

Causes Of Stunting In Toddlers

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ABSTRACT

Stunting is a chronic nutritional problem that remains a major public health challenge, particularly among toddlers. This condition is characterized by impaired linear growth due to long-term malnutrition and exposure to repeated infections, especially during the first 1,000 days of life. The purpose of this literature review is to examine the various causes, risk factors, and impacts of stunting in toddlers, with a particular focus on the role of maternal knowledge. The method used is a literature study, with data collected from national and international scientific articles through Google Scholar, PubMed, ResearchGate, and ScienceDirect, then analyzed descriptively and analytically using narrative synthesis to compare the findings of related studies discussing stunting in toddlers. The review results indicate that stunting is influenced by various factors, including inadequate nutritional intake, maternal health status, parenting patterns, sanitation and the environment, socioeconomic conditions, and low maternal knowledge regarding nutrition and child health. Maternal knowledge plays a crucial role in feeding practices, utilization of health services, and prevention of infectious diseases in toddlers. The impact of stunting is not limited to physical growth, but also affects cognitive development, productivity in adulthood, and increases the risk of degenerative diseases. The conclusion of this literature review shows that increasing maternal knowledge is a key strategy in efforts to prevent stunting in toddlers through ongoing nutrition and health education interventions.

Keywords:stunting, toddlers, causes, factors, impacts, maternal knowledge

INTRODUCTION

Stunting is a persistent nutritional deficiency problem that poses a global public health challenge, particularly in developing countries. Stunting is defined as a condition in which a child experiences stunted growth due to prolonged nutritional deficiencies, as indicated by a height-for-age (H/A) below the WHO standard of -2 standard deviations. This condition is not limited to physical dimensions alone, but also affects brain development and thinking skills, and increases the risk of developing long-term diseases in the future. Child growth and

development have long been a focus of study in various studies worldwide. Research on developmental delays has found that growth retardation in early life is closely linked to issues related to nervous system development.(Wheeler, Gwaltney, Raspa, & Okoniewski, 2021). In addition, developmental delays in children aged 12–59 months are related to nutritional factors, low birth weight, and stunting.(Kerebh et al., 2024).

The effects of short stature on children's thinking abilities during early growth have also been discussed in various articles, revealing the existence of persistent cognitive function impairments.(Salsabilla & Putri, 2024). On a global scale, this condition of stunted growth remains a major challenge.(Burki, 2025)A study of the causes of risk in Pakistan showed that economic constraints, parental knowledge levels, and birth weight were the most important determinants of malnutrition.(Yunitasari, Lee, Krisnana, Lugina, & Solikhah, 2022)Meanwhile, in Indonesia, a series of studies have shown that the prevalence of stunting remains quite high and is a top priority for the government.(Laksono, Edi, et al., 2022) (Kurniasih & Bariyah, 2024).

Various factors contribute to high rates of stunting. Broadly speaking, direct causes include inadequate nutrition, the child's health, and a history of previous illnesses.(Subdistrict, 2022)Protein deficiency has been shown to be closely linked to stunting. Infectious health conditions such as upper respiratory tract problems, diarrhea, pneumonia, and parasites also increase the risk of stunting.(R et al., 2024)Meanwhile, in various studies across the region, the main determining factors are the child's disease track record and nutritional status.(Wicaksono et al., 2024a). Furthermore, the level of immunization completeness also plays a crucial role. Children who have not received their full vaccinations are more susceptible to stunting than those who have completed their immunizations.(Purwanti et al., 2025).

The age of the child, low birth weight, and early birth are also said to be related to the problem of stunting.(Podungge, Yulianingsih, Porouw, Saraswati, Tompunuh, Gladis, et al., 2021). experienced by the mother during pregnancy. Prenatal conditions and all aspects have a significant impact on the potential for stunting. It turns out that depression experienced by the mother during pregnancy is closely related to stunting in toddlers.(Java et al., 2022).

Background of illness during pregnancy and the time between births are also crucial elements.(Wicaksono et al., 2024a)(Salsabilla & Putri, 2024)Routine prenatal checkups and the use of iron supplements during pregnancy are also linked to the occurrence of stunting. The method of serving food to children and parenting style are significant determinants.(Salsabilla & Putri, 2024)If the diet provided is inadequate, the risk of stunting will increase.(Laksono, Edi, et al., 2022) (Wicaksono et al., 2024b)A study conducted in the Muara Delang area showed that the way parents raise their children is the most determining variable in the emergence of stunting cases.(Andriyani et al., 2025). On the other hand, a history of getting breast milk exclusively also plays a very important role(Maajid et al., 2024) (Cahyaningrum et al., 2024).

A mother's insight is often a variable that is always conveyed in various studies.(Mporanyi et al., 2025)There is a clear correlation detected between mothers' understanding and the high prevalence of problems in children in various regions of the archipelago.(Putu Manik Juniantari et al., 2024) (Widyawati et al., 2023). Mothers' understanding of the "Fill My Plate" idea also shows a crucial connection to the case of short stature.(Alristina et al., 2025)A study in Rwanda showed that mothers' lack of knowledge about the root causes and negative impacts of malnutrition influenced the tendency for inadequate dietary patterns.(Apriliana et al., 2022). Initiatives to strengthen knowledge through health education strategies using the PRECEDE–PROCEED Framework have been shown to improve mothers' understanding of how to prevent stunted growth and development.(Laksono et al., 2024).

Economic and social aspects have an important role as determinants, even though their influence is not direct.(Suratri et al., 2025) (Asnidar et al., 2022) (Laksono, Sukoco, et al., 2022) (Anggraeni et al., 2025)Stunting is often closely related to inadequate socioeconomic conditions, parental knowledge, and the mother's occupation. A systematic study conducted in Asia also supports the view that socioeconomic factors and parental education are the main root causes of stunting.(Podungge, Yulianingsih, Porouw, Saraswati, Tompunuh, Claudia, et al., 2021) (Wheeler, Gwaltney, Raspa, Okoniewski, et al., 2021)A clean environment and sanitation are crucial. Limited sanitation facilities and access to clean water increase the likelihood of stunting, especially during the COVID-19 pandemic.(Salsabilla et al., 2024).

Social and cultural factors in the environment, including cross-cultural care approaches, also influence consumption habits and health behaviors within the family.(Alfian Fajri R et al., 2024)Research on the economic factors and financial losses caused by stunting reveals a significant impact on a region's productivity.(Yunitasari, Lee, Krisnana, Lugina, Solikhah, et al., 2022)

Overall, various studies show that stunting cannot be viewed as a single factor, but rather as the result of a complex interaction between biological, social, economic, environmental, and health behavior factors within the family. Its effects are multifaceted, including cognitive development, future health, and losses to the national economy.

METHOD

Study Design This study uses a narrative literature review with a systematic approach to map scientific findings related to stunting in toddlers, including definitions/indicators, impacts (cognitive and long-term health), and direct and indirect risk factors (biological, prenatal, infection, parenting and feeding patterns, exclusive breastfeeding, immunization, sanitation, socioeconomic, and maternal knowledge).

The study is structured based on the following questions:

1. What are the impacts of stunting on child development (especially cognitive and long-term health)?
2. What factors are most frequently reported as determinants, both direct (nutritional intake, infectious diseases, birth status) and indirect (parenting patterns, maternal knowledge, socioeconomics, sanitation, culture)?
3. What interventions/strategies have been reported to be effective for stunting prevention, particularly those based on family health education and behavior?

Article searches were conducted in scientific databases such as Google Scholar, PubMed/MEDLINE, ScienceDirect, and SINTA/Garuda (for the Indonesian context). Searches were conducted using a combination of keywords (Indonesian–English) with Boolean operators:

(“stunting” OR “linear growth failure” OR “height-for-age” OR “HAZ”) AND

(“risk factor” OR determinant OR “associated factors”) AND

(toddler OR “under-five” OR toddler OR child)

Additional topic-specific keywords: prenatal: “maternal depression,” “antenatal care,” “iron supplementation,” “birth spacing,” “low birth weight,” prematurity. Infection & health: diarrhea, pneumonia, acute respiratory infection, parasites. Family behavior: feeding practices, parenting, “exclusive breastfeeding,” immunization. Environment: sanitation, “clean water,” WASH.

socioeconomic: socioeconomic, education, income, employment.

Inclusion and Exclusion Criteria

Original research articles (cross-sectional, cohort, case-control, intervention), systematic reviews/meta-analyses, or relevant policy studies. Focus on stunting in children (generally aged 0–59 months or relevant child groups). Describe the impact and/or risk factors/determinants of stunting. Publication year, e.g., 2021–2025 (adjusting references in the introduction and to ensure recency). Indonesian or English. Full text accessible. Exclusions: Opinion articles, editorials, news articles, or articles not peer-reviewed (except highly relevant official policy documents). Not explicitly addressing stunting (e.g., only general malnutrition without TB/U/HAZ indicators). Duplicate publications. Irrelevant population (e.g., adolescents/adults without association with childhood stunting).

a. Selection is carried out in stages

Identification: collecting all articles from the database, then removing duplicates. Title and abstract screening: assessing suitability to the study question.

Eligibility (full-text): reading the full text to ensure it meets the inclusion criteria. Final inclusion: articles that pass are included in the synthesis. The selection process can be presented using a PRISMA diagram (number of articles identified–screened–eligible–inclusion).

b. Study Quality Assessment

The methodological quality of each article is assessed using tools according to the research design, for example: JBI Critical Appraisal Tools (for cross-sectional, cohort, case-control, quasi-experimental) CASP (optional for qualitative/cohort studies) For systematic reviews/meta-analyses, AMSTAR 2 can be used. The results of the quality assessment are used to weight the interpretation (for example: strong–moderate–weak), not solely to eliminate studies.

c. Data Extraction

Data from selected articles were extracted using a summary table containing:

- Study identity: author, year, location/country
- Study design and sample size
- Respondent characteristics (child's age, age range, mother/family status)
- Definition/indicator of stunting (Height/Age or Height < -2 SD)
- The determinant variables analyzed (prenatal, infection, diet, breastfeeding, immunization, maternal knowledge, socio-economic, sanitation, culture)
- Main findings (direction of association, measures of association such as OR/RR if available)

Notes on study limitations

d. Analysis and Synthesis of Findings

Synthesis was carried out thematically (narratively), by grouping the findings into categories:

1. Biological factors & birth conditions: LBW, premature, child's age
2. Maternal prenatal factors: ANC, Fe supplementation, birth spacing, illness during pregnancy, maternal depression
3. Intake factors and feeding practices: protein/energy adequacy, diet, feeding practices
4. Child health factors & infections: diarrhea, ARI/pneumonia, parasites, medical history
5. Preventive service factors: completeness of immunization

6. Family behavioral factors: parenting patterns, exclusive breastfeeding
7. Environmental factors & WASH: clean water, sanitation, hygiene
8. Socioeconomic & education/knowledge factors: income, parents' education, mother's occupation, knowledge of “My Plate”

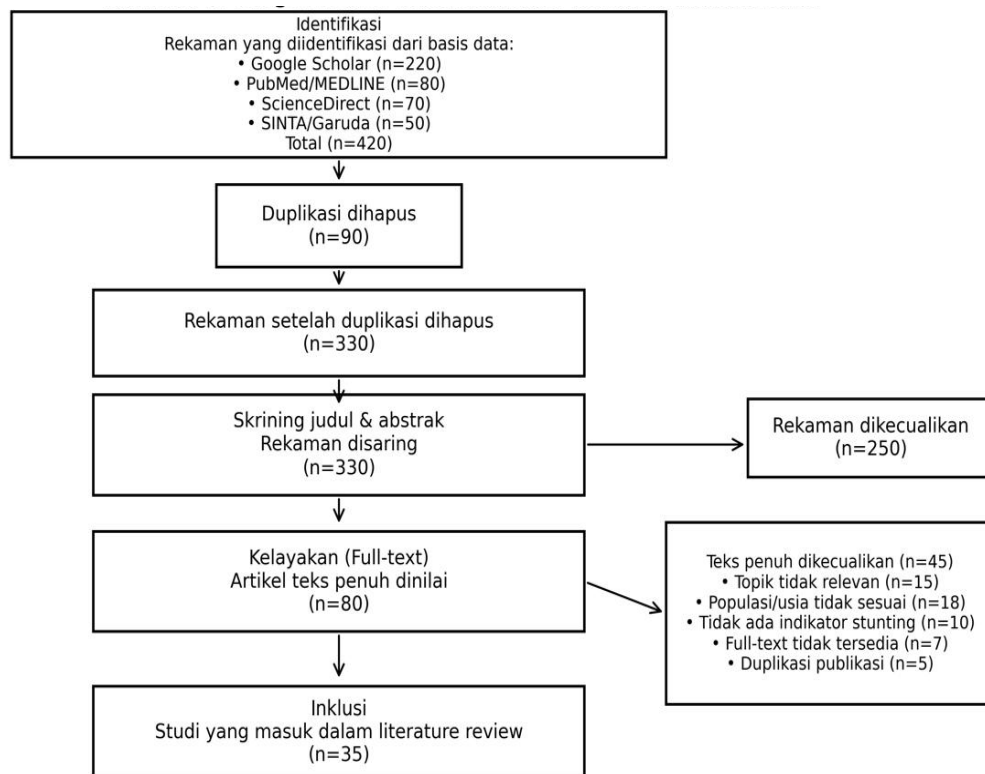


Figure 1. Flowchart of article selection based on PRISMA

RESULTS

(Anwar et al., 2022)– “Maternal Knowledge of Stunting in Toddlers: A Cross-Sectional Study in Indonesia” The study used a cross-sectional design to describe the level of maternal knowledge about stunting in toddlers and the factors that influence it.(Anwar et al., 2022)The results show that many mothers understand the general concept of stunting, but there are still

gaps in understanding the specific causes and technical aspects of prevention.(Anwar et al., 2022). The variables of education and maternal employment status are reported to be related to the level of knowledge, so education should be adjusted to the characteristics of the respondents.(Anwar et al., 2022).

(Tri Kurniasih et al., 2024)– “The Relationship Between Child Gender and Maternal Knowledge With the Incidence of Stunting in Toddlers” Cross-sectional study assessing the relationship between child gender and maternal knowledge with the incidence of stunting in toddlers(Tri Kurniasih et al., 2024)The results show that child gender is not significant, while maternal knowledge is significantly related to stunting.(Tri Kurniasih et al., 2024). The findings confirm that the targets of prevention programs should focus on improving parenting knowledge and practices, not on unchangeable biological characteristics.(Tri Kurniasih et al., 2024).

(Weti et al., 2024)– “The Relationship Between Mothers' Knowledge and Stunting Prevention Behavior in Toddlers” Cross-sectional research examines the relationship between mothers' knowledge and stunting prevention behavior.(Weti et al., 2024)The results show a significant relationship, so that knowledge can be positioned as a predisposing factor for preventive behavior.(Weti et al., 2024)The practical implication is that increasing maternal knowledge through education has the potential to improve preventive practices at home.(Weti et al., 2024).

(Fradila & Prabawati, 2023)– “Mothers’ Knowledge regarding Stunting in Toddlers: A Literature Review” This article summarizes evidence that mothers’ knowledge about stunting varies and is often influenced by age, education, occupation, and limited access to information.(Fradila & Prabawati, 2023). The findings underscore that low knowledge has the potential to undermine prevention practices, so education needs to be directed at groups with limited access to information.(Fradila & Prabawati, 2023).

(Noor et al., 2022)– “Maternal knowledge on nutritional-focused nurturing care... Yogyakarta” A cross-sectional study assessed maternal knowledge on nutritional-focused nurturing care and related factors in mothers with stunted children.(Noor et al., 2022). Maternal knowledge is reported to be high, but is influenced by maternal and child

characteristics as well as socioeconomic factors and previous exposure to information.(Noor et al., 2022). The findings emphasize the importance of a contextual educational approach, taking into account family income and access to information.(Noor et al., 2022).

(Purnama AL et al., 2021) – “The Impact of Mother's Knowledge, Attitudes, and Age During Pregnancy on the Incidence of Stunting in Families” Cross-sectional study shows the relationship between knowledge, attitudes, and age of mothers during pregnancy with the incidence of stunting in families.(Noor et al., 2022). The findings confirm that maternal factors during pregnancy are an important part of the stunting risk chain and need to be addressed antenatally.(Noor et al., 2022).

(Jepisa & Wati, 2023)– “Mothers’ Knowledge and Behavior in Preventing Stunting in Toddlers” This article reports that the majority of mothers have good knowledge and preventive behavior, but there are still weaknesses in technical understanding such as TB/U interpretation and habits of seeking stunting information.(Jepisa & Wati, 2023). The findings indicate the need to strengthen practical literacy (e.g., how to read KMS/TB-U) to make prevention more effective.(Jepisa & Wati, 2023).

(Khatimah & Avila, 2019)– “Relationship between Knowledge and Attitude of Mothers About Nutrition with Stunting Prevention...” Studies in the context of disaster evacuations show a relationship between mothers’ knowledge and attitudes about nutrition and stunting prevention efforts.(Khatimah & Avila, 2019)The disaster context emphasizes the need for educational support and easily accessible services because limited resources can hinder prevention.(Khatimah & Avila, 2019).

(Nuriska et al., 2024)– “The Relationship Between Mothers' Knowledge, Attitudes, and Behavior and the Incidence of Stunting in Children Aged 24–59 Months” The study reported that the majority of mothers were in the good knowledge, attitude, and behavior category, but no significant relationship was found with the incidence of stunting in children aged 24–59 months.(Nuriska et al., 2024). This finding suggests that other factors (e.g., economic, environmental, access to food/services) may be more dominant in the context of the study.(Nuriska et al., 2024).

(Qodrina & Sinuraya, 2021)– “The effect of mothers' nutritional education and knowledge on children's nutritional status: a systematic review” This study shows that nutritional education interventions tend to improve mothers' knowledge, attitudes, and skills, and contribute to improvements in children's growth status.(Qodrina & Sinuraya, 2021). These findings reinforce that maternal nutrition education is a key strategy, especially if it is structured and sustainable.(Qodrina & Sinuraya, 2021).

The most consistent factors across the 10 articles included maternal knowledge, maternal attitudes, maternal characteristics (age at pregnancy, education, occupation), access to information and socioeconomic context, and parenting/prevention practices (feeding, growth monitoring, and clean living behavior).(Anwar et al., 2022);(Tri Kurniasih, Rosyadi and Bariyah, 2024);(Fradila & Prabawati, 2023);(Noor et al., 2022). The causes of stunting in the 10-article framework are understood as the accumulation of risks across the 1,000 HPK (first 1,000 days) involving chronic malnutrition, inadequate parenting practices, and barriers to access to information/services that are reinforced by socioeconomic conditions.(Weti et al., 2024);(Purnama AL et al., 2021);(Khatimah and Avila, 2019)The impact of stunting is described as a disruption in physical growth that can lead to cognitive and productivity impacts in the future, so prevention must be carried out early and continuously.(Nuriska, Priyatno and Harokan, 2024); (Qodrina and Sinuraya, 2021)Overall, the literature emphasizes that increasing maternal knowledge through contextual nutrition education and health promotion can improve preventive behavior, but its effectiveness is influenced by access to information, service support, and family socioeconomic conditions.(Weti et al., 2024);(Purnama AL, Hasanuddin and Sulaeman S, 2021);(Khatimah and Avila, 2019).

No	Article Title	Researcher Name & Year	Research methods	Research Results (Brief)
1.	Maternal Knowledge of	(Anwar, Winarti and Sunardi, 2022)	Descriptive-analytic design with a cross-sectional approach.	The majority of mothers had sufficient/good knowledge, but there were

Stunting in Toddlers: A Cross- Sectional Study in Indonesia	Respondents: 260 still gaps in their mothers with understanding of the toddlers. Sampling specific causes of stunting. technique: stratified Bivariate testing showed random sampling. that maternal education Instrument: and employment status questionnaire on were significantly mothers' knowledge associated with knowledge about stunting. levels (mothers with higher Analysis: univariate education tended to have for knowledge better knowledge). distribution; Implications: Increasing bivariate using the nutrition/stunting Chi-square test to see education should target the relationship mothers with lower between maternal education and/or those characteristics (e.g., who are employed. education, occupation) and knowledge level.
2. The (Tri Kurniasih, Rosyadi and Bariyah, 2024) Relationsh ip Between Child Gender and	Quantitative research Child gender did not show with a cross- a significant association sectional design. with stunting incidence. Sample: 73 mother- Conversely, maternal toddler pairs. knowledge was Sampling technique: significantly associated stratified with stunting incidence:

Maternal Knowledge With the Incidence of Stunting in Toddlers	proportional sampling. Data collection: structured interviews using maternal knowledge questionnaires + toddler anthropometric measurements (height/age) for stunting classification. Analysis: univariate; bivariate Chi-square test at a 95% confidence level.	toddlers born to mothers with low knowledge had a higher proportion of stunting than those born to mothers with high knowledge. Implications: Interventions to improve maternal knowledge have the potential to reduce the risk of stunting.
3. The Relationship Between Mothers' Knowledge and Stunting Prevention Behavior in Toddlers (Weti et al., 2024)	An analytical observational study with a cross-sectional approach. Sample: 50 mothers with toddlers. Sampling technique: simple random sampling. Instruments: maternal knowledge questionnaire and	Most mothers have good knowledge and practices of stunting prevention. Analysis showed a significant relationship between maternal knowledge and stunting prevention behavior (p=0.017): the better the knowledge, the better the prevention behavior. Implication: Knowledge

		stunting prevention plays a role as a behavior predisposing factor questionnaire/observation sheet (e.g., feeding practices, growth monitoring, hygiene, utilization of health services). Analysis: Chi-square test for the relationship between knowledge and behavior.
4.	The Relationsh ip between Mothers' Knowledg e and the Incidence of Stunting in Toddlers in the Abang I Communit	(Fradila and Prabawati, 2023) This was an observational analytical quantitative study with a cross-sectional design. Sample: 107 respondents (mothers of toddlers) selected by purposive sampling. Variables: maternal knowledge about stunting A significant association was found between maternal knowledge and the incidence of stunting in toddlers ($p=0.001$). Mothers with lower knowledge were more likely to have stunted toddlers. Implications: Improving maternal nutritional literacy and understanding of stunting is an important strategy for stunting prevention at the

y Health Center Work Area	(questionnaire) and community health center toddler stunting (Puskesmas) level. status (based on anthropometric height/age). Analysis: Spearman Rank correlation test to assess the relationship between knowledge and stunting incidence.
5. The Impact of Protein Intake on Stunting in Toddlers	(Noor et al., 2022) Analytical observational study with a cross-sectional approach in the Lapai Community Health Center area. Sample: 18 toddlers. Protein intake assessment: using semi-quantitative FFQ/food record; stunting status measurement: anthropometry (H/U) with standard The proportion of toddlers with insufficient protein intake was higher than those with sufficient protein intake, and the proportion of stunting was also high. A chi-square test showed a significant relationship between protein intake and stunting incidence (p=0.04): toddlers with insufficient protein intake were more likely to experience stunting. Implications: Improving the quality of

		measuring instruments (microtoise/infantom eter according to age). Analysis: univariate for the distribution of protein intake and stunting; bivariate Chi-square test for the relationship between protein intake and stunting.	protein (animal/vegetable) should be a focus of nutritional interventions.
6.	Associatio n Between Basic Immunizat ion Status and Stunting in Toddlers Aged 12– 59 Months in Indonesia	(Purnama AL et al., 2021) Cross-sectional analysis using 2021 SSGI data (national). Subjects: 70,267 toddlers aged 12–59 months. Main variable: basic immunization status (complete/partial/not). Outcome: stunting (Height/Age <-2 SD). Analysis: Cox regression to estimate adjusted	The prevalence of stunting was 23.1%. Compared with complete immunization, partial immunization increased the risk of stunting (aPR 1.18; 95% CI 1.15–1.22), and no immunization increased the risk even more (aPR 1.27; 95% CI 1.17–1.37). The association remained significant after covariate adjustment. Implications:

			prevalence ratio	Increasing basic	
			(aPR) with covariate immunization coverage		
			controls (e.g., can contribute to stunting		
			maternal education, reduction through		
			economic status, infectious disease		
			LBW, sanitation, prevention.		
			drinking water		
			quality, etc.).		
7.	Factors (Jepisa & Wati, 2023)	Related to Stunting Incidence in Toddlers with Working Mothers in Indonesia	Cross-sectional study using national nutritional status survey data (secondary data). Sample: 44,071 toddlers from working mothers. Outcome: stunting categories (normal, stunted, severely stunted) based on height/age. Variables: type of area (urban/rural), maternal age, marital status, maternal education, toddler age. Analysis: Chi-	Toddlers of working mothers in rural areas have a higher risk of stunting/severe stunting than those in urban areas. Very young maternal age (≤ 19 years) increases the risk of severe stunting; higher education is protective. Toddler age is also associated with stunting status. Implications: Support for caregiving and access to services in rural areas, as well as interventions for young/low-educated mothers, are crucial for stunting prevention.	

				square/t-test at the initial stage; final analysis: multinomial logistic regression.
8.	Socioeconomic Factors Associated with Maternal Nutrition Knowledge and Undernutrition	(Khatimah Avila, 2019)	&	Cross-sectional study of mothers with children aged 36–59 months (n=657). Data collection: structured questionnaire for socioeconomic factors (education, occupation, income, assets, etc.) and child anthropometric measurements (height/age, weight/age, weight/height). Measurement of maternal nutrition knowledge: GNKQ-R. Analysis: selection of important factors
				Socioeconomic status (SES) emerged as a significant factor associated with MNK and nutritional status (particularly stunting and wasting). Indicators of IYCF (e.g., weaning and exclusive breastfeeding) were also identified as important for stunting/wasting. A link was found between forms of undernutrition (underweight is associated with stunting/wasting and vice versa). Implications: Prevention strategies need to be multisectoral—improving SES, WASH, IYCF, and access to health services.

using the Boruta algorithm (R) to identify the most influential predictors of stunting/wasting/underweight and their relationship to maternal nutrition knowledge (MNK).

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| 9. | Maternal Depression and Stunting in Toddlers (Nuriska et al., 2024) | A descriptive, correlative study using a cross-sectional approach. Sample: 140 mothers of toddlers from various provinces in Indonesia (quota sampling). Measurement of depression during pregnancy: EPDS (pregnancy recall). Outcome: stunting status in children aged 24–36 months. Analysis: | The proportion of stunting was 26.4%. Depression during pregnancy was significantly associated with stunting ($p=0.044$; $r=0.170$) with a weak correlation. Implications: Maternal psychological factors during pregnancy need to be included in screening and maternal health promotion programs as part of stunting prevention efforts. |
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			Correlation test to determine the relationship between pregnancy depression and stunting incidence.
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10	Analysis of Socioeconomic, Maternal Health Services, and Toddler Characteristics as Stunting Risk Factors	(Qodrina and Sinuraya, 2021)	Cross-sectional study using 2018 Riskesdas data (South Kalimantan). Sample: 1,218 toddlers. Variables: family socioeconomic status, utilization of maternal health services (e.g., ANC), toddler characteristics (age, LBW), parenting/exclusive breastfeeding, and other nutritional status (underweight). Analysis: bivariate (Chi-square) and multivariate (logistic	Factors significantly associated with stunting include maternal and paternal education, toddler age, low birth weight (LBW), and exclusive breastfeeding. Underweight is a very strong predictor (high OR). Implications: Stunting prevention requires a comprehensive approach, encompassing quality prenatal care, LBW prevention, exclusive breastfeeding promotion, and family socioeconomic interventions.
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regression) to
determine stunting
risk factors.

DISCUSSION

(Purnama AL et al., 2021);(Khatimah & Avila, 2019). Stunting in toddlers is a form of chronic malnutrition seen in linear growth disorders, so that the child's height/length is lower than the standard for his/her age. Stunting is generally assessed using anthropometric indicators of height for age (H/A) with WHO standards, where a H/A z-score <-2 SD is categorized as stunting and a z-score <-3 SD is categorized as severe stunting (Tri Kurniasih, Rosyadi and Bariyah, 2024; Fikriya & Mirwanti, 2024).

(Tri Kurniasih, Rosyadi and Bariyah, 2024);(Fradila & Prabawati, 2023)Stunting is usually not the result of a single event, but rather the accumulation of long-term exposure to risks such as inadequate dietary intake, recurrent illness, and inappropriate parenting practices. The first 1,000 days of life (HPK), from pregnancy to 24 months of age, are the most sensitive period for growth disorders, so nutritional and health interventions during this period are considered to determine the risk of stunting later in life.(Weti et al., 2024).

(Nuriska et al., 2024)In the period after 6 months of age, the quality of complementary feeding, meal frequency, food diversity, and breastfeeding practices become increasingly influential on the child's linear growth.

In addition to nutritional factors, stunting is also related to behavioral, environmental, and service access factors, so prevention strategies must involve family education and strengthening basic health services.(Khatimah & Avila, 2019).

Stunting does not only mean 'short', but is also an indicator of health risks and the quality of human resources because it can disrupt cognitive development, learning ability, and productivity in adulthood.(Anwar et al., 2022).

These consequences make stunting prevention a public health priority, particularly through changes in parenting behavior and improvements in nutritional quality in children (Noor et al., 2022; Fradila and Prabawati, 2023).

Mothers' knowledge about stunting includes understanding the definition, signs/indicators, causes and risk factors, short- and long-term impacts, and preventive measures that can be taken at home or through health services.(Anwar et al., 2022).

In several studies, maternal knowledge was assessed using questionnaires covering aspects of prevention, diet, health practices, and understanding of child growth monitoring (Weti et al., 2024; Fradila and Prabawati, 2023).

Findings(Nuriska et al., 2024)shows that many mothers have sufficient general knowledge, but there are still gaps in understanding the specific causes of stunting, so education needs to emphasize real risk factors in the family environment.(Anwar et al., 2022).

Better knowledge makes it easier for mothers to understand the importance of exclusive breastfeeding, dietary diversity, nutritional adequacy, and regular TB/U monitoring to detect the risk of stunting early.(Tri Kurniasih et al., 2024); Noor et al., 2022).

In addition, maternal knowledge also includes the ability to assess health information received from health workers, cadres, media, and family, so that the quality of the information received will influence parenting decisions (Haryanti et al., 2024; Purnama AL, Hasanuddin and Sulaeman S, 2021).

Several articles emphasize that access to information, previous educational exposure, and family socioeconomic characteristics can significantly shape mothers' knowledge levels (Haryanti et al., 2024;Anwar, Winarti and Sunardi, 2022).

Education and employment factors often appear as determinants of knowledge, so mothers with lower education or limited time due to work potentially need simpler, more practical and repetitive educational methods (Anwar, Winarti and Sunardi, 2022; Laksono et al., 2022).

Overall, the literature shows that maternal knowledge is a key factor because it forms the basis for the emergence of parenting attitudes and behaviors oriented towards stunting prevention (Fradila and Prabawati, 2023; Noor et al., 2022).

Maternal attitude is the tendency to accept, reject, or be neutral towards the issue of stunting, which then influences the mother's decision to take preventive measures (Purnama AL, Hasanuddin and Sulaeman S, 2021; Widniah & Rahmi, 2024).

In the context of stunting prevention, positive attitudes can be seen through willingness to participate in counseling, implement feeding recommendations, and regularly monitor child growth (Purnama AL, Hasanuddin and Sulaeman S, 2021; Tri Kurniasih, Rosyadi and Bariyah, 2024).

Positive attitudes also include openness to changes in habits, such as improving family eating patterns, maintaining cleanliness, and utilizing health services when a child is sick or during growth and development monitoring schedules (Purnama AL, Hasanuddin and Sulaeman S, 2021; Noor et al., 2022).

On the other hand, negative attitudes or lack of concern can arise due to misperceptions, the normalization of 'short children are hereditary', or parenting fatigue so that mothers delay preventive measures (Purnama AL, Hasanuddin and Sulaeman S, 2021; Varentina et al., 2025).

Literature on disaster situations shows that environmental stressors and limited access to services can worsen preventive attitudes and practices, so adaptive system support and education are important (Purnama AL, Hasanuddin and Sulaeman S, 2021; Noor et al., 2022).

The study by Widniah & Rahmi (2024) emphasized that the mother's attitude during pregnancy and family periods can be related to the risk of stunting, so the formation of preventive attitudes should begin during the antenatal period (Widniah & Rahmi, 2024).

However, several research contexts found that although many mothers have good attitudes, the direct relationship between attitudes and stunting incidence is not always significant, indicating the presence of confounding factors such as economics, food access, and the environment (Varentina et al., 2025; Laksono et al., 2022).

Therefore, attitude change interventions should be accompanied by practical support (e.g., access to information and service support) so that positive attitudes can truly be translated into preventive behavior (Noor et al., 2022; Tri Kurniasih, Rosyadi and Bariyah, 2024).

In general, the literature in 10 articles shows that maternal knowledge can contribute to stunting through direct and indirect pathways (Weti et al., 2024; Juniantari et al., 2024; Anwar, Winarti and Sunardi, 2022).

Direct contributions occur when knowledge influences children's nutritional needs, for example food selection, food diversity, and the implementation of exclusive breastfeeding and appropriate complementary feeding. (Tri Kurniasih et al., 2024); Noor et al., 2022).

Indirect contributions occur when knowledge shapes preventive behaviors such as growth monitoring, hygiene, and utilization of health services, which then influence the risk of stunting (Fradila and Prabawati, 2023; Purnama AL, Hasanuddin and Sulaeman S, 2021).

Lanita's findings (2025) and (Nuriska et al., 2024) showed a significant relationship between maternal knowledge and the incidence of stunting, so that knowledge can be seen as a risk factor that can be modified through education (Weti et al., 2024; Juniantari et al., 2024).

The findings of Al Kausar et al. (2024) strengthen this mechanism because maternal knowledge is significantly related to preventive behavior, so increasing knowledge has the potential to increase practices that are protective against stunting (Fradila and Prabawati, 2023).

However, Varentina et al. (2025) reported no significant relationship between knowledge/attitude/behavior and stunting in certain contexts, indicating that other dominant factors may mask the influence of knowledge (Varentina et al., 2025).

Other dominant factors that can disrupt this relationship include socioeconomic conditions, food availability, and differences in access to services, as emphasized in articles discussing the context of working mothers and rural–urban differences (Laksono et al., 2022; Haryanti et al., 2024).

Therefore, educational programs to increase maternal knowledge should be combined with supporting interventions such as strengthening services, social support, and context-appropriate communication strategies to produce real behavioral changes (Noor et al., 2022; Tri Kurniasih, Rosyadi and Bariyah, 2024).

First, the mother's knowledge factor consistently appears as a determinant of parenting behavior, because insufficient knowledge can cause mothers to not understand the risks of stunting and appropriate preventive measures (Anwar, Winarti and Sunardi, 2022; Weti et al., 2024).

Second, attitude and readiness to receive health information influence compliance with prevention recommendations, so negative attitudes can be a barrier even though information is available (Purnama AL, Hasanuddin and Sulaeman S, 2021; Widniah & Rahmi, 2024).

Third, maternal characteristics such as age at pregnancy, education level, occupation, and family income are often factors associated with both knowledge and the ability to implement preventive practices (Widniah & Rahmi, 2024; Anwar, Winarti and Sunardi, 2022; Haryanti et al., 2024).

Fourth, access to information and previous educational exposure can increase mothers' knowledge, but it needs to be accompanied by practical materials so that mothers are able to apply preventive measures in their daily lives. (Tri Kurniasih et al., 2024); Noor et al., 2022).

Fifth, the parenting practices discussed in the article include feeding practices, growth monitoring, hygiene, and utilization of health services, all of which contribute to the risk of stunting if not carried out adequately (Fradila and Prabawati, 2023; Tri Kurniasih et al., 2024).

Sixth, the socioeconomic context can strengthen or weaken the effectiveness of knowledge and attitudes, as families with limited resources may have difficulty providing nutritious food or accessing services (Haryanti et al., 2024; Laksono et al., 2022).

Seventh, in certain contexts, environmental factors such as disasters can limit access to food, clean water, and services, so stunting prevention interventions need to be adaptive and based on field conditions (Purnama AL, Hasanuddin and Sulaeman S, 2021; Noor et al., 2022).

Stunting impacts children's physical growth, because linear growth disorders cause height to be below age standards and can persist until school age if not intervened early (Fikriya & Mirwanti, 2024; Noor et al., 2022).

The impact of stunting is also related to cognitive development and learning abilities, so that stunted children have the potential to experience obstacles in academic achievement and psychosocial development (Fikriya & Mirwanti, 2024; Noor et al., 2022).

In the long term, stunting can reduce the productivity and quality of human resources, so that its impact is not only on individuals but also on socio-economic development (Noor et al., 2022; Fikriya & Mirwanti, 2024).

Because these impacts are multidimensional, stunting prevention requires integrating family education, nutritional interventions, and strengthening maternal and child health services on an ongoing basis (Noor et al., 2022; Widniah & Rahmi, 2024).

Articles emphasizing maternal nutrition education suggest that increasing maternal knowledge and skills can contribute to improving children's growth status, thereby mitigating the impact of stunting through effective educational interventions (Noor et al., 2022; Tri Kurniasih, Rosyadi, and Bariyah, 2024).

Structured nutrition education interventions tend to improve mothers' knowledge, attitudes, and skills, thus becoming an important component of family-based stunting prevention strategies (Noor et al., 2022; Fradila and Prabawati, 2023).

However, educational materials need to close the 'knowledge gap' on the specific causes of stunting so that mothers not only know the definition, but also know what actions to take and when to seek health service assistance (Anwar, Winarti and Sunardi, 2022; Tri Kurniasih, Rosyadi and Bariyah, 2024).

On the other hand, improving knowledge needs to be accompanied by environmental support, for example easy access to information, support from cadres and health facilities, and communication strategies according to the family's socio-economic context (Haryanti et al., 2024;(Qodrina and Sinuraya, 2021).

In vulnerable settings such as disasters, stunting prevention requires logistical support and accessible services because mothers' knowledge and attitudes can be hampered by limited resources (Purnama AL, Hasanuddin and Sulaeman S, 2021; Noor et al., 2022).

Because some contexts show that the relationship between knowledge-attitude-behavior is not always significant for stunting, program evaluation needs to consider local dominant factors so that interventions are on target (Varentina et al., 2025; Laksono et al., 2022).

CONCLUSION

"Causes of Stunting in Toddlers" is that stunting is a chronic nutritional problem that is multifactorial and occurs due to complex interactions between biological factors, prenatal conditions, infectious diseases, parenting/feeding patterns, the environment (WASH), as well as socio-economic factors and family education/knowledge.

More specifically, the factors most consistently reported to be associated with stunting include: inadequate nutritional intake (especially protein/energy), recurrent infections (e.g., diarrhea and acute respiratory infections), birth conditions such as low birth weight (LBW)/prematurity, and parenting and feeding practices, including a history of exclusive breastfeeding and complete immunizations. Indirect factors that amplify the risk include poor sanitation and clean water access, as well as socioeconomic limitations and low family education.

This review also confirms that the impact of stunting is not limited to height, but extends to impaired cognitive development and learning abilities, increased risk of long-term health problems, and reduced productivity and economic losses in adulthood.

Therefore, stunting prevention needs to be carried out through a comprehensive and cross-sectoral approach, with a strong focus on the First 1,000 Days of Life (HPK), improving nutrition and infection prevention, improving maternal-child health services, improving sanitation, and strengthening maternal knowledge through ongoing nutrition and health education because maternal knowledge has been proven to play an important role in feeding practices, hygienic behavior, and utilization of health services.

BIBLIOGRAPHY

Alfian Fajri R, Nasruddin, H., Pramono, SD, Jafar, Muh. A., & Darma, S. (2024). The Impact of Protein Intake on Stunting in Toddlers: A Lapai Health Center Study. *Green Medical Journal*, 6(2), 75–82. <https://doi.org/10.33096/gmj.v6i2.161>

Alistina, AD, Laili, RD, Nagy, É., & Feith, HJ (2025). The Importance of Socioeconomic Factors Associated with Maternal Nutrition Knowledge and Undernutrition Among Children Under Five. *Nutrients*, 17(21), 1–21. <https://doi.org/10.3390/nu17213355>

Andriyani, S., Sulastri, A., Fitriana, LA, Darmawan, D., Perdani, AL, Safariah, TD, Malisa, N., Putri, TH, & Mediani, HS (2025). Effectiveness of a Precede–Proceed Model-Based Health Promotion Intervention on Evaluating Changes in Mothers' Knowledge of Stunting Prevention in Indonesian Communities. *Journal of Multidisciplinary Healthcare*, 18(December), 8249–8256. <https://doi.org/10.2147/JMDH.S541443>

Anggraeni, LD, Utami, TA, & Wihardja, H. (2025). Factors Contributed Toward Stunting in Children in Indonesia. *Jurnal Mutiara Ners*, 8(1), 1–11. <https://doi.org/10.51544/jmn.v8i1.5007>

Anwar, S., Winarti, E., & Sunardi, S. (2022). Systematic Review of Risk Factors, Causes, and Impacts of Stunting in Children. *Journal of Health Sciences*, 11(1), 88. <https://doi.org/10.32831/jik.v11i1.445>

Apriliana, T., Keliat, BA, Mustikasari, & Primasari, Y. (2022). A contributing factor of maternal pregnancy depression in the occurrence of stunting in toddlers. *Journal of Public Health Research*, 11(2), 78–82. <https://doi.org/10.4081/jphr.2021.2738>

Asnidar, A., Haerani, H., Sriyanah, N., & Suswani, A. (2022). Determinants of Stunting in Pre-School-Aged Children in Ujung Bulu Subdistrict. *Proceedings of the International Conference on Nursing and Health Sciences*, 3(1), 291–298. <https://doi.org/10.37287/picnhs.v3i1.1233>

Burki, A. A. (2025). Assessing the relative significance of key risk factors for child undernutrition in Punjab,. *BMC Public Health*. <https://doi.org/10.1186/s12889-025-22626-2>

Cahyaningrum, NE, Mars, SP, & Suratman. (2024). Factors Influencing the Incidence of Stunting in Children Aged 24-59 Months in the Work Area Muara Delang Health Center, Jambi. *International Journal of Science and Society*, 6(2), 174–185. <https://doi.org/10.54783/ijsoc.v6i2.1112>

Fradila, W., & Prabawati, S. (2023). RELATIONSHIP BETWEEN MOTHER'S KNOWLEDGE LEVEL AND THE INCIDENCE OF STUNTING IN TODDLERS AGED 24 MONTHS TO 59 MONTHS AT POSYANDU NAMBERAN GUNUNG KIDUL. *Journal of Health Research*, 6(2), 83–92.

Java, W., Polri, AK, Apriliana, T., Keliat, BA, & Primasari, Y. (2022). A contributing factor of maternal pregnancy depression in the occurrence. 11, 78–82.

Jepisa, T., & Wati, L. (2023). Risk Factors for Stunting in Toddlers. *Mandira Cendikia Scientific Health Journal*, 2(8), 88–95. <https://journal.mandiracendikia.com/index.php/JIK-MC/article/view/412>

Kerebh, A., Endalifer, M.L., Birhanu, M.Y., Telayneh, A.T., Abate, L.K., Adissie, Z., Negesse, A., & Alamneh, A.A. (2024). Child developmental delay and its associated factors among children aged 12 – 59 months in Dembecha district, Northwest Ethiopia

: a community-based cross-sectional study. (December).

<https://doi.org/10.3389/fpubh.2024.1464121>

Khatimah, NH, & Avila, DZ (2019). DETERMINANTS INFLUENCING THE PREVALENCE OF STUNTING IN TODDLERS Nur. Indonesian Journal of Global Health Research, 2(4), 115–124. <https://doi.org/10.37287/ijghr.v2i4.250>

Kurniasih, AT, & Bariyah, N. (2024). FACTORS CAUSING STUNTING AND THE VALUE OF ECONOMIC LOSSES DUE TO STUNTING IN KETAPANG REGENCY. 3(2), 317–333. <https://doi.org/10.58344/jws.v3i2.566>

Laksono, AD, Edi, N., Sukoco, W., Rachmawati, T., & Wulandari, RD (2022). Factors Related to Stunting Incidence in Toddlers with Working Mothers in Indonesia.

Laksono, AD, Edi, N., Sukoco, W., Rachmawati, T., Wulandari, RD, Wheeler, AC, Gwaltney, A., Raspa, M., Okoniewski, KC, Salsabilla, MY, Putri, LD, Stunting, K., Age, B., Langsung, F., Cause, L., Asia, W., Review, S., Cahyaningrum, NE, Mars, SP, ... Feith, HJ (2024). The Relationship Between Mother's Knowledge and the Incidence of Stunting in Toddlers Aged 12-59 Months. Indonesian Journal of Global Health Research, 12(1), 1–11. <https://doi.org/10.37287/ijghr.v2i4.250>

Laksono, AD, Sukoco, NEW, Rachmawati, T., & Wulandari, RD (2022). Factors Related to Stunting Incidence in Toddlers with Working Mothers in Indonesia. International Journal of Environmental Research and Public Health, 19(17). <https://doi.org/10.3390/ijerph191710654>

Maajid, P. Al, Antono, SD, Cahyani, DD, & Kundarti, FI (2024). THE RELATIONSHIP BETWEEN MOTHERS' KNOWLEDGE ABOUT THE CONTENTS OF MY PLATE AND THE INCIDENCE OF STUNTING IN TODDLERS AGED 24-35 MONTHS. 13(1), 6–14.

Mporanyi, T., Condo, J., Absolomon, G., Mporanyi, M., Rubuga, F.K., & Munyanshongore, C. (2025). Influence of maternal knowledge of causes and consequences of stunting on infant and young child feeding practices in Rwanda. Scientific Reports, 15(1), 1–16. <https://doi.org/10.1038/s41598-025-28082-7>

Noor, MS, Andrestian, MD, Dina, RA, Ferdina, AR, Dewi, Z., Hariati, NW, Rachman, PH, Setiawan, MI, Yuana, WT, & Khomsan, A. (2022). Services, and Toddler's Characteristics as Stunting Risk Factors. *Nutrients*, 14(1), 1–12.

Nuriska, W., Priyatno, AD, & Harokan, A. (2024). ANALYSIS OF STUNTING INCIDENTS IN TODDLERS. *Al-Ma'arif Baturaja Health College Journal*, 9(2).

Podungge, Y., Yulianingsih, E., Porouw, HS, Saraswati, E., Tompunuh, MM, Claudia, JG, Zakaria, R., & Labatjo, R. (2021). Determinant factors of stunting in under-five children. *Open Access Macedonian Journal of Medical Sciences*, 9, 1717–1726. <https://doi.org/10.3889/oamjms.2021.6638>

Podungge, Y., Yulianingsih, E., Porouw, HS, Saraswati, E., Tompunuh, MM, Gladis, J., Zakaria, R., & Labatjo, R. (2021). Determinant Factors of Stunting in Under-Five Children. 9, 1717–1726.

Purnama AL, J., Hasanuddin, I., & Sulaeman S. (2021). The Relationship Between Maternal Knowledge and the Incidence of Stunting in Toddlers Aged 12-59 Months. *Panrita Husada Health Journal*, 6(1), 75–85. <https://doi.org/10.37362/jkph.v6i1.528>

Purwanti, ED, Masitoh, S., & Ronoatmodjo, S. (2025). Association Between Basic Immunization Status and Stunting in Toddlers Aged 12-59 Months in Indonesia. 298–306.

Putu Manik Juniantari, N., Yogi Triana, K., Made Ari Sukmandari, N., Komang Purwaningsih, ad, Bachelor of Nursing Study Program, N., & Bina Usada Bali, S. (2024). The Relationship of Mother's Knowledge to the Incidence of Stunting in Toddlers in the Working Area of Abang I Community Health Center. *Nursing Journal*, 12(1), 58.

Qodrina, HA, & Sinuraya, RK (2021). Direct and Indirect Factors Causing Stunting in the Asian Region: A Review. 12(4), 361–365.

R, AF, Nasruddin, H., Pramono, SD, Jafar, MA, & Darma, S. (2024). The Impact of Protein Intake on Stunting in Toddlers: A Lapai Health Center Study. 6(2), 75–82. <https://doi.org/10.33096/gmj.v6i2.161>

Salsabilla, MY, Ismaniar, & Putri, LD (2024). Beware of the Impact of Stunting on Cognitive Development in Early Childhood. *Scientific Journal of the Non-Formal Education Study Program*, 13(1), 46–52. <https://e-journal.stkipsiliwangi.ac.id/index.php/empowerment/article/view/4272/1947>

Salsabilla, MY, & Putri, LD (2024). BEWARE OF THE IMPACT OF STUNTING ON COGNITIVE. 13(2252), 46–52.

Subdistrict, B. (2022). Determinants of stunting in pre-school-aged children in Ujung bulu subdistrict 1. 3(1), 291–298.

Suratri, MAL, Indriasih, E., Warouw, TS, Edwin, VA, Yulianto, A., Faizal, DR, Deva, NMS, Yulianti, A., Agus, TP, Pracoyo, NE, & Raharni, R. (2025). The Relationship between Infectious Diseases and Stunting among Toddlers in Indonesia. *Iranian Journal of Nursing and Midwifery Research*, 30(6), 936–940. https://doi.org/10.4103/ijnmr.ijnmr_87_24

Tri Kurniasih, A., Rosyadi, R., & Bariyah, N. (2024). Factors Causing Stunting and the Value of Economic Losses Due to Stunting in Ketapang Regency. *Journal of World Science*, 3(2), 317–333. <https://doi.org/10.58344/jws.v3i2.566>

Weti, Nunik Andari, F., Kosvianti, E., & Febriawati, H. (2024). Analysis of Factors Influencing Stunting in Toddlers: Based on Transcultural Nursing. *Citra Delima Scientific Journal of Citra Internasional Institute*, 8(1), 32–38. <https://doi.org/10.33862/citradelima.v8i1.398>

Wheeler, A.C., Gwaltney, A., Raspa, M., & Okoniewski, K.C. (2021). Emergence of Developmental Delay in Infants and Toddlers With an FMR1 Mutation. 147(5), 1–11. <https://doi.org/10.1542/peds.2020-011528>

Wheeler, A.C., Gwaltney, A., Raspa, M., Okoniewski, K.C., Berry-Kravis, E., Botteron, K.N., Budimirovic, D., Hazlett, H.C., Hessler, D., Losh, M., Martin, G.E., Rivera, S.M., Roberts, J.E., & Bailey, D.B. (2021). Emergence of developmental delay in infants and toddlers with an fmr1 mutation. *Pediatrics*, 147(5), 1–11. <https://doi.org/10.1542/peds.2020-011528>

Wicaksono, KE, Purwanza, SW, Nurmawati, I., & Universitari, PS (2024a). ANALYSIS OF FACTORS OF STUNTING INCIDENT IN TODDLERS Jember State Polytechnic, Jember, Indonesia Maharani College of Health Sciences, Malang, Indonesia Email: kurniawan_erman@polije.ac.id . 12, 6–12.

Wicaksono, KE, Purwanza, SW, Nurmawati, I., & Universitari, PS (2024b). ANALYSIS OF FACTORS OF STUNTING INCIDENT IN TODDLERS Jember State Polytechnic, Jember, Indonesia Maharani College of Health Sciences, Malang, Indonesia Email: kurniawan_erman@polije.ac.id . 12, 6–12.

Widyawati, SA, Yuliaji Siswanto, & Alfian Afandi. (2023). Risk Factors Causing Stunting in Toddlers Aged 6-36 Months. Indonesian Journal of Midwifery (IJM), 6(2), 169–176. <https://doi.org/10.35473/ijm.v6i2.3042>

Yunitasari, E., Lee, BO, Krisnana, I., Lugina, R., & Solikhah, FK (2022). Determining the Factors That Influence Stunting during the Pandemic in Rural Indonesia: A Mixed Method. 1–16.

Yunitasari, E., Lee, BO, Krisnana, I., Lugina, R., Solikhah, FK, & Aditya, RS (2022). Determining the Factors That Influence Stunting during the Pandemic in Rural Indonesia: A Mixed Method. Children, 9(8), 1–16. <https://doi.org/10.3390/children9081189>