

## Giving Additional Food Snakehead Fish On The Weight Of Stunting Children At The Sadar Jaya Health Center UPT

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**Abstract.** *Stunting remains a significant nutritional issue in Indonesia, primarily caused by inadequate dietary intake. Nutritional deficiencies in toddlers often result from insufficient breastfeeding and a lack of proper nutrition from complementary foods. This study aims to evaluate the impact of supplementary feeding (PMT) made from snakehead fish on the nutritional status of stunted toddlers aged 24–47 months. The research employed a total sampling method, involving 15 toddlers within the specified age range. Prior to the intervention, the respondents had an average body weight of 10.77 kg, categorized as severely underweight. Following the administration of snakehead fish-based PMT, their average weight increased to 12.33 kg, falling into the underweight category. Statistical analysis revealed a p-value of 0.000, indicating a significant effect of the snakehead fish-based PMT in improving the nutritional status of stunted toddlers. These findings highlight the potential of local food sources, such as snakehead fish, to enhance maternal and child health efforts—particularly in addressing malnutrition through optimized use of locally sourced PMT in various preparations.*

**Keywords:** Food Additional, Snakehead Fish, Stunting Children

### 1. BACKGROUND

Stunting is a chronic nutritional condition that arises from prolonged deficiencies in essential nutrients, particularly during the early years of life. This condition is commonly caused by the long-term consumption of food that fails to meet the child's nutritional requirements, either in terms of quantity, quality, or both. According to the World Health Organization (WHO), in 2020 approximately 149.2 million children under five years old, or about 22% globally, were affected by stunting. The highest prevalence was recorded in Asia (53%) and Africa (41%), with Southeast Asia accounting for 83.6 million stunted children 25.7 million of whom were classified as severely stunted (UNICEF/WHO/World Bank, 2021; Angraini et al., 2020).

Stunting represents more than just delayed physical growth. It reflects underlying problems of chronic malnutrition and frequent exposure to infectious diseases during critical growth periods. Children who suffer from stunting are at risk not only of impaired physical development but also delayed cognitive function, reduced learning capacity, and lower productivity in adulthood, ultimately impacting the overall quality of a nation's human resources (UNICEF, 2014). This makes stunting a major public health issue that requires comprehensive and sustainable intervention strategies.

One of the most critical periods for preventing stunting is the First 1000 Days of Life a window that spans from conception to a child's second birthday. During this time, optimal nutritional intake and protection from infections are crucial to support proper brain development, immune function, and linear growth (Budiastutik & Rahfiludin, 2019).

The primary direct causes of stunting include insufficient nutrient intake and repeated infectious diseases, both of which are often linked to inadequate feeding practices. Even when food is available, poor feeding behaviors such as a lack of dietary diversity or minimal consumption of nutrient-dense foods can result in chronic nutrient deficiencies (Rosha et al., 2016). This is supported by research conducted by Widyaningsih et al. (2018), which showed a strong association between low food diversity and stunting among toddlers.

Efforts to address stunting must therefore focus not only on food quantity but also on improving the quality of dietary intake particularly through the inclusion of animal-based protein sources. Dewi et al. (2020) emphasize the importance of consuming animal protein, especially fish, which provides essential amino acids crucial for growth. Among local food sources, snakehead fish (*Channa striata*) is notable for its high content of albumin and essential amino acids. Studies have demonstrated its effectiveness in improving nutritional outcomes in children. For instance, Pratiwi et al. (2021) found that Supplementary Feeding Programs (PMT) incorporating snakehead fish significantly improved the weight and overall nutritional status of stunted toddlers.

Given its local availability, high nutritional value, and cultural acceptability, the use of snakehead fish as a base for supplementary food represents a promising, community-based strategy in the fight against stunting in Indonesia. Developing and scaling up the use of such local food-based interventions can enhance maternal and child health efforts, particularly in rural and underserved areas where the burden of stunting remains high.

## **2. THEORETICAL STUDY**

Stunting is a condition of impaired growth and development experienced by children due to chronic malnutrition, repeated infections, and inadequate psychosocial stimulation, especially during the first 1,000 days of life (UNICEF, 2014). It reflects a failure to achieve expected height-for-age and can lead to long-term effects such as decreased cognitive ability, poor academic performance, and reduced economic productivity in adulthood (WHO, 2021).

According to the UNICEF conceptual framework, stunting is primarily caused by two direct factors: insufficient nutrient intake and recurrent infections. Underlying these are poor feeding practices, food insecurity, limited access to healthcare, and poor sanitation (UNICEF,

2020). Feeding patterns lacking diversity and inadequate consumption of animal protein are strongly associated with stunting (Widyaningsih et al., 2018).

Efforts to prevent and reduce stunting include improving dietary quality through Supplementary Feeding Programs (PMT). Local foods rich in high-quality protein, such as snakehead fish (*Channa striata*), have gained attention due to their high content of albumin and essential amino acids (Dewi et al., 2020). Research by Pratiwi et al. (2021) demonstrates that PMT based on snakehead fish significantly improves the weight and nutritional status of stunted toddlers, showing its potential as an affordable, culturally acceptable, and effective intervention.

### 3. RESEARCH METHODS

The type of research employed in this study is a pre-experimental design, specifically the one-group pretest-posttest design. In this approach, the same group of participants is observed before and after receiving a treatment. Initially, a pretest (O1) was conducted to assess the nutritional status of toddlers before they were given supplementary food made from snakehead fish. Following the intervention, a posttest (O2) was carried out to evaluate any changes in their condition after receiving the snakehead fish-based supplement.

This study was conducted from November 2024 to February 2025 in the working area of the Aware Jaya Community Health Center (UPT Puskesmas Sadar Jaya). The population consisted of all toddlers, both boys and girls, identified as experiencing nutritional deficiencies within this health center's coverage area. The total sampling technique was applied, involving 15 toddlers as respondents.

### 4. RESULTS AND DISCUSSION

#### Univariate Analysis

#### 1. Characteristics of Respondents Based on Body Weight in the Working Area of the Sadar Jaya Health Center.

**Table 1 Distribution Frequency Characteristics Respondents By Weight**

No	Weight Before Treatment		
	Category	N	%
1	Very thin	6	40
2	Thin	9	60
3	Normal	0	0

Weight After Treatment			
1	Very thin	3	20
2	Thin	9	60
3	Normal	3	20

Based on table 1 shows amount distribution frequency toddler based on weight before given treatment the weight of respondents in the 8 - 10 kg category was 6 people (40%), and in the 11 - 13 Kg category there were 9 people (60%) in the 14 - 16 Kg category was 0 (0%). Whereas after treatment the weight of respondents in the 8 - 10 Kg category was 3 people (20%), in the 11 - 13 Kg category there were 9 people (60%) and in the 14 - 16 Kg category there were 3 people (20%).

This result is in line with Anik's research (2021) which shows that in the pre-test, toddlers with weight 5-6 kg were recorded as many as 5 respondents (28%), 7-8 kg as many as 5 respondents (28%), 9-10 kg as many as 6 respondents (33%), and 11-12 kg as many as 2 respondents (11%), with the majority of Respondents own weight 9-10 kg.

This study also supports Obar et al.'s (2023) theory states that giving food addition for underprivileged children nutrition must take the form of safe, high quality food, and fulfill safety and quality standards. Food additions usually originate from local materials and are considered from a security aspect, such as labels, packaging, and expiry dates. Protein from animal and vegetable sources, as well as vitamins and minerals from fruits and vegetables, are sources of main necessary nutrients.

Researchers to argue that the body needs balanced energy between carbohydrates, fats, and proteins to support growth and development. If the energy intake is not enough than the body needs, then the body will use backup energy in the form of glycogen and fat. If there is a continued shortage of energy and insufficient energy reserves, the body will utilize protein as an energy source, which can cause decline in body mass and inhibit growth.

## 2. Characteristics of Nutritional Status of Stunting Toddlers Based on Height/Age Before and After Treatment Giving Food Additional Snakehead Fish

**Table 2. Distribution Frequency of Nutritional Status of Stunting Toddlers Based on Height/Age before and after Giving Additional Food Snakehead Fish**

No	Height Before Treatment		
	Category	N	%

1	Very Short	11	73.3
2	Short	4	26.7
3	Normal	0	0
<b>Height After Treatment</b>			
1	Very Short	7	46.7
2	Short	8	53.3
3	Normal	0	0

From the table on show amount distribution frequency of nutritional status toddler based on previous height given Treatment The height of respondents in the category 80 cm - 90 cm (very short) was 11 respondents (73.3%), 90 cm - 100 cm (short) was 4 (26.7%). Meanwhile after treatment of respondent's height category 80 cm – 90 cm (very short) as many as 7 (46.7%), 90 cm – 100 (short) cm as many as 8 (53.3%).

This result is in line with research conducted by Suratman (2022), which shows that before giving additional food (PMT), there were 28 toddlers (25.0%) with very short nutritional status and 84 toddlers (75.0%) with short nutritional status. After PMT, there are changes in nutritional status with the amount of very short toddlers increasing to 45 toddlers (40.2%), short toddlers decreasing to 62 toddlers (55.4%), and 5 toddlers (4.5%) who entered in normal category.

In addition, research by Safri et al. (2022) also supports these findings by researching the connection between PMT and the risk of stunting in toddlers in Semarang City. Statistical test results show existence significant change on nutritional status of toddler before and after provision of recovery PMT for 3 months, okay based on anthropometry index BB/U and TB/U, with p-value = 0.00. Research it also revealed the existence of differences in average nutritional status (TB/A) of toddlers before and after PMT.

Researchers assume that the nutritional status is influenced by two main factors, namely direct and indirect factors. Direct factors cover food intake that is not sufficient, especially those containing the required protein and body calories. Meanwhile, factors No direct covering social and cultural differences related to eating habits, lack of knowledge about nutrition, excessive food consumption which is not in accordance with the body's needs, as well as the existence of accompanying diseases such as disturbance in digestion and absorption of food. In addition, the imbalance between eating patterns, resting, and activity can also affect the toddler's nutritional status.

## Bivariate Analysis

### 1. Influence Giving Food Additional Snakehead Fish To Increase in the Weight of Stunted Children in the Working Area of the Sadar Jaya Health Center.

**Table 3. Influence of Giving Additional Food Snakehead Fish To Weight Gain**

Stunting Child Body			
Category	Mean	SD	P Value
Before Intervention	10.77 kg	1,333	0.000
After Intervention	12.33 kg	1,470	

Based on table data above weight above of the 15 respondents who had done interviews. Then we get a P value of  $0.000 < 0.05$  It means there is an influence of giving additional food snakehead fish to improve stunted child weight.

This result is in line with Anik's research (2021) which shows that in the pre-test, toddlers with weight 5-6 kg were recorded as many as 5 respondents (28%), 7-8 kg as many as 5 respondents (28%), 9-10 kg as many as 6 respondents (33%), and 11-12 kg as many as 2 respondents (11%), with the majority of Respondents own weight 9-10 kg.

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Researchers to argue that the body needs balanced energy between carbohydrates, fats, and proteins to support growth and development. If the energy intake is not enough than the body needs, then the body will use backup energy in the form of glycogen and fat. If there is a continued shortage of energy and insufficient energy reserves, the body will utilize protein as an energy source, which can cause decline in body mass and inhibit growth.

### 2. Influence Giving Food Additional Snakehead Fish To Improve the Nutritional Status of Stunting Children Based on Height/Age in the Working Area of the Sadar Jaya Health Center.

**Table 4. Influence of Giving Additional Food Snakehead Fish To Improving the Nutritional Status of Stunting Children Based on Height in the Working Area of the Sadar Jaya Health Center**

<b>Height of Stunting Children</b>			
<b>Category</b>	<b>Mean</b>	<b>SD</b>	<b>P Value</b>
Before Intervention	87.29 cm	6.106	0.000
After Intervention	89.39 cm	5,678	

Based on table 4 above data was obtained that before intervention was done giving food additional snakehead fish to Increase in nutritional status and height of stunted children is achieved average value 87.29 cm, then after intervention was done giving food additional snakehead fish to increase the height of stunted children, data obtained shows that Average value of children's height experience increase that is to 89.39 cm. Then we get a P value of  $0.000 < 0.05$  It means There is influence of giving additional food snakehead fish to improving nutritional status in stunted children.

This result is in line with research conducted by Suratman (2022), which shows that before giving additional food (PMT), there were 28 toddlers (25.0%) with very short nutritional status and 84 toddlers (75.0%) with short nutritional status. After PMT, there are changes in nutritional status with the amount of very short toddlers increasing to 45 toddlers (40.2%), short toddlers decreasing to 62 toddlers (55.4%), and 5 toddlers (4.5%) who entered in normal category.

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Researchers assume that the nutritional status is influenced by two main factors, namely direct and indirect factors. Direct factors cover food intake that is not sufficient, especially those containing the required protein and body calories. Meanwhile, factors No direct covering social and cultural differences related to eating habits, lack of knowledge about nutrition, excessive food consumption which is not in accordance with the body's needs, as well as the existence of accompanying diseases such as disturbance in digestion and absorption of food. In addition, the imbalance between eating patterns, resting, and activity can also affect the toddler's nutritional status.

## 5. CONCLUSION

Average value of child weight before giving food additional 10.77 kg of very thin category snakehead fish, then after intervention giving food additional snakehead fish to improve stunted children's weight data that obtained average value of child weight experience increase that is to 12.33 kg in the thin category. The average value of nutritional status and height of stunted children was 87.29 cm, then after intervention giving food additional snakehead fish to improve the nutritional status and height of stunted children, data obtained shows that average value of children's height experience increase that is became 89.39 cm. Then in the analysis bivariate Paired sample t-test to determine the influence of giving additional food snakehead fish to child's weight and nutritional status of TB/A stunted children were obtained p value  $0.000 < 0.05$  then It means There is influence giving additional food snakehead fish to improve stunted child weight.

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