Controlling Stunting Prevalence Through Health Function Budgeting: The Role of APIP and Educational Factor in Indonesia

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Abstract

Purpose: *This study aims to examine the effect of health function expenditure on the reduction of stunting prevalence, with the effectiveness of Government Internal Supervisory Apparatus (APIP) as a moderating variable and average years of schooling as a control variable.*

Methodology/approach: *This study employs a quantitative approach using secondary panel data from local governments in Indonesia for the 2021–2022 period, comprising 518 and 1,036 observations. The data are sourced from Statistics Indonesia (BPS), Bappenas, and the Financial and Development Supervisory Agency (BPKP) And use Panel data regression analysis.*

Findings: *The results indicate that health function expenditure, APIP maturity, and mean years of schooling have a negative and significant effect on stunting prevalence. However, APIP, as a moderating variable, does not strengthen the relationship between health expenditure and stunting reduction. Instead, the interaction term shows a positive coefficient, indicating that the moderating effect does not support the proposed hypothesis. This suggests that APIP oversight remains largely administrative rather than performance-oriented.*

Practical implications: *These findings highlight the need to improve the effectiveness of health budget allocation, strengthen APIP competencies in performance-based auditing, and enhance nutrition, public health, and education quality.*

Originality/value: *This study contributes to the literature by examining APIP as a moderating variable between public health expenditure and stunting reduction, with educational attainment as a control variable. Using recent Indonesian panel data, the study provides empirical evidence on the governance of health spending effectiveness.*

Keywords:
Stunting Prevalence; Healt Budgeting; APIP; Mean Years of Schooling; SDG 2.

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INTRODUCTION

Stunting is a development issue that significantly affects the quality of human resources and has become a primary focus of the global agenda, particularly within the Sustainable Development Goals (SDGs), Goal 2 through indicator 2.2.1 on the prevalence of stunting among children under five years of age (Indriyastuti & Kartono, 2021). In Indonesia, the prevalence of stunting remains high and has not declined optimally. Based on the 2018 Basic Health Research (Riskesdas), the rate still exceeded the maximum threshold of 20 percent established by the World Health Organization (Saudale, 2019). This condition indicates that stunting is not only related to health aspects but also reflects challenges in the effectiveness of public budget management and governance. President Joko Widodo has highlighted the low effectiveness of regional budget allocations due to the use of funds for activities that are not prioritized (Titoni, Osbaldi, & Khairani, 2024). Furthermore, the absence of technical guidelines for the Government Internal Supervisory Apparatus (APIP) in conducting audits and specific oversight of stunting programs weakens the effectiveness of internal control. This situation creates the potential for irregularities in the management of health budgets, which may hinder improvements in nutrition services and the effectiveness of efforts to reduce stunting prevalence within the community (Rizki, 2023).

Furthermore, stunting in children is a condition of growth failure characterized by height below the age-standard and has long-term impacts on health, human capital quality, and economic growth. Children who experience stunting tend to have lower cognitive development, less optimal academic achievement, and a reduction in earning potential ranging from 5–53% (Shekar, 2017). This issue has become a global concern under SDG indicator 2.2.1; however, in Indonesia, the prevalence of stunting has declined relatively slowly over the past two decades. Meanwhile, the World Health Organization's target to reduce stunting prevalence by 40 percent by 2025 has so far been achieved only by a few smaller countries (Mitra, 2017). This indicates that addressing stunting requires a comprehensive and cross-sectoral approach through integrated policies across all districts and municipalities in Indonesia (Primanto & Puspitasari, 2024).

Thus, reducing stunting has become a national health development priority aligned with the Sustainable Development Goals (SDGs), particularly Goals 2 and 3 (Hafidh Fadhlurrohman, 2025). Although the government has increased health budget allocations within the State Budget (APBN), including reaching IDR 48.3 trillion in 2022, the prevalence of stunting remained at 21.6 percent (SSGI, 2022). This condition underscores that a large budget does not necessarily guarantee optimal outcomes, thereby requiring effective, efficient, and well-targeted management. From a public sector accounting perspective, this reflects the government's fiscal responsibility to ensure that public expenditures are managed transparently and accountably in order to enhance societal welfare (Pearson, 2018; Shekar, 2017).

In addition, the Average Years of Schooling (RLS) is an indicator of the educational attainment of the population aged 25 years and above (BPS, 2022). A higher RLS reflects better levels of knowledge and public awareness in maintaining health and fulfilling household nutritional needs. Conversely, a lower RLS indicates limited understanding of parenting practices and child nutrition, thereby increasing the risk of stunting. Stunting not only affects physical health but also influences children's cognitive abilities, academic achievement, educational opportunities, and future income prospects (Esta, 2024). Therefore, improving RLS is a crucial factor in reducing stunting through enhanced knowledge and family nutritional behavior.

However, efforts to reduce stunting continue to face challenges, particularly due to the weak Government Internal Control System (SPIP), as reflected in various findings of the Audit Board of Indonesia (BPK). In this context, the Government Internal Supervisory Apparatus (APIP) plays a strategic role in strengthening governance, enhancing accountability, and ensuring that public budget management is efficient and results-oriented (Djamil, 2023). Despite cross-sectoral synergy, its implementation still encounters obstacles such as overlapping programs, weak coordination among regional government organizations, and the dominance of operational expenditures that reduce budget effectiveness (Rokhmah et al., 2024). This condition indicates that large allocations for health and education do not automatically lead to optimal reductions in stunting without effective internal oversight. Therefore, the role of APIP becomes crucial in ensuring transparent, efficient, and results-oriented public financial management to support the effective implementation of stunting reduction programs and improve societal welfare (Alvianto et al., 2025).

In relation to this issue, a growing body of research has examined the relationship between health expenditure, APIP, and average years of schooling in reducing stunting prevalence in Indonesia. Several studies, including Sari (2023), show that government health expenditure has a significant effect across all provinces, including those outside Java, where a one percent increase in health spending can reduce stunting prevalence. Furthermore, research by Stanley et al. (2017), as cited in Nasution (2022), indicates that government health budgets positively impact child nutrition fulfillment in Nepal. Meanwhile, Jiwayanti and Abror (2023) emphasize the importance of APIP's role in Indonesia through performance audits to ensure the effectiveness, efficiency, and economy of programs. The optimization of such oversight encourages more targeted use of health budgets and accelerates stunting reduction. In line with this, Kouadio (2024) argues that the effectiveness of health expenditure depends on the quality of governance. Therefore, APIP plays a vital role in ensuring that health budgets are managed effectively, thereby improving health outcomes, including reducing stunting. Various studies also indicate that low parental education levels increase the risk of stunting due to limited understanding of child nutritional needs (Dungga et al., 2022; Fauzi et al., 2020). In South Sulawesi Province, Budiawan et al. (2018) found a strong relationship between high stunting rates and low

parental education levels. This finding is reinforced by Waliulu et al. (2018), who argue that education not only enhances cognitive capacity but also expands access to information, thereby supporting better child-rearing practices.

Although previous studies have examined the effect of health expenditure, governance quality, and educational attainment on stunting, most of them analyze these factors separately. Limited studies integrate the role of internal government oversight (APIP) as a moderating mechanism in the relationship between public health expenditure and development outcomes. Furthermore, from a public sector accounting perspective, empirical evidence explaining how internal control systems influence the effectiveness of budget allocation remains scarce. Therefore, this study fills this gap by simultaneously examining health expenditure, APIP as a moderating variable, and educational factors in a unified empirical model.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Agency Theory

Agency theory, introduced by Michael C. Jensen and William H. Meckling (1976), explains that the relationship between principals and agents is not always aligned due to information asymmetry, which can lead to opportunistic behavior and agency problems. This condition has the potential to reduce the effectiveness of public budget management. In the context of local governments, agency problems are reflected in the suboptimal management of health budgets, including those allocated for stunting reduction. Without adequate oversight, budgets are at risk of being used inefficiently, misallocated, or improperly targeted, thereby failing to achieve the expected outcomes. Therefore, the Government Internal Supervisory Apparatus (APIP) functions as a control mechanism to mitigate agency problems through supervision, auditing, and evaluation activities, as emphasized by Kathleen M. Eisenhardt (1989). Effective oversight can enhance transparency and accountability, thereby encouraging more efficient and well-targeted budget utilization. From an agency theory perspective, the existence of APIP becomes a crucial instrument in reducing information asymmetry and limiting opportunistic behavior by agents, ultimately strengthening the relationship between health expenditure and stunting reduction. This implies that budget effectiveness is determined not only by the size of the allocation but also by the quality of oversight mechanisms in addressing agency problems.

Human Capital Theory

Human Capital Theory, introduced by Gary S. Becker (1964), explains that education is a form of investment that enhances individual capacity, productivity, and behavioral quality, including in aspects of health and family welfare. In the context of human development, education encourages individuals to think more rationally and make more informed decisions regarding health-related

issues. According to Todaro and Smith (2015), human capital can be understood as an investment undertaken by individuals to achieve higher levels of future consumption, primarily through education and health. Higher levels of education or more intensive training have been shown to improve individual skills and capabilities. At the same time, health is closely linked to education. Without adequate health conditions, even high-quality education cannot optimally enhance productivity. Conversely, higher levels of education also contribute to greater awareness of health, encouraging individuals to adopt healthier lifestyles (Todaro & Smith, 2020). This reciprocal relationship highlights that education and health are mutually reinforcing components of human capital development.

In this study, Mean Years of Schooling (MYS), as a control variable, reflects the level of education within a given population. Higher educational attainment enables individuals to better understand nutrition, health, and child-rearing practices, thereby reducing the risk of stunting. The literature suggests that education not only improves cognitive capacity but also shapes health-related behavior and parenting quality, which ultimately contribute to lowering the prevalence of stunting.

The Effect of Health Function Budgeting on Prevalence Stunting Reduction (SDG 2)

One of the government's main challenges is converting health spending into tangible Public Health Outcomes (PHO) (Kabongo & Mbonigaba, 2024). Reducing stunting reflects improvements in child health and is a crucial investment in human capital development. Based on Grossman's theory, government spending on stunting reduction not only improves health but also productivity and economic well-being (Destianti & Suseno, 2024). The World Bank's report on Better Spending to Reduce Stunting in Indonesia shows stunting program financing is supported by village funds, the National Health Insurance (JKN), and the Ministry of Health, with an increase in village fund allocations to IDR 268 trillion in 2015–2019 period, or approximately USD 3.9 billion per year to strengthen community services and empowerment (Indra & Khoirunurrofik, 2022). Empirically, health sector spending has been shown to have a long-term negative impact on infant mortality and stunting prevalence, although not significant in the short term (Osei et al., 2023) and a positive effect on toddler nutritional intake in Nepal (Stanley et al., 2017 in Nasution 2022).

This aligns with the mandate of Law Number 36 of 2009, Article 171 paragraph (2), which stipulates that the health budget allocation is a minimum of 10% of the regional budget (APBD) excluding salaries. Astri (2013), as cited in Fajar & Indrawati (2020), stated that government spending in the health sector is crucial for human development because health services are a primary government responsibility. However, the implementation of the stunting reduction program still faces various obstacles, such as mismatched roles based on competencies, lack of community advocacy, suboptimal program monitoring, incomplete data, weak coordination between implementers, and unfavorable geographic conditions (Zaleha & Idris, 2022). Therefore, greater government spending allocation to the health sector will increase access to health services, improve nutritional status, and

reduce the prevalence of stunting. As a result, it can be assumed that the health budget has a negative impact on stunting, meaning that an increase in the health budget could reduce stunting rates in the community.

H_1: Government health expenditure has a negative effect on stunting levels in Indonesia.

APIP on Prevalence Stunting Reduction

The Indonesian government has implemented various programs to address stunting. These programs require continuous monitoring and evaluation to ensure that they are effectively implemented. The persistence of stunting cases has prompted the government to designate 100 priority districts/cities for intervention, focusing on both specific nutrition interventions and sensitive nutrition interventions (Syafrina, Masrul, & Firdawati, 2019).

The Government Internal Supervisory Apparatus (APIP) plays a crucial role in overseeing stunting reduction efforts, as stipulated in Presidential Regulation No. 72 of 2021 on the Acceleration of Stunting Reduction. APIP's focus includes ensuring convergence, the effectiveness of both specific (health-related) and sensitive (non-health-related) interventions, and budget accountability, in line with the fifth pillar of the national strategy, namely monitoring and evaluation (State Secretariat of the Republic of Indonesia). From a public sector governance perspective, effective oversight by APIP can enhance the efficiency and targeting accuracy of budget utilization, thereby enabling programs to achieve optimal outcomes. This is essential, as the success of stunting reduction depends not only on the size of the budget but also on the quality of control and program implementation. In Indonesia, Jiwayanti and Abror (2023) argue that APIP contributes through performance audits to ensure that programs are effective, efficient, and economical.

The more optimal the supervisory function of APIP, the more precise the allocation and utilization of health budgets, which ultimately supports the acceleration of stunting reduction. Therefore, optimizing the role of APIP in oversight is expected to improve the effectiveness of budget management and program implementation, thereby contributing to the reduction of stunting prevalence. Accordingly, APIP is hypothesized to have a significant effect on reducing stunting prevalence.

H2: APIP has negative effect on stunting levels in Indonesia.

APIP Strengthens the Effect of Health Budget Allocations on Stunting Prevalence Reduction.

The effectiveness of the Public Health Service Providers (APIP) plays a crucial role in ensuring efficient, transparent, and targeted health budget management. APIP oversees budget utilization, including the Special Allocation Fund for Health (DAK Kesehatan), to ensure it is results-oriented (Ministry of Health, 2019). Good governance has been shown to strengthen the impact of health

spending on health outcomes, including stunting reduction (Kouadio, 2024; Sari, 2023). However, this effectiveness tends to weaken in regions with low governance quality.

Furthermore, Rahman et al. (2025) emphasized that achieving effective health outcomes requires integration between health investment and institutional reform, as good governance strengthens the influence of health spending on health outcomes. This aligns with Kabongo & Mbonigaba (2024), who demonstrated that quality governance enhances the effectiveness of health spending. In Indonesia, APIP plays a role through performance audits to ensure programs are running effectively, efficiently, and economically (Jiwayanti & Abror, 2023). Optimal APIP oversight leads to more appropriate use of the health budget, thus supporting stunting reduction. Furthermore, regulations and budget support are also crucial for successful programs (Supranoto et al., 2025). Therefore, the effectiveness of the Internal Supervisory Agency (APIP) acts as a reinforcing factor in the relationship between the health budget and stunting reduction.

H_3: The effectiveness of the Government Internal Supervisory Apparatus (APIP) strengthens the effect of health budget allocations on the reduction of stunting prevalence.

METHOD

Data

This study uses multiple regression analysis and a quantitative research methodology. A more thorough analysis of variance across areas and over time is enabled by the panel data, which combine time-series and cross-sectional dimensions. Purposive sampling was used to choose the sample based on predetermined standards for the completeness and accessibility of the data needed for the study variables. The dataset includes 542 Indonesian local governments from 2021 to 2022 at the province, regency, and city levels. However, data constraints were identified in several regions: 22 regencies/municipalities did not report data on achieving Sustainable Development Goal (SDG) 2, and 2 regency/municipality lacked data on the health function budget. After accounting for these limitations, the final sample consisted of 518 cross-sectional units. 1,036 observations were made during the course of the two-year observation period.

This study's data came only from official government sources. Statistics Indonesia (Badan Pusat Statistik, BPS) provided the Human Development Index (HDI) data. BAPPENAS provided data on Prevalence Stunting SDG 2 (Zero Hunger), indicator 2.2.1*, which measures the prevalence of stunting (short and severely stunted) in children under five. Kemendikbudristek and Statistics Indonesia (BPS) provided information on average years of schooling. Meanwhile, data on the health function budget were sourced from the Ministry of Finance.

Empirical Model and Variable Operationalization

The purpose of the research model is to forecast and explain how changes in one variable will impact other variables. An empirical research model is as follows:

$$SDG2_{it} = \beta 0 + \beta 1\ APIP_{it} + \beta 2HFB_{it} + \beta 3MYS_{it} + \beta 4Island_{it} + \varepsilon t \quad \text{.....(1).}$$
$$SDG2_{it} = \beta 0 + \beta 1\ APIP_{it} + \beta 2HFB_{it} + \beta 3APIPXHFB + \beta 4MYS_{it} + \beta 5Island_{it} + \varepsilon t \quad \text{.....(2).}$$

The main variables in this study include the prevalence of stunting in SDG2it, HFBit (Health Function Budget), MYSit (Mean Years of Schooling), and APIPit, which are analyzed in relation to the achievement of Prevalence Stunting SDG 2 (Zero Hunger), especially the frequency of short and extremely short stunting in children under five. SDG2it represents the achievement of SDG 2, measured by indicator 2.2.1: the prevalence of stunting (short and severely stunted) among children under 5 years old. HFBit refers to the Health Function Budget allocated by local governments measured by the natural logarithm of the health function budget, while MYSit captures the education variable measured by mean years of schooling.

APIPit denotes capability variable measured using levels 1-5. Level 1 indicates that there are no fixed practices and that the practice relies heavily on individual performance. Level 2 indicates that the audit process is conducted consistently and supported by adequate human resource competency qualifications. Level 3 indicates that the APIP has implemented supervisory activities in accordance with standards, and the quality of the APIP's supervisory results has provided confidence in compliance, economy, efficiency, and effectiveness. It can provide early warnings and improve the effectiveness of risk management, as well as maintain and enhance the quality of organizational governance. At this level, the APIP is deemed effective because it has provided consulting services and performance audits for priority programs. Level 4 indicates that the APIP has become a strategic partner for the organization and can support the achievement of organizational goals through its supervisory results related to governance, risk management, and control. Finally, level 5 indicates that the APIP has practiced optimally, providing assurance regarding the achievement of organizational goals regarding operational effectiveness and efficiency, financial reporting reliability, asset security, and compliance with laws and regulations.

Data on the prevalence of stunting or SDG 2.2.1 indicators were obtained from BAPPENAS. Furthermore, the variable measured by mean years of schooling was sourced from Statistics Indonesia (Badan Pusat Statistik, BPS). Furthermore, the control variable Islandit indicates the geographical location of local governments and is measured using a dummy variable: a value of "1" indicates local governments on Java Island, and "0" indicates those outside Java Island.

RESULTS AND DISCUSSION

Results

The operational definitions of the variables used in this study, along with their corresponding data sources, are presented in Table 1:

Table 1. Operationalization of Variables and Data Sources

Name	Operationalization Of Variables	Data Sources
$SDG2_{it}$	Prevalence of stunting (stunted and severely stunted) among children under five years of age	National Development Planning Agency (BAPPENAS)
$APIP_{it}$	APIP Capability	Financial and Development Supervisory Agency (BPKP)
HFB_{it}	Budget Function Healths of provincial regency/city governments in Indonesia as measured by the natural logarithm of the health function budget.	Ministry of Finance
MYS_{it}	Education is measured by Mean Years of Schooling	Ministry of Education and Culture, and Central Bureau of Statistics (BPS)
$Island_{it}$	Regional Government Geographical Location: Measured using an island dummy variable, where" represents Java Island and "0" represents other islands.	Ministry of Home Affairs of The Republic Indonesia

Sources: Secondary Data, Stata-17 (processed, 2026)

Table 2 presents the descriptive statistics of all variables used in this study:

Table 2. Descriptive Statistics

Description	Mean	Standard Deviation	Min	Max
$Stunting_{it}$	24.80	7.86	4.8	55.4
$APIP_{it}$	2.45	0.59	1	3
HFB_{it}*)	26.34	0.68	21.35	30.25
MYS_{it}	8.52	1.58	1.42	13.03
$Island_{it}$	0.22	0.42	0	1

Remarks:
)* In billion rupiah
The number of observations = 1.036
The operational definitions of the variables are presented in Table 2.

Sources: Secondary Data, Stata-17 (processed, 2026)

Table 3 presents the descriptive statistics for all variables analyzed in this study. The mean value of the Stuntingit variable is 24.80%, with a standard deviation of 7.86, indicating substantial variation across regions. The minimum observed value 4.8%, the maximum 55.4%, suggesting significant disparities in children's nutritional conditions across regions.

Meanwhile, the APIPit variable, which reflects the Government Internal Supervisory Apparatus's capability level based on the BPKP assessment, has an average of 2.45, with a range of 1-3. That indicates that APIP capability in most local governments remains moderate and has not yet fully shifted toward performance-based supervision. The HFBit variable (Health Function Budget) has a mean of 26.34, a relatively small standard deviation of 0.68, and a range of 21.35–30.25. These

figures suggest that health budget conditions across regions are relatively stable and homogeneous. Furthermore, the control variable MYSit (mean years of schooling) has an average of 8.52 years, a standard deviation of 1.58, and a range of 1.42 to 13.03 years. This indicates noticeable differences in parental education levels across regions. By making people more aware of good eating and better ways to care for children, better schooling can help lower stunting. With an average islandit value of 0.22, this group is mostly made up of district-level local governments that are not in Java. The most dependent variable is Stuntingit as shown in the table. APIPit and HFBit on the other hand, have smaller ranges. The results indicate that the differences in the rates of stunting seen in different regions are probably due in part to how well state and local governments spend money on feeding and teaching mothers how to care for their babies.

To determine the most appropriate panel data estimation model, the Chow test and Hausman test were conducted. The results of these tests are presented in Table 3.

Table 3. Test of Determination and Panel Data Regression

Fixed-effects regression model	**Number Of Obs:** 1.036
Variabel Group: 2026	**Number Of Groups:** 518
R-squared:	**Obs Per Group:**
Within: 0.2828	**Min:** 518
Between: 1,000	**Avg:** 518.0
Overall: 0.2855	**Max:** 518
	Wald chi2(4): 412.04
Corr(ui,x) = 0 (Assumed)	**Prob > chi2:** 0.0000

1. Chow Test	**2. Hausman Test**
H0 : Common Effect Model	H0 : Random Effect Model
H1 : Fixed Effect Model	H1 : Fixed Effect Model
Result Test	
Chow Test	Hausman Test
Prob > F = 0.0000	Prob > chi2 = 0.0000
Decision :	
Rejected H0, Jika (Prob > F dan Prob > chi2) < (0,05)	

Sources: Secondary Data, Stata-17 (processed, 2026)

Based on the data processing results, this study employs panel data, so selecting the most appropriate estimation model is necessary. The initial stage involves estimating the Fixed Effect (FE)

model. The test results show a Prob > F value of 0.0000. Therefore, the Common Effect model (pooled OLS) is not appropriate because it fails to capture the existing heterogeneity.

Furthermore, to determine the best model between Fixed Effect (FE) and Random Effect (RE), the Hausman test is conducted. The test results show a Prob > chi² value of 0.0000 (< 0.05), leading to the rejection of the null hypothesis. This indicates that the Random Effect model is not consistent, therefore, the Fixed Effect model is the most appropriate model to use.

Outcome of correlation analysis betwen variables below:

Table 4. Variable Correlation Analysis

Variabel	**Stunting$_{it}$**	**APIP$_{it}$**	**HFB$_{it}$**	**MYS$_{it}$**	**Island$_{it}$**
Stunting$_{it}$	1.0000				
APIP$_{it}$	-0.2922***	1.0000			
	(0.000)				
HFB$_{it}$	-0.2367***	0.2485***	1.0000		
	(0.000)	(0.000)			
MYS$_{it}$	-0.4030***	0.2409***	0.0912***	1.0000	
	(0.000)	(0.000)	(0.000)		
Island$_{it}$	-0.2917***	0.0901***	0.5122***	-0.0355	1.0000
	(0.000)	(0.0037)	(0.000)	0.2533	

The number of observations= 1.036
The operational definitions of the variables are presented in Table 2.
***,**,* = significant P-value 1%, 5%,10%

Sources: Secondary Data, Stata-17 (processed, 2026)

Table 4 uses correlation analysis to show the types of relationships and how strong they are between the study factors. HFB, APIP, and the success of Prevalence Stunting (SDG 2) are statistically linked. Goal 2 of the Sustainable Development Agenda is to reduce the number of children under 5 years old who are stunted. Some examples are serious stunting and being short. To reduce the number of stunted kids and achieve SDG 2 (ending hunger and improving nutrition), these results show that the health function budget (HFB) needs to be better allocated, and government internal control (APIP) needs to function better. The number of years spent in school on average is also linked to the frequency of stunting. indicates that the level of public education influences the success of health programs and the effectiveness of budget utilization in reducing stunting rates. Therefore, efforts to reduce stunting depend not only on budgeting and supervisory mechanisms but also on educational factors, which are essential to sustainable human development.

Table 5 presents the results of two regression models. Model (1) represents the baseline

estimation without the interaction term, focusing on the direct effects of APIP, health function expenditure, and control variables on stunting prevalence. Model (2) extends the analysis by including the interaction term between APIP and health function expenditure to examine the moderating effect of APIP.

Table 5. Hypothesis Testing Results

$$SDG2_{it} = \beta0 + \beta1APIP_{it} + \beta2HFB_{it} + \beta3MYS_{it} + \beta4Island_{it} + \varepsilon t \ldots\ldots\ldots\ldots\ldots\ldots\ldots(1).$$

$$SDG2_{it} = \beta0 + \beta1APIP_{it} + \beta2HFB_{it} + \beta3(APIP \times HFB)_{it} + \beta4MYS_{it} + \beta4Island_{it} + \varepsilon t \ldots\ldots(2).$$

Variabel	Expected Sign	Individual Model Test $SDG2_{it}$	Full Model Test $SDG2_{it}$
Cons		52.030	111.120
		0.000	0.002
$APIP_{it}$	**(-)**	-2.288***	-25.462***
		0.000	0.049
HFB_{it}	**H1: (-)**	-0.179	-2.427***
		0.619	0.054
APIPxHFB	**H2: (+)**		0.883**
			0.066
MYS	**(+/-)**	-1.839***	-1.818***
		0.000	0.000
Island	**(+/-)**	-5.242***	-5.165***
		0.000	0.000
Prob > F		0.000	0.000
Adj R-Square		0.285	0.287
Obs		1.036	1.036
Mean Vif		1.25	1.25

The operational definitions of the variables are presented in Table 1
***,**,* = significant P-value 1%, 5%,10%

The table presents the regression results for the SDG 2 achievement model, which examines efforts to reduce stunting prevalence through APIP, (HFB), the moderating interaction APIP × HFB, as well as Mean Years of Schooling (MYS) and Island as control variables.

The APIP variable had a statistically significant negative impact on SDG 2 attainment in the individual model test, with a coefficient of −2.288 at the one percent significance level. This result

indicates that stronger internal government supervision is associated with lower stunting prevalence. In the baseline model, This suggests that the allocation of health expenditure alone is not sufficient, and its effectiveness depends on how the budget is implemented at the regional level. This indicates that increasing health expenditure alone is not sufficient to reduce stunting without considering other supporting factors.

When the Health Function Budget (HFB) and the control factors were added to the model, the HFB had a large negative effect on stunting, with a coefficient of -2.427. According to the first theory, this finding supports the idea that more funding for health care can help reduce stunting by making it easier for people to access basic care, nutrition care for mothers and children, and public health services.

Meanwhile, with a coefficient of −1.839, Mean Years of Schooling (MYS) as a variable control significantly and negative affects the prevalence of stunting. This result implies that a lower prevalence of stunting is associated with higher levels of schooling. Education plays an important role in improving nutritional knowledge, child-rearing practices, and households' ability to access health services.

The interaction term between APIP and HFB became positive and statistically significant at the 5% level (value 0.883). The interaction term between APIP and health function expenditure is positive and statistically significant. This indicates that the moderating effect of APIP does not support the proposed hypothesis. Instead of strengthening the relationship, the positive coefficient suggests that higher APIP involvement is associated with a weaker impact of health expenditure on reducing stunting. This finding implies that the current oversight mechanism may not be effective in enhancing the efficiency of health budget utilization.

DISCUSSION

The findings of this study indicate that the effectiveness of the Government Internal Supervisory Apparatus (APIP), the allocation of the health function budget, and Mean Years of Schooling (MYS) simultaneously have a significant effect on achieving development goals, particularly in reducing the prevalence of stunting in Indonesia. However, the results show that the moderating role of APIP does not support the research hypothesis, indicating that the effectiveness of internal supervision has not been able to strengthen the relationship between health budget allocation and the reduction of stunting.

This condition suggests that the role of APIP as a guardian of health budget implementation has not yet been optimal. Internal supervision still tends to focus on administrative and procedural compliance, and therefore has not been able to ensure that increases in health budget allocation are effectively translated into impactful, outcome-based nutritional interventions. This limitation is likely

associated with constraints in performance auditing, weak results-based supervision, and suboptimal accountability in the implementation of health programs at the regional level.

These procedural constraints indicate that the high intensity of supervisory activities in regions may actually reflect a response to weak performance conditions and high stunting prevalence, rather than functioning as a mechanism that drives program effectiveness. Sanjaya et al. (2024) found that most stunting-related expenditures in Aceh Jaya were absorbed by administrative activities rather than direct interventions. In line with this, reports from the World Bank and SMERU (2020), as well as Rokhmah et al. (2024), emphasize that the main issue in addressing stunting in Indonesia is not budget constraints, but rather weaknesses in governance, coordination, and the effectiveness of inter-agency supervision.

Furthermore, Khikmah et al. (2023) argue that supervision focused primarily on administrative compliance may reduce budget efficiency and even become counterproductive. Rizki (2023), along with findings from the Corruption Eradication Commission (KPK) through its Coordination and Supervision Deputy, also reveal that procurement and supervision of stunting programs across regions remain suboptimal. This is particularly due to the absence of specific technical guidelines for performance audits on stunting programs for APIP. Such conditions may ultimately reduce the quality of nutrition and public health services.

Meanwhile, Mean Years of Schooling (MYS), as a control variable, is found to have a significant effect on stunting prevalence. Higher levels of education contribute to improved knowledge of nutrition and health, as well as greater capacity to respond effectively to household-related challenges (Ridwan & Sebayan, 2025). At the regional level, MYS reflects the overall educational capacity of the population, which is closely associated with increased family awareness regarding parenting practices, health behavior, and child nutrition. This finding is consistent with Aulia et al. (2024) and Rahmawati et al. (2019), who emphasize that knowledge plays a crucial role in shaping awareness and promoting healthy behavior. Therefore, education emerges as a key determinant in supporting stunting reduction and achieving SDG 2.

From an agency theory perspective, local governments act as agents accountable to both the central government and the public in managing public resources. In this context, APIP serves as a monitoring mechanism aimed at reducing information asymmetry and ensuring accountability. However, when supervisory practices remain predominantly administrative and compliance-oriented rather than performance-based, the effectiveness of health spending in reducing stunting becomes constrained. This indicates that the presence of oversight alone is insufficient without a shift toward results-oriented governance.

In contrast, human capital theory provides a complementary explanation by emphasizing that education represents a long-term investment that directly enhances health outcomes and overall

welfare. Within this framework, MYS serves as a proxy for human capital, playing a critical role in reducing stunting through improved knowledge, decision-making, and health-related behavior at the household level. This reinforces the argument that structural improvements in education can generate sustainable impacts on public health outcomes.

These findings highlight that achieving optimal outcomes requires not only increased budget allocation but also institutional reform. In particular, internal supervision must evolve to become more adaptive and performance-oriented, supported by strong cross-sectoral coordination. In this regard, the audit and evaluation functions carried out by APIP are essential to prevent budget misuse, strengthen governance, and enhance the effectiveness of public policies in the health sector (Malelea et al., 2023; Setiawan & Safri, 2016; Purwati et al., 2024). Without such improvements, the potential impact of fiscal policy on reducing stunting will remain suboptimal.

CONCLUSION, IMPLICATION AND LIMITATION

This study concludes that education level and health expenditure allocation play important roles in reducing stunting prevalence in Indonesia. Prior to the inclusion of the moderating variable, the results indicate that health expenditure has a significant effect on reducing stunting, although its impact has not yet been fully optimal. Meanwhile, education level, as measured by Mean Years of Schooling (MYS), consistently contributes to stunting reduction by enhancing the educational capacity of the population, which in turn improves family knowledge regarding parenting practices, health, and child nutrition.

However, after incorporating the moderating variable of the Government Internal Supervisory Apparatus (APIP), the findings reveal that the moderating role of APIP does not support the proposed hypothesis. The interaction between APIP and health expenditure fails to strengthen the relationship in reducing stunting and even tends to move in a direction contrary to expectations. This suggests that the supervisory function has not been operating optimally in enhancing the effectiveness of health budget utilization. Directly, APIP still plays a role in promoting better governance. Nevertheless, this role remains limited, as the existing supervisory system tends to focus on administrative compliance rather than being fully performance- and outcome-oriented. This condition indicates that a larger health budget does not automatically lead to an optimal reduction in stunting without the support of an effective and results-based oversight system.

These findings imply that improving the quality of education and the effectiveness of health expenditure should be continuously prioritized as key drivers in reducing stunting. In addition, strengthening the role of the Government Internal Supervisory Apparatus (APIP) through a performance-based oversight approach is essential to ensure that health programs are more outcome-oriented. The optimization of health budget utilization is also necessary so that expenditures are not merely absorbed administratively, but instead generate tangible impacts on public welfare.

In this context, adopting an evidence-based approach in the planning and implementation of nutrition programs becomes crucial to enhance the effectiveness of government policies.

Furthermore, health policies that are integrated with improvements in education and performance-based supervision are critical to increasing the effectiveness of stunting reduction efforts. A more coordinated and cross-sectoral approach will ensure that interventions address both immediate and underlying determinants of stunting.

This study has several limitations. First, the number of variables included remains limited, and the observation period is relatively short, which may not fully capture the complexity of factors influencing stunting. Therefore, future research is recommended to incorporate additional social variables and extend the observation period. Moreover, social, institutional, and geographical factors should also be considered to provide a more comprehensive understanding of the determinants of stunting across different regions.

REFERENCES

Alvianto, F., Mattulada, A., dan Fattah, V. (2025). "Strategic Planning, Resource Allocation, Operational Efficiency, Organisational Effectiveness, Accountability Measures, and Budgetary Performance in the Stunting Prevalence Reduction Program in Sigi Regency," International Journal of Finance and Business Management (IJFBM), 3(3), hal. 177–196. https://jpnmultitechpublisher.my.id/index.php/ijfbm/article/view/48

Aulia, D., Gunarto, T., Murwiati, A., & Maimunah, E. (2024). Determinan prevalensi balita stunting 34 provinsi di Indonesia tahun 2017-2022. Jurnal Simki Economic, 7(1), 289-299. https://jurnal.unpkediri.ac.id/index.php/JSE/article/view/617

Budiman, M.R.A.; S.R.W. (2019) "Evaluasi Anggaran Dana Alokasi Khusus Terhadap Anak Stunting di Dinas Kesehatan Kabupaten Subang Provinsi Jawa Barat," hal. 1–9.Tersedia pada: https://doi.org/10.24912/jssh.v1i1.24544213.

Darmaga, R. dan Ipb, K. (2025). "Sekolah Keluarga Berkualitas : Pencegahan Stunting Di," Jurnal Pengabdian Inovasi Masyarakat Indonesia, 4(2), hal. 122–127. Tersedia pada: https://doi.org/10.29303/jpimi.v4i2.6284.

Destianti, A.; Suseno, D.A. (2025) "Analisis Pengaruh Pengeluaran Pemerintah Terhadap Stunting," Sibatik Journal, 4(6), hal. 1049-1064. https://publish.ojsindonesia.com/index.php/SIBATIK/article/view/2794

Djamil, N. (2023). "APIP dalam Pelaksanaan Maturitas SPIP," JAAMTER (jURNAL Audit, Akuntansi, Manajemen Terintegrasi), 1(2), hal. 76–88. https://naaspublishing.com/index.php/jaamter/article/view/3

Esta, L., Siregar, A., Hidayat, A. K., & Yusuf, A. A. (2024). Stunting and its association with education and cognitive outcomes in adulthood : A longitudinal study in In*donesia*. PLOS ONE, 1–18. https://doi.org/10.1371/journal.pone.0295380

E. Malelea, F. et al., (2024). "The Role of Government Internal Supervisory Apparatus (APIP) and Government Internal Control System (SPIP) in Achieving Sustainable Development Goals (SDGs) in Indonesia," KnE Social Sciences, 2024, hal. 379–398. Tersedia pada: https://doi.org/10.18502/kss.v9i20.16541.

Eisenhardt, K.M. (1989). "Agency Theory : An Assessment and Review. Linked references are available on JSTOR," Agency Theory : An Assessment and Review, 14(1)(1), hal. 57–74. Tersedia pada: https://www.jstor.org/stable/258191.

Fadhlurrohman, H. (2025). "Analisis Implementasi Kebijakan Percepatan Penurunan Stunting Dalam Capaian SDGs di Indonesia," Jurnal Syntax Imperatif: Jurnal Ilmu Sosial dan Pendidikan, 6(3),

hal. 857–875. https://jurnal.syntaximperatif.co.id/index.php/syntax-imperatif/article/view/757

Faid, M., Sya, W., dan Sukron, M. (2025). "Pemetaan Daerah Rawan Stunting dengan Algoritma K-Means dan Analisis Demografis di Kabupaten Probolinggo," JOKI : Journal of Computing and Informatics, 02(01), hal. 16–25. http://ejournal.duniakampus.org/index.php/joki/article/view/155

Fajar, M.A. dan Indrawati, L. (2020). "Pengaruh Belanja Pendidikan, Belanja Kesehatan Dan Belanja Perumahan Dan Fasilitas Umum Terhadap Indeks Pembangunan Manusia (Studi Kasus Pada Pemerintah Daerah Kabupaten Cianjur)," Indonesian Accounting Research Journal, 1(1), hal. 108–118. Tersedia pada: https://jurnal.polban.ac.id/ojs-3.1.2/iarj/article/view/2366/1851.

Fakhrina, A., Nurani, N. dan Triasih, R. (2020). "Berat Badan Lahir Rendah sebagai Faktor Risiko Stunted pada Anak Usia Sekolah," Sari Pediatri, 22(1), hal. 18–23. https://saripediatri.org/index.php/sari-pediatri/article/view/1640

Fauzi, M., Wahyudin, W., & Aliyah. (2020). Hubungan Tingkat Pendidikan Dan Pekerjaan Ibu Balita Dengan Kejadian Stunting Di Wilayah Kerja Puskesmas X Kabupaten Indramayu. In Prosiding Seminar Nasional Kesehatan "Peran Tenaga Kesehatan Dalam Menurunkan Kejadian Stunting" Tahun 2020 [Conference proceedings]. https://ejurnal.respati-tasikmalaya.ac.id/index.php/semnas/article/download/257/183/448

Fikriya, A. dan Mirwanti, R. (2024) "Pengetahuan ibu terkait stunting pada balita: A literature review," Holistik Jurnal Kesehatan, 18(6), hal. 756–764. Tersedia pada: https://doi.org/10.33024/hjk.v18i6.375.

Febriani Dungga, E., Ibrahim, S., & Suleman, I. (2022). The Relationship Of Parents' Education And Employment With The Nutritional Status Of The Child, The License Cc By-Sa 4.0. Jembura Journal Of Health Sciences And Research, 4(3).

Gabrieli, F., Dan Pramudiana, I.D. (2024). "Pengelolaan Anggaran Kemenko Pmk Ri Dalam Pelaksanaan Program Bantuan Sosial Tahun 2019-2020," Jurnal Ilmiah Riset dan Pengembangan, 9(September), hal. 1–13. https://ejournal.irpia.or.id/index.php/irpia-jurnal/article/view/257

Gazali, M. et al., (2024). "Fungsi Pengawasan Internal Oleh Aparat Pengawasan Intern Pemerintah (Apip) Pada Pemerintah Daerah Kabupaten Buton Selatan," Governance, jurnal ilmu pemerintahan, (12), hal. 168–180. https://www.scilit.com/publications/93043e62e02f97f9e9e9da012eec5813

Group, W.B. (2020) "Better to Reduce Stunting in Indonesia," Spending Better to Reduce Stunting in Indonesia [Preprint]. Tersedia pada: https://doi.org/10.1596/34196

Hilal, F., Irawan, R. I., Wati, I., & Nurhaliza. (2024). Peran Audit Internal (Apip) Dalam Meningkatkan Efektivitas Pengawasan Dan Pencegahan Korupsi Di Indonesia. In Jurnal Sosial Humaniora Sigli. https://journal.unigha.ac.id/index.php/JSH/article/view/2812

Hengki, S. et al., (2024). "Strategi Inovatif Mengatasi Korupsi Dana Stunting : Maksimalkan Dana Stunting Demi Masa Depan Sehat," PRAXIS: Jurnal Sains, Teknologi, Masyarakat dan Jejaring, 6(2), hal. 109–119. https://www.beritasatu.com/ekonomi/581125/kasus-stunting-di-indonesia-masih-tinggi

Id, E.L. et al., (2024) "Stunting and its association with education and cognitive outcomes in adulthood : A longitudinal study in Indonesia," PLOS ONE, hal. 1–18. Tersedia pada: https://doi.org/10.1371/journal.pone.0295380.

Indriyastuti, H.I., dan Kartono, D.T. (2022). "Implementation of the Sustainable Development Goals (SDGs) Program on the Management of Stunting Cases in Indonesia," International Journal of Recent research in Interdisciplinary Sciences (IJRRIS), 9(2), hal. 60–65. https://doi.org/10.5281/zenodo.6631152

Indra, J., & Khoirunurrofik, K. (2022). Understanding the role of village fund and administrative capacity in stunting reduction : Empirical evidence from Indonesia. PLOSONE, 1–12. https://doi.org/10.1371/journal.pone.0262743

Kementerian Kesehatan Republik Indonesia. (2019). Wujudkan pembangunan kesehatan yang berkualitas melalui penguatan pengawasan internal. Kemkes.go.id; kemenkes.

https://kemkes.go.id/id/wujudkan-pembangunan-kesehatan-berkualitas-melalui-penguatan-pengawasan-internal.

Khikmah, M., Herawati, Y.T., dan Baroya, N. (2023). "The implementation of health operational cost management in reducing stunting in the Kalisat Community Health Centre, Jember Regency," JNKI (Jurnal Ners dan Kebidanan Indonesia) (Indonesian Journal of Nursing and Midwifery), 11(4), hal. 335. Tersedia pada: https://doi.org/10.21927/jnki.2023.11(4).335-348.

Rahmawati, A., Nurmawati, T., & Sari, L. P. (2019). Faktor yang berhubungan dengan pengetahuan orang tua tentang stunting pada balita. Jurnal Ners dan Kebidanan, 6(3), 389-395. https://ojs.phb.ac.id/index.php/jnk/article/view/500

Lisanu Mazengia, A., & Andargie Biks, G. (2018). Predictors of Stunting among School-Age Children in Northwestern Ethiopia. Journal of Nutrition and Metabolism, 2018, 1–7. https://doi.org/10.1155/2018/7521751

Lestari, E., Siregar, A., Hidayat, A., & Yusuf, A. (2024). Stunting and its association with education and cognitive outcomes in adulthood: A longitudinal study in Indonesia. PLoS One, 19(5), e0295380. https://doi.org/10.1371/journal.pone.0295380

Kouadio, M., & Mom, A. N. (2024). Health expenditure, governance quality, and health outcomes in West African countries. The International Journal of Health Planning and Management, 40(2), 427–441. https://doi.org/10.1002/hpm.3887

Kresnina, K. et al., (2024). "Evaluasi Program Percepatan Penurunan Stunting di Wilayah Kerja Puskesmas Baqa Samarinda Seberang," Jurnal Syntax Admiration, 5(5), hal. 1804–1817. Tersedia pada: https://doi.org/10.46799/jsa.v5i5.1167

Manggala, A. K., Wiswa, K., Kenwa, M., Me, M., Kenwa, L., Agung, A., Dwinaldo, G., Jaya, P., Agung, A., & Sawitri, S. (2018). Risk factors of stunting in children aged 24-59 months, Arya. Paediatr Indones, 58(5), 205–212. https://doi.org/10.14238/pi58.5.2018.205-12&usg=AOvVaw3zwOX70kBi6gWEWh5G9Xd2

Mustamin, 1, Ramlan Asbar, & Budiawan. (2018). Tingkat Pendidikan Ibu Dan Pemberian Asi Eksklusif Dengan Kejadian Stunting Pada Balita Di Provinsi Sulawesi Selatan. In Media Gizi Pangan (Vol. 25, Issue Edisi 1, Pp. 25–27).

Nasution, M. (2022). "Studi Atas Belanja Kesehatan Pemerintah Daerah Di Indonesia Study on Local Government Health Expenditures In Indonesia," Jurnal Budget, 7, hal. 149–164. https://doi.org/10.22212/jbudget.v7i1.124

Ntita, W., Kabongo, S., & Mbonigaba, J. (2024). Effectiveness of public health spending : Investigating the moderating role of governance using partial least squares structural equation modelling (PLS - SEM). Health research Policy and Systems, 1–16. https://doi.org/10.1186/s12961-024-01159-x

Osei, B., Kulu, E., & Appiah-Konadu, P. (2023). Government health expenditure and child health: empirical evidence from West African countries. International Journal of Social Economics, 51(6), 786–799. https://doi.org/10.1108/ijse-03-2022-0212

Pearson, R. et al., (2018). "Optima Nutrition : an allocative efficiency tool to reduce childhood stunting by better targeting of nutrition-related interventions," (April), hal. 1–12. https://pubmed.ncbi.nlm.nih.gov/29558915/

Perpres Nomor 72 tahun 2021 Tentang Percepatan Penurunan Stunting. (2026). KEMENTERIAN SEKRETARIAT NEGARA RI SEKRETARIAT WAKIL PRESIDEN. https://stunting.go.id/perpres-nomor-72-tahun-2021-tentang-percepatan-penurunan-stunting/?btwaf=68557795

Pramono, T.; Abror, M. Daimul ; Jiwayanti, Nurima; Pramono, T. (2024) "Pengawasan Kinerja Aparatur Daerah Melalui Audit Kinerja Aparat Pengawas Internal Pemerintah (Apip)" Jurnal Interaksi Vol.01, 01(01), hal. 49–66. https://doi.org/10.30737/interaksi.v1i1.5230

Puspitasari, L.; Primanto, Aj. (1805) "Kebijakan Penanggulangan Penurunan Angka Stunting di Indonesia," Berajah Journal, hal. 393–408. https://doi.org/10.47353/bj.v4i2.332

Rahman, M., Dyuti, T. I., Tareque, M., & Alnour, M. (2025). Health expenditure, governance, and SDG3 nexus : a longitudinal analysis in BRICS economies. Globalization and Health, 1–18, 1–18. https://doi.org/10.1186/s12992-025-01113-8

Ramadani, N.W. et al., (2025). "Controlling Corruption To Strengthen The Role Of The Education Budget Function In Achieving Sdg 4 In Indonesia," Journal of Applied Finance & Accounting, 12(June), hal. 43–55. https://doi.org/10.21512/jafa.v12i1.13443

Rahmawati, U. H., Aini, L., Rasni, H., Ilmu, S., Fakultas, K., Universitas, K., Jl., J., & Kalimantan. (2019). Hubungan Pelaksanaan Peran Keluarga dengan Kejadian Stunting pada. E-Journal Pustaka Kes ehatan, 7(2), 112.

Rokhmah, N.H. et al., (2024). "The Role of Government in Reducing Stunting," Indonesian Journal of Innovation Multidisplinary research, 2, hal. 293–303. https://doi.org/10.69693/ijim.v2i4.255

Rizki, M. J. (2023). KPK meminta Kementerian PUPR untuk memperbaiki 4 persoalan penyelenggaraan jalan tol. Hukumonline.com. Di akeses pada tanggak 25 November 2025, dari https://www.hukumonline.com/berita/a/kpk-minta-kementerian-pupr-benahi-4-persoalan-penyelenggaraan-jalan-tol-lt63f36524a4ebd/

Ridwan, M., & Sebayang, A. F. (2025). "Pengaruh Pengeluaran Pemerintah, Rata-Rata Lama Sekolah, dan Laju Pertumbuhan Ekonomi terhadap Prevalensi Stunting," Jurnal Riset Ilmu Ekonomi Dan Bisnis, 5(1), 29–36. https://doi.org/10.29313/jrieb.v5i1.6400

Sanjaya, Y., Lastri, S., dan Hermansyah (2024). "Policy Analysis of Budget Utilization in Stunting Programs Based on District Health Account," Indonesian Journal of Global Health research, 6(6), hal. 885–860. https://doi.org/10.37287/ijghr.v6iS6.5002

Sari, D.T. (2023). "Government Health Expenditure and Stunting Prevalence Reduction in Indonesia," Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning, 7(2), hal. 192–208. Tersedia pada: https://doi.org/10.36574/jpp.v7i2.452.

Saudale, V. (2019). 'Kasus stunting di Indonesia masih tinggi.' Jakarta.

Scheffler, C., Hermanussen, M., Deny, S., Soegianto, P., Homalessy, A. V., Touw, S. Y., Angi, S. I., Ariyani, Q. S., Suryanto, T., Kathlix, G., Matulessy, I., Fransiskus, T., Safira, A. V. C., Puteri, M. N., Rahmani, R., Ndaparoka, D. N., Kurniati, M., Payong, E., Indrajati, Y. D., … Pulungan, A. B. (2021). Stunting as a Synonym of Social Disadvantage and Poor Parental Education. International Journal of Environmental research and Public Health, 1–13. https://www.mdpi.com/journal/ijerph

Semba, R. D., Pee, S. De, Sun, K., Sari, M., Akhter, N., & Bloem, M. W. (2008). Effect of parental formal education on risk of child stunting in Indonesia and Bangladesh : a cross-sectional study. International Journal of Environmental research and Public Health, 371, 322–328. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(08)60169-5/abstract

Setiyawan, H.E. dan Safri, M. (2016). "Analisis Pengaruh Akuntabilitas Publik , Transparansi Publik dan Pengawasan Terhadap Kinerja Satuan Kerja Perangkat Daerah di Kabupaten Bungo," Jurnal Perspektif Pembiayaan dan Pembangunan Daerah, 4(1), hal. 51–72 https://doi.org/10.22437/ppd.v4i1.3533

Supranoto, Sasmito, L., Indriastuti, S., Prayitno, H., & Sawir, M. (2025). Social Sciences & Humanities Open From parallel to partnership governance : Strengthening institutional synergy for stunting reduction in decentralized Indonesia. Social Sciences & Humanities Open, 12(March), 102051. https://doi.org/10.1016/j.ssaho.2025.102051

Shekar, M.; Kakietek, Jakub; Eberwein, J.D.W.D. (2018) An Investment Framework for Nutrition. https://ideas.repec.org/b/wbk/wbpubs/26069.html

Syafrina, M., Masrul, M., & Firdawati, F. (2019). Analisis Komitmen Pemerintah Kabupaten Padang Pariaman dalam Mengatasi Masalah Stunting Berdasarkan Nutrition Commitment Index 2018. Jurnal Kesehatan Andalas, 8–2, 233–244. https://doi.org/10.25077/jka.v8i2.997

Sugiato, M.A. (2021). "Analisis Kebijakan Pencegahan dan Penanggulangan Stunting di Indonesia : Made Agus Sugianto," JURNAL EKONOMI, MANAJEMEN, BISNIS DAN SOSIAL, 1(3), hal. 197–209. https://media.neliti.com/media/publications/386888-analisis-kebijakan-pencegahan-dan-penang-d339a27d.pdf

Titoni, M.H., Osbaldi, G.A., dan Khairani, A. (2024). "STUNTING DI INDONESIA MELALUI EVALUASI," Argopuro: Administration, Government, And Public Relation Journal, 1, Hal. 9–13. Waliulu, S. H., Ibrahim, D., & Umasugi, M. T. (2018). Pengaruh Edukasi Terhadap Tingkat Pengetahuan Dan Upaya Pencegahan Stunting Anak Usia Balita. In Jurnal Penelitian Kesehatan Suara Forikes

(Vol. 9, Issue 4, pp. 269–270) [Journal-article]. http://forikes-ejournal.com/index.php/SF

Todaro, M. P., & Smith, S. C... (2020). Economic Development. Pearson

Wicaksono, C.E., Daerobi, A., dan Mulyanto (2022). "Peran Anggaran Pendapatan dan Belanja Desa dan Indeks Desa Membangun dalam Mengurangi Angka Stunting (Kasus pada Provinsi di Indonesia)," Prosiding Nasional 2022 Universitas Abdurachman Saleh SItubondo, 1(4), hal. 16–24.

Yohanes, E. (2018). "Peran Aparat Pengawas Intern Pemerintah (APIP) Dalam Penyelenggaraan Pemerintahan Daerah Di Kabupaten Bulungan," Jurnal Paradigma, 7(2), hal. Agustus 2018 : 55–64. Tersedia di: www.beritakaltara.com.

Zaleha, S., & Idris, H. (2022). Implementation Of Stunting Program In Indonesia : A Narrative Review. Indonesian Journal of Health Administration, 143–151. https://doi.org/10.20473/jaki.v10i1.2022.143-151