# Risk Factors Causing Stunting in Toddlers

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**ABSTRACT**

Stunting is a condition in which a child experiences a lack of nutritional intake for a long period of time, causing growth disorders in toddlers (infants under five years old). Stunting in toddlers is a global health problem that is influenced by various social, economic, and policy factors. **Objective.** This study aims to conduct a systematic review of the available literature to identify risk factors for stunting and examine the challenges faced in handling it, especially in developing countries such as Indonesia and South Africa. In addition, this study also focuses on the role of social policy and health interventions in preventing stunting.

**Methods.** A literature search was conducted on several reputable scientific databases, such as PubMed, Web of Science, and Google Scholar with a span of 2019-2024. Keywords used include "stunting", "socioeconomic risk factors", "health policy", and "stunting management". Articles that meet the inclusion criteria are analyzed to extract data related to study design, population, intervention, outcomes, and conclusions relevant to stunting management in children under five.

**Results.** The review shows that social and economic factors play an important role in stunting, especially in areas with low socioeconomic conditions. Health interventions and social policies have helped reduce stunting rates, but challenges such as lack of access to adequate nutrition and policies that are not fully integrated in some countries remain major obstacles. Conclusions: Although various policies and interventions have yielded positive results in

reducing stunting rates, major challenges remain, especially related to access to nutrition and sustainable policy implementation. Future research needs to focus on developing more integrated and personalized policies to reduce stunting rates in developing countries.

**Keywords:** Stunting, Children Under Five, Socioeconomic Risk Factors, Health Policy, Health Interventions, Systematic Review.

## Introduction

In 2013, the most common nutritional problem found in children aged 24-59 months in Indonesia was stunting. Stunting is a growth disorder caused by chronic malnutrition or chronic infection. Stunting assessment is carried out using the Height Index for Age (TB/U) with a threshold (z-score) of less than -2 Standard Deviations (SD). Based on the 2013 Basic Health Research, the problem of stunting is still very serious, with a national prevalence reaching 37.2%.[1]

According to data from the World Health Organization (WHO), in 2018 around 21.9% of toddlers worldwide experienced stunting. More than half of the number of toddlers affected by stunting came from Asia, with a percentage of 55%. Of the total 81.7 million stunted toddlers in Asia, the majority came from South Asia at 57.9%, followed by Southeast Asia at 14.4%. Indonesia is the country with the second highest prevalence of stunting in Southeast Asia, at 36.4%, after Timor Leste which has a stunting rate of 57.5%.[2] Stunting is caused by a lack of nutritional intake over a long period of time, especially during the critical period of growth that begins in the fetus. This condition can continue until school age, namely 6-18 years, and has an impact on declining academic achievement. When children who experience stunting grow up, they tend to be less productive, have lower incomes, and are at risk of remaining below the poverty line.[3] Other factors that influence the occurrence of stunting include the ability of health workers to detect stunting early, water and environmental cleanliness, parenting patterns, place of birth, and genetic factors. Children with stunted growth are at higher risk of growing into adults who are less educated, live in poverty, have poor health, and are more susceptible to non-communicable diseases. The high rate of stunting is an indication of the low quality of human resources, which can ultimately reduce the productivity of a nation in the future.[4]

## Method

This study uses a literature review method by accessing electronic databases through five international journals from sources such as Pubmed, ScienceDirect, and Google Scholar. The

inclusion criteria used are journals published in the last five years, namely from 2019 to 2024. The selected journals must have titles and contents that are in accordance with the research topic, available in full text format, and related to stunting in children. Only journals that meet the criteria are included in this study.

## Results

**Table 1 Summary of Article Results**

| No | Author Name | Title | Research Method | Result |
|---|---|---|---|---|
| 1 | Amrul Hasan, Haris Kadaruman, Agus Sutopo (2022)[5] | Air Minum, Sanitasi, dan *Hygiene* sebagai Faktor Risiko *Stunting* di Wilayah Pedesaan | The study used a case-control method with a research population of toddlers aged 6-24 months who live in Sungkai Utara District. The number of samples in the case was 175 cases and in the control was 175 controls so that the number of samples was 525 toddlers. Respondents were mothers of toddlers. | Individuals who have inadequate access to drinking water are at 4.62 times risk of stunting. Access to sanitation and hygiene is also a risk factor for stunting. Individuals with inadequate access to sanitation are at 4.60 times risk of stunting, while individuals who do not have access to hygiene are at 3.67 times risk. |
| 2. | Tyas Setiyo Yuniarti, Ani Margawati, Nuryanto (2019)[1] | Faktor Risiko Kejadian Stunting anak usia 1-2 tahun di daerah rob Kota Pekalongan | The type of observational research using the case control method. The location used is the working area of | It was found that the majority of children who experienced stunting were male, as many as 21 children (56.8%). Children who lack |

| No | Author Name | Title | Research Method | Result |
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| | | | the Kusuma Bangsa Health Center, North Pekalongan District. The total sample is 74 children, with 37 children for each case and control group. | protein intake have a 3.42 times risk of stunting, while those who lack iron intake have a 3.08 times risk. A history of illness also affects such as diarrhea which has a 13.33 times risk and ISPA has a 7.01 times risk of stunting. In addition, toddlers who are not given exclusive breastfeeding have a 19.5 times greater risk of stunting. |
| 3. | Sri Supadmi, Agung Dwi Laksono, Hastin Dyah Kusumawardani, Hadi Ashar, Afi Nursafingi, Ina Kusrini, Muhamad Arif Musoddaq (2024)[6] | Factor related to stunting of children under two years with working mothers in Indonesia | The study used a cross-sectional design method with a sample size of 2,073 children under two years old. The dependent variable is nutritional status, while the independent variables consist of residence, mother's age, marital status, mother's education, wealth | Urban children whose mothers work are 1.116 times more likely to experience stunting than those in rural areas (95% CI, 1.107 to 1.124). Married and working mothers are 1.500 times more likely than divorced mothers to have stunted children (95% CI, 1.461 to 1.540). Children aged 12–23 months whose mothers work |

| No | Author Name | Title | Research Method | Result |
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| | | | status, child's age, gender, and early initiation of breastfeeding (IMD). | are 2.831 times more likely to suffer from stunting than those aged <12 months (95% CI, 2.809 to 2.854). |
| 4. | Anggita Deva Ardianti, Sri Sumarmi (2023)[7] | Keragaman Pangan Balita dan Pengeluaran pangan sebagai faktor risiko stunting pada Balita | This study was conducted in the working area of the Kalirungkut Health Center in July 2023 using a case-control design. The study population was stunted and normal toddlers in June 2023 totaling 2463 toddlers. The sample in this study was 52 children consisting of 26 children for the case group (stunting) with total sampling and 26 children for the control group (normal) with simple random sampling. | A total of 14 toddlers (53.8%) with stunting have poor food diversity while the healthy toddler group has good food diversity, namely 17 toddlers (65.4%). Indicating that poor food diversity for toddlers will increase stunting 17.744 times compared to good food diversity for toddlers. In addition, there are 18 toddlers (69.2%) with stunting who have low food expenditure while 15 toddlers (57.7%) have high food expenditure. indicating that low food expenditure will increase stunting 11.155 times compared to high food expenditure. |

| No | Author Name | Title | Research Method | Result |
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| 5. | Siska Aryani, Lia Komalasari, Irna Trisnawati, Mamat, Judiono, Rahayu Pertiwi (2023)[3] | Analisis Pola Asuh dan Pengetahuan Ibu sebagai faktor risiko terjadinya *Stunting* | Quantitative research with case control method conducted in the working area of Tanjungpura Health Center, Karawang Regency. The research sample was toddlers aged 2 to 5 years, consisting of 48 stunted toddlers and 48 non-stunted toddlers. | There are 25 people (52.1%) of 48 stunted children who received poor parenting patterns, while there are 36 people (75%) of 48 non-stunted children who received good parenting patterns. In addition, in stunting sufferers, there are 29.2% or 14 toddlers with poor maternal knowledge and 34 toddlers or 70.8% have mothers with good knowledge. |
| 6. | Zalzia, Andi Nurdin, Nurlinda, Rahmat Zarkasyi, Sukmawati Thasim, Syamsurijal Tabang (2023)[4] | Pengaruh Aspek Lingkungan terhadap Kejadian Stunting Di Desa Temban Kabupaten Enrekang | Quantitative research with observational analytical approach And cross sectional research design. This research was conducted in Temban Village, Enrekang District, Enrekang Regency. The population in this study were all toddlers in Temban | Based on 52 respondents, there were 16 people (30.8%) who experienced stunting and 36 toddlers (69.2%) who were not stunted. Among the 52 respondents, there were also 40 people (76.9%) toddlers whose parents did not attend school, and 17 parents (32.7%) worked as self-employed. It was |

| No | Author Name | Title | Research Method | Result |
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| | | | Village, Enrekang District, totaling 52 toddlers with total sampling technique. The media used was a questionnaire with a total of 24 questionnaire items. | found that 13 toddlers (25%) experienced diarrhea, and 5 toddlers (9.6%) experienced ARI. In the hygiene variable, it is known that 24 people (46.2%) have sufficient hygiene and only 6 people (11.5%) have poor hygiene. Based on the results of the tabulation analysis with the Chi-Square statistical test, p = 0.000 (p <α 0.05) was obtained, which means that there is a significant influence between drinking water sources and the incidence of stunting in toddlers aged 0-59 months |
| 7. | Helena Ludorika Simanihuruk, Yetrie Ludang, Syamsul Arifin, Firlianty, Nawan, Vera Amelia (2023)[8] | Hubungan Penggunaan Air Bersih dan Kepemilikan Jamban dengan Kejadian *Stunting* di Kecamatan Murung | The type of research used is observational analytic with a case control research design. | The use of poor water facilities is dominated by stunted toddlers as many as 47 toddlers (82.5%) and 3 children (7%) the rest are non- |

| No | Author Name | Title | Research Method | Result |
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| | | Kabupaten Murung Raya. | | stunted toddlers (7.0%). In addition, the ownership of inadequate latrines is also dominated by stunted toddlers as many as 37 toddlers (71.2%) and the rest as many as 15 (28.85%) are non-stunted toddlers. |
| 8. | Diki Prayugo Wibowo, Irmawati, Deby Tristiyanti, Normila, Agung Sutriyawan (2023)[9] | Pola Asuh Ibu dan Pola Pemberian Makanan Berhubungan dengan Kejadian *Stunting* | quantitative research with a descriptive analytical research design with a cross-sectional approach. The population of this study were mothers who had toddlers in the Cipadung Health Center work area of Bandung City in 2021, totaling 2,842 people. The sample taken was 84 respondents. | There are 64% of toddlers who receive poor parenting patterns experiencing stunting, the POR analysis obtained 2.9 which means that mothers who have poor parenting patterns for toddlers have a 2.9 times chance of having stunted toddlers. Then mothers who provide inappropriate eating patterns have children with stunting conditions, namely 59.1%. The POR analysis obtained 3.3 means that there is a 3.3 times chance of |

| No | Author Name | Title | Research Method | Result |
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| | | | | toddlers experiencing stunting if the eating patterns given are inappropriate. |
| 9. | Muchamad Arif Al Ardha, Eddy Silamat, Anggara Setya Saputra (2023)[2] | Hubungan Sosial Ekonomi dengan Kejadian *Stunting* di Wilayah Puskesmas Cipadung Kota Bandung | The type of research used is an analytical study with a cross-sectional design (Sutriyawan, 2021). The case population in this study were mothers who had toddlers aged 24-59 months. The sample in this study was 108 respondents. The sampling technique used was simple random sampling. | Toddlers experience stunting of 51.2% in families with a socio-economic group that is included in the gakin group, while toddlers who experience stunting in families that are not included in the gakin group are only 28.4%. The results of the chi-square test obtained a p value of 0.029 and further analysis was carried out, a POR value of 2.6 was obtained, meaning that families with a socio-economic group that is included in gakin have a 2.6 times greater chance of having toddlers with stunting conditions. |

| No | Author Name | Title | Research Method | Result |
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| 10. | Mery Sambo, Yunita G.Madu, Ananda S. Tandiboro, Antjelita M. Kabo (2022)[10] | Pemberian ASI Eksklusif Sebagai Faktor Risiko Kejadian Stunting Pada Anak Usia 3-5 Tahun di Kecamatan Lau Kabupaten Maros | Quantitative research with case control study as the research method. With a population of 132 toddlers aged 36-60 months with a case group of toddlers who have a height (<-2 SD to <-3 SD) of 88 toddlers and a control group who do not experience stunting. Sampling using the cluster random sampling method. | As many as 61 (80.3%) mothers who did not provide exclusive breastfeeding to their toddlers experienced stunting and as many as 45 (80.4%) mothers who had provided exclusive breastfeeding to their toddlers and did not experience stunting. The OR value (LL-UL) (6-9) indicates that toddlers who do not receive exclusive breastfeeding experience stunting at least 6 to 39 times more |

## Discussion

Stunting is a complex nutritional problem that can be influenced by various factors, including drinking water, sanitation, parenting, and socio-economic aspects. Based on the analysis of 10 journals reviewed, there are several main factors that contribute to the incidence of stunting in children, which can be grouped into environmental factors, parenting, and socio-economic aspects. Here are 5 factors that cause stunting:

1. **Environmental Factors**

   Several studies emphasize the importance of environmental factors in the incidence of stunting. For example, a journal conducted by Hasan et al. (2022) shows that access to unsafe drinking water increases the risk of stunting by 4.62 times. In addition, research by Simanihuruk et al. (2023) found that the use of poor clean water facilities and

ownership of unsafe latrines are closely related to the incidence of stunting. This shows that poor sanitation and hygiene can lead to infections and diseases, which in turn affect the nutritional status of children.

2. **Parenting Patterns and Maternal Knowledge**

   Aspects of parenting patterns and maternal knowledge are also significant factors in the study. For example, research by Aryani et al. (2023) showed that 52.1% of stunted children received poor parenting. Meanwhile, Yuniarti et al. (2019) reported that children who were not given exclusive breastfeeding had a much higher risk of stunting, reaching 19.5 times. Mothers' knowledge of nutrition and proper feeding practices are very important to reduce the risk of stunting. A journal written by Wibowo et al. (2023) revealed that mothers who had poor parenting were 2.9 times more likely to have stunted children. This shows that increasing maternal knowledge and training on good parenting can contribute to reducing the incidence of stunting.

3. **Socioeconomic Aspects**

   Socioeconomic aspects also play a role in the incidence of stunting. Research by Al Ardha et al. (2023) showed that toddlers from families with low economic status (gakin) had a higher risk of stunting, namely 51.2%, compared to families who were not included in this group. This is in line with the results of research by Supadmi et al. (2024) who found that children from low-educated families are also more likely to experience stunting. This indicates that limited economic resources contribute to the lack of access to nutritious food and adequate health services.

4. **Food Diversity**

   Food diversity is an important factor that is also raised in several journals. Research by Ardianti and Sumarmi (2023) shows that toddlers with low food diversity have a higher risk of stunting, reaching 17.744 times compared to toddlers who have good food diversity. Parental knowledge and practices in providing diverse foods can improve children's nutritional status and reduce the incidence of stunting.

5. **Health Factors**

   A child's health history, such as diarrhea and respiratory infections, is also a risk factor for stunting. Yuniarti et al. (2019) reported that children with diarrhea have a 13.33 times greater risk of stunting. This shows that poor child health can affect nutrient absorption and increase the risk of stunting.

## Conclusion

From this analysis, it can be concluded that stunting is a multidimensional problem influenced by various factors, including the environment, parenting, socio-economic, and health. Efforts to reduce stunting must be carried out in an integrated manner by considering these aspects, including increasing access to clean water, educating mothers about parenting and nutrition, and strengthening the family economy. Further research is needed to identify effective intervention strategies in addressing stunting problems in various contexts.

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