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*(Research/ Review) Article*

# A Qualitative Study on Risk Factors Contributing to Stunting in Karang Dima Village, Sumbawa Regency

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**Abstract:** Stunting is a significant public health issue with lasting effects on human development and the quality of the workforce. This study aimed to identify the risk factors of stunting using an epidemiological approach in Karang Dima Village, Sumbawa Regency. A descriptive qualitative method was employed, and data were gathered through in-depth interviews with 22 mothers of stunted children and environmental observations. The results highlighted several key factors contributing to stunting. Host factors, such as low maternal nutritional knowledge, improper parenting practices, and limited spousal support during pregnancy, were identified as primary contributors. These factors negatively influence a mother's ability to provide adequate care and nutrition during pregnancy and the early stages of a child's life. Agent factors included recurrent infections, including diarrhea, acute respiratory infections (ARI), and measles. These infections, often linked to weak child immunity, exacerbate the risk of stunting, especially when compounded by poor nutritional intake. Environmental factors also played a significant role. Poor sanitation, high population density, and exposure to pollution from household waste burning and indoor cigarette smoke were noted as critical elements in the village's stunting risk profile. These environmental conditions compromise both maternal and child health, increasing vulnerability to infections and impairing overall development. The study emphasizes that stunting prevention requires a comprehensive, multi-faceted approach. Nutritional education, improved sanitation, and greater family involvement, particularly from fathers and extended family members, are essential in reducing stunting risk. The findings highlight the need for cross-sectoral strategies to address the various interrelated factors contributing to stunting, particularly in vulnerable communities. Accelerating stunting reduction efforts requires a collaborative, community-driven approach involving healthcare providers, local governments, and families.

**Keywords:** Health determinants, Infection, Nutrition, Sanitation, Stunting.

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## 1. Introduction

Stunting is an indicator of a toddler's nutritional status, characterized by a height or length below the standard for their age. This condition is assessed based on the World Health Organization (WHO) child growth standards, where a toddler is categorized as stunted if the measurement results show a value greater than minus two standard deviations (SD) below the WHO growth median. Stunting is caused by various complex and interrelated factors, including the family's socioeconomic conditions, the mother's nutritional status during pregnancy, the frequency of illness in the infant, and inadequate nutritional intake during critical periods of child development. In general, stunting is chronic because it persists over a long period (Kemenkes RI, 2019).

Until 2025, Indonesia will still face serious challenges in the field of public nutrition that will directly impact the quality of future human resources (HR). The problem of malnutrition in toddlers, especially stunting (shortness) and wasting (thinness), as well as health problems in pregnant women such as anemia and chronic energy deficiency (CED), remain a major

concern. Based on the results of the 2024 Indonesian Nutrition Status Survey (SSGI), the national prevalence of stunting has indeed decreased from 21.5% (2023) to 19.8% (2024), but the wasting and underweight rates still show a tendency to stagnate or even increase, at 7.4% and 16.8%, respectively (Ministry of Health of the Republic of Indonesia, 2025a). This problem is caused by direct factors such as low intake of nutritious food and high infection, as well as indirect factors such as poverty, poor environmental sanitation, limited access to healthy food, inadequate parenting patterns, and suboptimal health services (UNICEF Indonesia, 2024). Malnutrition in pregnant women, especially anemia and KEK, contributes greatly to the high rate of low birth weight babies (LBW), which ultimately increases the risk of stunting and growth and development disorders in toddlers (Kemenkes RI, 2025).

To address these challenges, the Indonesian government has launched a number of strategic interventions, such as the Free Nutritious Meal Program for school children and pregnant women, and strengthening primary care through the Healthy Pregnant Women Movement. These programs emphasize the provision of locally sourced food supplements, iron supplementation, and intensive monitoring of pregnancy health and child growth (AP News, 2024; Sehatnegeriku, 2024). Although initial results show improvements nationally, the program's impact has not been evenly distributed across all provinces. Therefore, a more focused and data-driven strategy is needed to significantly reduce stunting rates in the next few years (Kompas, 2025).

Stunting is also closely linked to low socioeconomic status, poor maternal health and nutritional intake, high frequency of childhood illness, and inadequate parenting and feeding practices during early childhood (WHO, 2022). In Indonesia, the Ministry of Villages and Human Resources states that stunting is caused by various multidimensional factors, including poor nutritional care practices and weak health services for pregnant women, such as Antenatal Care (ANC) and Postnatal Care (PNC). The success of stunting prevention efforts depends heavily on the quality of ANC and PNC services. Low coverage of comprehensive prenatal care and limited nutrition education for pregnant and breastfeeding women are key factors contributing to the lack of understanding about early stunting prevention. The WHO emphasizes the importance of the first 1,000 days of life, from pregnancy to age two, as a critical window for nutritional interventions that determine the quality of child growth and development (WHO, 2025).

In Indonesia, many mothers still do not receive standard ANC services. Recent data shows that only 40.7% of pregnant women with chronic obstructive pulmonary disease (CED) receive supplementary food assistance, while iron supplementation coverage has only reached 15.5%, far below the national targets of 84% and 65% (Antara News, 2025). This fact indicates a gap in access to education and nutritional support during pregnancy. Furthermore, PNC services also play a crucial role in monitoring infant growth and the success of exclusive breastfeeding, which has been proven effective in reducing the risk of stunting (WHO, 2025). Therefore, strengthening the capacity of health workers, providing community-based educational training, and improving the quality and coverage of ANC–PNC services are key strategies for sustainably reducing stunting in Indonesia.

In 2015, the prevalence of stunting in Indonesia reached 36.4%, or approximately 8.8 million children under five, making it the country with the second-highest stunting prevalence in Southeast Asia after Laos with 43.8%. This figure is well above the WHO threshold of 20% (Global Nutrition Report, 2021). Based on the 2017 Nutrition Status Monitoring (PSG), stunting prevalence decreased to 26.6%, consisting of 9.8% of very short children and 19.8% of stunting. This downward trend continued until 2024, when the national prevalence was successfully reduced to 19.8%, exceeding the 2024 RPJMN target of 20.1% (Coordinating Ministry for Human Development and Culture, 2024). This success reflects the positive impact of various strategic interventions, such as nutrition campaigns, community empowerment, and integration of maternal and child health services, which together were able to prevent more than 337,000 new cases of stunting (Health Development Policy Agency, 2024).

Positive achievements are also visible at the local level, such as in Sumbawa Regency, West Nusa Tenggara. Based on 2024 data, the prevalence of stunting in this region decreased drastically to 8.95%, or approximately 3,026 toddlers, from 25.7% in 2023 and even 31.53% in 2018 (Samawarea, 2024). This decline is the result of close collaboration between the local government, health workers, and the community through the implementation of convergent actions to reduce stunting. For this achievement, Sumbawa Regency received an award as the regency with the best implementation of convergent actions at the NTB Province level in 2023 (Sumbawakab.go.id, 2023).

Although this figure is already below the WHO threshold, accelerated stunting reduction is still needed through community nutrition strengthening strategies, regular evaluations, and family-based interventions to achieve the national target of 14% in the near future.

Technically, child growth is assessed through three main nutritional status indicators: weight-for-age (BW/A), height-for-age (H/A), and weight-for-height (BW/H). Stunting is determined based on the BW/A indicator, which is when the Z-score falls below minus two standard deviations. The nutritional status of toddlers is measured using an anthropometric approach, which includes measuring body dimensions and body composition based on age and nutritional status. Anthropometry helps identify imbalances between protein and energy intake.

Research shows that maternal low knowledge directly impacts nutritional parenting patterns within the family. This lack of understanding of the importance of nutrition and health during pregnancy and breastfeeding is reflected in behaviors that do not support stunting prevention (Nurmalisa, 2021). Inappropriate parenting practices include poor health practices during pregnancy, inadequate consumption of nutritious foods, failure to provide exclusive breastfeeding for the first six months (Firdausya & Hardini, 2020), and errors in selecting or providing appropriate complementary foods (Phu, Wittayasooporn, & Kongsaktrakul, 2019).

## 2. Proposed Method

This study used a qualitative method with a descriptive approach. This approach was chosen because it aligns with the research objective, which was to uncover risk factors for stunting in Sumbawa Regency, specifically in Karang Dima Village, Labuhan Badas District. The study included 22 mothers with infants or toddlers with stunting.

Data collection techniques included in-depth interviews and document studies to obtain comprehensive and in-depth information. Meanwhile, data analysis was conducted using an interactive model developed by Miles and Huberman (1992), which includes the stages of data reduction, data presentation, and conclusion drawing/verification.

## 3. Results and Discussion

### Results

### a. Determinants of Stunting from Host Factors

The results of this study indicate that most respondents had children with a history of infectious diseases, particularly diarrhea and acute respiratory infections (ARI). Some children also reported having experienced measles, although not repeatedly. The high incidence of these diseases is thought to be closely related to suboptimal clean and healthy living behaviors (PHBS). This condition is most pronounced in families living in densely populated areas with narrow alleys, where sanitation and waste management facilities are very limited. Most respondents stated they lacked adequate access to waste disposal sites and were reluctant to dispose of waste at official government-provided landfills due to their distance from their homes. As a result, burning waste in vacant lots near their homes is considered the most practical solution.

According to Mrs. R, during the dry season, household waste is burned directly next to the house. However, during the rainy season, wet, non-burnable waste is left to pile up for weeks. The scattered and heavy condition of the waste due to rainwater makes respondents even more reluctant to take it to the dump. A similar statement was made by Mrs. E, who explained that the only waste disposal site is about two kilometers from their neighborhood, while garbage trucks can only reach the main road and cannot enter residential alleys. This reinforces the habit of burning waste as an alternative that is considered easier and faster. Mrs. W also confirmed this situation by saying, "... It's far, ma'am. There's only one like that at the end of the bridge over there. There's none near here. It's also difficult to dispose of it there. It's quicker to burn."

This environmental problem is exacerbated by the family's poor behavior and knowledge regarding nutrition and health. Most respondents do not understand the importance of a balanced diet, whether for pregnant women, breastfeeding mothers, or children. Many mothers combine breastfeeding with formula, especially due to work commitments. During pregnancy, several mothers admitted to not paying serious attention to their food intake, preferring to consume whatever food they could, even if its nutritional content was inadequate. Expressions such as, "As long as it gets in, I'll eat anything because I'm nauseous," illustrate the low awareness of the importance of adequate nutrition during pregnancy and breastfeeding.

This condition is also evident in parenting patterns. A village midwife reported that many parents pay little attention to their children's dietary intake. As long as the child isn't crying or fussy, feeding is considered sufficient. Some mothers even give fast food, snacks like sausages and candy, and sweetened and colored drinks in an attempt to calm their children's fussiness. This behavior demonstrates a lack of parental knowledge regarding the principles of proper nutrition for child growth and is a significant risk factor for stunting.

Another factor contributing to vulnerability is the lack of family support, particularly from husbands. Several respondents revealed that they had to navigate the pregnancy process alone because their husbands worked out of town. As a result, pregnant women often had to undergo prenatal checkups without a companion, and some even skipped prenatal checkups altogether. This lack of husband involvement not only diminishes the emotional and practical support pregnant women need but also limits their access to essential health information for themselves and their fetuses.

This series of findings indicates that host factors within the family, including clean and healthy living behaviors, nutritional understanding, child-rearing patterns, and social support from family members, especially husbands, are not functioning optimally. Ignorance, indifference, and limited access to health and sanitation facilities combine to increase the risk of stunting in children. Therefore, stunting prevention efforts must be carried out holistically, not only targeting mothers and children, but also involving all family members in increasing awareness, knowledge, and shared responsibility for creating a healthy environment that supports optimal child growth and development.

### b Determinants of Stunting from Agent Factors

The results of this study indicate that the general condition of children suffering from stunting is often accompanied by infectious diseases as comorbidities. The types of infectious diseases most frequently reported by subjects included diarrhea, acute respiratory infections (ARI), and measles. Most parents acknowledged that their children frequently experienced illnesses since infancy, which resulted in a decreased appetite and indirectly affected the child's daily nutritional intake. In this case, diarrhea was the most dominant complaint and was known to be caused by viral infections such as rotavirus and norovirus, as well as bacteria or parasites from contaminated food and water. The majority of diarrhea cases in children under five were caused by viral infections closely related to poor sanitation and environmental hygiene.

Several subjects living in densely populated areas reported a lack of adequate waste management facilities. Consequently, household waste is dumped around the house and then burned once dry. However, during the rainy season or when the waste is wet, they allow it to pile up around the house for days. This creates a dirty environment and a breeding ground for bacteria and parasites, which can contaminate the family's food and drinking water. This contributes to the high incidence of diarrhea and acute respiratory infections (ARI) in children.

In addition to diarrhea, several subjects also reported that their children frequently experienced coughs and fevers, which were suspected to be symptoms of acute respiratory infections (ARI). Low awareness of the importance of clean and healthy living behaviors is a major contributing factor. One frequently cited cause is the habit of burning trash around the house, which results in direct smoke exposure. This exposure is a significant predictor of respiratory tract disorders in children. As explained by Mrs. W, "It's also difficult if we throw it there. It's quicker to burn it," describing the habit of burning trash as a practical solution, despite its impact on family health.

In addition to diarrhea and acute respiratory infections, several children have also reportedly experienced measles. This disease is caused by a virus from the Paramyxoviridae family, which is transmitted through droplets of saliva when an infected person coughs, sneezes, or talks. Transmission can also occur through hands touching contaminated surfaces, then touching the mouth or nose. Most subjects admitted to not knowing the exact source of the disease transmission. As expressed by Mrs. HM, "I also don't know where it came from, because my child suddenly had an itch, there were red spots on his body."

Parents' low level of attention to the importance of family health, especially among lower-income groups, is at the root of children's weak protection against infectious diseases, which worsen nutritional and growth conditions. Lack of knowledge about infectious disease prevention and irregular environmental hygiene practices increase children's risk of recurrent infections, which can cumulatively disrupt nutrient absorption and lead to stunting.

### c Determinants of Stunting from Environmental Factors

An environment that does not meet health standards is a major factor contributing to various diseases, such as diarrhea, worms, acute respiratory infections (ARI), and gastrointestinal infections. Poor sanitation, including inadequate waste management systems, can increase a child's risk of stunting. Children growing up in unhealthy environments are more susceptible to recurrent infectious diseases, which in the long term can impact nutrient absorption and hinder optimal growth and development.

This study found that most subjects living in densely populated settlements experience difficulties in maintaining environmental sanitation, particularly related to waste management. The lack of adequate waste disposal sites has led residents to resort to burning their household waste. This is as expressed by Mrs. T, "Most people here burn their waste because there are no waste disposal sites here." This condition is a major obstacle in implementing clean and healthy living behaviors, especially in the habit of disposing of waste in the proper place.

Furthermore, the almost daily burning of trash produces significant smoke and has the potential to directly expose children to it. Smoke from burning easily enters homes, especially since many houses have open ventilation or poorly sealed structures. Furthermore, the smoking habits of husbands contribute to worsening indoor air quality. Many smoke indoors without considering the impact on their children. Mrs. I even stated, "Maybe all the men here smoke, because I see men smoking when they gather." This statement indicates that exposure to secondhand smoke in the household is common and difficult to control.

Overall, these findings indicate that environmental factors, community behavior, and indoor smoking culture are interrelated factors that contribute to children's exposure to health risks. Repeated exposure to combustion and cigarette smoke can cause chronic respiratory disorders, increase the incidence of acute respiratory infections (ARI), and indirectly hinder child growth and development. Therefore, stunting prevention interventions need to consider both environmental aspects and behavioral changes as part of a comprehensive preventive effort.

## Discussion

The findings of this study confirm that stunting is a multidimensional phenomenon influenced by three main determinants: host, agent, and environmental factors. These three factors interact with each other and form a cycle of risk that increases the likelihood of children experiencing developmental disorders. This aligns with the ecological model of health behavior (McLeroy et al., 1988), which places individuals within a multi-layered system encompassing personal, interpersonal, organizational, community, and policy factors as a framework for understanding health determinants.

### a Host Factors: Nutritional Behavior and Parenting Style

The host factors in this study indicate that mothers' low understanding of balanced nutrition, inadequate caregiving, and lack of husband support during pregnancy and breastfeeding are the main determinants of stunting. Inadequate understanding of the basic principles of nutritional fulfillment results in poor food choices, both for themselves during pregnancy and for their children after birth. This lack of understanding often leads mothers to rely on readily available and inexpensive foods that are low in nutrients. In the context of families with limited income, the inability to distinguish between nutritious and non-nutritious foods further exacerbates children's nutritional deficiencies. Furthermore, parenting practices that tend to be permissive or unresponsive to children's needs contribute to the risk of stunted growth. Many mothers, due to time constraints or socioeconomic pressures, do not pay sufficient attention to their children's diets and do not apply parenting principles that support optimal growth and development. Furthermore, the absence of husband support, whether emotional, financial, or practical, during pregnancy and breastfeeding places the burden of childcare entirely on the mother's shoulders. This imbalance results in a decline in the quality of care and the fulfillment of maternal nutritional needs, which are crucial for ensuring optimal conditions for fetal and infant growth. Low nutritional knowledge has been shown to impact food choices that are not suitable for the needs of pregnant women and toddlers, as also found by Putri et al. (2022), who stated that low maternal nutritional literacy contributes to the quality of energy and protein intake in toddlers, as well as increasing the risk of stunting.

From the perspective of the Health Belief Model (HBM) theory (Rosenstock, 1974), mothers' low perceptions of the severity of stunting and the benefits of healthy behaviors can explain the lack of awareness in meeting nutritional needs during pregnancy. This theory explains that a person will take preventive action if they feel vulnerable to a serious condition

and believe in the benefits of such action. In this context, if a mother is unaware that malnutrition can cause stunting, which has long-term impacts on children, she is less likely to make behavioral changes. This low perception can arise from a lack of information, weak communication between health workers and the community, and cultural norms that underestimate the importance of nutrition during pregnancy. This theory is supported by a study by Khorrami et al. (2023), which found that low perceptions of stunting risk correlated with a lack of preventive behaviors among pregnant and breastfeeding mothers. This means that promotive and educational efforts to build risk perception and awareness of the benefits of healthy behaviors are crucial in upstream stunting prevention interventions.

**b Agent Factors: Recurrent Infections and Child Immunity**

Unhealthy physical environments such as densely populated areas, the lack of official trash receptacles, and the practice of burning waste significantly contribute to poor child health. Dense housing restricts movement and increases the potential for infectious disease transmission, particularly in children with weakened immune systems. The lack of adequate waste management facilities forces people to resort to shortcuts by littering or burning waste around their homes. This not only pollutes the environment but also impairs air quality and creates conditions that are vulnerable to health problems, particularly respiratory disorders and digestive infections. These conditions demonstrate the crucial role of the household environment in determining the quality of children's health. If the environment does not support clean and healthy living behaviors, nutritional and medical interventions will not produce optimal results.

A study by Ulfah et al. (2020) found that children living in environments with poor access to clean water and sanitation are 2.4 times more likely to experience stunting than children from healthy environments. This finding confirms that environmental factors not only indirectly influence the risk of disease but also directly hinder children's growth and development due to exposure to pathogens from dirty environments. Waste burning, in addition to being a source of air pollution in households, also increases the incidence of acute respiratory infections (ARI), as found in a study by Mahmudiono et al. (2021), which examined indoor air quality as a predictor of respiratory disorders. Repeated exposure to smoke from burning worsens indoor air quality and, in the long term, can disrupt children's respiratory systems, increase susceptibility to infection, and negatively impact nutritional status. Therefore, improving environmental sanitation and changing waste disposal habits are important interventions that must be considered in a comprehensive stunting prevention strategy.Environmental Factors: Sanitation, Pollution, and Overcrowding

Unhealthy physical environments such as densely populated areas, the absence of official trash receptacles, poor home ventilation, and the practice of burning waste near homes are significant contributors to poor child health. In densely populated areas, land available for sanitation facilities is limited, while drainage and household waste disposal systems are generally poorly managed. This situation creates a dirty, damp environment that is fraught with the risk of pathogen contamination. Furthermore, the practice of burning waste, considered more practical by some, actually results in exposure to fine dust particles (PM2.5) and toxic gases that pollute the surrounding air. This condition not only increases the risk of respiratory problems but also contributes to a decline in children's nutritional status due to an increased burden of infection. This demonstrates that the household environment plays a crucial role in facilitating or hindering clean and healthy living practices, which directly and indirectly impact child development.

A study by Dearden et al. (2021) in BMC Public Health showed that access to adequate sanitation facilities and a clean living environment are strongly associated with stunting, especially in low-income areas. The study confirmed that children living in unhygienic home environments are 1.8 times more likely to experience stunting than children living in clean and healthy environments. Furthermore, a meta-analysis by He et al. (2022) found that exposure to indoor air pollution including that from burning waste and solid fuels is significantly correlated with an increased incidence of acute respiratory infections (ARI) in toddlers, which is an important risk factor for stunting. Indoor air pollution disrupts children's developing immune systems, increases the risk of recurrent infections, and inhibits optimal nutrient absorption. Therefore, environment-based interventions, including improved sanitation, household waste management, and air pollution control, are key components of an integrated stunting prevention strategy

## 4. Conclusions

Based on the results of this study, supported by recent theories and studies, it can be concluded that stunting is not solely caused by malnutrition, but rather by the accumulation of family behaviors, repeated infections, and unfavorable environmental conditions. Effective interventions must address all three factors simultaneously, focusing on improving nutritional literacy, environmental sanitation, and the involvement of all family members in creating a healthy home that supports child development.

As a recommendation, stunting prevention programs need to be designed holistically, involving cross-sectoral stakeholders, such as health, education, the environment, and community empowerment. Training and education on balanced nutrition and appropriate parenting for mothers and expectant mothers should be prioritized, not only through health facilities but also through the role of community cadres and community leaders close to the community. Furthermore, the provision of basic infrastructure such as waste disposal facilities, clean water, and adequate home ventilation should be part of local government promotional and preventive efforts. The active involvement of husbands and other family members in supporting maternal and child health should also be increased through educational campaigns based on local culture and a family approach. This will ensure more sustainable and targeted stunting reduction efforts.

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