

The Relationship Between Exclusive Breastfeeding and a History of Infectious Diseases and the Occurrence of Stunting Among Toddlers in Oesapa Village, Kupang City, 2026

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ABSTRACT

Stunting remains an important chronic nutritional problem in Indonesia because of its potential effects on children's growth and development. Exclusive breastfeeding and a history of infectious diseases are among the factors that may be related to stunting. This study therefore examined the relationship between exclusive breastfeeding, a history of infectious diseases, and stunting among toddlers in Oesapa Subdistrict, Kupang City. A case-control study was conducted from February to May 2026 involving 84 respondents, consisting of 42 children in the case group and 42 in the control group. Data were collected using questionnaires and analyzed with the Chi-square test. The findings showed that 58.3% of respondents had received exclusive breastfeeding, while 53.6% had no history of infectious diseases. Exclusive breastfeeding was significantly associated with stunting ($p = 0.003$), as was a history of infectious diseases ($p = 0.002$). Toddlers who had not received exclusive breastfeeding had 4.71 times greater odds of stunting than those who had received exclusive breastfeeding (OR = 4.71; 95% CI: 1.85–11.97). Likewise, toddlers with a history of infectious diseases had 4.50 times greater odds of stunting than those without such a history (OR = 4.50; 95% CI: 1.82–11.10). It can be concluded that exclusive breastfeeding and a history of infectious diseases were significantly associated with the occurrence of stunting among toddlers

INTRODUCTION

Stunting remains a persistent chronic nutritional disorder and a major public health concern globally, especially in developing nations such as Indonesia. The condition is characterized by impaired linear growth, reflected by a height-for-age (H/A) measurement below -2 standard deviations based on the WHO Child Growth Standards (WHO, 2019). It generally develops as a consequence of prolonged undernutrition, particularly during the first 1,000 days of life. The effects of stunting are not limited to physical growth; they can also influence cognitive development, learning capacity, immune function, future productivity, and the risk of non-communicable diseases. Consequently, stunting is an important marker of population health and the quality of future human resources.

Globally, approximately 149.2 million children under five were affected by stunting in 2020. In Indonesia, the prevalence has gradually declined, from 24.4% in 2021 to 21.6% in 2022 and 19.8% in 2024. Nevertheless, these figures confirm that stunting continues to require sustained public health action. East Nusa Tenggara (NTT) is among the Indonesian provinces with a relatively high stunting burden. The 2023 Indonesian Nutrition Status Survey (SSGI) reported a prevalence of 37.9% in NTT and 19.2% in Kupang City. Within the Oesapa Health Center service area, Oesapa Village recorded a stunting prevalence of 23.1% in 2025. This condition indicates the continuing need for comprehensive prevention and control measures.

Stunting results from multiple determinants that interact with one another. Within the UNICEF conceptual framework, these determinants are generally divided into direct and indirect factors. Direct causes include inadequate nutrient intake and infectious disease, whereas indirect contributors include socioeconomic conditions, environmental sanitation, access to health services, and childcare practices. Exclusive breastfeeding during the first six months is an important strategy for meeting infants' nutritional needs during a critical period of growth. Breast milk contains essential nutrients, growth-related components, and immune factors that support healthy development and strengthen protection against infection. Conversely, infants who do not receive exclusive breastfeeding may be more vulnerable to impaired growth and infectious illness.

Apart from inadequate dietary intake, infectious diseases are also closely involved in the development of stunting. Diarrhea and acute respiratory infections (ARIs), for example, may reduce appetite, increase metabolic demands, interfere with nutrient absorption, and consequently worsen nutritional status. Repeated infections can establish a cycle in which infection and malnutrition reinforce one another and eventually compromise linear growth. In Oesapa Village, 2025 health-center records indicated that exclusive breastfeeding coverage was only 16.2%, while cough without pneumonia represented 50.96% of reported cases and diarrhea accounted for 45.15%. These conditions highlight inadequate exclusive breastfeeding and infectious diseases as important issues that should be addressed in stunting reduction programs.

Earlier research has generally indicated that children who do not receive exclusive breastfeeding have a greater likelihood of developing stunting than

children who are exclusively breastfed. Similarly, recurrent infectious illnesses have been associated with an increased risk of impaired growth. However, findings regarding the relationship between exclusive breastfeeding and stunting are not uniform. Some investigations have not identified a statistically significant association. Differences in respondent characteristics, sample size, research methodology, socioeconomic circumstances, and environmental conditions may contribute to these varying results.

Evidence specifically examining the relationship between exclusive breastfeeding, a history of infectious diseases, and stunting among children in Oesapa Village, Kupang City, is still limited. Local studies are therefore needed to generate evidence that reflects the characteristics and conditions of the community in this area.

The distinctive aspect of this study is the concurrent examination of two direct determinants of stunting—exclusive breastfeeding and a history of infectious diseases—using a case-control design with matching according to age and sex among children in Oesapa Village, Kupang City. This design is intended to reduce the potential influence of confounding variables and produce a more reliable estimate of the relationships between the variables studied. The results are expected to contribute scientific evidence for strengthening promotive and preventive interventions, particularly efforts to improve exclusive breastfeeding practices, reduce infectious diseases among young children, and support stunting reduction in Kupang City.

Based on the background described above, this study was conducted to determine the relationship of exclusive breastfeeding and a history of infectious diseases with the occurrence of stunting among children in Oesapa Village, Kupang City.

LITERATURE REVIEW

Stunting Among Toddlers

Stunting is a manifestation of chronic growth failure that reflects the cumulative effects of inadequate nutrition, recurrent illness, and unfavorable living conditions during early childhood. Child growth during the first years of life is particularly important because nutritional and health conditions during this period can influence physical development, cognitive capacity, educational outcomes, and productivity later in life. Dewey and Begum (2011) explained that stunting in early life can have long-term consequences for human development, while Black et al. (2013) emphasized that maternal and child undernutrition remains an important public health problem in low- and middle-income countries.

The determinants of stunting are complex and operate through multiple pathways. Beal et al. (2018), in their review of determinants of child stunting in Indonesia, identified inadequate dietary intake, infectious diseases, maternal and household characteristics, sanitation, and socioeconomic conditions as important contributors. Similarly, Danaei et al. (2016), based on evidence from 137 developing countries, demonstrated that childhood stunting is influenced by a combination of nutritional, health, environmental, and socioeconomic risk

factors. These findings indicate that stunting should not be considered the consequence of a single nutritional deficiency but rather the result of interacting determinants.

At the national and community levels, the persistence of stunting also reflects inequalities in access to adequate nutrition, health services, sanitation, and appropriate childcare. Atamou et al. (2023) reported that stunting among children in Indonesian stunting-locus villages was associated with multiple determinants, reinforcing the importance of context-specific interventions. Hayati et al. (2020) similarly identified several factors influencing stunting among children aged 24–59 months. Therefore, interventions to reduce stunting need to address both immediate nutritional and health-related causes and the broader conditions that influence children's growth.

Exclusive Breastfeeding and Child Growth

Exclusive breastfeeding is an important component of infant nutrition and child health. Breast milk provides nutrients and bioactive components that support growth and immune development during the early months of life. Rollins et al. (2016) emphasized that breastfeeding provides substantial benefits for child survival, health, and development, while improvements in breastfeeding practices require support from families, health systems, communities, and broader policies.

The potential relationship between exclusive breastfeeding and stunting has received considerable attention in studies conducted in Indonesia. Dewi Astuti (2023), through a literature review of Indonesian studies published between 2020 and 2023, reported evidence supporting the protective role of exclusive breastfeeding against stunting. The review indicates that children who receive exclusive breastfeeding may have better protection against growth faltering because breast milk provides adequate early nutrition and immune protection.

Several empirical studies have also reported an association between exclusive breastfeeding and stunting. Yati et al. (2020), as cited in the present article, found evidence of a relationship between breastfeeding practices and child growth. More recent research by Negari et al. (2025) examined exclusive breastfeeding together with infectious diseases such as acute respiratory infections and diarrhea and reported an association with stunting. Mariani and Puspitarini (2025) likewise examined exclusive breastfeeding and the incidence of stunting among toddlers and contributed further evidence regarding the importance of breastfeeding practices in stunting prevention.

However, the relationship between exclusive breastfeeding and stunting is not necessarily consistent across all populations. Differences in maternal characteristics, complementary feeding practices, household socioeconomic conditions, sanitation, birth conditions, and other environmental factors may influence children's growth outcomes. Exclusive breastfeeding should therefore be viewed as an important component of stunting prevention rather than as an isolated intervention capable of eliminating all risks of growth failure.

Infectious Diseases as a Determinant of Stunting

Infectious diseases represent another important determinant of impaired child growth. Recurrent infections can negatively affect nutritional status by reducing appetite, increasing metabolic requirements, interfering with nutrient absorption, and contributing to nutrient loss. The relationship between infection and malnutrition can become cyclical: inadequate nutritional status increases susceptibility to infection, while repeated infection further compromises nutritional status.

The broader literature supports the role of infectious diseases in childhood undernutrition. Danaei et al. (2016) identified infectious and nutritional factors among the important contributors to childhood stunting across developing countries. Beal et al. (2018) also highlighted infectious diseases as an important determinant of stunting in the Indonesian context. These findings are consistent with the understanding that repeated illness during critical periods of growth can interfere with children's ability to achieve optimal linear growth.

Specific infectious diseases, particularly diarrhea and acute respiratory infections, are frequently discussed in relation to stunting. Negari et al. (2025) specifically investigated the relationship between exclusive breastfeeding and infectious diseases, including acute respiratory infections and diarrhea, with stunting among toddlers. Amelia et al. (2024) similarly examined exclusive breastfeeding, a history of infectious diseases, and maternal anemia during pregnancy in relation to stunting. Together, these studies suggest that prevention and management of childhood infections should form an important component of comprehensive stunting-reduction strategies.

The mechanism linking infection and growth failure is also influenced by environmental conditions. Poor sanitation, unsafe water, and repeated exposure to pathogens can increase children's risk of infection and interfere with nutritional utilization. Consequently, reducing infectious diseases requires interventions that extend beyond clinical treatment and include improvements in sanitation, hygiene, safe water, immunization, and household health practices.

Interaction Between Nutrition and Infection

Nutrition and infection are closely interconnected in the development of stunting. Inadequate nutritional intake can weaken immune function and increase children's vulnerability to infectious diseases. Conversely, repeated infection can reduce dietary intake and nutrient utilization, creating a cycle that contributes to chronic growth impairment. Black et al. (2013) and Victora et al. (2021) emphasized that maternal and child undernutrition is influenced by multiple interacting biological, nutritional, social, and environmental factors.

This interaction provides an important theoretical basis for examining exclusive breastfeeding and infectious disease history simultaneously. Breastfeeding may contribute to child health not only by providing nutrients but also by supporting immune protection. At the same time, reducing exposure to infectious diseases can help preserve nutritional status and support normal growth. Therefore, examining these two factors together may provide a more

comprehensive understanding of the determinants of stunting than examining either factor independently.

The literature also indicates that the effects of nutrition and infection may be influenced by conditions before and after birth. Maternal nutritional status, birth weight, complementary feeding, household income, maternal education, parenting practices, sanitation, and access to health services can modify children's nutritional and health outcomes. Beal et al. (2018) and Atamou et al. (2023) demonstrate the importance of considering these broader determinants when interpreting the causes of stunting in Indonesia.

Exclusive Breastfeeding, Infectious Diseases, and Stunting in the Indonesian Context

Evidence from Indonesia generally supports the importance of exclusive breastfeeding and infection prevention in reducing the risk of stunting, although the magnitude of the association varies between populations. Amelia et al. (2024), Negari et al. (2025), Mariani and Puspitarini (2025), and Dewi Astuti (2023) provide evidence concerning the relationship between breastfeeding, infectious diseases, and child growth. At the same time, the broader literature demonstrates that stunting is a multifactorial condition influenced by household, maternal, environmental, and socioeconomic factors.

The Indonesian context is particularly important because the prevalence and determinants of stunting vary between provinces, districts, and communities. Atamou et al. (2023) emphasized the importance of understanding determinants in specific stunting-locus communities. Such local evidence is necessary because national-level findings may not fully represent differences in breastfeeding practices, infectious disease exposure, sanitation, health-service utilization, and socioeconomic conditions at the community level.

Consequently, examining exclusive breastfeeding and infectious disease history among toddlers in a specific community can provide locally relevant evidence for health promotion and preventive programs. Local findings can help health workers identify modifiable risk factors and strengthen interventions that combine breastfeeding promotion, infection prevention, appropriate nutrition, and growth monitoring.

METHODS

An analytical quantitative method with a case-control design was used to investigate the relationship of exclusive breastfeeding and a history of infectious diseases with stunting among toddlers. In this observational design, children identified as cases, namely those with stunting, are compared with controls, namely children without stunting, to assess previous exposure to potential risk factors (Setiadi, 2020).

A structured questionnaire served as the primary research instrument. Primary data were obtained by interviewing mothers or caregivers of toddlers. Additional information was obtained from secondary sources, including Maternal and Child Health (KIA) books, Posyandu documentation, and records from Community Health Centers (Puskesmas).

Data management involved editing, coding, tabulation, and presentation of the collected information. Statistical software was used for the analysis. Univariate analysis summarized respondent characteristics and the distribution of each study variable. Bivariate analysis examined the association between the independent variables and stunting using the Chi-square test at a 95% confidence level (Dahlan, 2019). A p-value <0.05 was considered statistically significant, indicating evidence of an association between the variables. A p-value ≥ 0.05 was interpreted as showing no statistically significant association.

RESULTS

The study was conducted in the Oesapa Village working area, and the findings are summarized below.

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Tabel 1 Distribution of Respondents Based on Their Characteristics in the Working Area of Oesapa Village

Characteristics	Frequency (n)	Percentage (%)
Mother's Education		
Elementary School	10	11,9
Junior High School	27	32,1
Senior High School	31	36,9
College/University	16	19,1
Total	84	100
Mother's Occupation		
Housewife/Not Working	36	42,9
Self-employed	23	27,4
Private Employee	16	19
Civil Servant/Military/Police	9	10,7
Total	84	100
Age		
24-35 months	28	33,3
36-47 months	30	35,7
48-59 months	26	31
Total	84	100
Gender		
Male	42	50
Female	42	50
Total	84	100

Source: Primary Data, 2026

Table 1 shows that the largest proportion of mothers had completed senior high school, comprising 31 respondents (36.9%). This was followed by mothers with junior high school education (27 respondents; 32.1%), college or university

education (16 respondents; 19.1%), and elementary education (10 respondents; 11.9%).

Regarding employment, the largest group consisted of housewives or mothers who were not working, totaling 36 respondents (42.9%). This was followed by self-employed mothers with 23 respondents (27.4%), private-sector employees with 16 respondents (19.0%), and civil servants, military personnel, or police officers with 9 respondents (10.7%).

The sex distribution was balanced, consisting of 42 male toddlers (50.0%) and 42 female toddlers (50.0%). In terms of age, the 36–47-month group was the largest, with 30 toddlers (35.7%), followed by those aged 24–35 months with 28 toddlers (33.3%) and those aged 48–59 months with 26 toddlers (31.0%).

Analisis Bivariat

Tabel 2 Distribution of Respondents Based on Stunting Status among Toddlers in the Working Area of Oesapa Village

Nutritional Status (TB/U)	Frequency (n)	Percentage (%)
Stunting	42	50
Not Stunting	42	50
Total	84	100

Source: Primary Data, 2026

As presented in Table 2, the case and control groups were equal in size. Each group consisted of 42 toddlers, representing 50.0% of the total respondents.

Tabel 3 Distribution of Respondents Based on Exclusive Breastfeeding in the Working Area of Oesapa Health Center

Exclusive Breastfeeding	Frequency (n)	Percentage (%)
Received Exclusive Breastfeeding	35	41,7
Did Not Receive Exclusive Breastfeeding	49	58,3
Total	84	100

Source: Primary Data, 2026

According to Table 3, 49 toddlers (58.3%) were reported as having received exclusive breastfeeding, whereas 35 toddlers (41.7%) had not received exclusive breastfeeding.

Tabel 4 Distribution of Respondents Based on a History of Infectious Diseases in the Working Area of Oesapa Health Center

History of Infectious Diseases	Frequency (n)	Percentage (%)
History of Infectious Diseases	39	46,4

No History of Infectious Diseases	45	53,6
Total	84	100

Source: Primary Data, 2026

Table 4 indicates that 45 toddlers (53.6%) had no recorded history of infectious disease, while 39 toddlers (46.4%) had experienced infectious disease.

Analisis Multivariat

Tabel 5 Association Between Exclusive Breastfeeding and the Occurrence of Stunting among Toddlers in the Working Area of Oesapa Village

Exclusive Breastfeeding	TB/U Nutritional Status				Total	p-value	OR	95% CI
	Stunting		Not Stunting					
	N	%	N	%				
Did Not Receive Exclusive Breastfeeding Eksklusif	25	59,5	10	23,8	35	0,003	4,71	1,85-11,97
Received Exclusive Breastfeeding	17	40,5	32	76,2	49			
Total	42	100	42	100	84			

Among the 42 toddlers classified as stunted, 25 (59.5%) had not received exclusive breastfeeding. Conversely, among the toddlers who were not stunted, the majority – 32 children (76.2%) – had received exclusive breastfeeding.

The Chi-square test showed a statistically significant relationship between exclusive breastfeeding and stunting among toddlers in Oesapa Village, Kupang City ($p = 0.003$; $p < 0.05$). The analysis produced an OR of 4.71 with a 95% CI of 1.85–11.97. Thus, toddlers who did not receive exclusive breastfeeding had 4.71 times greater odds of being stunted than those who received exclusive breastfeeding.

Tabel 6 Association Between a History of Infectious Diseases and the Occurrence of Stunting among Toddlers in the Working Area of Oesapa Village

History of Infectious Diseases	TB/U Nutritional Status				TOT AL	p-value	OR	95% CI
	Stunting		Stunting					
	N	%	N	%				
History of Infectious Diseases	27	64,3	12	28,6	39	0,002	4,50	1,82–11,10
No History of Infectious Diseases	15	35,7	30	71,4	45			
Total	42	100	42	100	84			

In this section, every statistical test you conducted must be explained thoroughly. This part is very critical to elaborate on the employed stated research methodology. Every statistical finding must be summarized and presented in tables or graphs; instead of a mere copy-paste from your statistical tools.

DISCUSSION

Association of Exclusive Breastfeeding with Stunting among Toddlers

The analysis identified a statistically significant association between exclusive breastfeeding and stunting among toddlers in Oesapa Village, Kupang City ($p = 0.003$; OR = 4.71; 95% CI: 1.85–11.97). Children who had not received exclusive breastfeeding showed 4.71 times greater odds of stunting than those who had been exclusively breastfed. These findings suggest that exclusive breastfeeding can have a protective role in maintaining appropriate linear growth.

From a theoretical perspective, the findings support the UNICEF conceptual framework, which places inadequate nutrition and infectious diseases among the direct determinants of stunting, particularly during the first 1,000 days of life. Breast milk supplies important nutrients and immune components, including immunoglobulin A (IgA), lactoferrin, and leukocytes. These components help support immune function, reduce vulnerability to infection, and promote healthy growth and development.

The World Health Organization (WHO) advises exclusive breastfeeding during the first six months because breast milk can meet infants' nutritional requirements while providing protection against common childhood illnesses, including diarrhea and respiratory infections. Adequate breastfeeding may consequently help maintain nutritional status and lower susceptibility to infections, both of which are relevant to the prevention of growth faltering.

The present findings are in line with previous research suggesting that failure to provide exclusive breastfeeding is associated with a greater risk of stunting in young children, including findings reported by Negari et al. (2025) and Yati et al. (2020). A literature review by Astuti and Stiady likewise indicated that exclusive breastfeeding may act as a protective factor against stunting in several Indonesian settings. These findings underline the importance of improving exclusive breastfeeding coverage as part of stunting prevention efforts (Dewi Astuti, 2023).

Nevertheless, other studies have not demonstrated a statistically significant relationship between exclusive breastfeeding and stunting. The differing results emphasize that stunting has a complex etiology and may be influenced by other determinants, including the adequacy of complementary foods, maternal nutritional status, birth weight, sanitation, and family socioeconomic conditions.

The study also identified toddlers who developed stunting despite having received exclusive breastfeeding, as well as toddlers who did not become stunted even though they had not received exclusive breastfeeding. This pattern indicates that exclusive breastfeeding by itself cannot fully prevent stunting and should be accompanied by adequate complementary feeding, infection prevention, appropriate caregiving, and a supportive healthy environment.

Overall, the findings reinforce the role of exclusive breastfeeding as an important protective factor against stunting, while recognizing that it must be supported by broader nutritional and health measures. Increasing exclusive breastfeeding coverage should therefore be accompanied by health education, lactation counseling, family involvement, and regular monitoring of child growth and development.

Association of Infectious Disease History with Stunting among Toddlers

A statistically significant association was found between a history of infectious diseases and stunting among toddlers in Oesapa Village, Kupang City ($p = 0.002$; OR = 4.50; 95% CI: 1.82–11.10). Toddlers with a history of infectious disease had 4.50 times greater odds of experiencing stunting than those without a history of infection.

The findings indicate that infectious diseases can substantially affect children's linear growth, especially during the first 1,000 days of life. Diarrhea and acute respiratory infections may reduce food intake, increase energy requirements, interfere with nutrient absorption, and contribute to nutrient loss. Repeated episodes of infection can also trigger persistent inflammation, which may disrupt physiological processes involved in growth and ultimately affect bone and linear development.

The findings are also compatible with the Environmental Enteric Dysfunction (EED) concept. Repeated exposure to infectious agents and unfavorable environmental conditions may impair intestinal function and nutrient absorption, thereby contributing to inadequate growth and stunting.

The results further correspond with the UNICEF conceptual framework, which recognizes infectious diseases as a direct determinant of stunting that interacts with inadequate nutritional intake. Infection can worsen nutritional status, while poor nutritional status can increase susceptibility to infection, creating a reinforcing cycle between the two conditions.

The findings are consistent with earlier studies showing that children with a history of diarrhea or acute respiratory infections may face a higher risk of stunting.

At the same time, the presence of children with previous infections who remained non-stunted, together with children without a recorded infection history who nevertheless experienced stunting, confirms the multifactorial nature of the condition. Growth outcomes may also be shaped by maternal nutritional status, low birth weight, the quality of complementary feeding, parenting practices, immunization, socioeconomic circumstances, and environmental sanitation.

Accordingly, stunting prevention should extend beyond improving dietary intake. Measures should also address the prevention and management of infectious diseases through appropriate immunization, better sanitation, access to safe drinking water, and consistent implementation of clean and healthy living practices.

Reducing infections and accelerating stunting reduction require an integrated strategy that combines specific nutrition interventions with sensitive interventions addressing the broader determinants of child health.

CONCLUSIONS AND RECOMMENDATIONS

Based on the study findings regarding exclusive breastfeeding, infectious disease history, and stunting among toddlers in Oesapa Village, Kupang City, the following conclusions can be drawn:

1. A greater proportion of toddlers had received exclusive breastfeeding, namely 49 respondents (58.3%), while 35 respondents (41.7%) had not received exclusive breastfeeding.
2. Most toddlers had no history of infectious disease, totaling 45 respondents (53.6%), whereas 39 respondents (46.4%) reported a history of infectious disease.
3. The number of toddlers with stunting was the same as the number without stunting, with 42 respondents (50.0%) in each category.
4. Exclusive breastfeeding was significantly associated with stunting among toddlers in Oesapa Village, Kupang City ($p = 0.003$; $p < 0.05$). Toddlers who did not receive exclusive breastfeeding had 4.71 times greater odds of stunting than those who received exclusive breastfeeding (OR = 4.71; 95% CI: 1.85–11.97).
5. A statistically significant association was also observed between a history of infectious diseases and stunting ($p = 0.002$; $p < 0.05$). Toddlers with a history of infectious disease had 4.50 times greater odds of experiencing stunting than those without such a history (OR = 4.50; 95% CI: 1.82–11.10).

RECOMMENDATION

Health workers and community health centers should reinforce promotive and preventive programs focused on exclusive breastfeeding as well as the prevention and appropriate management of infectious diseases.

Health promotion should stress the value of exclusive breastfeeding for the first six months, followed by appropriate complementary feeding from six months onward. Education should also address immunization, environmental sanitation, safe water availability, and clean and healthy living behaviors.

Families should be encouraged to take an active role in monitoring children's growth and development and to seek health services promptly when signs or symptoms of infection appear.

Further studies should consider other potential determinants of stunting, including maternal nutritional status during pregnancy, birth weight and length, maternal education, household income, parenting practices, environmental sanitation, immunization status, and children's dietary and nutritional intake.

FURTHER STUDY

Future investigations should explore additional determinants associated with stunting, such as maternal nutritional condition during pregnancy, birth weight and length, maternal educational attainment, household income,

parenting practices, environmental sanitation, immunization status, and dietary intake among toddlers.

Researchers are also encouraged to use more objective sources of information, including Maternal and Child Health (KIA) books, medical records, Posyandu documentation, and Health Monitoring Cards (KMS), to reduce the possibility of recall bias arising from reliance on respondents' memories.

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