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Rotavirus Immunization and Stunting Among Indonesian Children Under Five: A Cross-Sectional Analysis of the 2024 Indonesian Nutritional Status Survey (SSGI)

Fitria[1*], Trisari Anggondowati[2], Sely Anggraini[3], Nadia Putri[4]

[1,3,4]Master's Program in Epidemiology, Faculty of Public Health, Universitas Indonesia, Indonesia.
[2]Department of Epidemiology, Faculty of Public Health, Universitas Indonesia, Depok, Indonesia

[*]**Corresponding Author:** fitria43@ui.ac.id

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ABSTRAK

Introduction: Stunting remains a major public health problem in Indonesia. Rotavirus-related diarrhea can impair child growth through recurrent infections, nutrient malabsorption, and increased susceptibility to undernutrition, thereby increasing the risk of stunting. This study aimed to examine the association between rotavirus immunization status and stunting among children under five years of age in Indonesia in 2024.

Methods: A cross-sectional study was conducted using data from the 2024 Indonesian Nutritional Status Survey (SSGI), including 243,322 children aged 4–59 months. Data were analyzed using a causal model approach. Cox regression with constant time was employed to estimate adjusted prevalence ratios (aPRs) and 95% confidence intervals (CIs).

Results: Children who did not receive complete rotavirus immunization had a higher prevalence of stunting (aPR = 1.09; 95% CI: 0.99–1.20), whereas children who did not receive any rotavirus immunization had a 1.31-fold higher prevalence of stunting (95% CI: 1.23–1.40) compared with children who received complete rotavirus immunization.

Conclusion: Children who did not receive rotavirus immunization had a higher prevalence of stunting than those who received complete rotavirus immunization. Expanding rotavirus immunization coverage should be considered an important component of strategies to accelerate stunting reduction in Indonesia.

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INTRODUCTION

Stunting remains a major global public health problem affecting millions of children worldwide. According to the World Health Organization (WHO), the global prevalence of stunting was 23.2% in 2024, affecting approximately 150.2 million children under five years of age (World Health Organization, 2024). n Indonesia, the prevalence of stunting was 21.5% in the 2023 Indonesian Health Survey (SKI), showing little change from 21.6% in 2022. Although the 2024 Indonesian Nutritional Status Survey (SSGI) reported a decline to 19.8%, the prevalence remains substantially above the national target of 14% established in the 2020–2024 National Medium-Term Development Plan (RPJMN) (Kemenkes RI, 2023b, 2025). Significant provincial disparities persist, with the highest prevalence reported in Central Papua (39.4%), East Nusa Tenggara (37.9%), and Highland Papua (37.3%), whereas Jakarta and Riau Islands reported lower prevalence rates of approximately 13–14% (Kemenkes RI, 2023a). Stunting is associated with both short- and long-term adverse consequences, including increased morbidity and mortality, impaired cognitive development, reduced immune function and productivity, and a greater risk of developing non-communicable diseases in adulthood, such as obesity, type 2 diabetes mellitus, and cardiovascular disease (Kemenkes RI, 2022).

Stunting is caused by multiple factors, with chronic inadequate nutrient intake and recurrent infections recognized as major underlying causes that interfere with nutrient intake and absorption, thereby impairing child growth (Tadesse et al., 2023). Diarrhea is one of the infectious diseases that can adversely affect nutrient absorption and increase nutrient losses. In addition, diarrheal episodes often reduce appetite, leading to inadequate dietary intake. When recurrent or inadequately managed, diarrhea may result in weight loss and impaired linear growth among children (Choiroh et al., 2020). Diarrhea remains a significant child health problem in Indonesia. Data from the 2024 SSGI reported a diarrhea prevalence of 4.1% based on medical diagnosis and 5.8% based on diagnosis or symptoms, indicating that diarrhea continues to be an important contributor to childhood morbidity in Indonesia (Kemenkes RI, 2025).

Rotavirus is one of the leading causes of severe gastroenteritis among children under five years of age, particularly in low- and middle-income countries. The virus is primarily transmitted through the fecal–oral route and causes acute diarrhea that may lead to dehydration and hospitalization in severe cases. The substantial morbidity and mortality associated with rotavirus infection make it an important public health concern and impose a considerable economic burden on families and healthcare systems (Mishra et al., 2026). Consequently, the World Health Organization recommends the inclusion of rotavirus vaccination in national immunization programs worldwide, particularly in countries with a high burden of rotavirus-related gastroenteritis. Rotavirus vaccines are live attenuated oral vaccines that replicate in the human intestine and stimulate immune responses that provide protection against rotavirus infection (Kementerian Kesehatan Republik Indonesia, 2023).

Evidence from Pakistan showed that children who received complete rotavirus immunization experienced lower rates of diarrhea and fever than those who were unvaccinated or incompletely vaccinated. These findings suggest that rotavirus immunization is effective in reducing diarrheal disease among children and may consequently contribute to improved nutritional status and growth outcome (Karim et al., 2024). Similarly, a study conducted in India reported that rotavirus immunization reduced severe diarrhea, hospitalization, and mortality attributable to rotavirus infection among children (Mishra et al., 2026).

Beyond preventing acute diarrheal disease, rotavirus immunization may also support linear growth by reducing intestinal mucosal damage caused by recurrent enteric infections. Repeated gastrointestinal infections can lead to chronic intestinal inflammation, increased intestinal permeability, and impaired nutrient absorption, a condition commonly referred to as environmental enteric dysfunction (EED). EED has been widely associated with impaired linear growth and an increased risk of stunting among children in low- and middle-income countries. Therefore, preventing enteric infections through rotavirus immunization may indirectly promote child growth by reducing the risk of EED and nutrient malabsorption (Tickell et al., 2019) Rotavirus immunization was gradually introduced in Indonesia in 2022 across 21 high-risk districts and municipalities in 18 provinces and was subsequently expanded nationwide in 2023 (Kementerian Kesehatan Republik Indonesia, 2023). However, vaccine coverage remains suboptimal. Data from the 2024 SSGI showed coverage rates of 40.4% for the first dose, 34.3% for the second dose, and only 24.2% for the third dose (SSGI, 2024). Inadequate vaccination coverage may hinder the development of herd immunity, there by sustaining the risk of infectious disease transmission and potentially contributing to stunting among children (Joseph Leonardo Marvin Hamzah et al., 2025).

Despite the nationwide introduction of rotavirus immunization in Indonesia, vaccine coverage remains low and the prevalence of stunting continues to be a major public health concern. Therefore, understanding the potential contribution of rotavirus immunization to child growth has become increasingly important. Previous studies have primarily focused on the effectiveness of rotavirus immunization in reducing diarrheal morbidity. Although these studies demonstrate the important role of rotavirus immunization in preventing diarrheal disease, evidence regarding its association with linear growth and stunting remains scarce, particularly using nationally representative data following the nationwide introduction of rotavirus immunization in Indonesia. To address this gap, this study examined the association between rotavirus immunization and stunting among Indonesian children under five using nationally representative data from the 2024 Indonesian Nutritional Status Survey (SSGI). In addition, this study compared complete, incomplete, and no rotavirus immunization to evaluate whether the association with stunting differed according to immunization status. By addressing the current evidence gap using nationally representative post-introduction data, this study helps address this evidence gap, contributes to the existing literature, and provides evidence to inform nutrition and immunization policies aimed at accelerating stunting reduction in Indonesia.

METHODS

Study Design

This study employed a quantitative cross-sectional design using a causal modeling approach to examine the association between rotavirus immunization status and stunting among children under five years of age in Indonesia. In a cross-sectional study, exposure and outcome variables are measured simultaneously.

Data Source

This study utilized data from the 2024 Indonesian Nutritional Status Survey (SSGI). The SSGI is a nationally representative survey designed to assess the nutritional status of children under five years of age in Indonesia (Kemenkes RI, 2025). The target population of the survey comprised all households with children under five years of age in Indonesia.

Study Population and Sample

The study population consisted of all children under five years of age included in the 2024 SSGI (n = 300.143). The eligible population included children aged 4–59 months; therefore, 9.032 children aged 0–3 months (3,0%) were excluded because complete rotavirus immunization is expected to have been received by four months of age and can therefore be appropriately assessed. Among the eligible children (n = 291.111), 1.141 (0,4%) were excluded due to missing length-for-age or height-for-age data, 36 (0,01%) due to extreme height-for-age z-scores (<−6 SD or >+6 SD), 45.127 (15,6%) due to unavailable information on the main independent variable (immunization status), and 1.485 (0,51%) because they were twins (only one child from each twin pair was retained for analysis). Total sampling was applied to all eligible participants who met the study criteria. The final analytical sample comprised 243.322 children.

Study Variables

The dependent variable was stunting. The primary independent variable was rotavirus immunization status. Covariates were selected based on the availability of variables in the 2024 Indonesian Nutritional

Status Survey (SSGI) and their relevance to the WHO Conceptual Framework on Childhood Stunting (World Health Organization, 2013). Covariates included non-rotavirus routine childhood immunization status; child-related factors (sex, age, low birth weight history, birth length, supplementary feeding history, and infectious diseases); maternal factors (height, age during pregnancy, anemia, chronic energy deficiency risk, birth spacing, iron-folic acid supplementation, and history of fetal growth restriction); environmental factors (water source and sanitation); sociodemographic factors (place of residence, socioeconomic status, parental education, maternal employment, number of children under five in the household, and household size); knowledge and attitudes regarding stunting; and healthcare access factors, including antenatal care (ANC), vitamin A supplementation, and deworming treatment.

Data Processing and Statistical Analysis

Data processing and analysis were conducted using Microsoft Excel and Stata and included coding, data cleaning, and statistical analyses. Missing data were assessed for all covariates before analysis. Missing data were handled using complete-case analysis, whereby only observations with complete data for all variables included in the regression models were retained for analysis. (Christina Mack, 2018; Sterne et al., 2009). The deworming variable had 13.86% missing data, while the remaining covariates had lower proportions of missing data.

Univariate analysis was performed to describe the distribution of each study variable. Bivariate analysis was conducted using simple Cox regression to estimate prevalence ratios (PRs) and their 95% confidence intervals (CIs). Multivariable analysis was performed by constructing a causal model to assess the association between rotavirus immunization status and stunting after controlling for potential confounding variables. Cox regression with constant time was used to estimate adjusted prevalence ratios (aPRs), assuming that all participants had the same follow-up time. This approach was selected because the prevalence of stunting in the study population exceeded 10%, indicating that the outcome was not rare. Under such circumstances, logistic regression may overestimate the magnitude of the association when interpreted as a prevalence ratio (Gnardellis et al., 2022). Therefore, Cox regression with constant time was used to directly estimate adjusted prevalence ratios.

Potential confounding variables for the multivariable analysis were selected based on both theoretical and empirical considerations. A priori, candidate confounders were identified according to the WHO Conceptual Framework on Childhood Stunting (World Health Organization, 2013) and previous epidemiological evidence. Candidate confounding variables were subsequently evaluated using a backward elimination approach based on the change-in-estimate criterion, with a change in the prevalence ratio (ΔPR) of $\geq$10% considered indicative of empirical confounding. Variables that met the empirical criterion or were considered conceptually important based on the theoretical framework and existing evidence were retained in the final multivariable model.

All analyses in this study accounted for the complex survey design because the data were obtained from the 2024 Indonesian Nutritional Status Survey (SSGI), which used a complex sampling design based on a two-stage, one-phase stratified sampling approach. In the first stage, census blocks were selected using probability proportional to size (PPS) with replacement, followed by systematic selection of households with children under five in the second stage (Kemenkes RI, 2025). Therefore, all analyses were conducted using survey-weighted procedures to account for sampling weights, stratification, and clustering, ensuring nationally representative estimates and valid standard errors, confidence intervals, and statistical tests appropriate for complex survey data (Sakshaug & West, 2014). Data processing and analysis were conducted between May and June 2026.

Ethical Approval

This study received ethical approval from the Health Research and Community Service Ethics Committee, Faculty of Public Health, Universitas Indonesia (Ethical Approval No. Ket-

487/UN2.F10.ETK/PPM.00.02/2026).

RESULTS

The distribution of stunting, rotavirus immunization status, and other study variables, as well as the associations between each variable and stunting among children aged 12–59 months in Indonesia in 2024, are presented in Table 1.

Table 1. Distribution of Respondent Characteristics and the Associations of Rotavirus Immunization Status and Other Factors with Stunting Among Children Aged 12–59 Months in Indonesia, 2024, Before Adjustment for Confounding Variables (n = 243.322)

Variable	Univariate		Bivariate	
	n	%	Crude PR (95% CI)	*p value*
Stunting				
Non-Stunted	202.428	83,19		
Stunted	40.894	16,81		
Rotavirus Immunization Status				
Complete Rotavirus Immunization	28.547	11,73	Ref.	
Incomplete Rotavirus Immunization	20.025	8,23	1,07 (0,98-1,15)	0,095
No Immunization	194.750	80,04	1,76 (1,67-1,86)	< 0,01*
Basic Childhood Immunization Status Excluding Rotavirus				
Complete Basic Immunization	39.420	16,2	Ref.	
Incomplete Basic Immunization	196.839	80,9	1,07 (1,02-1,11)	< 0,01*
No Immunization	6.955	2,858	1,83 (1,71-1,96)	< 0,01*
Missing data	108	0,0444		
Child Factors				
Sex				
Female	118.829	48,84	Ref.	
Male	124.493	51,16	1,10 (1,07-1,13)	< 0,01*
Age				
4-23 Months	83.930	34,49	Ref.	
24-59 Months	159.392	65,51	1,44 (1,40-1,49)	< 0,01*
Birth Length				
≥ 48 cm.	179.260	73,67	Ref.	
< 48cm.	39.949	16,42	1,70 (1,65-1,76)	< 0,01*
Missing data	24.113	9,91		
History of Low Birth Weight (LBW)				
No LBW	222.017	91,24	Ref.	
LBW	14.856	6,105	1,90 (1,82-1,98)	< 0,01*
Missing data	6.449	2,65		
History of Receiving Animal-Source Supplementary Feeding Counseling				
Yes	83.668	34,39	Ref.	
No	146.362	60,15	1,04 (1,01-1,083)	0,006*
Missing data	13.292	5,463		
Consumption of Recovery Supplementary Feeding (PMT)				
Consumed Recovery Supplementary Feeding	27.343	11,24	Ref.	
Did Not Consume Recovery Supplementary Feeding	208.576	85,72	0,38 (0,37-0,40)	< 0,01*
Missing data	7.403	3,042		

Variable	Univariate		Bivariate	
	n	%	Crude PR (95% CI)	*p value*
Maternal Factors				
Maternal Height				
≥ 150 cm	157.642	64,79	Ref.	
< 150 cm	63.111	25,93	2,14 (2,08-2,20)	< 0,01*
Missing data	22.579	9,28		
Maternal Age During Pregnancy				
20-35 years	192.576	79,14	Ref.	
< 20 years	11.140	4,578	1,21 (1,14-1,28)	< 0,01*
> 35 years	38.822	15,95	1,10 (1,06-1,14)	< 0,01*
Missing data	784	0,3221		
History of Anemia During Pregnancy				
No	204.383	84	Ref.	
Yes	32.900	13,52	1,05 (1,01-1,10)	0,005*
Missing data	6.039	2,482		
Maternal Risk of Chronic Energy Deficiency (CED) During Pregnancy				
No	222.439	91.42	Ref.	
Yes	15.326	6,298	1,49 (1,41-1,56)	< 0,01*
Missing data	5.557	2,284		
Birth Interval				
Non-risky (≥ 2 Years)	222.859	91,59	Ref.	
Risky (< 2 Years)	19.455	7,996	1,09 (1,04-1,15)	< 0,01*
Missing data	1.008	0,4141		
Iron-Folic Acid (IFA) Tablet Consumption During Pregnancy				
≥ 90 tablets	131.680	54,12	Ref.	
< 90 tablets	79.335	32,6	1,24 (1,20-1,28)	< 0,01*
Did Not Receive IFA Tablets	20.549	8,445	1,19 (1,13-1,25)	< 0,01*
Missing data	11.758	4,832		
Environmental Factors				
Household Drinking Water Source				
Adequate	229.881	94,48	Ref.	
Inadequate	12.567	5,165	1,40 (1,32- 1,48)	< 0,01*
Missing data	874	0,3593		
Household Water Source for Non-drinking Purposes				
Adequate	227.792	93,62	Ref.	
Inadequate	15.530	6,382	1,43 (1,36-1,50)	< 0,01*
Availability of Adequate Sanitation				
Adequate	195.600	80,39	Ref.	
Inadequate	47.722	19,61	1,41 (1,36- 1,45)	< 0,01*
Sociodemographic Factors				
Area of Residence				
Urban	147.911	60,79	Ref.	
Rural	95.411	39,21	1,24 (1,21-1,28)	< 0,01*
Socioeconomic Status				
Highest (Q5)	45.892	18,86	Ref.	
Upper-middle (Q4)	43.765	17,99	1,43 (1,35-1,51)	< 0,01*
Middle (Q3)	44.072	18,11	1,66 (1,57-1,75)	< 0,01*
Lower-middle (Q2)	42.851	17,61	1,77 (1,67-1,87)	< 0,01*
Lowest (Q1)	45.029	18,51	2,29 (2,17-2,41)	< 0,01*

Variable	Univariate		Bivariate	
	n	%	Crude PR (95% CI)	*p value*
Missing data	21.713	8,923		
Maternal Education				
High	131.213	53,93	Ref.	
Low	109.294	44,92	1,47 (1,42-1,51)	< 0,01*
Missing data	2.815	1,157		
Paternal Education				
High	127.507	52,4	Ref.	
Low	107.025	43,98	1,48 (1,44-1,52)	< 0,01*
Missing data	8.790	3,613		
Maternal Employment Status				
Employed	78.972	32,46	Ref.	
Unemployed	161.536	66,39	1,14 (1,11- 1,18)	< 0,01*
Missing data	2.814	1,157		
Number of Under-Five Children in the Household				
Small (1 Child))	202.887	83,38	Ref.	
Large (≥ 2 Children)	40.435	16,62	1,05 (1,01-1,092	0,008*
Household Size				
Small (≤ 4 Members)	148.362	60,97	Ref.	
Large (> 4 Members)	94.960	39,03	1,20 (1,16-1,23)	< 0,01*
Knowledge and Attitude Factors				
Knowledge and Attitudes Toward Stunting				
Good (≥60)	22.870	9,399	Ref.	
Poor (<60)	220.452	90,6	0,99 (0,95-1,04)	0,885
Health Service Access Factors				
Antenatal Care (ANC) History				
In Accordance with Recommendations	196.264	80,66	Ref.	
Not in Accordance with Recommendations	47.058	19,34	1,38 (1,34-1,43)	< 0,01*
Vitamin A Supplementation in the Past Year				
≥ 2 Times/Year	171.804	70,61	Ref.	
< 2 Times/Year	27.699	11,38	0,75 (0,71-0,78)	< 0,01*
Did Not Receive Vitamin A	31.096	12,78	1,01 (0,97-1,05)	0,355
Missing data	12.723	5,229		
History of Deworming in the Past Year				
Yes	166.989	68,63	Ref.	
No	42.612	17,51	1,16 (1,12-1,20)	< 0,01*
Missing data	33.721	13,86		

Source: *Secondary Data, SSGI 2024*
Note: Statistically significant.

The distribution of respondents according to rotavirus immunization status, child characteristics, maternal characteristics, environmental characteristics, sociodemographic characteristics, knowledge and attitudes, and healthcare access is presented in Table 1. The prevalence of stunting in this study was 16.81%. The proportions of children with complete rotavirus immunization, incomplete rotavirus immunization, and no rotavirus immunization were 11.73%, 8.23%, and 80.04%, respectively.

In the unadjusted analysis, a statistically significant association was observed between rotavirus immunization status and stunting. Children who had not received any rotavirus immunization had a 1.76-fold higher prevalence of stunting compared with children who had received complete rotavirus immunization (cPR = 1.76; 95% CI: 1.67–1.86; p < 0.01). In contrast, children with incomplete rotavirus immunization had a 1.07-fold higher prevalence of stunting than those with complete rotavirus immunization; however, this association was not statistically significant (cPR = 1.07; 95% CI: 0.98–1.15; p = 0.095).

DISCUSSION

The multivariable analysis showed that Indonesian children aged 4–59 months who had not received rotavirus immunization had a higher prevalence of stunting than those who received complete rotavirus immunization. After adjustment for history of low birth weight, birth length, socioeconomic status, maternal education, antenatal care (ANC) utilization, and deworming treatment within the previous year, children who had not received rotavirus immunization had a 1.31-fold higher prevalence of stunting (95% CI: 1.23–1.40). Although children with incomplete rotavirus immunization also showed a higher prevalence of stunting than those who received complete immunization, this association was not statistically significant after adjustment (PR = 1.09; 95% CI: 0.99–1.20). These findings suggest that complete rotavirus immunization was associated with **a** lower prevalence of stunting among Indonesian children. The observed pattern across immunization categories suggests that the highest prevalence of stunting was observed among children who had not received rotavirus immunization.

These findings are consistent with previous studies reporting that children who were unvaccinated or incompletely vaccinated against rotavirus experienced a higher burden of diarrheal disease than fully vaccinated children. Karim et al. (2024) reported that 73.1% of children with diarrhea belonged to the unvaccinated or partially vaccinated groups, whereas only 26.9% were fully vaccinated (Karim et al., 2024). Similarly, Cassocera et al. (2025) found that stunted children were less likely to have received rotavirus immunization than non-stunted children in Mozambique (OR = 0.68; 95% CI: 0.48–0.96). These findings are consistent with the association observed in the present study between rotavirus immunization status and stunting. Likewise, Loli and Cárcamo (2020) reported that children who received rotavirus vaccination had higher height-for-age z-scores than unvaccinated children after adjustment for demographic, health-related, and household characteristics, further supporting the consistency of the present findings (Loli & Carcamo, 2020). Although the present study did not examine the biological pathways linking rotavirus immunization and stunting, previous studies have suggested that recurrent rotavirus-associated diarrhea may be associated with impaired nutrient absorption and poor linear growth (Mishra et al., 2026; Sobi et al., 2024). Other studies have also reported that diarrheal illness is associated with an increased risk of growth faltering and malnutrition among young children (Ogwel et al., 2024; Varghese et al., 2024). However, these mechanisms were not assessed in the present study and therefore should not be interpreted as explanations directly supported by the study findings.

Incomplete rotavirus immunization was not significantly associated with stunting in the present study. One possible explanation is that partial immunization may still provide some protection against severe rotavirus infection, although this protection may be lower than that achieved with complete immunization. In addition, stunting is a multifactorial condition influenced by dietary intake, sanitation, socioeconomic status, and other childhood illnesses, which may attenuate the association between incomplete rotavirus immunization and stunting. Karim et al. (2024) also highlighted that limited parental knowledge, barriers to immunization access, and low vaccination coverage remain important challenges to achieving optimal rotavirus immunization (Karim et al., 2024). Evidence from Peru further suggests that the association between rotavirus vaccination and diarrheal outcomes may vary according to environmental conditions, including access to clean water and improved sanitation (Delahoy et al., 2020). Therefore, the absence of a statistically significant association between incomplete rotavirus immunization and stunting in this study may reflect the influence of environmental and socioeconomic factors that were not fully captured in the analysis and may have a greater influence on child growth than partial immunization alone.

This study has several limitations that should be considered when interpreting the findings. First, the cross-sectional design makes it difficult to determine the direction of the relationship between rotavirus immunization status and stunting. Second, residual confounding may still exist because several important factors could not be included in the analysis, including infant and young child feeding practices such as early breastfeeding initiation, exclusive breastfeeding, timing of complementary feeding, and dietary diversity, which were only available for children aged 6–23 months and therefore could not be used for the full sample of children aged 4–59 months.

In addition, recurrent diarrhea was not available in the dataset. Some variables may also be subject to information bias due to reliance on caregiver-reported data and limitations in data availability, which may affect the accuracy of measurement (misclassification bias). Immunization adherence could not be fully assessed because detailed vaccination timing was incomplete or inconsistently recorded. Finally, as this study used secondary data, the analysis was limited to variables available in the dataset, restricting the ability to include all potentially relevant determinants of stunting.

CONCLUSION

This study found that, after adjustment for potential confounding factors, children who did not receive rotavirus immunization had a significantly higher prevalence of stunting than those who received complete rotavirus immunization (aPR = 1.31; 95% CI: 1.23–1.40). Although children who received incomplete rotavirus immunization also showed a higher prevalence of stunting (aPR = 1.09; 95% CI: 0.99–1.20), this association was not statistically significant. Overall, these findings suggest that complete rotavirus immunization was associated with a lower prevalence of stunting among Indonesian children aged 4–59 months.

The government and healthcare providers should strengthen efforts to increase complete rotavirus immunization coverage among children through enhanced routine immunization programs, improved access to healthcare services, and parental education on the importance of immunization in preventing infectious diseases and supporting child growth. These efforts should be integrated with broader child health interventions, including improved nutrition, better sanitation and hygiene practices, and strengthened control of infectious diseases, as these factors are closely linked in the prevention of stunting. In addition, routine deworming programs should be further expanded as part of infection control strategies that support optimal nutritional status and child growth. Future studies are recommended to employ mixed-methods approaches to explore barriers to achieving higher rotavirus immunization coverage and to better understand factors influencing vaccine uptake in Indonesia.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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