


Mothers' Perceptions Of The Influence Of Environmental Sanitation On The Causes Of Stunting In Toddlers

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Article Info	ABSTRACT
Keywords: Adolescents, Peer Education, Knowledge.	Nutritional status is an important health indicator where the age of toddlers is a group that is very vulnerable to nutritional problems, especially stunting, which is a condition of failure to grow in children under five years of chronic lack of nutrition so that height is less at their age. Research Objectives: to determine the Mother's Perception of the Effect of Environmental Sanitation on the Causes of Stunting in Toddlers. This research is a qualitative research with a case study approach. This research was conducted in the Mayangan Health Center area, Jombang Regency. The informants of this study amounted to 12 consisting of 3 key informants, 8 main informants and 1 supporting informant. Informants were selected by purposive sampling and snowball sampling to obtain the information needed to answer the research questions. The results of the study were that the mother's education level and sanitation were associated with the incidence of stunting, while parental labor and clean water were not associated with the incidence of stunting in Jombang Regency. Environmental sanitation factors are one of the triggers for the emergence of stunting in Jombang District.
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INTRODUCTION

Malnutrition in children is a serious health issue that can impact their physical growth and cognitive development. This condition is often caused by inadequate nutritional intake, commonly associated with low socioeconomic status and certain illnesses that hinder the body's ability to absorb nutrients. Nutritional problems, including underweight, stunting, wasting, and micronutrient deficiencies, frequently draw attention in developing countries (Maulina, 2021).

Nutritional status is a crucial health indicator, especially in toddlers, a group particularly vulnerable to nutrition-related problems such as stunting. Stunting is a condition of growth failure in toddlers caused by chronic nutritional deficiencies, resulting in a height significantly below the standard for their age.

According to the World Health Organization (WHO), stunting is one of the most common forms of chronic malnutrition in children and a critical indicator of long-term nutritional deficiencies. It occurs when a child's height is significantly lower than the

standard for their age, due to insufficient nutrient intake during critical growth periods, particularly within the first 1,000 days of life (from pregnancy to the child's second birthday) (Ministry of Health RI, 2018).

WHO defines stunting as the result of chronic and recurring nutritional deficiencies in children. Globally in 2020, approximately 149.2 million (144.4 to 154.2 million) children under five years old, or 22.0% (21.3 to 22.7%) of all children in this age group, were estimated to be stunted (WHO, 2022).

Stunting is one of the Sustainable Development Goals (SDGs) targets, included in Goal 2: to eliminate hunger and all forms of malnutrition by 2030 and achieve food security. The set target aims to reduce stunting prevalence by 40% by 2025 (Ministry of Health RI, 2022).

Globally, nearly 45% of deaths among children under five years of age in 2020 were attributable to malnutrition. Stunting contributes the largest share among the four forms of malnutrition. According to the 2018 Global Nutrition Report, 144 million children under five were stunted worldwide. However, the decline in stunting prevalence among children under five has been slow, decreasing from 32.6% in 2000 to 22.2% in 2017 globally. Despite these reductions, current figures remain alarming, and the absolute number of stunted children has risen due to population growth. Stunting predominantly occurs in low- and middle-income countries (Fufa, 2022).

Stunting is caused by multidimensional factors, including environmental conditions. Environmental factors contributing to stunting include maternal personal hygiene (Rah et al., 2015), sanitation (Rahayu and Darmawan, 2019), clean water access (Adriany et al., 2021), and drinking water sources (Irianti et al., 2019). Inadequate sanitation is significantly associated with stunting, with children in environments with poor sanitation being five times more likely to experience stunting (Apriluana and Fikawati, 2018).

The results of research by Torlesse et al., (2016) found that there is an interaction between household sanitation facilities and water treatment in children living in households that drink untreated water. The results of the study, obtained the risk of being stunted more than 3 times greater in children living in households using unimproved latrines. The lack of cleanliness of the water used in everyday life causes infectious diseases such as diarrhea and helminthiasis, so that toddlers will experience impaired absorption of nutrients in the digestive process which results in toddler weight loss. Infectious diseases that last for a long time and often will cause stunting in toddlers (Kemenkes RI, 2018). Referring to SSGI data in 2022, Jombang District, East Java, was ranked 13th largest in East Java with a stunting prevalence of 22.1%.

Although various studies have shown the relationship between environmental factors, including sanitation and hygiene, and stunting, there are still gaps in understanding how mothers' perceptions of environmental sanitation contribute to stunting, especially in high-prevalence areas such as Jombang District. While previous studies have focused on the direct relationship between environmental factors and stunting, few have explored the perceptions of mothers as the primary caregivers of children under five. In fact, these perceptions play an important role in determining daily hygiene and sanitation management

practices that affect children's health. Therefore, this study aims to bridge the gap by examining mothers' perceptions of the influence of environmental sanitation on the causes of stunting in toddlers. Based on the above background, the study was conducted with the aim of knowing the Mother's Perception of the Effect of Environmental Sanitation on the Causes of Stunting in Toddlers.

METHODS

The research is a qualitative study employing a case study approach. It was conducted at the Health Office of Jombang Regency, East Java, and the Mayangan Health Center. The study involved 12 informants, comprising 3 key informants, 8 main informants, and 1 supporting informant. Informants were selected using purposive sampling and snowball sampling techniques to gather the necessary information for answering the research questions. This qualitative case study aims to explain and provide an understanding of mothers' perceptions of the influence of environmental sanitation on the causes of stunting in toddlers in Jombang Regency.

The informants in this study included healthcare workers, mothers of toddlers, and health cadres, all selected based on inclusion criteria and serving as information sources to achieve research objectives. A total of 12 informants participated in the study. Data analysis in this study used the Miles and Huberman approach which includes reduction, presentation, and conclusion drawing. Data from interviews, observations, and documentation were reduced to filter out relevant information about mothers' perceptions related to environmental sanitation and stunting. The reduced data were presented in narrative or matrix form to facilitate analysis of patterns and themes. Conclusions were drawn by comparing data from various sources and verifying the validity of the findings. This process was carried out iteratively to produce a comprehensive conclusion according to the research objectives.

RESULTS AND DISCUSSION

Key Informant Characteristics

In this study, three key informants were selected by the researchers based on inclusion criteria. These key informants consisted of healthcare workers at the Mayangan Health Center.

- a. Mrs. Y serves as the Coordinator Midwife at the Mayangan Health Center. During the interview, Mrs. Y was still at the health center and had just finished conducting a prenatal class. The interview was conducted in the Maternal and Child Health (MCH) room.
- b. Mrs. A works as a community health nurse at the Mayangan Health Center. At the time of the interview, Mrs. A was at the health center, and the interview took place in the nutrition room.
- c. Mrs. SC serves as a functional doctor at the Mayangan Health Center. During the interview, the doctor was attending to patients, and the interview was conducted in the examination room.

Table 1. Key Informant Characteristics

Kode Informan	Time and Date	Education	Position
KI1 (Mrs. Y)	09.30	D4 Midwifery	Coordinator Midwife
KI2 (Mrs. A)	11.00	D3 Nursing	Community Health Nurse
KI3 (Mrs. SC)	12.00	Bachelor's Degree in Medicine	Functional Doctor

Source: Primary Data Analysis (2024)

Main Informant Characteristics

In this study, 8 main informants were selected as respondents who met the inclusion criteria. All of the main informants are mothers of toddlers with stunting. The average education level of the informants is in the lower to middle range. Nearly all of the mothers are housewives, while their husbands typically work as laborers, earning enough to meet daily needs.

The characteristics of the main informants are presented in the following table:

Table 2. Main Informant Characteristics

Informant Code	Time and Date	Education	Occupation		Income	Location
			Mother's	Father's		
Mrs. H	13.20 17/04/2024	SI	Housewife	Entrepreneur	1 million/month	Jogoroto
Mrs. W	14.00 17/04/2024	SLTA	Housewife	Deceased	-	Jogoroto
Mrs. M	14.30 17/04/2024	SMP	Housewife	Deceased	-	Jogoroto
Mrs. Z	15.00 17/04/2024	SD	I Housewife	Bus driver	1,5 million/month	Jogoroto
Mrs. L	08.30 18/04/2024	SI	Teacher	Laborer	3,5 million/month	Mayangan
Mrs. SM	09.15 18/04/2024	SMP	Housewife	Entrepreneur	2 million/month	Mayangan
Mrs. A	10.00 18/04/2024	MI	Housewife	Laborer	90 million/month	Mayangan
Mrs. S	12.00 18/04/2024	SMP	Housewife	Laborer	100 million/month	Sumbermulyo

Source: Primary Data Analysis (2024)

Parental education is related to the occurrence of stunting, as higher levels of parental education can influence their mindset toward better outcomes, leading to better knowledge. This was reflected in the statements made by the informants :

Table 3. Parental Education Perceptions Regarding Stunting Incidence

Informant	Parental Education Perception Related to Stunting Incidence
Mrs. Y	"...some parents have high education but are busy working... while others stay with their children but are less attentive, not taking their children seriously..."
Mrs. A	"...their education is high too... in my opinion, maybe it's the child's eating habits,

Informant	Parental Education Perception Related to Stunting Incidence
	they don't want to eat. Education seems to have no influence..."
Mrs. SC	"...it has a significant impact in my opinion... starting from pregnancy preparation, if the mother's education level is not high..."
Mrs. H	Bachelor's Degree
Mrs. W	Senior High School
Mrs. M	Junior High School
Mrs. Z	Elementary School
Mrs. L	Bachelor's Degree
Mrs. SM	Junior High School
Mrs. A	Islamic Elementary School
Mrs. S	Junior High School

Source: Processed Primary Data (2024)

Based on field findings, it was observed that many parents have a low level of education, with most having an educational background below high school. This factor contributes to the incidence of stunting in Jombang Regency.

Parental occupation has little correlation with the incidence of stunting in Jombang Regency. Whether parents are employed or unemployed and regardless of whether they have high or low incomes, stunting cases are still present. However, many stunting cases occur among parents with middle to lower income levels, as stated by the informants:

Table 4. Parental Job Perceptions Related to Stunting Incidence

Informant	Parental Job Perception Related to Stunting Incidence
Mrs. Y	...the parents' job is irregular, but the child's nutritional status is good... there are also parents with stable jobs whose children are stunted...
Mrs. A	...uhh, for workers with minimal wages, uhh, maybe they can only meet basic nutritional needs...
Mrs. SC	...unemployed, ma'am... it really affects us because we can't afford nutritious food for the child...
Mrs. AH	...umm... most of them work in factories...
Mrs. SH	...housewife...
Mrs. W	...not working, just taking care of the children...
Mrs. M	...housewife...
Mrs. Z	...sometimes there's work, like wrapping lontong, and the father is a driver...
Mrs. L	...teaching at a Madrasah school...
Mrs. SM	...I'm a housewife, and my husband is self-employed...
Mrs. A	...uhh, I take care of the children... housewife...
Mrs. S	...at home, housewife...

Source: Processed Primary Data (2024)

The findings in the field confirm that most parents of stunted toddlers, particularly mothers, are housewives, while fathers work as laborers, earning a monthly income of approximately 1 million rupiah. Regardless of whether parents have high or low incomes, cases of stunting still occur, indicating that the type of parental occupation is not strongly associated with the incidence of stunting.

Characteristics of Supporting Informant

The supporting informant in this study consisted of one individual, whose data was collected through an in-depth interview. Mrs. AH serves as a health cadre in the Mayangan Public Health Center area. The interview was conducted during her lunch break at home. The detailed characteristics of the supporting informant are presented in the following table:

Table 5. Characteristics of Supporting Informant

Informant Code	Time and Date	Education	Position	Location
Mrs. AH	11:00 AM, 6/5/2024	High School	Health Cadre	Mayangan Public Health Center

Source: Processed Primary Data (2024)

The characteristics of toddlers in this study were obtained through in-depth interviews, observations, and documentation from the Maternal and Child Health (MCH) Handbook of each interviewed mother. The detailed characteristics of the toddlers are presented in the following table:

Table 6. Characteristics of Toddlers

Toddler Code	Gender	Age (Months)	Weight (kg)	Height (cm)
Ba. SH	Female	42	11	79
Ba. W	Female	47	13.4	90
Ba. M	Female	36	10	-
Ba. Z	Female	47	12	-
Ba. L	Male	21	8.5	-
Ba. SM	Male	46	12.5	-
Ba. A	Male	29	11	80.5
Ba. S	Male	40	12	78

Source: Processed Primary Data (2024)

The results of the case study on toddler characteristics in this research indicate that gender does not have a significant correlation with the incidence of stunting in Jombang Regency. This is supported by the statements of the following informants:

Table 7. Perception of Toddler Characteristics Related to Stunting

Informant	Perception of Toddler Characteristics Related to Stunting
Mrs. Y	...the occurrence of stunting in Jombang is indicated by height... as for gender, uhh... so far, there's no difference between males and females...
Mrs. A	...I don't think gender has any influence, but age, weight, and height definitely have a connection...
Mrs. SC	...basically, it's about growth failure at 100 days post-birth...
Mrs. AH	...currently, weight is indeed a factor...

Source: Processed Primary Data (2024)

Referring to the field data obtained by the researcher, from the 8 main informants interviewed, there were 4 male toddlers and 4 female toddlers who experienced stunting. This indicates that gender has little correlation with the incidence of stunting in Jombang

Regency, as it can occur in both male and female toddlers.

The characteristics of toddlers, such as age, weight, and height, are related to the incidence of stunting in Jombang Regency. As found in the field, age, weight, and height are closely linked to stunting, with growth data recorded in the yellow zone in the MCH Handbook from all interviewed mothers.

Sanitation is also linked to the incidence of stunting, as the environment significantly impacts families, especially toddlers. According to the main informants, sanitation issues include wastewater being discharged into fields, the lack of toilets, and the water being polluted by local factories, as stated by the informant:

Table 8. Perception of Sanitation Related to Stunting Incidence

Informant	Perception of Sanitation Related to Stunting Incidence
Mrs. Y	It definitely has a strong impact on stunting because poor sanitation leads to infections in toddlers, which means the food they consume doesn't contribute to growth...
Mrs. A	...the house is small, one room for three people, no toilet, no clean water...there are a lot of flies, possibly due to the smell from the tofu factory, the water smells and is not clean...
Mrs. SC	...if the sanitation is poor and the water is dirty, giving it to the child is not good, ma'am...
Mrs. AH	...in front of the house, there is a cow shed, and the waste affects the environment...they don't have a toilet because it's by the river...
Mrs. SH	-
Mrs. W	Yes, we have a squat toilet, that's usually how it is...
Mrs. M	At the mosque, we continue there...if not, we go to the river...
Mrs. Z	Sometimes by the river, sometimes by the field...before, it was by the river...
Mrs. L	We have a squat toilet...
Mrs. SM	Yes, we have a toilet in the back...the waste goes to a septic tank at the back of the house...the trash is thrown in the garden...
Mrs. A	Yes, we have a toilet...the waste is drained in the back...next to it is a cow shed...sometimes, if it's wet, there's a smell...
Mrs. S	There is a toilet with a septic tank...it's separate from the bathroom...

Source: Processed Primary Data (2024)

Other findings in the field, as reported by the main informants, indicate that mothers of toddlers who do not have a toilet often perform defecation and urination in public facilities or share toilets with nearby families. Furthermore, if the urge to relieve themselves is urgent and they cannot reach public facilities in time, they are forced to do so in the river. Although this rarely occurs, it can have an impact.

In addition, based on the researcher's observations, many informants maintain clean yards, keeping them free from trash and waste. However, one informant's environment was quite shabby, with garbage being disposed of next to the house near the main entrance. This practice can attract various vectors such as mosquitoes and flies, which can land on food or children, leading to infections.



Figure 1. Environmental Sanitation

Clean water is not directly related to the incidence of stunting, according to the key informants. We need to consider whether the water used for daily activities is clean or not. If it is not, it may trigger infections that could contribute to health issues. Additionally, it is important to assess whether the water consumed is properly treated or not, as mentioned by the informants:

Table 9. Perception of Clean Water Related to Stunting Incidence

Informant	Perception of Clean Water Related to Stunting Incidence
Mrs. Y	...access to clean water is important, if it's clean, it's fine, but if it's not, infections like coughs, colds, and diarrhea may arise...
Mrs. A	If it's clean, InshaAllah it's fine...
Mrs. SC	It's usually well water...for daily use, it's boiled, but in some villages, they have industrial areas, so the water gets contaminated with waste...
Mrs. AH	Yes, it's from the well as usual...
Mrs. SH	Sanyo...yes, for everything...for drinking, it's gallon water...sometimes Cleo, sometimes Aqua...
Mrs. W	Yes, it's from Sanyo, boiled and filtered...
Mrs. M	It's from the pump well...gallon water...
Mrs. Z	I use Aqua...refillable, if not, I boil it...
Mrs. L	I make a well...it doesn't smell, I boil it to make it clear...if there's a white residue, I discard it...
Mrs. SM	It's from the well...boiled for safety...
Mrs. A	I use refillable water...
Mrs. S	The tap water from the well is boiled...sometimes it smells, but now it's fine...

Source: Processed Primary Data (2024)

The field findings from interviews with all the mothers of toddlers reveal that the clean water they use mainly comes from well water. The water consumed by the mothers is typically boiled well water, although some mothers use refillable branded water such as Cleo, Aqua, and Le Mineral. Additionally, two informants mentioned that their groundwater used to have an odor, but it no longer does.

The key informants in this study have backgrounds in nutrition, midwifery, nursing, and medicine. They hold positions as program managers for nutrition in the public health office. The supporting informants are health cadres with a high school education. The key

informants in this study are mothers with toddlers who experience stunting, with an average level of education below high school. The education level of parents, particularly mothers, is related to the occurrence of stunting in Jombang Regency. This aligns with the research by Umbu Zogara et al. (2021), which suggests that parental education is linked to stunting in children. A mother's education is especially important because educated mothers are more likely to understand the health conditions of their children. Lower parental education, both for fathers and mothers, can lead to a lack of understanding of child health. According to Roesardhyati and Kurniawan (2020), a mother's education level influences personal and family health, as well as child-rearing practices. A mother's knowledge about fulfilling a child's nutritional needs and stimulating their growth and development is a crucial factor in preventing stunting.

Regarding parental occupation, the study found no significant link between employment and stunting in Jombang. Many parents have jobs, where the mother works as a housewife and the father works as a laborer, with monthly income ranging from 1 to 3 million IDR. This is consistent with the research by Oka and Annisa (2019), which indicates no significant relationship between respondents' occupations and mothers' knowledge about stunting. Similarly, studies have shown that the mother's occupation does not necessarily correlate with a child's nutritional status, which can lead to stunting. Even if a mother does not work, it does not guarantee that child-rearing practices will be good, as demonstrated in research by Imam et al. (2021).

Sanitation is related to the occurrence of stunting in Jombang Regency, as the study reveals that the sanitation issues linked to stunting include the disposal of wastewater into garden areas, the lack of toilets, and the necessity for mothers of toddlers to find alternative places for defecation (BAB) and urination (BAK). When desperate, they resort to using rivers. Furthermore, the water used for daily needs has been contaminated by waste from local factories, and there are animal enclosures around the homes of mothers of toddlers, which contribute to environmental pollution, especially due to odors. During the rainy season, animal waste is washed away. Additionally, regarding waste management, diapers and other trash are disposed of near the house, right next to the main entrance. This practice attracts flies, mosquitoes, and even rats to the house.

These findings align with the research by Rahayu and Dermawan (2019), which indicates a significant relationship between environmental sanitation and stunting in children. Similarly, Olo et al. (2021) highlighted that many rural areas in Indonesia face sanitation issues related to the use of latrines, including the availability of toilets, types of toilets, toilets that do not use septic tanks, the cleanliness of toilets, and improper open defecation. Improper disposal of children's feces outside of toilets has been linked to an increase in stunting in Indonesian toddlers.

Clean water does not have a relationship with the occurrence of stunting in Jombang Regency. In this study, nearly all mothers of toddlers use well water or borehole water for daily activities such as bathing, washing, and others. Additionally, this groundwater is also consumed by the mothers and their families, but it is boiled until it is cooked before consumption. Some filter the water, while others allow it to settle first. Other sources of

drinking water include refillable water bottles and gallon water. This finding is consistent with the research by Febrianti (2021), which concluded that there is no relationship between the availability of clean water facilities in healthy homes and the occurrence of stunting.

CONCLUSION

The results show that environmental sanitation is one of the key factors contributing to stunting in Jombang district. Therefore, several applicable steps are recommended to address this issue. First, the Jombang district government needs to improve access to proper and safe sanitation facilities, such as the provision of healthy latrines and standardized waste disposal facilities. Second, conduct regular education programs to mothers of children under five and communities in Jombang district on the importance of environmental hygiene and good sanitation practices, such as washing hands with soap and managing safe drinking water. Third, encourage collaboration between the Jombang Health Office, puskesmas, and health cadres to monitor and support families with children under five, especially in vulnerable areas. Fourth, community-based interventions are proposed to increase community awareness and empowerment in maintaining a healthy environment, to break the cycle of stunting in Jombang district.

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REFERENCE

- Adriany, F., et al. (2021). Hubungan sanitasi lingkungan dan pengetahuan dengan kejadian stunting pada balita di wilayah Puskesmas Rambah. *Jurnal Kesehatan Global*, 4(1), 17–25. <https://doi.org/10.33085/jkg.v4i1.4767>
- Apriluana, G., & Fikawati, S. (2018). Analisis faktor-faktor risiko terhadap kejadian stunting pada balita (0-59 bulan) di negara berkembang dan Asia Tenggara. *Media Litbangkes*, 28(4), 247–256. <https://ejournal2.litbang.kemkes.go.id/index.php/mpk/article/view/472/537>
- Fufa, D. A. (2022). Determinants of stunting in children under five years in Dibate district of Ethiopia: A case-control study. *Human Nutrition and Metabolism*, 30, 200162. <https://doi.org/10.1016/j.hnm.2022.200162>
- Irianti, S., et al. (2019). The role of drinking water source, sanitation, and solid waste management in reducing childhood stunting in Indonesia. *IOP Conference Series: Earth and Environmental Science*, 344(1). <https://doi.org/10.1088/1755-1315/344/1/012009>
- Kementerian Kesehatan Republik Indonesia. (2018). Situasi balita pendek (stunting) di

- Indonesia. Jakarta: Pusat Data dan Informasi Kementerian Kesehatan Republik Indonesia.
- Kemendes RI. (2022). Buku Saku Hasil Survei Gizi Indonesia (SSGI) Tahun 2022 (Pocket Book of Indonesian Nutrition Survey Results (SSGI) for 2022). Jakarta: Badan Kebijakan Pembangunan Kesehatan.
- Maulina, R. (2021). Hubungan pengetahuan, sikap dan perilaku ibu balita terhadap stunting di Kecamatan Kuta Baro. *Jurnal Ilmu Kedokteran dan Kesehatan*, 8(1), 19–27.
- Rah, J. H., et al. (2015). Household sanitation and personal hygiene practices are associated with child stunting in rural India: A cross-sectional analysis of surveys. *BMJ Open*, 5(2). <https://doi.org/10.1136/bmjopen-2014-005180>
- Rahayu, B., & Darmawan, S. (2019). Hubungan karakteristik balita, orang tua, higiene dan sanitasi lingkungan terhadap stunting pada balita. *Binawan Student Journal*, 1(1), 22–27.
- Torlesse, H., et al. (2016). Determinants of stunting in Indonesian children: Evidence from a cross-sectional survey indicate a prominent role for the water, sanitation, and hygiene sector in stunting reduction. *BMC Public Health*, 16(1), 1–12. <https://doi.org/10.1186/s12889-016-3339-8>
- WHO. (2022). World health statistics: Monitoring health of the SDGs. 1–131. [Internet].