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The Occurrence of Stunting in Indonesia in 2023

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Abstract
Background: The nutritional status of toddlers is a serious issue that the government is trying to address. Various efforts have been made to reduce toddler nutrition problems, one of which is providing PMT to toddlers with stunting. Objective: to analyze the relationship between low economic status, exclusive breastfeeding, age of the baby at birth < 37 weeks, incomplete immunization status, and Low Birth Weight (LBW) < 2500 grams with stunting based on secondary data. Method: The research method used is quantitative research oriented with inductive logic, data collection was conducted using secondary data sourced from the 2023 Indonesian Health Survey (SKI) from 38 provinces in Indonesia. Data analysis used Scatter Plot processed with SPSS. Results: There is a positive relationship between low economic status, exclusive breastfeeding, the age of the baby at birth being < 37 weeks, and incomplete immunization status, with stunting. Conclusion: Factors such as low economic status, exclusive breastfeeding, age of the baby at birth < 37 weeks, and incomplete immunization status are associated with the occurrence of stunting.

Keywords: economic status, exclusive breastfeeding, age of the baby at birth, immunization status, low birth weight, stunting

INTRODUCTION

Current nutritional status the nutritional status of toddlers is an important factor that reflects the quality of health and well-being of the community. Various factors influence the nutritional status of toddlers, including economic status and exclusive breastfeeding. The toddler period is an important phase in a child's growth and development. In this phase, nutritional needs are crucial to support physical, mental, and social development. Indonesia still faces various challenges in meeting the nutritional needs of toddlers, such as high prevalence of stunting, wasting, obesity, and toddler anemia. Efforts to reduce stunting have already begun, but they have not yet yielded satisfactory results. In fact, to maximize the reduction of stunting, Presidential Regulation No. 72 of 2021 on the acceleration of the Stunting program has been established [1](Semarang 2022).

The secondary data used is sourced from the 2023 SKI, which utilizes data on the lowest economic status, exclusive breastfeeding, the age of the baby at birth < 37 weeks, incomplete immunization status, and low birth weight (LBW), which are linked to the occurrence of stunting. This indicator is used because it encompasses several factors that cause the occurrence of stunting, which require comprehensive and integrated study and handling from all parties. Nutritional problems in toddlers have long-term impacts, including reduced individual productivity, weakened national competitiveness, and increased social and economic burdens [2] (Direktorat Gizi dan Kesehatan Ibu dan Anak 2023).

The main indicators for diagnosing toddler nutrition are height for age (H/A), weight for height (W/H), and weight for age (W/A). One of the nutritional problems for toddlers in Indonesia, and a major concern, is stunting in toddlers. Nutrition in toddlers is defined as a health status resulting from the balance between nutrient intake and the metabolic needs of children aged 0-5 years. Limited access

[1] (Semarang 2022).
[2] (Direktorat Gizi dan Kesehatan Ibu dan Anak 2023).

to healthcare facilities can trigger a lack of early detection while the child is still in the womb, leading to the risk of being born with a gestational age of less than 37 weeks and with low birth weight. Additionally, the mother's education level and low income are among the reasons for poor access to healthcare services.

Inappropriate eating behaviors in toddlers, such as avoiding certain foods, eating very little, and improper feeding patterns like giving snacks or milk before meals, which can make toddlers feel full, are related to family behavioral patterns in meeting their children's nutritional needs. The practice of providing food and positive interaction between mother and child in delivering nutrition can be a solution in improving the nutritional status of toddlers and supporting their gross motor, fine motor, language, and social development [3](Faghani et al. 2024).

Nutritional problems commonly encountered in middle-income countries are divided into two categories: macro-nutrient deficiencies and micro-nutrient deficiencies. Macro-nutrient deficiencies are one of the obstacles to toddler growth that must be addressed by the government with a focused approach, involving relevant parties such as healthcare workers supported by adequate healthcare facilities. Meanwhile, micro-nutrient deficiencies can be helped to be overcome through gradual and progressive food provision involving the role of parents [4] (Boetig and Renner 2021).

METHOD

The research used is a quantitative study oriented with inductive logic, the population in this study is the Indonesian Health Survey (SKI) data from 2023, and the sample used in this study is toddlers with stunting in Indonesia. The selection of samples was determined based on inclusion criteria, namely toddlers with stunting in Indonesia based on the 2023 Indonesian Health Survey (SKI) data and was carried out using the purposive sampling method. The number of populations and samples in this study is 38 provinces in Indonesia.

The type of data used in this study is secondary data and tertiary data. This study uses secondary data obtained from (SKI) in 2023 with independent variables including low economic status, exclusive breastfeeding, age of the baby at birth < 37 weeks, and incomplete immunization status, while the dependent variable is the incidence of stunting. Meanwhile, the tertiary data in this study are journals and articles related to the health conditions of toddlers with stunting.

The data analysis technique in this study uses univariate and bivariate analysis with scatter plots processed using SPSS. Scatter plot or scatter diagram is a graph that illustrates the relationship between two numerical variables.

RESULT & DISCUSSION

Result

Table 1. Percentage of Stunting Incidence, Lowest Economic Status, Exclusive Breastfeeding, Preterm Birth (<37 weeks), Incomplete Immunization, Low Birth Weight (LBW), and Stunting Based on SKI 2023 Data

Province	Lowest Ekonomi Status (%)	Exclusive Breastfeeding f (%)	Incomplete Immunization(%)	Born <37 Weeks ((%)	LBW (%)	Stunting (%)
Aceh	18.0	49.9	3.9	29.5	4.4	20.3
Sumatra Utara	29.5	43.9	20.8	36.9	3.1	13.2
Sumatra Barat	14.5	64.4	15.6	8.4	5.9	17.1
Riau	9.2	54.5	13.9	10.1	5	10.3
Jambi	11.1	68.2	27.8	7.2	2.7	9.5
Sumatra Selatan	20.9	55.1	22	18.3	5.4	14.3
Bengkulu	15.1	63.3	34.8	8.1	5	14.4
Lampung	20.7	56.9	23.8	6.4	4	11.3
Bangka Belitung	4.4	49.6	29.3	12	6.6	15.1
Kepulauan Riau	10.3	50.4	36.1	8.7	4.9	13.1
DKI Jakarta	1.2	60.3	42.4	7.9	6.7	13.1

[3] (Faghani et al. 2024).

[4] (Boetig and Renner 2021)

Jawa Barat	9.7	54.1	36.9	10.5	6.2	16.6
Jawa Tengah	16.3	64.4	54.7	5.6	6.1	16
DI Yogyakarta	12.0	71.4	68.9	4.9	7.2	14.4
Jawa Timur	15.9	52.9	50.7	6.9	6.8	13.8
Banten	8.1	57.0	24.7	6.7	5.1	16.9
Bali	6.7	57.7	73.5	3.7	4.7	5.5
Nusa Tenggara Barat	24.5	68.7	34.6	5	5.3	19.3
Nusa Tenggara Timur	64.4	62.8	34.5	7.8	7.7	26.2
Kalimantan Barat	17.4	63.9	24.2	5.6	7	17.3
Kalimantan Tengah	20.6	54.4	30.4	6.2	5.6	15.9
Kalimantan Selatan	24.5	56.7	38.6	5.4	7.8	16.9
Kalimantan Timur	10.3	57.2	37.9	6.4	7.3	17.1
Kalimantan Utara	8.9	63.0	38.6	3.1	7.7	12.8
Sulawesi Utara	23.4	42.7	40.6	17.1	5.7	17.8
Sulawesi Tengah	30.3	39.8	21.6	15.4	7.9	19.6
Sulawesi Selatan	21.2	49.0	32	14.2	7	20.7
Sulawesi Tenggara	27.3	41.9	22	13.6	5.3	20.6
Gorontalo	23.5	37.6	38.1	6.6	7.8	18.4
Sulawesi Barat	33.3	57.6	17.1	6.6	6.6	22.8
Maluku	38.1	48.1	18.3	27.9	4.9	18.3
Maluku Utara	25.4	50.9	18.7	20.3	3.8	16
Papua	17.7	44.0	40.9	5.3	5.3	18.2
Papua Selatan	28.0	33.4	27.1	6	6	15.8
Papua Tengah	17.0	41.1	9.7	8	8	18.6
Papua Pegunungan	0.0	56.8	8.8	6.1	6.1	17.1
Papua Barat	21.7	35.9	31	3.8	4.9	16.8
Papua Barat Daya	35.8	41.3	29.7	6.5	6.5	20.3

The Relationship Between Economic Status and the Incidence of Stunting

Based on the 2023 SKI data, the province with the lowest economic status is the Papua Pegunungan Province, with an economic status of 0.0% and a stunting occurrence of 17.1%. The province with the highest economic status is East Nusa Tenggara Province at 64.4% with a stunting occurrence of 26.2%. The relationship between economic status and the incidence of stunting was analyzed using a scatter plot in Figure 1.

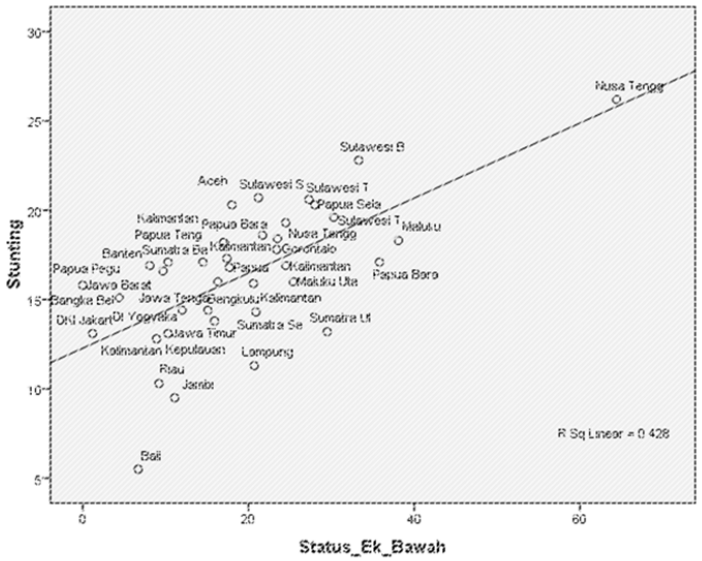

Figure 1. Relationship Between Economic Status and the Incidence of Stunting

The scatter plot of the relationship between economic status and the incidence of stunting is shown in Figure 1, which indicates that the more people with lower economic status, the higher the incidence of stunting, thus showing a positive relationship, or there is a correlation between economic status and the incidence of stunting.

The Relationship Between Exclusive Breastfeeding and the Incidence of Stunting

Based on the 2023 SKI data, the province with the lowest exclusive breastfeeding rate is South Papua Province at 33.4%, with a stunting rate of 15.8%. The province with the highest exclusive breastfeeding rate is the Special Region of Yogyakarta at 71.4%, with a stunting rate of 14.4%. The relationship between breastfeeding and the incidence of stunting was analyzed using a Scatter Plot in Figure 2.

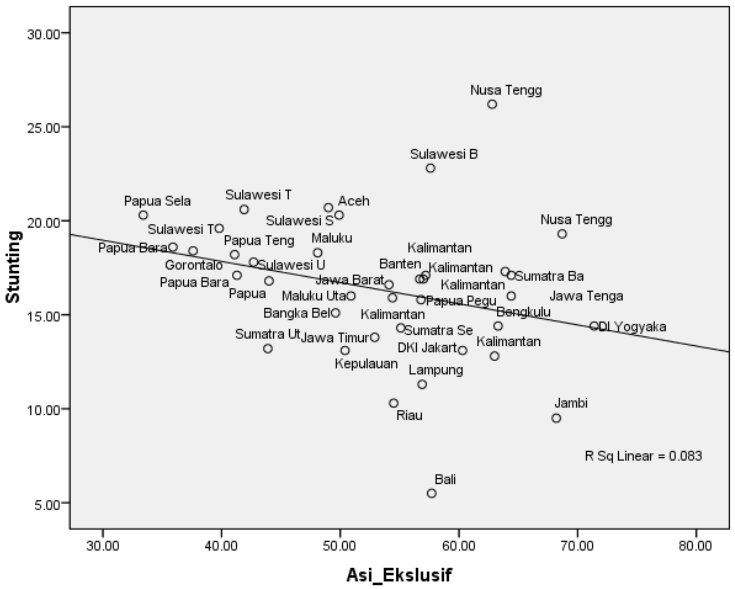

Figure 2. Relationship Between Exclusive Breastfeeding and the Incidence of Stunting Scatter Plot

The relationship between Exclusive Breastfeeding and the occurrence of Stunting is shown in Figure 2, which indicates that the fewer people who provide Exclusive Breastfeeding, the higher the incidence of stunting, thus the relationship is positive, or there is a correlation between the provision of Exclusive Breastfeeding and the occurrence of stunting.

The Relationship Between Age at Birth < 37 Weeks and the Incidence Of Stunting

Based on the 2023 SKI data, the province with the lowest percentage of babies born at < 37 weeks is Jambi Province at 2.7%, with a stunting rate of 9.5%. The province with the highest percentage of babies born at < 37 weeks is Central Papua Province at 8%, with a stunting rate of 18.6%. The correlation between the age of the baby at birth and the incidence of stunting was analyzed with a Scatter Plot in Figure 3.

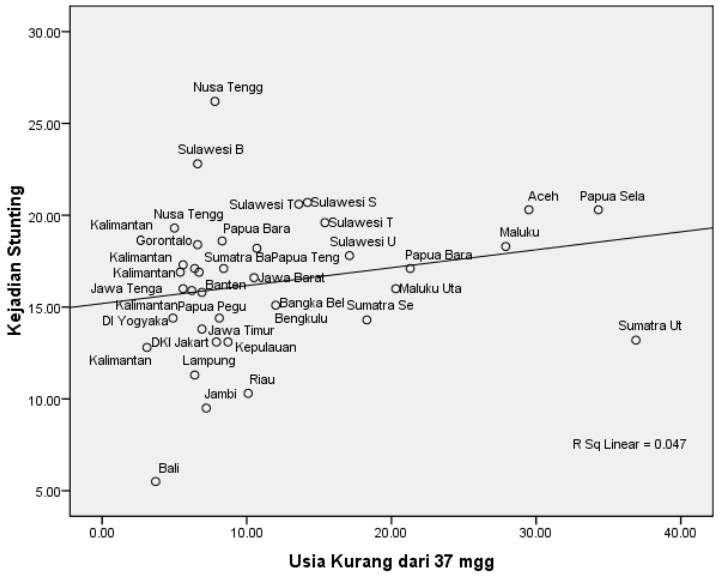

Figure 3. Relationship between age at birth < 37 weeks and the incidence of stunting Scatter Plot

The relationship between age at birth < 37 weeks and the incidence of stunting is shown in Figure 3, which indicates that the more babies born at less than 37 weeks, the higher the incidence of stunting, or there is a correlation between the age of the baby at birth and the incidence of stunting.

The Relationship Between Incomplete Immunization and Stunting

Based on the 2023 SKI data, the province with the lowest incomplete immunization status is Aceh Province at 3.9%, with a stunting incidence of 20.3%. The province with the highest incomplete immunization status is Bali Province at 73.5%, with a stunting incidence of 5.5%. The correlation between incomplete immunization status and the incidence of stunting was analyzed using a Scatter Plot in Figure 4.

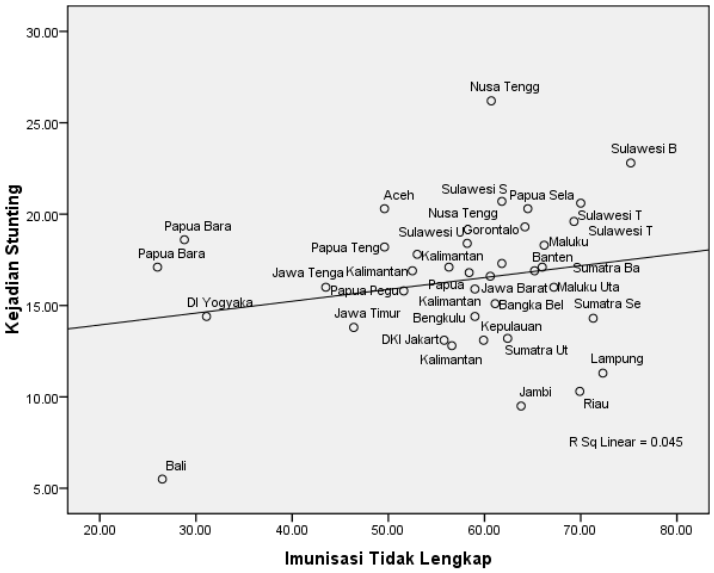

Figure 4. Relationship between incomplete immunization and Stunting Scatter Plot

The relationship between incomplete immunization status and the incidence of stunting is shown in Figure 4, which indicates that the more toddlers who receive incomplete immunization, the higher the incidence of stunting, or there is a relationship between incomplete immunization status and the incidence of stunting.

The Relationship between Low Birth Weight and Stunting

Based on the 2023 SKI data, the province with the lowest incidence of LBW is Jambi Province at 2.7% with a stunting incidence of 9.5%. The province with the highest incidence of LBW is Central Papua Province at 8%, with a stunting incidence of 18.6%. The correlation between the incidence of LBW and the incidence of stunting was analyzed using a Scatter Plot in Figure 5.

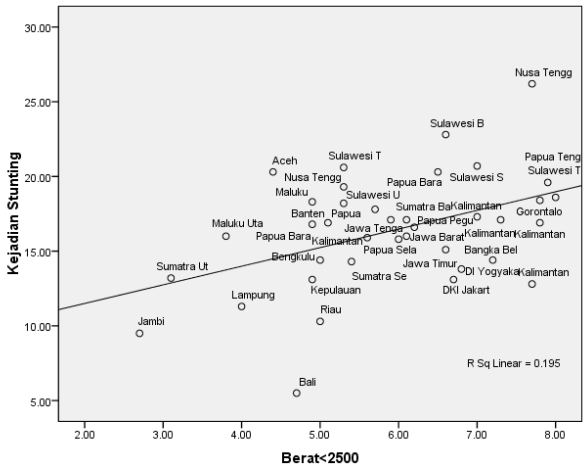

Figure 5. Relationship between Low Birth Weight and Stunting Distribution Plot

The relationship between the incidence of LBW and the incidence of stunting is shown in Figure 5, which indicates that the more babies born with a weight < 2500 g, the higher the incidence of stunting, or there is a relationship between incomplete immunization status and the incidence of stunting.

Discussion

Stunting is a nutritional status problem in toddlers because their height growth does not meet age standards. growth disorders in toddlers, including stunting. Nutrients that play an important role in preventing stunting include Protein, which is essential for the growth of cells and tissues; Iron, which prevents anemia that can affect brain growth and development; Zinc, which is involved in the growth process, with its deficiency linked to stunted growth; Vitamin A, which is important for eye health and the immune system; and Calcium and Vitamin D, which are involved in the formation of healthy and strong bones. Families with low incomes affect their ability to meet basic needs, including nutritional intake, so families with low incomes are at risk of having malnourished children [5](Bayoumi et al. 2020).

The family's ability to provide adequate nutrition is also influenced by the role of parents, both mother and father. Parents with higher education tend to play their roles as caregivers better, including in terms of earning a living to meet the family's needs. Low-income families are more vulnerable to unhealthy food intake, which may be due to the parents' low education levels, leading to limitations in consuming healthy foods because they prefer the availability of cheaper food[6](dos Santos Leal, Pinto da Costa, and Vilela 2024). Basically, a mother's income and education have a significant impact on providing nutrition to children. Mothers with low income and education may face challenges in providing proper nutrition to their children[7] (Heuchan et al. 2025).

Exclusive breastfeeding, which is the provision of breast milk without any additional food or drink for the first six months, plays an important role in preventing malnutrition. According to the Indonesian Ministry of Health, only 52% of infants in Indonesia receive exclusive breastfeeding. Toddlers who do not receive exclusive breastfeeding are at a higher risk of experiencing malnutrition and infections compared to those who are exclusively breastfed. Breastfeeding practices require support from family, whether it's from a partner or other family members [8](Rajabi et al. 2022). Social support helps minimize mothers from giving formula milk or mixed foods to babies under 6 months. Women will consider breastfeeding important when their partners also say the same thing. The decision to provide exclusive breastfeeding to the baby is also influenced by the mother's level of education and her knowledge about the importance of exclusive breastfeeding for the baby [9](Channell Doig, Aparicio, and Gallo 2023). Exclusive breastfeeding has a significant relationship with weight gain and height increase in toddlers, especially if given during the first 6 months. Conversely, if a baby is given breast milk for less than 6 months, there is a risk of obesity because they tend to be given additional formula milk [10](Martín-Ramos et al. 2024). Breastfeeding can be one of the efforts to provide protection against stunting in children. [11] (Nadhiroh, Ayuningtyas, and Salsabil 2024).

The status of a baby at birth, such as being born with a gestational age of < 37 weeks and being born with low birth weight (LBW), is an indicator for assessing the development of infants and toddlers. Children born with those risky conditions are expected to receive adequate stimulation and nutrition compared to children born normally [12](Hikmah and Cahyati 2023). Efforts to maintain and improve health need to be realized in a health service facility called a means for the implementation of health efforts. such as Posyandu, Puskesmas, Hospitals, midwife and doctor practices. The higher the community's access to the aforementioned basic health services, the lower the risk of malnutrition-related diseases [13](Hossain et al. 2024).

[5] (Bayoumi et al. 2020)
[6] (dos Santos Leal, Pinto da Costa, and Vilela 2024)
[7] (Heuchan et al. 2025)
[8] (Rajabi et al. 2022)
[9] (Channell Doig, Aparicio, and Gallo 2023)
[10] (Martín-Ramos et al. 2024)
[11] (Nadhiroh, Ayuningtyas, and Salsabil 2024)
[12] (Nadhiroh, Ayuningtyas, and Salsabil 2024)
[13] (Hossain et al. 2024)

Demographic and socioeconomic factors of parents such as occupation, education, breastfeeding practices, and poor feeding, the number of children in the family, and recurrent diarrhea contribute to nutritional problems in children such as stunting and wasting. [14](Danso and Appiah 2023). Experts argue that protein from animal food sources has a higher quality compared to protein from plant food sources, as well as a broader range of vitamins and nutrients. Families with low economic status have limitations in their ability to purchase animal protein sources, resulting in the insufficient intake of nutrients typically found in animal protein, such as iron and zinc, which cannot be maximally fulfilled. The lack of provision of food ingredients containing nutrients triggers the low food intake given by mothers to their children, so the quality of food as a source of nutrients is also less attended to, thereby increasing the risk of stunting in toddlers. [15](Hary Cahyati et al. 2019).

Parental characteristics such as education, income, and health insurance ownership can also be linked to the parenting style applied to their children, such as fulfilling toddler nutrition, monitoring child development, and access to healthcare facilities to provide preventive efforts like immunization, which are factors that determine the achievement of health status in toddlers [16](Rahayuwati et al. 2025). Mothers with higher education tend to seek various types of information to improve their children's nutrition, and they are also more sensitive to various efforts to prevent nutritional problems, such as providing quality nutrition or vaccinations to prevent certain diseases. [17](Tangwa, Epo, and Baye 2024). Nutritional problems in toddlers can also lead to low cognitive development in children [18](Hikmah and Cahyati 2023).

There are many risk factors believed to be the causes of nutritional problems at the community, family, household, and individual levels. At the community level, it can be caused by inadequate healthcare services, environmental cleanliness, and clean water sources. At the family level, it can be caused by economic factors, nutritional fulfillment, and parenting patterns. At the individual level, it can be caused by a history of illness, the baby's birth weight, and the mother's nutritional status during pregnancy. [19](Rahayuwati et al. 2025). Access to healthcare services in urban areas tends to be more easily reachable, so residents living in the city are generally at a lower risk compared to those in rural areas of having toddlers with nutritional problems [20](Santa-Ramírez et al. 2023).

Infants experiencing malnutrition are at risk of anemia, which threatens growth retardation, motor and cognitive impairments, potentially increasing morbidity and mortality. Nutrients are essential in early life, associated with the rapid growth phase during childhood, linked to the depletion of iron stores obtained before birth and the transition to complementary foods. The occurrence of stunting is one of the factors that can cause anemia in toddlers. Children who experience anemia are more likely to be those whose mothers have low education level [21](Bayoumi et al. 2020), (Islam 2020).

CONCLUSION

The issue of nutrition in toddlers is a significant challenge that requires the attention of all parties. Through specific and sensitive nutrition intervention strategies, supported by technology and cross-sector collaboration, the nutritional quality of toddlers in Indonesia can be improved to support a healthy generation in the future. To achieve the planned results, a holistic approach involving all stakeholders is needed. Comprehensive interventions, both from direct health aspects and from economic, social, and environmental aspects, as well as sustainability, are absolutely necessary to achieve national nutrition targets.

Stunting that occurs in toddlers has negative impacts in both the short and long term. By implementing the right policies and actively involving the community, as well as conducting strict monitoring and evaluation activities, it is hoped that the stunting rate can be significantly reduced, allowing Indonesian children to grow up healthy and develop optimally. Optimal nutritional status will be achieved by children if they have easy access to nutritious food, adequate healthcare services, and a

[14] (Danso and Appiah 2023)
[15] (Hary Cahyati et al. 2019)
[16] (Rahayuwati et al. 2025)
[17] (Tangwa, Epo, and Baye 2024)
[18] (Hikmah and Cahyati 2023)
[19] (Rahayuwati et al. 2025)
[20] (Santa-Ramírez et al. 2023)
[21] (Santa-Ramírez et al. 2023)

healthy environment. Several aspects of basic health services related to children's nutritional status include immunization, childbirth assistance, child weighing, child health education, and health facilities.

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In the preparation of this article, the author states that there is no conflict of interest whatsoever in the publication of this article.

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