

## THE EFFECTIVENESS OF SUPPLEMENTARY FEEDING ON TODDLERS' NUTRITIONAL STATUS IN REDUCING STUNTING IN RIVERBANK AREAS

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### Abstract

Stunting is a chronic nutritional problem that affects children's physical growth and cognitive development. Supplementary feeding is one of the strategies implemented to improve toddlers' nutritional status and reduce stunting prevalence. This study aimed to evaluate the effectiveness of supplementary feeding on toddlers' nutritional status in riverbank areas. This study employed a pre-experimental design with a one-group pre-post test approach. The sample consisted of 40 toddlers aged 6–59 months who received supplementary feeding for 90 days. Anthropometric measurements were conducted to assess height-for-age, weight-for-age, and weight-for-height z-scores based on WHO standards. Data were analyzed using paired t-test and Wilcoxon test. The results showed a significant improvement in toddlers' nutritional status after the intervention. The mean height-for-age z-score increased from -2.31 to -1.78 ( $p = 0.001$ ). The prevalence of stunting decreased from 45.0% to 25.0%. Body weight and height also increased significantly after supplementary feeding. In conclusion, supplementary feeding is effective in improving toddlers' nutritional status and reducing stunting prevalence in riverbank communities. These findings suggest that supplementary feeding programs should be implemented continuously and integrated with nutrition education and community-based interventions.

**Keywords:** Stunting; Supplementary feeding; Nutritional status; Toddlers; Riverbank areas

### INTRODUCTION

Stunting is one of the most critical public health problems affecting children under five years old, particularly in developing countries. Stunting results from chronic malnutrition during the first 1,000 days of life and leads to impaired physical growth and cognitive development (WHO, 2021). Children who experience stunting are more vulnerable to infectious diseases and have lower productivity in adulthood (UNICEF, 2020).

In Indonesia, the prevalence of stunting remains high despite various government interventions. The Indonesian Nutritional Status Survey reported that the national stunting prevalence was 21.6%, which is still above the WHO threshold of 20% (Ministry of Health of Indonesia, 2022). Riverbank areas are considered vulnerable due to environmental and socioeconomic limitations that may exacerbate nutritional problems among children.

Supplementary feeding programs are widely implemented as a strategy to improve dietary intake among toddlers. These programs aim to provide additional energy and essential nutrients to children at risk of malnutrition. Previous studies have shown that supplementary feeding can significantly improve anthropometric indicators among toddlers (Wulandari et al., 2020; Suryani et al., 2022). However, the effectiveness of supplementary feeding varies depending on local conditions, compliance, and the quality of food provided.

Therefore, evaluating the effectiveness of supplementary feeding programs in specific community settings is essential. This study aimed to assess changes in toddlers' nutritional status before and after supplementary feeding and to evaluate its effectiveness in reducing stunting prevalence in a riverbank community.

## **METHODS**

### **Study Design**

This study used a quantitative approach with a pre-experimental design, specifically a one-group pre–post test design.

### **Study Area and Population**

The study was conducted in Kampung Besar Seberang Village, Rengat District, Indragiri Hulu Regency, Indonesia. The population consisted of toddlers aged 6–59 months living in riverbank areas.

### **Sample**

A total of 40 toddlers were selected using purposive sampling based on inclusion criteria:

1. toddlers aged 6–59 months,
2. receiving supplementary feeding, and
3. having complete anthropometric data before and after intervention.

### **Intervention**

Supplementary feeding was provided for 90 days in the form of nutrient-dense food appropriate for toddlers' nutritional needs, following national guidelines (Ministry of Health of Indonesia, 2017).

### **Variables**

1. Independent variable: Supplementary feeding
2. Dependent variables: Nutritional status (height-for-age, weight-for-age, weight-for-height) and stunting prevalence

## Data Collection

Anthropometric measurements were conducted using standardized equipment. Body weight was measured using digital scales, and height was measured using a stadiometer. Z-scores were calculated based on WHO Child Growth Standards (WHO, 2006). Z-scores were calculated based on WHO Child Growth Standards.

## Data Analysis

Descriptive analysis was used to describe respondents' characteristics and nutritional status. Inferential analysis was conducted using paired t-test and Wilcoxon test with a significance level of 0.05.

## RESULTS AND DISCUSSIONS

### Characteristics of Respondents

The study involved 40 toddlers. Most respondents were aged 24–59 months (55.0%). Male toddlers accounted for 52.5% of the sample. The majority of mothers had an educational level below senior high school (65.0%).

**Table 1. Characteristics of Respondents (n = 40)**

Characteristics	n	%
Age 6–23 months	18	45.0
Age 24–59 months	22	55.0
Male	21	52.5
Female	19	47.5
Mother's education ≤ junior high school	26	65.0
Mother's education ≥ senior high school	14	35.0

### Changes in Anthropometric Measurements

There was an increase in body weight and height after supplementary feeding.

**Table 2. Mean Body Weight and Height Before and After Supplementary Feeding**

Indicator	Before Intervention	After Intervention
Body weight (kg)	10.2 ± 1.8	11.1 ± 1.7
Height (cm)	80.4 ± 7.2	83.6 ± 7.0

### Changes in Nutritional Status

Supplementary feeding significantly improved toddlers' nutritional status.

**Table 3. Mean Z-score of Nutritional Status Before and After Supplementary Feeding**

Index	Before Intervention	After Intervention	p-value
Height-for-age (HAZ)	-2.31 ± 0.62	-1.78 ± 0.55	0.001
Weight-for-age (WAZ)	-1.95 ± 0.58	-1.32 ± 0.50	0.002
Weight-for-height (WHZ)	-1.21 ± 0.47	-0.78 ± 0.42	0.004

The statistical analysis showed significant differences in nutritional status before and after intervention ( $p < 0.05$ ).

### Changes in Stunting Prevalence

The prevalence of stunting decreased after supplementary feeding.

**Table 4. Prevalence of Stunting Before and After Supplementary Feeding**

	Nutritional Status Before Intervention	After Intervention
Stunting	18 (45.0%)	10 (25.0%)
Not stunting	22 (55.0%)	30 (75.0%)

## DISCUSSION

The findings indicate that supplementary feeding significantly improved toddlers' nutritional status. The increase in height-for-age z-score reflects an improvement in linear growth, which is crucial in addressing chronic malnutrition and stunting (WHO, 2006).

The reduction in stunting prevalence from 45.0% to 25.0% demonstrates that supplementary feeding is an effective intervention in riverbank communities. These results are consistent with previous studies reporting that supplementary feeding contributes to improved anthropometric indicators among children (Wulandari et al., 2020; Suryani et al., 2022).

Nevertheless, the effectiveness of supplementary feeding is influenced by multiple factors, including maternal education, feeding practices, socioeconomic conditions, and environmental sanitation (UNICEF, 2020). Therefore, supplementary feeding programs should be integrated with nutrition education, health promotion, and environmental improvements to achieve sustainable outcomes.

## CONCLUSION

This study concludes that supplementary feeding significantly improves toddlers' nutritional status and reduces stunting prevalence in riverbank areas. The findings support the implementation of supplementary feeding as an effective strategy for addressing chronic malnutrition among toddlers.

Future research is recommended to use controlled experimental designs and larger sample sizes to strengthen the evidence of supplementary feeding effectiveness.

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