-Age (HAZ), Weight-for-Age (WAZ), and Weight-for-Height (WHZ)—as well as the level of parental participation in the Toddler-Mother Class program. Data analysis was conducted univariately to generate frequency and percentage distributions.

RESULTS AND DISCUSSIONS

Result

The general characteristics of the research respondents are presented in Table 1, while the distribution of stunting incidence based on the HAZ indicator according to each variable is presented in Table 2.

Table 1. Distribution of Respondent Characteristics (n = 200)

Characteristics	Frequency (n)	Percentage (%)
Sex		
Male	106	53.0
Female	94	47.0
Characteristics	Frequency (n)	Percentage (%)
Nutritional Status WAZ (Weight-for-Age)		
Severely Underweight	20	10.0
Underweight	80	40.0
Normal	100	50.0
Nutritional Status HAZ (Height-for-Age)		
Severely Stunted	31	15.5
Stunted	169	84.5
Nutritional Status WHZ (Weight-for-Height)		
Severely Wasted	5	2.5
Wasted	18	9.0
Normal / Good Nutrition	172	86.0
Overweight	5	2.5
Participation in Toddler-Mother Class		
Did Not Participate	152	76.0
Participated	48	24.0

Source: Secondary data from the Toddler Cohort of Klampok 1 Public Health Center, Banjarnegara (2026). Average age of toddlers: 33.77 months; SD: 16.88; minimum age: 0 months; maximum age: 59 months.

Demographic Characteristics of Toddlers (Age and Sex)

Data analysis results show that the average age of stunted toddlers at Klampok 1 Public Health Center is 33.77 months. Clinically and epidemiologically, the manifestation of stunting due to chronic malnutrition indeed tends to become more apparent once a child passes the age of 2 years (24 months). In the age range above 2 years, children begin to actively explore the outdoor environment, thereby increasing the risk of exposure to environmental infections (such as diarrhea and Acute Respiratory Infection/ARI), which, if recurrent, can worsen linear growth failure.

In terms of sex, the proportion of male toddlers was slightly higher, at 53.0% (106 children) compared to female toddlers. This is in line with biological and behavioral theories, where boys tend to be more physically active, requiring a higher energy intake. If nutritional intake is not balanced with energy expenditure, they become more vulnerable to chronic nutritional deficits. Additionally, male toddlers biologically possess a slightly higher immune vulnerability to gastrointestinal and respiratory tract infections during early life.

Nutritional Status Based on Anthropometric Indicators

- **Height-for-Age (HAZ):** As the primary indicator (gold standard) for stunting, the majority of the sample was in the stunted category (84.5% / 169 children), while the remainder fell into the severely stunted category. This confirms the presence of long-term malnutrition issues or a history of recurrent infections since the child was in the womb up to toddlerhood.
- **Weight-for-Age (WAZ):** Based on this indicator, it was recorded that 36.7% (62 children) of stunted toddlers were also in the underweight category. Biologically, weight loss that is not immediately intervened will gradually halt height growth because the body prioritizes limited energy for vital organ functions over linear bone growth.
- **Weight-for-Height (WHZ):** Interestingly, 87.0% (147 children) of stunted toddlers had a normal nutritional status (good nutrition) based on WHZ. This condition proves the clinical phenomenon that physically short children can appear proportional (normal weight) if only their weight is measured against their current height. However, the proportion of toddlers experiencing an intersection between underweight/wasting (acute problem) and stunting (chronic problem) remains the highest risk group for a drastic decline in immunity.

Table 2. Distribution of Stunting Incidence Based on the HAZ Indicator

Variable	Severely Stunted n (%)	Stunted n (%)	Total
Nutritional Status WAZ			
Severely Underweight	8 (25.8)	12 (7.1)	20
Underweight	18 (58.1)	62 (36.7)	80
Normal	5 (16.1)	95 (56.2)	100
Sex			
Female	14 (45.2)	80 (47.3)	94
Male	17 (54.8)	89 (52.7)	106
Variable	Severely Stunted n (%)	Stunted n (%)	Total
Participation in Toddler-Mother Class			
Did Not Participate	23 (74.2)	129 (76.3)	152
Participated	8 (25.8)	40 (23.7)	48
Nutritional Status WHZ			
Severely Wasted	3 (9.7)	2 (1.2)	5
Wasted	2 (6.5)	16 (9.5)	18
Normal / Good Nutrition	25 (80.6)	147 (87.0)	172
Overweight	1 (3.2)	4 (2.4)	5
Total	**31 (100.0)**	**169 (100.0)**	**200**

Source: Secondary data from the Toddler Cohort of Klampok 1 Public Health Center, Banjarnegara (2026).

Participation Factor in Toddler-Mother Class

The most prominent external factor (psychosocial and educational) in this study was the low participation in the Toddler-Mother Class, where 76.3% (129 mothers) did not participate in the program. The Toddler-Mother Class is a crucial platform for learning together about growth and development monitoring, parenting practices, immunization, and balanced nutritional complementary feeding (MP-ASI) practices. The non-participation of mothers in this educational forum carries a high risk of triggering maladaptive feeding practices and delaying the early detection of child growth disorders.

CONCLUSIONS

The incidence of stunting among toddlers at the Klampok 1 Public Health Center, Banjarnegara, is influenced by complex, multidimensional interactions. The main characteristics of stunted toddlers were dominated by boys with an average age of 33.77 months. Clinically, stunting manifestations were dominated by the stunted category (HAZ 84.5%), with an intersection of underweight status (WAZ) at 36.7%. In addition to the child's physical factors, behavioral factors in the form of low maternal participation in the Toddler-Mother Class (76.3%) became the most significant external risk factor hindering the understanding of balanced nutritional parenting.

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CONFLICT OF INTEREST AND FUNDING DISCLOSURE

The author declares no conflicts of interest regarding this study. This research did not receive any funding from any source.

AUTHOR CONTRIBUTIONS

Arum Ratih Febriana: Conceptualization, data curation, investigation, methodology, formal analysis, writing – original draft.
Untari Fajar Utami: Conceptualization, supervision, validation, writing – review and editing.
Linda Yanti,S.ST.,M.Keb: Methodology, supervision, validation, writing – review.
Refania Ayunda Friska: Supervision, validation, writing – review and editing.

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