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The Effect of Chicken Eggs on The Body Weight of Stunting Toddlers Aged 12-59 Months

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ABSTRACT

Stunting remains a major nutritional health problem among Indonesian children under five, with long-term effects on health and the quality of future generations. One effective intervention is providing supplementary food using locally available sources such as chicken eggs. Eggs are rich in essential macro and micronutrients that meet children's nutritional needs and can improve body weight. This study aimed to determine the effect of chicken egg consumption on the body weight of stunted children in Sumurkidang Village, Bantarbolang Sub-District, Pemalang Regency. A pre-experimental one-group pretest-posttest design was used, involving 36 stunted children aged 12–59 months selected through purposive sampling. Research instruments included chicken eggs, observation sheets, weighing scales, and child growth monitoring cards (KMS). Data were analyzed using the Wilcoxon signed-rank test. The mean body weight increased from 11.489 kg before to 12.375 kg after 90 days of daily egg consumption, showing a significant effect (p = 0.001). In conclusion, daily consumption of chicken eggs for 90 days significantly increased body weight in stunted children. Mothers are encouraged to provide eggs regularly with varied cooking methods while maintaining food hygiene to prevent infection and support optimal growth.

Keywords: Stunted Children, Body Weight, Chicken Egg Consumption

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INTRODUCTION

Stunting is a global problem in the field of nutrition that ranks first. *The World Health Organization* (WHO) and *the United Nations Children's Fund* (UNICEF) stated that the prevalence of *stunting* in children under 5 years of age in the world in 2019 was 21.3% (WHO, 2020). *Stunting* is a major nutritional health problem in toddlers in Indonesia because it has the highest prevalence. The number of *stunting prevalence* in 2022 experienced a decrease of 2.8% compared to the prevalence in 2021 of 24.4%. The prevalence of *stunting in toddlers* in Central Java Province in 2022 was 20.8% and Pemalang Regency ranked 9th with a prevalence of *stunting in toddlers* of 19.8% (Ministry of Health of the Republic of Indonesia, 2023) . Data on *stunting* in Bantarbolang Health Center in December 2024 was 729 toddlers (15%), while stunting in Sumurkidang Village was 43 toddlers (14.7%). The government launched the Supplementary Feeding (PMT) program as a solution to address *stunting* in toddlers through the Indonesian Minister of Health Regulation Number 51 of 2016 concerning Nutritional Supplementation Product Standards (Harumi et al., 2023) . Community-based PMT innovations to improve toddler nutritional status are recommended to be economical and affordable. Local ingredients for PMT must have a high protein content to support toddler growth and development, thereby preventing and addressing *stunting* in toddlers (Runjati et al., 2024) .

Eggs are a local ingredient that contain vitamins and minerals needed for the growth and *development* of toddlers. Eggs are a source of *biologically active compounds* , or active compounds found in small amounts in food, that have the ability to improve current health conditions or prevent potential health conditions, which helps provide benefits to human health (Evanuarini, Thohari & Safitri, 2021) . Eggs are an animal food that contains almost all macro and micronutrients. Egg whites are a source of protein, vitamins B2, B6, B12, and selenium. Egg yolks contain fat, calories, cholesterol, and several types of minerals (Budi, 2023) . Adequate protein and calcium intake is needed by the body for growth, especially the formation of bones, teeth, and brain development (Litaay et al., 2021) .

Bantarbolang Community Health Center in *addressing* the problem *of stunting* in toddlers has attempted cross-program and cross-sectoral collaboration by holding counseling on *stunting* and its handling in

pregnant women's classes, toddler classes and integrated health posts (Posyandu), providing additional PMT to *stunted toddlers* both from the Village Fund Budget (ADD), the Pemalang Regency Health Office and the Fisheries Office. The PMT program for *stunting toddlers* was given in November 2024 in the form of 10 chicken eggs given once a week and given for 6 weeks, but this program has not been able to reduce the incidence of *stunting* in toddlers at Bantarbolang Community Health Center. The number of *stunted* toddlers aged 0-59 months at Bantarbolang Community Health Center in November 2024 was 748 children and those aged 12-24 months who experienced *stunting* were 172 children. This study aims to determine the effect of chicken egg consumption on the weight of *stunted toddlers* in Sumurkidang Village, Bantarbolang, Pemalang Regency.

METHOD

The type of research used in this study is *a pre-experiment* , namely using *a quasi-experiment* . The approach used is *a one-group research type. pre-test and posttest design* . The research variables consist of The independent variable of this study was chicken egg consumption and the dependent variable of this study was the weight of *stunted toddlers* . This study was conducted in the working area of Sumurkidang Village, Bantarbolang Regency, Pemalang Regency, from February to April 2025 for 90 days. The population in this study was all toddlers in Sumurkidang Village, Bantarbolang Community Health Center Working Area, Pemalang Regency in January 2025, totaling 291 toddlers . Respondents in this study were 36 respondents. Researchers will take toddlers aged 12-59 months with *stunting* who meet the inclusion and exclusion criteria. Data collection in this study used observation by checking the toddler's weight using scales. The primary data in this study was the body weight *of stunted toddlers* obtained through monthly weighing before and after consuming chicken eggs. Secondary data is data obtained indirectly from respondents.

These include data on *stunted toddlers* at the Bantarbolang Community Health Center in Pemalang Regency and the KIA (Child Health Card).

RESULTS AND DISCUSSION

Results

The results of the study on respondent characteristics based on age and gender can be seen in the following table :

Table 1 Frequency Distribution of Age and Gender of Respondents in Sumurkidang Village, Bantarbolang Regency, Pemalang Regency, 2025 (n=36)

Characteristics	Frequency (n)	Percentage (%)
Age		
12-23 months	2	5.6
24-35 months	14	38.9
36-47 months	12	3.3
48-59 months	8	22.2
Gender		
Man	17	47.2
Women	19	52.8

Source: Primary Data, 2025

Table 1 shows that *stunted* toddlers are mostly aged 24-35 months, as many as 38.9%. The gender of *stunted toddlers* is more female than male, namely 52.8% .

The results of the study on the weight of *stunted toddlers* before and after consuming chicken eggs can be seen in the following table:

Table 2 Body Weight of *Stunted Toddlers* Before and After Egg Consumption in Sumurkidang Village, Bantarbolang, Pemalang Regency (n=36)

Egg Consumption	Mean	Median	Elementary School	Min-Max
Stunting toddler weight (*pre-test*)	11,489	11,350	±1.4667	9.3-14.5
Stunting toddler weight (*post test*)	12,375	12,375	±1.5230	9.5-15.5

Source: Primary Data, 2025

Table 2 shows that the average weight of respondents before consuming eggs was 11.489 kg with the lowest weight of 9.3 kg and the highest of 14.5 kg. The average weight of respondents after consuming eggs was 12.375 kg with the lowest weight of 9.5 kg and the highest of 15.3 kg. This indicates that there was an increase in the average weight of *stunted toddlers* after consuming eggs with a median value of 0.886 kg over 90 days. From table 2, it is known that the median value of respondents' weight before consuming chicken eggs was 11.35 kg and the median value of respondents' weight after consuming chicken eggs was 12.375 kg. This indicates a tendency for weight gain after being given the intervention of chicken egg consumption. The increase in respondents' weight after consuming chicken eggs indicates that continuous consumption of chicken eggs has the potential to increase the weight of *stunted toddlers* .

Based on the standard deviation before egg consumption of ±1.4667 kg, meaning that the variation or difference in body weight between toddlers is relatively small, while after egg consumption for 90 days the standard deviation is obtained at ±1.5230 kg, which means there is little variation in weight gain between toddlers. This shows that although there is an average increase in body weight, each toddler experiences different weight gains, even more varied after the egg consumption intervention.

Toddler weight after consuming eggs can be categorized as follows:

Table 3 Frequency Distribution of* Stunting Toddler Body Weight *After Consuming Eggs in Sumurkidang Village, Bantarbolang, Pemalang Regency (n=36)

Stunting Toddler Weight	Frequency (n)	Percentage (%)
Go on	32	88.9
Not Up	4	11.1
Total	**36**	**100**

Source: Primary Data, 2025

Table 3 shows that based on the KMS, there was an increase in toddler weight after consuming chicken eggs for 32 respondents (88.9%) and some respondents did not experience an increase in weight after consuming chicken eggs for 4 respondents (11.1%).

The results of the study on the effect of chicken egg consumption on the body weight of *stunted toddlers* in Sumurkidang Village, Bantarbolang, Pemalang Regency can be seen in the following table:

Table 4 Wilcoxon Test Results

Variables		Mean		N	*Mean Rank*	*p-value*
Weight	*Pre-test*	11,489	*Negative Ranks*	0 [a]	.00	0.001
	Post test	12,375	*Positive Ranks*	36 [b]	18.50	
			Ties	0 [c]		
			Total	36		

Source: Primary Data, 2025

Based on table 4 above, it can be explained that the results of the *Wilcoxon test* obtained a significance value of 0.001 <0.05, so Ha is accepted, namely there is an effect of chicken egg consumption on the weight of *stunted toddlers* in Sumurkidang Village, Bantarbolang, Pemalang Regency . From table 4, it is known that *the Negative Rank* or negative difference between body weight for *the pre-test* and *post-test* is 0, meaning that no respondents experienced weight loss after consuming eggs. *Positive* Rank or positive difference between body weight *pre-test* and *post-test* is 36, meaning that 36 respondents experienced an increase in body weight after being given an intervention in the form of egg consumption. *The mean rank* or average increase in body weight is 18.50, *Ties* is 0, meaning that there are no respondents with the same body weight between *the pre-test* and *post-test* .

Discussion

Respondent Characteristics

The results of the study showed that the majority (38.9%) of *stunted toddlers* were aged 24-35 months or toddlers aged over 2 years, which is a crucial period in toddler growth since infancy. The age of 24-35 months is an important transition phase in child development, children's nutritional needs increase along with motor and cognitive development. Children at this age begin to experience food diversification that depends on parenting patterns, adequate nutritional intake and eating habits formed from an early age. This is in line with the opinion of Susiyanti (2019) who stated that the nutritional needs of children aged over 2 years are increasing and cannot be met only from breast milk. Children in a period of rapid growth and development, are starting to be susceptible to infection and are becoming physically active, so their nutritional needs must be met. Research by Hidayat (2023) states that parenting patterns occur in *stunting* in children aged 24-60 months. Democratic parenting is associated with a one-fold higher risk of stunting *compared* to authoritarian parenting in providing food or nutrition to children. Meanwhile, research by Ibrahim et al. (2021) states that sociocultural factors are associated with *stunting* in toddlers aged 24-59 months. The study found that *stunted* toddlers were more likely to be girls than boys, at 52.8%. Gender determines the nutritional needs of toddlers. This is influenced by differences in body composition between boys and girls. Boys have more muscle tissue, while girls have more fat tissue. Muscle tissue in boys requires more activity and requires more energy obtained from nutritional intake, while girls, with fat tissue, do not require as much energy, so their energy needs are lower and if not met according to their needs, are at risk of *stunting* . This is in accordance with the opinion of (Darmayanti & Puspitasari, 2021) who stated that the difference in nutritional needs between boys and girls is due to differences in body composition. Women have more fat tissue and less muscle tissue than men. Muscle is metabolically more active than fat, so muscle requires proportionally more energy than fat. Therefore, boys and girls of the same weight, height, and age have different body compositions.

Stunting Toddlers' Weight Before and After Consuming Chicken Eggs

The results showed that the average weight of respondents after egg consumption was 12.375 kg, with the lowest weight being 9.5 kg and the highest being 15.5 kg. This indicates an increase in the weight of *stunted toddlers* after egg consumption, with an average weight increase of 0.886

kg. These results align with the research of Yuliana, Utaminingrum, & Minarni (2023). which states that providing additional animal protein with chicken eggs can increase body weight and length in children suffering *from stunting,*

Stunted toddlers whose weight falls below the WHO growth chart indicate chronic malnutrition affecting their physical growth and development. A toddler's weight below the normal curve indicates a long-term energy and nutrient deficit. One effective intervention to address stunted toddlers with low birth weight is to provide them with nutritious foods, such as eggs. Eggs are a source of animal protein with high biological value and are easily digested and absorbed by the body. Eggs also contain vitamins and minerals needed by toddlers for growth and tissue formation. This is in line with the opinion of Evanuarini, Thohari, and Safitri (2021) stated that eggs are a local ingredient containing vitamins and minerals necessary for the growth and development of toddlers. Eggs are a source of *biologically active compounds* , or active compounds found in small amounts in food, that have the ability to improve current health conditions or prevent potential health conditions, thus providing benefits to human health.

When viewed from the lowest value of toddler weight before and after egg consumption, it shows that the lowest weight after egg consumption (9.5 kg) is higher than the lowest weight before egg consumption (9.3 kg). This indicates that during the egg consumption intervention, all respondents experienced weight gain. The results showed that the majority, namely 32 respondents (88.9%), experienced weight gain after egg consumption, but there was a small portion, namely 4 respondents (11.1%) who did not experience weight gain after egg consumption.

Stunting in toddlers who do not gain weight after being given egg consumption interventions can be caused by other factors such as health. Chronic infectious diseases such as diarrhea, acute respiratory infections, or worm infections can disrupt nutrient absorption in the digestive tract, so that even though food intake is sufficient, the toddler's body is unable to utilize it optimally for growth. Toddlers suffering from chronic infectious diseases also experience a decreased appetite, thereby limiting nutrient intake, while sick toddlers' energy needs increase to fight the infection, resulting in weight loss. This is in line with UNICEF's opinion (2019, in Marselinus et al., 2024) , which states that one factor influencing body weight is

health. Health significantly influences a child's growth, where good health allows a child's body to develop optimally. Chronic diseases, infections, and other health disorders can inhibit nutrient absorption, disrupt metabolic processes, and reduce the energy available for growth.

The results of the study showed that toddler weight gain was related to the KMS. It was known that the majority, namely 32 respondents (88.9%), experienced weight gain after consuming eggs, but there was a small portion, namely 4 respondents (11.1%) who did not experience weight gain after consuming eggs. This can be concluded that there are still toddlers who do not experience weight gain based on KMS after consuming eggs for 90 days. This could be due to the adequacy of toddler nutritional intake is still lacking, even though they have consumed eggs every day, because nutritional needs for growth are not only determined by protein, but require macro and micro nutrient intake. This is in line with the opinion of Hatala (2022) who stated that a person's nutritional needs for weight growth require nutritional intake in the form of energy, protein, fat, carbohydrates, vitamins, minerals and fiber.

The Effect of Chicken Egg Consumption on the Body Weight of *Stunted Toddlers*

The Wilcoxon test results obtained a significance value of 0.000 <0.05, so Ha is accepted, namely there is an effect of chicken egg consumption on the weight of *stunted toddlers* in Sumurkidang Village, Bantarbolang, Pemalang Regency. The results of this study are in accordance with the research of Yuliana, Utaminingrum & Minarni (2023) which stated that there was an increase in the weight of *stunted toddlers* up to 1 kg after being given eggs for 12 days, as well as the research of Patmawati et al (2024) which stated that there was an effect of providing additional food on the weight of *stunted toddlers* .

Regularly feeding chicken eggs for a period of 90 days can increase the weight of *stunted toddlers* because eggs contain essential micronutrients such as iron, zinc, vitamins A, D, and B complex, which support the child's metabolism and immune system. These nutrients are needed by *stunted toddlers* who experience long-term energy and nutrient deficits to increase their weight. This is in accordance with the opinion of Budi (2023) , who stated that eggs are an animal food that contains almost all macro and micronutrients. Egg whites are a source of protein, vitamins B2, B6, B12, and selenium. Egg yolks contain fat, calories, cholesterol, and several types of minerals.

The intervention of providing additional food by consuming eggs for *stunted toddlers* with local ingredients is expected to be continued by the parents of *stunted toddlers* , because eggs are a food ingredient that is easily found in the market at an affordable price and can be easily processed. Consistent consumption of eggs by *stunted toddlers* can increase the weight of stunted toddlers and the long-term impact can reduce cases of stunted toddlers in Sumurkidang Village, Bantarbolang, Pemalang. This is in line with research by Lubis et al. (2023) which states that providing chicken eggs and quail eggs affects the adequacy of animal protein in children and reduces *stunting rates* in children.

Conclusion

There is an effect of chicken egg consumption on the body weight of *stunted toddlers* in Sumurkidang Village, Bantarbolang, Pemalang Regency with a p value of 0.000 < 0.05.

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