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#26138 REVIEW

SUMMARY   REVIEW   EDITING

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Authors	Ida Bagus Eka Utama Wija, Wiradi Suryanegara, Louisa Ariantje Langi, Keswari Aji Patriawati ✉
Title	Demographic Characteristics, Knowledge, Attitudes, and Actions of Mothers Related to Nutrition among Stunting Toddlers
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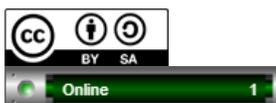
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Demographic Characteristics, Knowledge, Attitudes, And Actions Of Mothers Related to Nutrition in Stunting Toddlers

Abstract

Stunting is a chronic global nutritional issue that significantly affects physical growth, cognitive development, and the quality of life for children. Indonesia is one of the countries with a high prevalence of stunting, particularly in densely populated urban areas, such as Bogor. The causes of stunting are multifactorial, including socioeconomic conditions, maternal nutrition knowledge, parenting patterns, sanitation, and access to health services. Therefore, it is crucial to understand the characteristics of affected mothers and toddlers so that interventions can be more targeted.

This study aims to describe the demographic characteristics of mothers, their level of knowledge, attitudes, and practices related to nutrition, as well as the incidence of stunting in toddlers in Gunung Batu Village, Bogor City. This study used a quantitative, descriptive, observational design. The study population consisted of all mothers with stunted toddlers aged 6–59 months who were registered at the Gunung Batu Community Health Center in February 2025. A total of 54 respondents were recruited using a total sampling technique. Primary data were collected using a questionnaire to assess mothers' knowledge, attitudes, and practices related to nutrition, while secondary data were obtained from the Community Health Center records. Data analysis was conducted descriptively using frequency distribution and percentages. The results showed that the average maternal age was 30.69 years, with the majority having a high school/vocational high school education (42.59%) and working as housewives (72.22%). Family income levels varied, reflecting the heterogeneity of respondents' economic conditions. All toddlers (N = 54) in this study were diagnosed with stunted growth. The level of maternal knowledge and practices regarding toddler nutrition was categorized as "fairly good" (96.3%), while the attitudes of all respondents (100%) were in the "fairly good" category. Despite adequate maternal knowledge, attitudes, and practices, the prevalence of stunting remained high, indicating the presence of other risk factors beyond maternal cognitive aspects, such as economic limitations, sanitation quality, and access to health services. It was concluded that stunting among toddlers in Gunung Batu Village, Bogor City, remains high despite the majority of mothers having adequate knowledge, attitudes, and practices regarding nutrition. This suggests that stunting is a multifaceted issue influenced not only by mothers' understanding and practices, but also by socioeconomic conditions, environmental sanitation, and the availability of health services. Holistic, cross-sectoral, and sustainable interventions are necessary to reduce stunting rates, including improvements in nutritional quality, sanitation, and family economic empowerment.

Keyword: Stunting, Knowledge, Attitude, Practice, Mother, Toddler, Demography
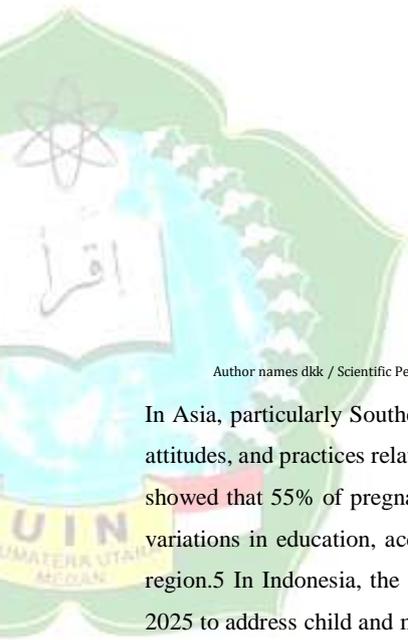
INTRODUCTION

The nutritional status of toddlers, particularly stunting, is a key indicator for assessing the health and development of toddlers globally. Stunting represents a chronic failure to thrive, as measured by a Z-score that reflects both acute and chronic nutritional problems in toddlers. According to the 2024 Joint Child Malnutrition Estimates (JME) report, an estimated 148

million toddlers (22.3%) worldwide are stunted (Organization 2020). This indicates that stunting remains an unresolved problem, particularly in low- and middle-income countries, and has the potential to impact the long-term physical and cognitive development of young people. (Organization 2020). Asia, as the region with the largest child population in the world, continues to contribute significantly to the global burden of malnutrition, particularly stunting. According to the 2024 JME report, Asia ranks first in the absolute number of stunted toddlers, at approximately 84.5 million children, accounting for more than 57% of the total global stunting cases. South Asia, particularly India, Pakistan, and Bangladesh, accounts for the most significant number, although Southeast Asia, such as Indonesia, the Philippines, and Myanmar, also contribute significantly. This indicates that the issue of toddler nutrition in Asia remains a significant challenge that necessitates cross-sectoral interventions, including enhancing nutritional knowledge and implementing actions at the household level (Organization 2020).

The nutritional status of toddlers, particularly stunting, remains a serious challenge to health development in Indonesia. According to the 2024 Indonesian Nutritional Status Survey (SSGI), the national prevalence of stunting decreased to 19.8%, equivalent to approximately 4,482,340 toddlers, from 21.5% in 2023. This decline represents progress, but remains above the national target of 14% set in the 2020–2024 National Medium-Term Development Plan (RPJMN) (Anon 2025d). In 2024, the prevalence of stunting in West Java Province experienced a significant decline, reaching 15.9% from 21.7% in 2023. This decline reflects the regional government's intensive efforts to address chronic malnutrition in toddlers. However, this figure remains above the national target of 14% set for 2024. Several regencies/cities in West Java show a high prevalence of stunting, such as Bandung Regency and Bogor Regency, while Bekasi City and Depok City recorded lower rates (Nurulliah 2025).

In Bogor Regency, according to the 2024 Indonesian Nutrition Status Survey (SSGI) released by GoodStats, the prevalence of stunting decreased sharply from 27.6% in the previous year to 7.59% in 2024. This significant decline demonstrates the success of various strategic interventions implemented by the regional government, such as the Stunting Prevention Home Program (Ceting) and the foster care movement for stunted children (Data 2025). Globally, good nutrition practices among pregnant women remain low. A 2024 meta-analysis in Ethiopia showed that only 34% of pregnant women had good nutrition practices. This figure is lower than Malaysia (55%) and Iran (70%), but higher than China (16.8%) and Rwanda (28.2%). Factors such as culture, education, and access to information significantly influence mothers' knowledge, attitudes, and practices (Bayked et al. 2024).
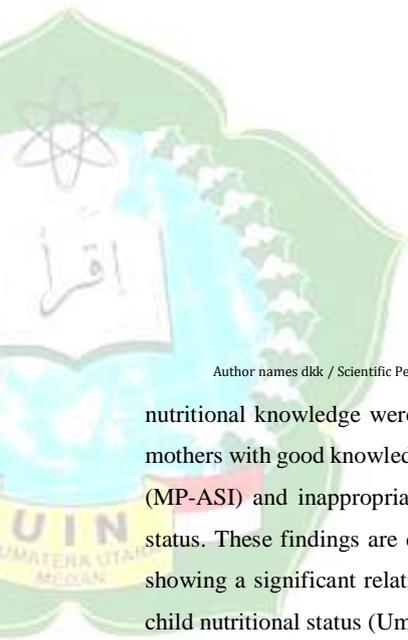
In Asia, particularly Southeast Asia, specific data on the prevalence of maternal knowledge, attitudes, and practices related to child nutrition are still limited. However, a study in Malaysia showed that 55% of pregnant women had good nutritional practices. This difference reflects variations in education, access to healthcare, and nutrition intervention programs across the region.5 In Indonesia, the government launched the Free Nutritional Meal Program in early 2025 to address child and maternal malnutrition. The program aims to provide nutritious food to nearly 90 million children and pregnant women, with an initial target of reaching 19.5 million recipients by 2025. Although specific data on the prevalence of maternal knowledge, attitudes, and practices nationally are not yet available, this initiative demonstrates the government's efforts to improve nutritional knowledge and practices among mothers (Anon 2025b).

In West Java, the prevalence of stunting in 2024 was recorded at 21.7%. The West Java Food Security and Animal Husbandry Agency (DKPP) is focusing on improving family nutrition through the Healthy Family Members Sustainable Yard (ASRI) program, which involves Women Farmers Groups to promote proper eating patterns and meet daily nutritional needs. Although specific data on mothers' knowledge, attitudes, and practices are not yet available, this effort demonstrates the region's commitment to improving nutritional knowledge and practices at the family level (Anon 2025a). In Bogor Regency, data from the 2024 Indonesian Nutrition Status Survey (SSGI) showed a decline in stunting prevalence to 7.59% from 27.6% the previous year. This decline is attributed to various strategic programs such as the Stunting Prevention House (Ceting) and the foster parent movement for stunted children. Although specific data on mothers' knowledge, attitudes, and practices are not yet available, this success reflects an increase in nutritional knowledge and practices among mothers (Anon 2025c).

Global studies show that low maternal knowledge, attitudes, and practices are closely linked to the increasing prevalence of stunting in toddlers. A meta-analysis in 14 developing countries found that toddlers born to mothers with low nutritional knowledge were 2.4 times more likely to experience stunting than toddlers born to mothers with good knowledge. Lack of understanding about complementary feeding (MP-ASI), feeding frequency, and food variety are the main causes of nutritional status disorders, particularly stunting. These findings confirm that maternal knowledge, attitudes, and practices play a crucial role in determining the nutritional status of toddlers globally In Southeast Asia, several studies have shown that maternal knowledge, attitudes, and practices significantly contribute to high rates of stunting in children. Data from 2024 in Malaysia reported that children born to mothers with poor

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nutritional knowledge were up to twice as likely to experience stunting as children born to mothers with good knowledge. Factors such as lack of education about complementary feeding (MP-ASI) and inappropriate consumption patterns also contribute to poor child nutritional status. These findings are consistent with data from several other Southeast Asian countries showing a significant relationship between maternal knowledge, attitudes, and practices and child nutritional status (Umwali 2020).

In West Java, the prevalence of stunting among toddlers, which reached 21.7% in 2024, is also linked to mothers' low nutritional knowledge and practices. The ASRI program, run by the West Java Food Security and Animal Husbandry Agency, aims to improve mothers' knowledge, attitudes, and practices through education and coaching of women's farmer groups. Local research shows that children of mothers with good nutritional knowledge have a lower risk of stunting, making educational interventions a primary focus. These efforts are expected to improve maternal nutritional practices and reduce the prevalence of stunting in the province (Anon 2025a). Bogor Regency recorded a decline in stunting prevalence to 7.59% in 2024, influenced by improvements in maternal nutritional knowledge and practices. The Stunting Prevention Home (Ceting) program and the stunting foster parent movement specifically target improving mothers' knowledge, attitudes, and practices regarding child nutrition. Program evaluations show that children of mothers who receive nutrition education have better nutritional status than those who do not. This underscores the central role of mothers' knowledge, attitudes, and practices in improving children's nutritional status at the district level.8 The purpose of this study was to determine the description of mothers' knowledge, attitudes, and actions regarding nutrition, as well as the demographic characteristics of mothers and toddlers who experienced stunting in Gunung Batu Village, Bogor City, for the period February 2025.

METHODS

This study is a quantitative descriptive observational study. It aims to describe the demographic characteristics of mothers, their knowledge, attitudes, and practices regarding nutrition, and the incidence of stunting in toddlers in Gunung Batu Village, Bogor City, during February 2025.

Commented [RS4]: Population/sample: 'total sampling' N=54 from BNBA, preferably with an explanation of what BNBA is (what does it stand for, how is stunting status determined, source and date of measurement, WHO 2006/2007 standards, measurement tools?). Also include the inclusion/exclusion criteria in this study.
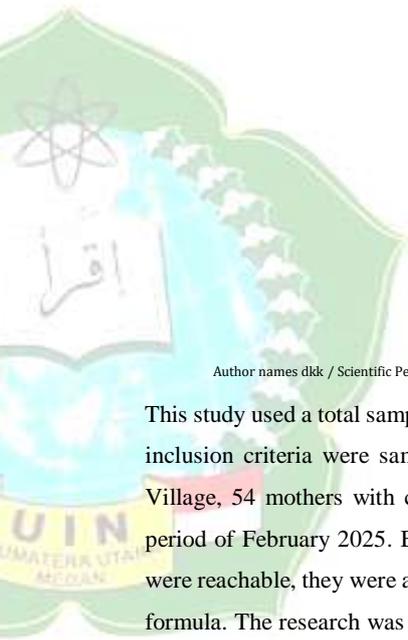
This study used a total sampling technique, namely all members of the population who met the inclusion criteria were sampled and based on secondary data (BNBA) from Gunung Batu Village, 54 mothers with children aged 6-59 months had a stunted nutritional status in the period of February 2025. Because the target population was relatively small and all of them were reachable, they were all included as research samples, without using a sample calculation formula. The research was conducted in Gunung Batu Village, Bogor Regency, West Java in June 2025.

The research instrument was a questionnaire containing questions about knowledge (14 items using the Guttman scale), attitudes (15 items using the Likert scale), and actions (12 items using the Guttman scale). This questionnaire was adapted from previous research that had been tested for validity and reliability. This study did not conduct repeated validity and reliability tests on the questionnaire. Descriptive statistical analysis will be used to describe the demographic characteristics of respondents (maternal age, education, occupation, income, number of children, age of children, and caregiver), child nutritional status (Z-score), and the level of knowledge, attitudes, and actions of mothers. Data will be presented in the form of frequency distribution, percentage, average (mean), median, mode, and standard deviation according to the type of data. This research will be submitted for ethical approval from the Research Ethics Committee of the Faculty of Medicine, Christian University of Indonesia.

RESULTS

Table 1 Demographic Characteristics of Respondents Based on Mother's Age

Descriptive Statistics	N
Mean	30.69

> **Commented [RS5]:** 1.Reconsider Categorization: Instead of using the ambiguous "Good Enough" / "Poor" categories, simply report the average scores (Mean, SD) for each variable (Knowledge, Attitude, Action) separately.
> 2. If categories must be used: The author is required to justify why the 60% threshold is used and recognized as "quite good."

Median	29
Mode	28, 36, 40
Minimum	22
Maximum	46
Total Data	54

Based on the collected data, the distribution of maternal ages shows a fairly varied range. The average maternal age was 30.69 years, with a median of 29 years. This indicates that most mothers were in the young to early adult age group. The mode of the data, the most frequently occurring ages, was 28, 36, and 40 years. The youngest recorded maternal age was 22 years, while the oldest was 46 years, for a total of 54 age data points collected.

Table 2 Demographic Characteristics of Respondents Based on Mother's Education

Descriptive Statistics	Frequency	Percentage
Senior High School	23	42.59
Primary School	15	27.78
Junior High School	13	24.07
Higher Education	3	5.55
Total Data	54	100

The final educational profile of the mothers in this sample shows that the majority had a secondary education background. High school/vocational high school education was the highest level of education most commonly held by mothers, accounting for 42.59% of the total respondents (23 people). This was followed by elementary school education at 27.78% (15 people) and junior high school at 24.07% (13 people). A further 5.55% (3 people) had a higher education.

Table 3 Demographic Characteristics of Respondents Based on Mother's Occupation

Descriptive Statistics	Frequency	Percentage
Housewife	39	72.22
Trader	12	22.22
Seblak Seller	1	1.85
Teacher or Lecturer	1	1.85
Laborer	1	1.85
Total Data	54	100

A review of mothers' occupations shows a dominant role as housewives. 72.22% of respondents (39 people) work as housewives. Furthermore, a significant proportion of other occupations are traders, accounting for 22.22% (12 people). Other occupations, such as selling seblak (spicy rice cakes), teaching or lecturers, and laborers, were each represented by only one respondent, representing 1.85% of each category.

Table 4 Demographic Characteristics of Respondents Based on Monthly Family Income

Descriptive Statistics	Frequency	Percentage
≥ Rp 3.000.000	18	33.33
Rp 1.000.000 - < Rp 2.000.000	17	31.48
Rp 2.000.000 - < Rp 3.000.000	17	31.48
< Rp 1.000.000	2	3.70
Total Data	54	100

Analysis of monthly family income shows that income distribution is relatively even across several categories. The income category "≥ Rp 3,000,000" is the largest group, covering 33.33% (18 families). The other two income categories, namely "Rp 1,000,000 - < Rp 2,000,000" and "Rp 2,000,000 - < Rp 3,000,000", have identical proportions, each at 31.48% (17 families). Meanwhile, only a small portion, namely 3.70% (2 families), have incomes below Rp 1,000,000.

Table 5 Descriptive Statistics of Research Variables

Variable	N	Average (Mean)	Deviation Standar
Knowledge, Attitudes, and Actions of Mothers regarding Nutrition	54	57.4630	3.94162

> **Commented [RS6]:** Delete Table 5 (Combined Scores). Analyze Knowledge, Attitudes, and Actions separately. All three are different constructs and should not be summed raw.

Based on Table 5, the combined score of mothers' knowledge, attitudes, and actions related to nutrition averaged 57.4630, ranging from 46.00 to 65.00. The standard deviation of 3.94162 indicates relatively small variation in this combined score among respondents. Based on the operational definition (which refers to the Khomsan criteria, 2021), the maximum combined total score is 86. With an average combined score of 57.4630, the percentage is approximately 66.82%. Referring to the categorization criteria ("Good Enough: ≥60%, Poor: <60%"), the average combined score of 66.82% falls into the 'Good Enough' category. This indicates that, in general, the level of knowledge, attitudes, and actions of mothers in Gunung Batu Village is at an adequate level in managing nutrition and child growth and development to prevent stunting.

Table 6 Distribution of Mothers' Knowledge Level Regarding Stunting

Knowledge Level	Frequency	Percentage
Fair (≥ 9 score)	52	96.3
Poor (≤ 8 score)	2	3.7
Total Data	54	100

Note: Knowledge category criteria (Max score 14): Fairly Good ≥60 (score ≥8.4, rounded up to ≥9); Poor <60 (score ≤8)

Based on Table 6, the majority of mothers (96.3%) had a "fairly good" level of knowledge about stunting. This indicates that almost all respondents had an adequate understanding of stunting, including its definition, causes, characteristics, impacts, and prevention efforts.

Table 7 Distribution of Mothers' Attitude Levels Regarding Stunting

Attitute Level	Frequency	Percentage
Fair (≥ 36 score)	54	100
Poor (≤ 35 score)	0	0
Total Data	54	100

Note: Attitude category criteria (Max score 60): Fair ≥60 (score ≥36); Poor <60 (score ≤35)

Based on Table 7, all mothers (100.0%) showed a 'Quite Good' attitude toward stunting prevention efforts. This indicates a positive tendency and willingness on the part of mothers to support practices related to child nutritional health.

Table 8 Distribution of Maternal Action Levels in Stunting Prevention

Practice/Action Level	Frequency	Percentage
Fair (≥ 8 score)	52	96.3
Poor (≤ 7 score)	2	3.7
Total Data	54	100

Note: Action category criteria (Max score 12): Fair ≥60 (score ≥7.2, rounded to ≥8); Poor <60 (score ≤7).

Based on Table 8, the majority of mothers (96.3%) demonstrated 'Quite Good' practices or actions in stunting prevention efforts. This reflects that most mothers have implemented concrete steps to support stunting prevention in toddlers.

DISCUSSION

This study reports that the average age of mothers was 30.69 years, most had a high school/vocational high school education, and the majority were housewives. This finding aligns with many studies in Indonesia: for example, in a study in Kenagarian Sijunjung, respondents were also predominantly high school-educated and housewives (Marzuki and Tahrim 2024; Saputra et al. 2023) Similarly, a study by the Journal of Nursing Science Research found that most mothers (28 out of 30 respondents, or 93.3%) had good knowledge, which likely correlates with their relatively adequate educational background (Siagian et al. 2024). Maternal education is often closely related to their capacity to process nutritional information, their ability to seek information sources, and their adaptability to health interventions. Research by Ramadhan et al. (2024) in Aceh showed that mothers with higher levels of education tend to

Commented [RS7]: Strengthen the 'key findings' paragraph. The literature review you describe should explain the associations between relevant variables/provide a more in-depth narrative. It is advisable to specify local recommendations for this research.

have better knowledge and practices of nutritional care, which has an impact on reducing the prevalence of stunting (Ahmad, Utomo, and Ramadhan 2021). However, despite the relatively good educational background of the respondents in your study, the prevalence of stunting remains high (100% of the sample). This situation suggests that education alone while important is not sufficient to ensure a reduction in stunting if other structural factors remain unaddressed.

This descriptive study shows that the majority of mothers have a "fair" level of knowledge, attitudes, and practices regarding stunting prevention. However, it should be noted that all toddlers in this study sample were diagnosed with stunting (Chusniah Rachmawati 2019). This phenomenon indicates that the stunting problem in Gunung Batu Village is multifactorial, not solely caused by a lack of maternal knowledge or attitudes.

Various other determinants, such as family socioeconomic factors, access to nutritious food, environmental sanitation, and comprehensive health services, likely also play a role in stunting. This aligns with research by (Aramico and Siketang 2017) which states that stunting is caused by various interacting factors, not solely the result of poor nutritional intake in pregnant women or children. Therefore, this descriptive data highlights the need for a more holistic nutritional intervention approach involving various sectors to comprehensively address the factors causing stunting in Gunung Batu Village.

While maternal knowledge and attitudes are crucial, these findings reinforce that they are only one component in stunting prevention efforts. Future intervention programs should consider other factors that may be key barriers to addressing stunting in this community, even when maternal knowledge and practice levels are adequate.
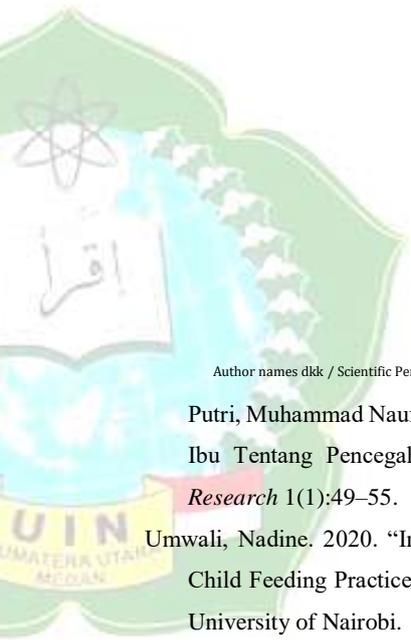
CONCLUSIONS

This study shows that the majority of mothers of toddlers in Gunung Batu Village are around 30 years old, have a high school/vocational high school education, and are housewives, with knowledge, attitudes, and practices related to nutrition in the fairly good category. However, all toddler respondents experienced stunting, confirming that this problem is multifactorial. Socioeconomic factors, sanitation, access to food and health services, and biological conditions such as low birth weight (LBW) contribute significantly to stunting. Therefore, addressing stunting requires holistic interventions that include nutrition education, environmental improvement, family economic empowerment, and sustainable health services.

REFERENCE

> **Commented [RS8]:** The conclusion stating that "socioeconomic factors, sanitation, food access... also contribute significantly to stunting" is confusing. This study does not measure those factors. The researchers did not collect data on the respondents' sanitation or food access. Therefore, the researchers cannot conclude that these factors contributed significantly to this study. This is speculation based on other literature, not a conclusion from this study.

> **Commented [RS9]:** Adjust to APA 7 style. Ensure that every citation in the text is in the reference list and vice versa (in-text vs reference list synchronisation). Include the DOI if available and the date of access for web sources/policy news.

Ahmad, Fakhrunnisa, Budi Utomo, and Noor Aulia Ramadhan. 2021. "Pelaksanaan Inisiasi Menyusu Dini Berdasarkan Jenis Persalinan Di Indonesia: Analisis SDKI 2017." *Jurnal Kesehatan Reproduksi* 8(2).

Anon. 2025a. "DKPP Jabar Fokus Benahi Gizi Keluarga Tekan Prevalensi Stunting - ANTARA News."

Anon. 2025b. "Indonesia Launches Free Meals Program to Feed Children and Pregnant Women to Fight Malnutrition | AP News."

Anon. 2025c. "Portal Resmi Kabupaten Bogor."

Anon. 2025d. "Prevalensi Stunting Tahun 2024 Turun Jadi 19,8 Persen, Pemerintah Terus Dorong Penguatan Gizi Nasional | Kementerian Koordinator Bidang Pembangunan Manusia Dan Kebudayaan."

Aramico, Basri, and Nihan Wati Siketang. 2017. "Hubungan Asupan Gizi, Aktivitas Fisik, Menstruasi Dan Anemia Dengan Status Gizi Pada Siswi Madrasah Aliyah Negeri (MAN) Simpang Kiri Kota Subulussalam." *Sel Jurnal Penelitian Kesehatan* 4(1):21–30.

Bayked, Ewunetie Mekashaw, Ebrahim M. Yimer, Tiruset Gelaw, Abdu Seid Mohammed, and Nigusie Abebaw Mekonen. 2024. "Dietary Knowledge, Attitude, Practice, and Associated Factors among Pregnant Mothers in Ethiopia: A Systematic Review and Meta-Analysis." *Frontiers in Public Health* 12:1393764.

Chusniah Rachmawati, Windi. 2019. "Promosi Kesehatan Dan Ilmu Perilaku."

Data, GoodStats. 2025. "Masih Jauh dari Target, Prevalensi Stunting di Jawa Barat Melebihi 20%." *GoodStats Data*.

Marzuki, Dian Saputra, and Nurmutmainna Tahrim. 2024. *Derajat Kesehatan Masyarakat*. Uwais Inspirasi Indonesia.

Nurulliah, Novianti. 2025. "Prevalensi Stunting di Jawa Barat Turun." *Pikiran Rakyat Koran*.

Organization, World Health. 2020. "Levels and Trends in Child Malnutrition: UNICEF/WHO/The World Bank Group Joint Child Malnutrition Estimates: Key Findings of the 2020 Edition." in *Levels and trends in child malnutrition: UNICEF/WHO/The World Bank Group joint child malnutrition estimates: key findings of the 2020 edition*.

Saputra, Muhammad Rizki, Rifkind Malik, Siska Ferilda, Sri Wahyuni, and Nurwiyeni Nurwiyeni. 2023. "GAMBARAN TINGKAT PENGETAHUAN, SIKAP, DAN TINDAKAN IBU TENTANG STUNTING DI KENAGARIAN SIJUNJUNG." *Jurnal Kesehatan Saintika Meditory* 6(1):315–24.

Siagian, Regina, Firman Sekozen Sihombing, Ripandi Siregar, Haryanti Sibuea, Khairun Nisa

Putri, Muhammad Naufal Arif Lubis, and Regina Oktavia. 2024. "Gambaran Pengetahuan Ibu Tentang Pencegahan Stunting Pada Anak Balita." *Journal Of Nursing Science Research* 1(1):49–55.

Umwali, Nadine. 2020. "Influence of Maternal Nutrition Knowledge on Infant and Young Child Feeding Practices and Nutrition Status of Children in Musanze District, Rwanda." University of Nairobi.

Demographic Characteristics, Knowledge, Attitudes, And Actions Of Mothers Related to Nutrition in Stunting Toddlers

Abstract

Stunting is a chronic global nutritional issue that significantly affects physical growth, cognitive development, and the quality of life for children. Indonesia is one of the countries with a high prevalence of stunting, particularly in densely populated urban areas, such as Bogor. The causes of stunting are multifactorial, including socioeconomic conditions, maternal nutrition knowledge, parenting patterns, sanitation, and access to health services. Therefore, it is crucial to understand the characteristics of affected mothers and toddlers so that interventions can be more targeted.

This study aims to describe the demographic characteristics of mothers, their level of knowledge, attitudes, and practices related to nutrition, as well as the incidence of stunting in toddlers in Gunung Batu Village, Bogor City. This study used a quantitative, descriptive, observational design. The study population consisted of all mothers with stunted toddlers aged 6–59 months who were registered at the Gunung Batu Community Health Center in February 2025. A total of 54 respondents were recruited using a total sampling technique. Primary data were collected using a questionnaire to assess mothers' knowledge, attitudes, and practices related to nutrition, while secondary data were obtained from the Community Health Center records. Data analysis was conducted descriptively using frequency distribution and percentages. The results showed that the average maternal age was 30.69 years, with the majority having a high school/vocational high school education (42.59%) and working as housewives (72.22%). Family income levels varied, reflecting the heterogeneity of respondents' economic conditions. All toddlers (N = 54) in this study were diagnosed with stunted growth. The level of maternal knowledge and practices regarding toddler nutrition was categorized as "fairly good" (96.3%), while the attitudes of all respondents (100%) were in the "fairly good" category. Despite adequate maternal knowledge, attitudes, and practices, the prevalence of stunting remained high, indicating the presence of other risk factors beyond maternal cognitive aspects, such as economic limitations, sanitation quality, and access to health services. It was concluded that stunting among toddlers in Gunung Batu Village, Bogor City, remains high despite the majority of mothers having adequate knowledge, attitudes, and practices regarding nutrition. This suggests that stunting is a multifaceted issue influenced not only by mothers' understanding and practices, but also by socioeconomic conditions, environmental sanitation, and the availability of health services. Holistic, cross-sectoral, and sustainable interventions are necessary to reduce stunting rates, including improvements in nutritional quality, sanitation, and family economic empowerment.

Keyword: Stunting, Knowledge, Attitude, Practice, Mother, Toddler, Demography

INTRODUCTION

The nutritional status of toddlers, particularly stunting, is a key indicator for assessing the health and development of toddlers globally. Stunting represents a chronic failure to thrive, as measured by a Z-score that reflects both acute and chronic nutritional problems in toddlers. According to the 2024 Joint Child Malnutrition Estimates (JME) report, an estimated 148
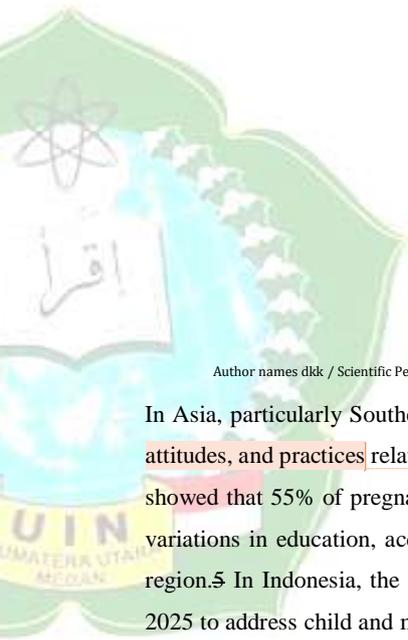
million toddlers (22.3%) worldwide are stunted (Organization 2020). This indicates that stunting remains an unresolved problem, particularly in low- and middle-income countries, and has the potential to impact the long-term physical and cognitive development of young people. (Organization 2020). Asia, as the region with the largest child population in the world, continues to contribute significantly to the global burden of malnutrition, particularly stunting. According to the 2024 JME report, Asia ranks first in the absolute number of stunted toddlers, at approximately 84.5 million children, accounting for more than 57% of the total global stunting cases. South Asia, particularly India, Pakistan, and Bangladesh, accounts for the most significant number, although Southeast Asia, such as Indonesia, the Philippines, and Myanmar, also contribute significantly. This indicates that the issue of toddler nutrition in Asia remains a significant challenge that necessitates cross-sectoral interventions, including enhancing nutritional knowledge and implementing actions at the household level (Organization 2020).

The nutritional status of toddlers, particularly stunting, remains a serious challenge to health development in Indonesia. According to the 2024 Indonesian Nutritional Status Survey (SSGI), the national prevalence of stunting decreased to 19.8%, equivalent to approximately 4,482,340 toddlers, from 21.5% in 2023. This decline represents progress, but remains above the national target of 14% set in the 2020–2024 National Medium-Term Development Plan (RPJMN) (Anon 2025d). In 2024, the prevalence of stunting in West Java Province experienced a significant decline, reaching 15.9% from 21.7% in 2023. This decline reflects the regional government's intensive efforts to address chronic malnutrition in toddlers. However, this figure remains above the national target of 14% set for 2024. Several regencies/cities in West Java show a high prevalence of stunting, such as Bandung Regency and Bogor Regency, while Bekasi City and Depok City recorded lower rates (Nurulliah 2025).

In Bogor Regency, according to the 2024 Indonesian Nutrition Status Survey (SSGI) released by GoodStats, the prevalence of stunting decreased sharply from 27.6% in the previous year to 7.59% in 2024. This significant decline demonstrates the success of various strategic interventions implemented by the regional government, such as the Stunting Prevention Home Program (Ceting) and the foster care movement for stunted children (Data 2025). Globally, good nutrition practices among pregnant women remain low. A 2024 meta-analysis in Ethiopia showed that only 34% of pregnant women had good nutrition practices. This figure is lower than Malaysia (55%) and Iran (70%), but higher than China (16.8%) and Rwanda (28.2%). Factors such as culture, education, and access to information significantly influence mothers' knowledge, attitudes, and practices (Bayked et al. 2024).

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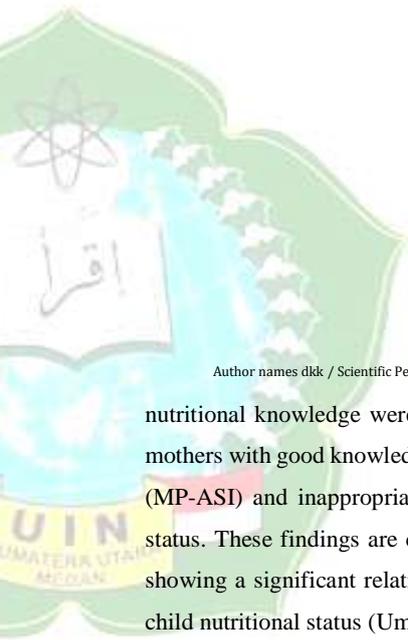Commented [AD6]: Better to use Indonesian

In Asia, particularly Southeast Asia, specific data on the prevalence of maternal knowledge, attitudes, and practices related to child nutrition are still limited. However, a study in Malaysia showed that 55% of pregnant women had good nutritional practices. This difference reflects variations in education, access to healthcare, and nutrition intervention programs across the region.5 In Indonesia, the government launched the Free Nutritional Meal Program in early 2025 to address child and maternal malnutrition. The program aims to provide nutritious food to nearly 90 million children and pregnant women, with an initial target of reaching 19.5 million recipients by 2025. Although specific data on the prevalence of maternal knowledge, attitudes, and practices nationally are not yet available, this initiative demonstrates the government's efforts to improve nutritional knowledge and practices among mothers (Anon 2025b).

In West Java, the prevalence of stunting in 2024 was recorded at 21.7%. The West Java Food Security and Animal Husbandry Agency (DKPP) is focusing on improving family nutrition through the Healthy Family Members Sustainable Yard (ASRI) program, which involves Women Farmers Groups to promote proper eating patterns and meet daily nutritional needs. Although specific data on mothers' knowledge, attitudes, and practices are not yet available, this effort demonstrates the region's commitment to improving nutritional knowledge and practices at the family level (Anon 2025a). In Bogor Regency, data from the 2024 Indonesian Nutrition Status Survey (SSGI) showed a decline in stunting prevalence to 7.59% from 27.6% the previous year. This decline is attributed to various strategic programs such as the Stunting Prevention House (Ceting) and the foster parent movement for stunted children. Although specific data on mothers' knowledge, attitudes, and practices are not yet available, this success reflects an increase in nutritional knowledge and practices among mothers (Anon 2025c).

Global studies show that low maternal knowledge, attitudes, and practices are closely linked to the increasing prevalence of stunting in toddlers. A meta-analysis in 14 developing countries found that toddlers born to mothers with low nutritional knowledge were 2.4 times more likely to experience stunting than toddlers born to mothers with good knowledge. Lack of understanding about complementary feeding (MP-ASI), feeding frequency, and food variety are the main causes of nutritional status disorders, particularly stunting. These findings confirm that maternal knowledge, attitudes, and practices play a crucial role in determining the nutritional status of toddlers globally In Southeast Asia, several studies have shown that maternal knowledge, attitudes, and practices significantly contribute to high rates of stunting in children. Data from 2024 in Malaysia reported that children born to mothers with poor

nutritional knowledge were up to twice as likely to experience stunting as children born to mothers with good knowledge. Factors such as lack of education about complementary feeding (MP-ASI) and inappropriate consumption patterns also contribute to poor child nutritional status. These findings are consistent with data from several other Southeast Asian countries showing a significant relationship between maternal knowledge, attitudes, and practices and child nutritional status (Umwali 2020).

In West Java, the prevalence of stunting among toddlers, which reached 21.7% in 2024, is also linked to mothers' low nutritional knowledge and practices. The ASRI program, run by the West Java Food Security and Animal Husbandry Agency, aims to improve mothers' knowledge, attitudes, and practices through education and coaching of women's farmer groups. Local research shows that children of mothers with good nutritional knowledge have a lower risk of stunting, making educational interventions a primary focus. These efforts are expected to improve maternal nutritional practices and reduce the prevalence of stunting in the province (Anon 2025a). Bogor Regency recorded a decline in stunting prevalence to 7.59% in 2024, influenced by improvements in maternal nutritional knowledge and practices. The Stunting Prevention Home (Ceting) program and the stunting foster parent movement specifically target improving mothers' knowledge, attitudes, and practices regarding child nutrition. Program evaluations show that children of mothers who receive nutrition education have better nutritional status than those who do not. This underscores the central role of mothers' knowledge, attitudes, and practices in improving children's nutritional status at the district level.8 The purpose of this study was to determine the description of mothers' knowledge, attitudes, and actions regarding nutrition, as well as the demographic characteristics of mothers and toddlers who experienced stunting in Gunung Batu Village, Bogor City, for the period February 2025.
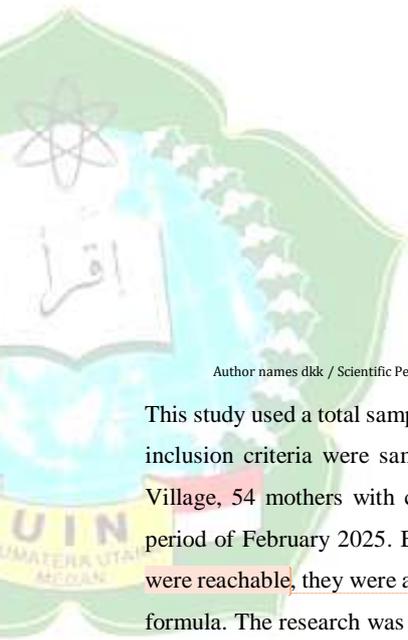
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METHODS

This study is a quantitative descriptive observational study. It aims to describe the demographic characteristics of mothers, their knowledge, attitudes, and practices regarding nutrition, and the incidence of stunting in toddlers in Gunung Batu Village, Bogor City, during February 2025.

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This study used a total sampling technique, namely all members of the population who met the inclusion criteria were sampled and based on secondary data (BNBA) from Gunung Batu Village, 54 mothers with children aged 6-59 months had a stunted nutritional status in the period of February 2025. Because the target population was relatively small and all of them were reachable, they were all included as research samples, without using a sample calculation formula. The research was conducted in Gunung Batu Village, Bogor Regency, West Java in June 2025.

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The research instrument was a questionnaire containing questions about knowledge (14 items using the Guttman scale), attitudes (15 items using the Likert scale), and actions (12 items using the Guttman scale). This questionnaire was adapted from previous research that had been tested for validity and reliability. This study did not conduct repeated validity and reliability tests on the questionnaire. Descriptive statistical analysis will be used to describe the demographic characteristics of respondents (maternal age, education, occupation, income, number of children, age of children, and caregiver), child nutritional status (Z-score), and the level of knowledge, attitudes, and actions of mothers. Data will be presented in the form of frequency distribution, percentage, average (mean), median, mode, and standard deviation according to the type of data. This research will be submitted for ethical approval from the Research Ethics Committee of the Faculty of Medicine, Christian University of Indonesia.

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RESULTS

Table 1 Demographic Characteristics of Respondents Based on Mother's Age

Descriptive Statistics	N
Mean	30.69

Median	29
Mode	28, 36, 40
Minimum	22
Maximum	46
Total Data	54

Based on the collected data, the distribution of maternal ages shows a fairly varied range. The average maternal age was 30.69 years, with a median of 29 years. This indicates that most mothers were in the young to early adult age group. The mode of the data, the most frequently occurring ages, was 28, 36, and 40 years. The youngest recorded maternal age was 22 years, while the oldest was 46 years, for a total of 54 age data points collected.

Table 2 Demographic Characteristics of Respondents Based on Mother's Education

Descriptive Statistics	Frequency	Percentage
Senior High School	23	42.59
Primary School	15	27.78
Junior High School	13	24.07
Higher Education	3	5.55
Total Data	54	100

The final educational profile of the mothers in this sample shows that the majority had a secondary education background. High school/vocational high school education was the highest level of education most commonly held by mothers, accounting for 42.59% of the total respondents (23 people). This was followed by elementary school education at 27.78% (15 people) and junior high school at 24.07% (13 people). A further 5.55% (3 people) had a higher education.

Table 3 Demographic Characteristics of Respondents Based on Mother's Occupation

Descriptive Statistics	Frequency	Percentage
Housewife	39	72.22
Trader	12	22.22
Seblak Seller	1	1.85
Teacher or Lecturer	1	1.85
Laborer	1	1.85
Total Data	54	100

A review of mothers' occupations shows a dominant role as housewives. 72.22% of respondents (39 people) work as housewives. Furthermore, a significant proportion of other occupations are traders, accounting for 22.22% (12 people). Other occupations, such as selling seblak (spicy rice cakes), teaching or lecturers, and laborers, were each represented by only one respondent, representing 1.85% of each category.

Table 4 Demographic Characteristics of Respondents Based on Monthly Family Income

Descriptive Statistics	Frequency	Percentage
≥ Rp 3.000.000	18	33.33
Rp 1.000.000 - < Rp 2.000.000	17	31.48
Rp 2.000.000 - < Rp 3.000.000	17	31.48
< Rp 1.000.000	2	3.70
Total Data	54	100

Analysis of monthly family income shows that income distribution is relatively even across several categories. The income category "≥ Rp 3,000,000" is the largest group, covering 33.33% (18 families). The other two income categories, namely "Rp 1,000,000 - < Rp 2,000,000" and "Rp 2,000,000 - < Rp 3,000,000", have identical proportions, each at 31.48% (17 families). Meanwhile, only a small portion, namely 3.70% (2 families), have incomes below Rp 1,000,000.

Table 5 Descriptive Statistics of Research Variables

Variable	N	Average (Mean)	Deviation Standar
Knowledge, Attitudes, and Actions of Mothers regarding Nutrition	54	57.4630	3.94162

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Based on Table 5, the combined score of mothers' knowledge, attitudes, and actions related to nutrition averaged 57.4630, ranging from 46.00 to 65.00. The standard deviation of 3.94162 indicates relatively small variation in this combined score among respondents. Based on the operational definition (which refers to the Khomsan criteria, 2021), the maximum combined total score is 86. With an average combined score of 57.4630, the percentage is approximately 66.82%. Referring to the categorization criteria ("Good Enough: ≥60%, Poor: <60%"), the average combined score of 66.82% falls into the 'Good Enough' category. This indicates that, in general, the level of knowledge, attitudes, and actions of mothers in Gunung Batu Village is at an adequate level in managing nutrition and child growth and development to prevent stunting.

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Table 6 Distribution of Mothers' Knowledge Level Regarding Stunting

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Knowledge Level	Frequency	Percentage
Fair (≥ 9 score)	52	96.3
Poor (≤ 8 score)	2	3.7
Total Data	54	100

Note: Knowledge category criteria (Max score 14): Fairly Good ≥60 (score ≥8.4, rounded up to ≥9); Poor <60 (score ≤8)

Based on Table 6, the majority of mothers (96.3%) had a "fairly good" level of knowledge about stunting. This indicates that almost all respondents had an adequate understanding of stunting, including its definition, causes, characteristics, impacts, and prevention efforts.

Table 7 Distribution of Mothers' Attitude Levels Regarding Stunting

Attitute Level	Frequency	Percentage
Fair (≥ 36 score)	54	100
Poor (≤ 35 score)	0	0
Total Data	54	100

Note: Attitude category criteria (Max score 60): Fair ≥60 (score ≥36); Poor <60 (score ≤35)

Based on Table 7, all mothers (100.0%) showed a 'Quite Good' attitude toward stunting prevention efforts. This indicates a positive tendency and willingness on the part of mothers to support practices related to child nutritional health.

Table 8 Distribution of Maternal Action Levels in Stunting Prevention

Practice/Action Level	Frequency	Percentage
Fair (≥ 8 score)	52	96.3
Poor (≤ 7 score)	2	3.7
Total Data	54	100

Note: Action category criteria (Max score 12): Fair ≥60 (score ≥7.2, rounded to ≥8); Poor <60 (score ≤7).

Based on Table 8, the majority of mothers (96.3%) demonstrated 'Quite Good' practices or actions in stunting prevention efforts. This reflects that most mothers have implemented concrete steps to support stunting prevention in toddlers.

DISCUSSION

This study reports that the average age of mothers was 30.69 years, most had a high school/vocational high school education, and the majority were housewives. This finding aligns with many studies in Indonesia: for example, in a study in Kenagarian Sijunjung, respondents were also predominantly high school-educated and housewives (Marzuki and Tahrim 2024; Saputra et al. 2023) Similarly, a study by the Journal of Nursing Science Research found that most mothers (28 out of 30 respondents, or 93.3%) had good knowledge, which likely correlates with their relatively adequate educational background (Siagian et al. 2024). Maternal education is often closely related to their capacity to process nutritional information, ability to seek information sources, and their adaptability to health interventions. Research by Ramadhan et al. (2024) in Aceh showed that mothers with higher levels of education tend to

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have better knowledge and practices of nutritional care, which has an impact on reducing the prevalence of stunting (Ahmad, Utomo, and Ramadhan 2021). However, despite the relatively good educational background of the respondents in your study, the prevalence of stunting remains high (100% of the sample). This situation suggests that education alone while important is not sufficient to ensure a reduction in stunting if other structural factors remain unaddressed.

This descriptive study shows that the majority of mothers have a "fair" level of knowledge, attitudes, and practices regarding stunting prevention. However, it should be noted that all toddlers in this study sample were diagnosed with stunting (Chusniah Rachmawati 2019). This phenomenon indicates that the stunting problem in Gunung Batu Village is multifactorial, not solely caused by a lack of maternal knowledge or attitudes.

Various other determinants, such as family socioeconomic factors, access to nutritious food, environmental sanitation, and comprehensive health services, likely also play a role in stunting. This aligns with research by (Aramico and Siketang 2017) which states that stunting is caused by various interacting factors, not solely the result of poor nutritional intake in pregnant women or children. Therefore, this descriptive data highlights the need for a more holistic nutritional intervention approach involving various sectors to comprehensively address the factors causing stunting in Gunung Batu Village.

While maternal knowledge and attitudes are crucial, these findings reinforce that they are only one component in stunting prevention efforts. Future intervention programs should consider other factors that may be key barriers to addressing stunting in this community, even when maternal knowledge and practice levels are adequate.
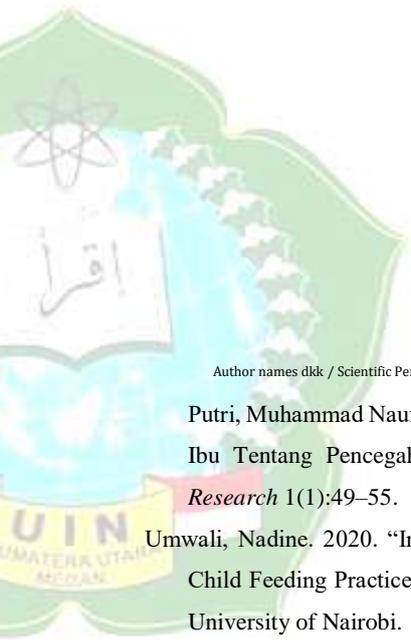
CONCLUSIONS

This study shows that the majority of mothers of toddlers in Gunung Batu Village are around 30 years old, have a high school/vocational high school education, and are housewives, with knowledge, attitudes, and practices related to nutrition in the fairly good category. However, all toddler respondents experienced stunting, confirming that this problem is multifactorial. Socioeconomic factors, sanitation, access to food and health services, and biological conditions such as low birth weight (LBW) contribute significantly to stunting. Therefore, addressing stunting requires holistic interventions that include nutrition education, environmental improvement, family economic empowerment, and sustainable health services.

REFERENCE

Ahmad, Fakhrunnisa, Budi Utomo, and Noor Aulia Ramadhan. 2021. "Pelaksanaan Inisiasi Menyusu Dini Berdasarkan Jenis Persalinan Di Indonesia: Analisis SDKI 2017." *Jurnal Kesehatan Reproduksi* 8(2).

Anon. 2025a. "DKPP Jabar Fokus Benahi Gizi Keluarga Tekan Prevalensi Stunting - ANTARA News."

Anon. 2025b. "Indonesia Launches Free Meals Program to Feed Children and Pregnant Women to Fight Malnutrition | AP News."

Anon. 2025c. "Portal Resmi Kabupaten Bogor."

Anon. 2025d. "Prevalensi Stunting Tahun 2024 Turun Jadi 19,8 Persen, Pemerintah Terus Dorong Penguatan Gizi Nasional | Kementerian Koordinator Bidang Pembangunan Manusia Dan Kebudayaan."

Aramico, Basri, and Nihan Wati Siketang. 2017. "Hubungan Asupan Gizi, Aktivitas Fisik, Menstruasi Dan Anemia Dengan Status Gizi Pada Siswi Madrasah Aliyah Negeri (MAN) Simpang Kiri Kota Subulussalam." *Sel Jurnal Penelitian Kesehatan* 4(1):21–30.

Bayked, Ewunetie Mekashaw, Ebrahim M. Yimer, Tiruset Gelaw, Abdu Seid Mohammed, and Nigusie Abebaw Mekonen. 2024. "Dietary Knowledge, Attitude, Practice, and Associated Factors among Pregnant Mothers in Ethiopia: A Systematic Review and Meta-Analysis." *Frontiers in Public Health* 12:1393764.

Chusniah Rachmawati, Windi. 2019. "Promosi Kesehatan Dan Ilmu Perilaku."

Data, GoodStats. 2025. "Masih Jauh dari Target, Prevalensi Stunting di Jawa Barat Melebihi 20%." *GoodStats Data*.

Marzuki, Dian Saputra, and Nurmutmainna Tahrim. 2024. *Derajat Kesehatan Masyarakat*. Uwais Inspirasi Indonesia.

Nurulliah, Novianti. 2025. "Prevalensi Stunting di Jawa Barat Turun." *Pikiran Rakyat Koran*.

Organization, World Health. 2020. "Levels and Trends in Child Malnutrition: UNICEF/WHO/The World Bank Group Joint Child Malnutrition Estimates: Key Findings of the 2020 Edition." in *Levels and trends in child malnutrition: UNICEF/WHO/The World Bank Group joint child malnutrition estimates: key findings of the 2020 edition*.

Saputra, Muhammad Rizki, Rifkind Malik, Siska Ferilda, Sri Wahyuni, and Nurwiyeni Nurwiyeni. 2023. "GAMBARAN TINGKAT PENGETAHUAN, SIKAP, DAN TINDAKAN IBU TENTANG STUNTING DI KENAGARIAN SIJUNJUNG." *Jurnal Kesehatan Saintika Meditory* 6(1):315–24.

Siagian, Regina, Firman Sekozen Sihombing, Ripandi Siregar, Haryanti Sibuea, Khairun Nisa

Putri, Muhammad Naufal Arif Lubis, and Regina Oktavia. 2024. "Gambaran Pengetahuan Ibu Tentang Pencegahan Stunting Pada Anak Balita." *Journal Of Nursing Science Research* 1(1):49–55.

Umwali, Nadine. 2020. "Influence of Maternal Nutrition Knowledge on Infant and Young Child Feeding Practices and Nutrition Status of Children in Musanze District, Rwanda." University of Nairobi.

FOR AUTHORS

- Title: The title is descriptive and accurate but could be more compelling. It currently lists variables rather than highlighting the key finding (e.g., "High Stunting Prevalence Despite Adequate Maternal Knowledge: A Descriptive Study in Bogor City").

- Abstract Structure: The abstract follows the standard background-methods-results-conclusion format.

- Content: It accurately summarizes the paradoxical finding: high knowledge (96.3%) yet 100% stunting prevalence. However, the conclusion that "socioeconomic conditions... influenced" the outcome is speculative because these associations were not statistically tested in the abstract.

- Problem Definition: The introduction effectively defines stunting and its global/regional prevalence using up-to-date data (2024 JME report, 2024 SSGI)

- Gap Analysis: The gap is identified as a lack of specific data on maternal KAP (Knowledge, Attitudes, Practices) in Southeast Asia

- Relevance: The introduction is well-cited and current.

- Critique: The introduction is quite repetitive regarding the link between knowledge and stunting. It cites multiple similar studies without critically synthesizing them to explain *why* knowledge might not be enough.

- Clarity: The objective is purely descriptive: "to determine the description of mothers' knowledge... and demographic characteristics"[4].

- Testability: Since this is a descriptive study without a control group, there are no formal hypotheses to test. This limits the analytical depth expected in top-tier journals.

- Study Design: The design is "quantitative descriptive observational"[5].
  - Major Limitation: The study lacks a control group. By only sampling mothers of *stunted* children[6], you cannot determine if knowledge/attitude levels differ from mothers of *normal* children. This is a fatal flaw if the goal is to find "determinants" or "influence."

- Sampling: Total sampling (N=54) is appropriate for a small population but results in a small sample size for statistical robustness

- Instruments: The use of Guttman and Likert scales adapted from valid previous research is appropriate

- Analysis: The analysis is purely univariate (frequency distribution). There is no bivariate analysis (e.g., linking income to knowledge scores), which misses an opportunity to dig deeper into the data.

- Presentation: The results are clearly presented in 8 tables.

- Findings:
  - The Paradox: The most striking finding is that 96.3% of mothers have "Fairly Good" knowledge and actions, and 100% have "Fairly Good" attitudes, yet all their children are stunted.
  - Demographics: The demographic data is clear (mostly housewives, high school educated)[11111111].

- Statistical Critique: Table 5 presents a mean score of 57.46 with a Standard Deviation of 3.9. The interpretation relies heavily on

arbitrary cut-offs ("Good Enough:). Using such binary categories often obscures nuance.

- Interpretation: The discussion correctly identifies that "education alone... is not sufficient"[14].

- Comparison: The comparison with other studies (Ramadhan et al., Siagian et al.) is relevant[15151515].

- Missing Critical Analysis: The discussion attributes the stunting to "socioeconomic factors, sanitation, etc."[16]. While plausible, your study *did not measure* sanitation or access to health services in detail, nor did it statistically link income to the outcomes. Therefore, these claims are theoretical assumptions rather than data-driven conclusions from your study.

- Justification: The conclusion that stunting is "multifactorial" is sound logic but, again, is an inference rather than a direct finding of the data collected.

- Implications: The call for "holistic, cross-sectoral" interventions is standard but appropriate.

- Minimum reference 30

Demographic Characteristics, Knowledge, Attitudes, And Actions Of Mothers Related to Nutrition in Stunting Toddlers

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Abstract

Stunting is a chronic nutritional problem that affects children's growth and development. Indonesia still has a high prevalence of stunting, including in urban areas such as Bogor. Understanding maternal characteristics and nutrition-related behaviors is important for planning appropriate interventions. This study aimed to describe maternal demographic characteristics, nutrition-related knowledge, attitudes, and practices, as well as the incidence of stunting among toddlers in Gunung Batu Village, Bogor City. A quantitative descriptive observational design was used. The study included all mothers with stunted toddlers aged 6–59 months registered at the Gunung Batu Community Health Center in February 2025. A total of 54 respondents were selected using a total sampling approach. Data on maternal knowledge, attitudes, and practices were collected using questionnaires, while toddler stunting data were obtained from health center records. Data were analyzed descriptively using frequencies and percentages. The average maternal age was 30.69 years. Most mothers had a senior high school/vocational education (42.59%) and were housewives (72.22%). All toddlers included in the study (N = 54) were classified as stunted. Most mothers had relatively good levels of knowledge and practices related to toddler nutrition (96.3%), and all respondents reported positive attitudes. Despite adequate maternal knowledge, attitudes, and practices, stunting persisted among all toddlers in this study. These findings suggest that factors beyond maternal nutrition-related behaviors may contribute to stunting and highlight the need for further studies to examine other potential contributors to support more comprehensive stunting prevention efforts.

Keyword: Stunting, Knowledge, Attitude, Practice, Mother, Toddler, Demography

INTRODUCTION

The nutritional status of toddlers, particularly stunting, is a key indicator of child health and development worldwide. Stunting reflects a condition of chronic growth failure, defined by a height-for-age z-score below −2 standard deviations, resulting from prolonged inadequate nutrition and recurrent infections. According to the Joint Child Malnutrition Estimates (JME) 2024 report, approximately 148 million toddlers (22.3%) globally were stunted. This persistent burden indicates that stunting remains a major public health challenge, particularly in low- and middle-income countries, with long-term consequences for physical growth, cognitive development, and human capital formation (UNICEF, 2015). Asia, as the most populous region globally, contributes the largest share of stunting cases. The 2024 JME report estimates that

Asia accounts for more than 57% of global stunting cases, or approximately 84.5 million children. While South Asia bears the greatest burden, Southeast Asian countries, including Indonesia, continue to contribute substantially. This situation highlights the need for comprehensive and multisectoral interventions, particularly those targeting household-level nutritional practices (UNICEF, 2015)

In Indonesia, stunting remains a national priority in health and development planning. The 2024 Indonesian Nutritional Status Survey (SSGI) reported a decline in national stunting prevalence to 19.8%, down from 21.5% in 2023. Although this reduction represents progress, the prevalence remains above the national target of 14% as stipulated in the 2020–2024 Rencana Pembangunan Jangka Menengah Nasional (RPJMN). Consequently, both central and local governments have intensified stunting reduction programs focusing on maternal and child nutrition (Kemenko, 2025). At the provincial level, West Java experienced a decline in stunting prevalence to 15.9% in 2024. Despite this improvement, the figure still exceeds the national target, and disparities persist among districts and cities. While some areas, such as Bekasi City and Depok City, reported lower prevalence, other regions, including Bogor Regency, continued to show relatively high stunting rates. Various programs have been implemented, including nutrition-sensitive interventions led by the West Java Food Security and Animal Husbandry Agency, such as the Healthy Family Members Sustainable Yard (ASRI) program, which emphasizes improving household nutrition practices (Nurulliah, 2025).

In Bogor Regency, stunting prevalence decreased markedly from 27.6% to 7.59% in 2024, attributed to strategic local initiatives such as the Stunting Prevention House (Ceting) program and the foster parent movement for stunted children. However, these data primarily reflect district-level outcomes and do not fully capture conditions in urban settings. Urban areas, including Bogor City, present distinct challenges related to population density, socioeconomic disparities, and lifestyle factors. Moreover, despite ongoing stunting prevention programs, detailed data describing maternal knowledge, attitudes, and practices in households with stunted toddlers in urban Bogor City remain limited (Rowa & Averus, 2025; Utami et al., 2024). Evidence from global and regional studies consistently demonstrates that maternal knowledge, attitudes, and practices related to nutrition play a critical role in determining child nutritional status. A meta-analysis across developing countries reported that toddlers born to mothers with poor nutritional knowledge were more than twice as likely to experience stunting. Similar findings have been reported in Southeast Asia, including Malaysia, where inadequate

maternal understanding of complementary feeding, feeding frequency, and dietary diversity was significantly associated with stunting (Bayked et al., 2024).

Despite the strong evidence linking maternal knowledge, attitudes, and practices with stunting, there is a notable research gap at the local level. Specifically, studies describing the profile of maternal knowledge, attitudes, and practices among households with stunted toddlers in urban areas of Bogor City are scarce. This gap limits the availability of local evidence needed to support city-level policies and to optimize existing stunting reduction programs. A preliminary survey conducted at the Gunung Batu Community Health Center in January 2025 identified several toddlers classified as stunted, despite routine maternal participation in nutrition counseling activities. This preliminary finding suggests the need for a systematic assessment of maternal characteristics and nutrition-related knowledge, attitudes, and practices among affected households. Therefore, this study aims to describe maternal demographic characteristics, knowledge, attitudes, and practices related to nutrition, as well as the characteristics of stunted toddlers in Gunung Batu Village, Bogor City, during February 2025. The findings are expected to provide local evidence to support targeted and context-specific stunting prevention strategies in urban settings.

METHODS

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A total sampling technique was applied, whereby all eligible subjects were included as research samples. Based on the BNBA data, 54 mothers with stunted toddlers met the study criteria and were included (N = 54). No sample size calculation was performed because the population size was relatively small and entirely accessible. The inclusion criteria were mothers who had toddlers aged 6–59 months with stunting status recorded in the BNBA data of February 2025, who resided in Gunung Batu Village, and were willing to participate in the study. The exclusion criteria were mothers who were unavailable during data collection, who declined participation, or who had incomplete questionnaire data. Data were collected using a structured questionnaire assessing maternal knowledge (14 items; Guttman scale), attitudes (15 items; Likert scale), and practices (12 items; Guttman scale), adapted from previously validated and reliable instruments. Descriptive statistics were used, and results were presented as frequencies, percentages, means, medians, modes, and standard deviations, according to the characteristics of the data. Ethical approval was obtained from the Research Ethics Committee of the Faculty of Medicine, Christian University of Indonesia.

RESULTS

Table 1 Demographic Characteristics of Respondents Based on Mother's Age

Descriptive Statistics	N
Mean	30.69
Median	29
Mode	28, 36, 40
Minimum	22
Maximum	46
Total Data	54

Based on the collected data, the distribution of maternal ages shows a fairly varied range. The average maternal age was 30.69 years, with a median of 29 years. This indicates that most mothers were in the young to early adult age group. The mode of the data, the most frequently occurring ages, was 28, 36, and 40 years. The youngest recorded maternal age was 22 years, while the oldest was 46 years, for a total of 54 age data points collected.

Table 2 Demographic Characteristics of Respondents Based on Mother's Education, Mother's Occupation and Monthly Family Income

Descriptive Statistics	Frequency	Percentage
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$\geq$ Rp 3.000.000	18	33.33
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From the Table 2, the final educational profile of the mothers in this sample shows that the majority had a secondary education background. High school/vocational high school education was the highest level of education most commonly held by mothers, accounting for 42.59% of the total respondents (23 people). This was followed by elementary school education at 27.78% (15 people) and junior high school at 24.07% (13 people). A further 5.55% (3 people) had a higher education. A review of mothers' occupations shows a dominant role as housewives. 72.22% of respondents (39 people) work as housewives. Furthermore, a significant proportion of other occupations are traders, accounting for 22.22% (12 people). Other occupations, such as selling seblak (spicy rice cakes), teaching or lecturers, and laborers, were each represented by only one respondent, representing 1.85% of each category. Analysis of monthly family income shows that income distribution is relatively even across several categories. The income category "$\geq$ Rp 3,000,000" is the largest group, covering 33.33% (18 families). The other two income categories, namely "Rp 1,000,000 - < Rp 2,000,000" and "Rp 2,000,000 - < Rp 3,000,000", have identical proportions, each at 31.48% (17 families). Meanwhile, only a small portion, namely 3.70% (2 families), have incomes below Rp 1,000,000.

Table 3 Distribution of Mothers' Knowledge Level Regarding Stunting

Category Level	Frequency	Percentage
Mothers' Knowledge		
Fair (≥ 9 score)	52	96.3
Poor (≤ 8 score)	2	3.7
Mothers' Attitude		
Fair (≥ 36 score)	54	100
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Note: Knowledge category criteria (Max score 14): Fairly Good ≥60 (score ≥8.4, rounded up to ≥9); Poor <60 (score ≤8)

Note: Attitude category criteria (Max score 60): Fair ≥60 (score ≥36); Poor <60 (score ≤35)

Note: Action category criteria (Max score 12): Fair ≥60 (score ≥7.2, rounded to ≥8); Poor <60 (score ≤7).

Based on Table 3, the majority of mothers (96.3%) had a "fairly good" level of knowledge about stunting. This indicates that almost all respondents had an adequate understanding of stunting, including its definition, causes, characteristics, impacts, and prevention efforts. Based on data of mothers' attitude, all mothers (100.0%) showed a 'Quite Good' attitude toward stunting prevention efforts. This indicates a positive tendency among mothers to support practices related to children's nutritional health. The last based on maternal action, the majority of mothers (96.3%) demonstrated 'Quite Good' practices or actions in stunting prevention efforts. This reflects that most mothers have implemented concrete steps to support stunting prevention in toddlers.

DISCUSSION

This study provides a descriptive overview of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices among households with stunted toddlers in Gunung Batu Village, Bogor City. The key finding of this study is that although the majority of mothers demonstrated fairly good levels of knowledge, attitudes, and practices regarding toddler nutrition, all toddlers included in the study were classified as stunted. This finding suggests that adequate maternal cognitive and behavioral factors alone may not be sufficient to prevent stunting in this urban setting. The results highlight the complexity of stunting as a public health problem and underscore the importance of examining maternal factors alongside broader contextual determinants. The average maternal age in this study was 30.69 years,

which falls within the productive reproductive age group. Most respondents had completed senior high school or vocational high school education and were predominantly housewives. These findings are consistent with previous studies in Indonesia, including research conducted in Kenagarian Sijunjung, which reported similar educational backgrounds and employment status among mothers of stunted children (Marzuki & Tahrim, 2024; Saputra et al., 2023) Similarly, a study by the Journal of Nursing Science Research found that most mothers (28 out of 30 respondents, or 93.3%) had good knowledge, which likely correlates with their relatively adequate educational background (Siagian et al., 2024). Maternal education is often closely related to their capacity to process nutritional information, their ability to seek information sources, and their adaptability to health interventions. Research by Ramadhan et al. (2024) in Aceh showed that mothers with higher levels of education tend to have better knowledge and practices of nutritional care, which has an impact on reducing the prevalence of stunting (Ahmad et al., 2021). However, the findings of the present study indicate that even among mothers with relatively adequate educational backgrounds, stunting can persist. This suggests that education alone is insufficient to mitigate stunting when other underlying factors, such as household resources and environmental conditions, are not adequately addressed.

This descriptive study shows that the majority of mothers have a "fair" level of knowledge, attitudes, and practices regarding stunting prevention. However, it should be noted that all toddlers in this study sample were diagnosed with stunting (Chusniah Rachmawati, 2019). This phenomenon indicates that the stunting problem in Gunung Batu Village is multifactorial, not solely caused by a lack of maternal knowledge or attitudes.

Various other determinants, such as family socioeconomic factors, access to nutritious food, environmental sanitation, and comprehensive health services, likely also play a role in stunting. This aligns with research by (Aramico & Siketang, 2017) which states that stunting is caused by various interacting factors, not solely the result of poor nutritional intake in pregnant women or children. Therefore, this descriptive data highlights the need for a more holistic nutritional intervention approach involving various sectors to comprehensively address the factors causing stunting in Gunung Batu Village.

The majority of mothers in this study demonstrated a fairly good level of knowledge regarding toddler nutrition and stunting prevention. This finding is consistent with previous research showing that mothers with secondary education tend to have better nutritional knowledge (Siagian et al., 2024). Adequate knowledge theoretically enables mothers to recognize appropriate feeding practices, understand the importance of balanced nutrition, and utilize

available health services. However, despite relatively good knowledge levels, stunting remained present in all toddlers included in this study. This finding indicates a gap between knowledge and nutritional outcomes. Similar observations have been reported in other descriptive studies, where adequate maternal knowledge did not necessarily translate into improved child growth. This may be due to limitations in food availability, financial constraints, or inadequate household support systems that restrict the application of nutritional knowledge in daily practice.

All respondents in this study were categorized as having fairly good attitudes toward toddler nutrition and stunting prevention. Positive attitudes reflect maternal awareness and willingness to support healthy feeding and child-care practices. Previous studies have shown that positive maternal attitudes are associated with better compliance with nutrition counseling and health recommendations. Nevertheless, positive attitudes alone may not be sufficient to overcome structural barriers such as limited access to diverse foods, suboptimal sanitation, or inconsistent health service utilization. In urban settings like Gunung Batu Village, these barriers may persist despite favorable maternal attitudes, thereby limiting their impact on child nutritional status.

Most mothers in this study also demonstrated fairly good nutritional practices. This finding contrasts with several studies in Southeast Asia that reported poor feeding practices as a major contributor to stunting (Umwali, 2020). The discrepancy suggests that in Gunung Batu Village, stunting may not be primarily driven by inappropriate maternal feeding behaviors alone. It is possible that maternal practices are constrained by external factors, such as household food insecurity, economic limitations, or inadequate environmental sanitation. These constraints may reduce the effectiveness of otherwise appropriate feeding practices and contribute to persistent stunting.

Implications for Local Policy and Practice

The findings of this study have important implications for stunting prevention efforts in Bogor City. While maternal education and behavior-focused interventions remain important, they should be complemented by broader strategies addressing socioeconomic conditions, food access, sanitation, and health service quality. Local stunting reduction programs should integrate nutrition education with social assistance, environmental health improvements, and strengthened primary health care services. Future research in urban areas of Bogor City should adopt analytical designs to explore the interaction between maternal factors and structural determinants of stunting. Such evidence is essential to support more targeted, context-specific, and sustainable stunting prevention strategies at the city level.

CONCLUSIONS

This study found that most mothers of stunted toddlers in Gunung Batu Village were in the productive age group, had a senior high school or vocational education, and were predominantly housewives. The majority of respondents demonstrated fairly good levels of knowledge, attitudes, and practices related to toddler nutrition. Nevertheless, all toddlers included in this study were classified as stunted. These findings indicate that, within the study population, adequate maternal knowledge, attitudes, and practices alone were not sufficient to prevent stunting. The results highlight the need for further analytical research that includes a broader range of variables to better understand the factors associated with stunting among toddlers in urban areas of Bogor City. Such evidence is essential to support the development of comprehensive and context-appropriate stunting prevention strategies.

REFERENCE

Ahmad, F., Utomo, B., & Ramadhan, N. A. (2021). Pelaksanaan Inisiasi Menyusu Dini berdasarkan Jenis Persalinan di Indonesia: Analisis SDKI 2017. *Jurnal Kesehatan Reproduksi*, *8*(2). https://journal.ugm.ac.id/jkr/article/view/52540

Aramico, B., & Siketang, N. W. (2017). Hubungan Asupan Gizi, Aktivitas Fisik, Menstruasi Dan Anemia Dengan Status Gizi Pada Siswi Madrasah Aliyah Negeri (MAN) Simpang Kiri Kota Subulussalam. *Sel Jurnal Penelitian Kesehatan*, *4*(1), 21–30. http://download.garuda.kemdikbud.go.id/article.php?article=1684682&val=7741&title =Hubungan Asupan Gizi Aktivitas Fisik Menstruasi Dan Anemia Dengan Status Gizi Pada Siswi Madrasah Aliyah Negeri Man Simpang Kiri Kota Subulussalam

Bayked, E. M., Yimer, E. M., Gelaw, T., Mohammed, A. S., & Mekonen, N. A. (2024). Dietary knowledge, attitude, practice, and associated factors among pregnant mothers in Ethiopia: a systematic review and meta-analysis. *Frontiers in Public Health*, *12*, 1393764.

Chusniah Rachmawati, W. (2019). *Promosi kesehatan dan ilmu perilaku*. https://repository.unar.ac.id/jspui/bitstream/123456789/5683/1/2.-PROMOSI-KESEHATAN-DAN-ILMU-PERILAKU.pdf

Kemenko, P. M. K. (2025). *Prevalensi Stunting tahun 2024 Turun Jadi 19, 8 Persen, Pemerintah Terus Dorong Penguatan Gizi Nasional*.

Marzuki, D. S., & Tahrim, N. (2024). *Derajat kesehatan masyarakat*. Uwais Inspirasi

Indonesia. https://books.google.com/books?hl=en&lr=&id=cpnuEAAAQBAJ&oi=fnd&pg=PR6&dq=29.%09Dewi+L.+Profil+Puskesmas+Merdeka+Kota+Bogor.+2017.+1–50+p&ots=E1_KlMTzzM&sig=kj9K3eAXhpbUB5nFpdHu10c19_s

Nurulliah, N. (2025). Prevalensi Stunting di Jawa Barat Turun. In *Pikiran Rakyat Koran*. https://koran.pikiran-rakyat.com/bandung-raya/pr-3039285761/prevalensi-stunting-di-jawa-barat-turun

Rowa, H., & Averus, A. (2025). Kinerja Dinas Kesehatan Kabupaten Bekasi dalam Penanganan Stunting di Kabupaten Bekasi Provinsi Jawa Barat. *Jurnal Ekonomi Dan Statistik Indonesia*, *5*(1), 97–105. http://www.jurnaljesi.ijmpjournal.org/index.php/jurnaljesi/article/view/185

Saputra, M. R., Malik, R., Ferilda, S., Wahyuni, S., & Nurwiyeni, N. (2023). GAMBARAN TINGKAT PENGETAHUAN, SIKAP, DAN TINDAKAN IBU TENTANG STUNTING DI KENAGARIAN SIJUNJUNG. *Jurnal Kesehatan Saintika Meditory*, *6*(1), 315–324. https://jurnal.syedzasaintika.ac.id/index.php/meditory/article/view/1861

Siagian, R., Sihombing, F. S., Siregar, R., Sibuea, H., Putri, K. N., Lubis, M. N. A., & Oktavia, R. (2024). Gambaran Pengetahuan Ibu Tentang Pencegahan Stunting Pada Anak Balita. *Journal Of Nursing Science Research*, *1*(1), 49–55. https://jurnalilmiah.ici.ac.id/index.php/jnsr/article/view/430

UNICEF, W. (2015). Levels and trends in child malnutrition UNICEF-WHO-World Bank Group joint child malnutrition estimates: key findings of the 2015 edition. *New York: UNICEF, WHO, World Bank Group*.

Utami, G. P., Rahmaniati, M., & Bagus, N. (2024). Kejadian Prevalensi Stunting dengan Indeks Pembangunan Manusia dengan Pendekatan Spasial di Jawa Barat Tahun 2021. *Jurnal Manajemen Informasi Kesehatan (Health Information Management)*, *9*(1), 63–72. https://ojs.stikessaptabakti.ac.id/jmis/article/view/476

Demographic Characteristics, Knowledge, Attitudes, And Actions Of Mothers Related to Nutrition in Stunting Toddlers

Ida Bagus Eka Utama Wija[1,3], Wiradi Suryanegara[2], Louisa Ariantje Langi[2], Keswari Aji Patriawati[1]

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Abstract

Stunting is a chronic nutritional problem that affects children's growth and development. Indonesia still has a high prevalence of stunting, including in urban areas such as Bogor. Understanding maternal characteristics and nutrition-related behaviors is important for planning appropriate interventions. This study aimed to describe maternal demographic characteristics, nutrition-related knowledge, attitudes, and practices, as well as the incidence of stunting among toddlers in Gunung Batu Village, Bogor City. A quantitative descriptive observational design was used. The study included all mothers with stunted toddlers aged 6–59 months registered at the Gunung Batu Community Health Center in February 2025. A total of 54 respondents were selected using a total sampling approach. Data on maternal knowledge, attitudes, and practices were collected using questionnaires, while toddler stunting data were obtained from health center records. Data were analyzed descriptively using frequencies and percentages. The average maternal age was 30.69 years. Most mothers had a senior high school/vocational education (42.59%) and were housewives (72.22%). All toddlers included in the study (N = 54) were classified as stunted. Most mothers had relatively good levels of knowledge and practices related to toddler nutrition (96.3%), and all respondents reported positive attitudes. Despite adequate maternal knowledge, attitudes, and practices, stunting persisted among all toddlers in this study. These findings suggest that factors beyond maternal nutrition-related behaviors may contribute to stunting and highlight the need for further studies to examine other potential contributors to support more comprehensive stunting prevention efforts.

Keyword: Stunting, Knowledge, Attitude, Practice, Mother, Toddler, Demography

INTRODUCTION

The nutritional status of toddlers, particularly stunting, is a key indicator of child health and development worldwide. Stunting reflects a condition of chronic growth failure, defined by a height-for-age z-score below −2 standard deviations, resulting from prolonged inadequate nutrition and recurrent infections. According to the Joint Child Malnutrition Estimates (JME) 2024 report, approximately 148 million toddlers (22.3%) globally were stunted. This persistent burden indicates that stunting remains a major public health challenge, particularly in low- and middle-income countries, with long-term consequences for physical growth, cognitive development, and human capital formation (UNICEF, 2015). Asia, as the most populous region globally, contributes the largest share of stunting cases. The 2024 JME report estimates that

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Explain the issues or problems from relevant studies or findings, at least 5-10 findings. Explain how the problems or issues are in several countries or cities. Then provide a brief review of at least 5-10 relevant literature sources. Use literature from the last 5 years. Explain in the literature review or problem statement why the variables you are researching are important to study.

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Asia accounts for more than 57% of global stunting cases, or approximately 84.5 million children. While South Asia bears the greatest burden, Southeast Asian countries, including Indonesia, continue to contribute substantially. This situation highlights the need for comprehensive and multisectoral interventions, particularly those targeting household-level nutritional practices (UNICEF, 2015)

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In Indonesia, stunting remains a national priority in health and development planning. The 2024 Indonesian Nutritional Status Survey (SSGI) reported a decline in national stunting prevalence to 19.8%, down from 21.5% in 2023. Although this reduction represents progress, the prevalence remains above the national target of 14% as stipulated in the 2020–2024 Rencana Pembangunan Jangka Menengah Nasional (RPJMN). Consequently, both central and local governments have intensified stunting reduction programs focusing on maternal and child nutrition (Kemenko, 2025). At the provincial level, West Java experienced a decline in stunting prevalence to 15.9% in 2024. Despite this improvement, the figure still exceeds the national target, and disparities persist among districts and cities. While some areas, such as Bekasi City and Depok City, reported lower prevalence, other regions, including Bogor Regency, continued to show relatively high stunting rates. Various programs have been implemented, including nutrition-sensitive interventions led by the West Java Food Security and Animal Husbandry Agency, such as the Healthy Family Members Sustainable Yard (ASRI) program, which emphasizes improving household nutrition practices (Nurulliah, 2025).
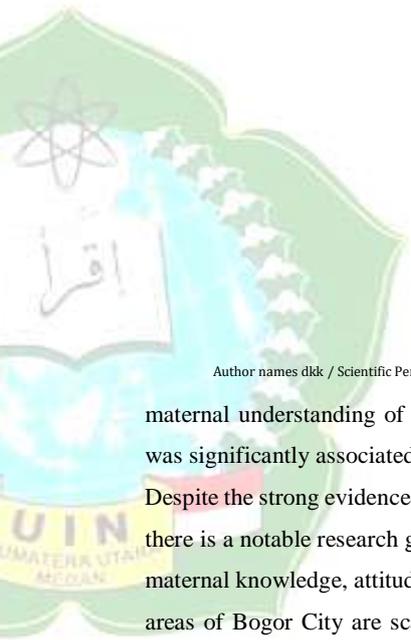
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In Bogor Regency, stunting prevalence decreased markedly from 27.6% to 7.59% in 2024, attributed to strategic local initiatives such as the Stunting Prevention House (Ceting) program and the foster parent movement for stunted children. However, these data primarily reflect district-level outcomes and do not fully capture conditions in urban settings. Urban areas, including Bogor City, present distinct challenges related to population density, socioeconomic disparities, and lifestyle factors. Moreover, despite ongoing stunting prevention programs, detailed data describing maternal knowledge, attitudes, and practices in households with stunted toddlers in urban Bogor City remain limited (Rowa & Averus, 2025; Utami et al., 2024). Evidence from global and regional studies consistently demonstrates that maternal knowledge, attitudes, and practices related to nutrition play a critical role in determining child nutritional status. A meta-analysis across developing countries reported that toddlers born to mothers with poor nutritional knowledge were more than twice as likely to experience stunting. Similar findings have been reported in Southeast Asia, including Malaysia, where inadequate
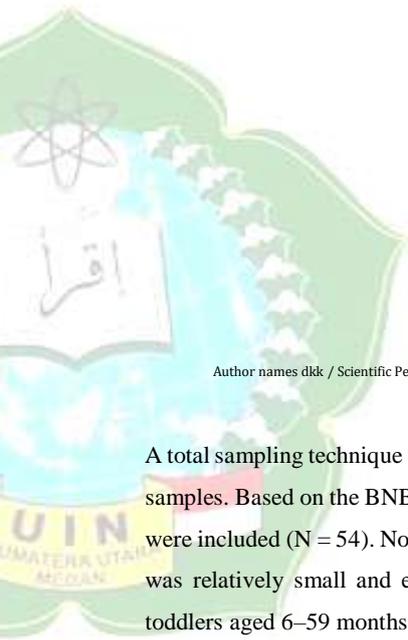
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maternal understanding of complementary feeding, feeding frequency, and dietary diversity was significantly associated with stunting (Bayked et al., 2024).

Despite the strong evidence linking maternal knowledge, attitudes, and practices with stunting, there is a notable research gap at the local level. Specifically, studies describing the profile of maternal knowledge, attitudes, and practices among households with stunted toddlers in urban areas of Bogor City are scarce. This gap limits the availability of local evidence needed to support city-level policies and to optimize existing stunting reduction programs. A preliminary survey conducted at the Gunung Batu Community Health Center in January 2025 identified several toddlers classified as stunted, despite routine maternal participation in nutrition counseling activities. This preliminary finding suggests the need for a systematic assessment of maternal characteristics and nutrition-related knowledge, attitudes, and practices among affected households. Therefore, this study aims to describe maternal demographic characteristics, knowledge, attitudes, and practices related to nutrition, as well as the characteristics of stunted toddlers in Gunung Batu Village, Bogor City, during February 2025. The findings are expected to provide local evidence to support targeted and context-specific stunting prevention strategies in urban settings.

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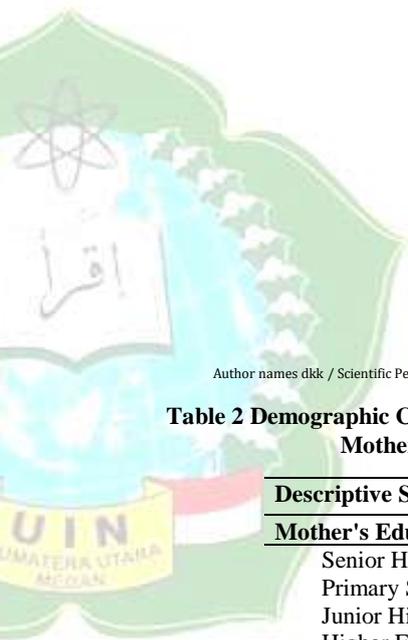
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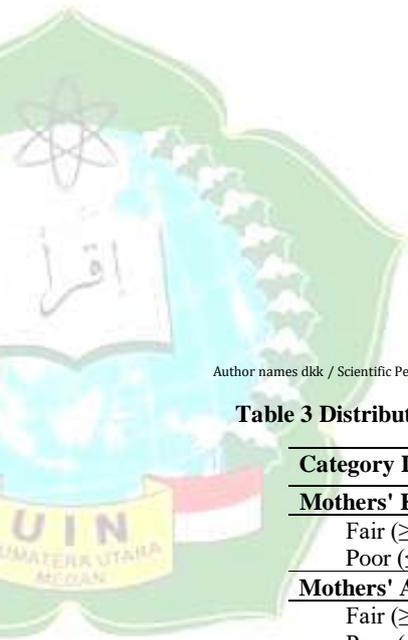
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Note: Attitude category criteria (Max score 60): Fair ≥60 (score ≥36); Poor <60 (score ≤35)

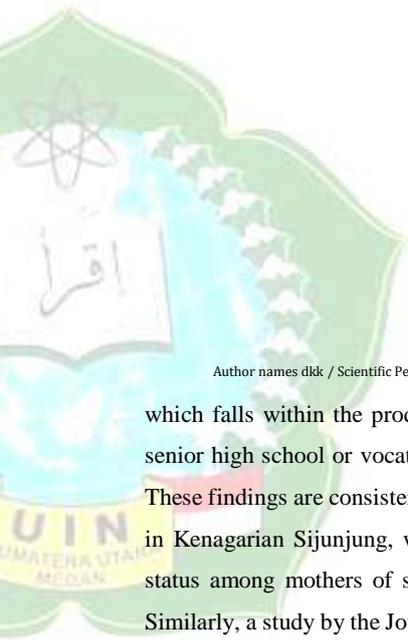*Note: Action category criteria (Max score 12): Fair ≥60 (score ≥7.2, rounded to ≥8); Poor <60 (score ≤7).*

Based on Table 3, the majority of mothers (96.3%) had a "fairly good" level of knowledge about stunting. This indicates that almost all respondents had an adequate understanding of stunting, including its definition, causes, characteristics, impacts, and prevention efforts. Based on data of mothers' attitude, all mothers (100.0%) showed a 'Quite Good' attitude toward stunting prevention efforts. This indicates a positive tendency among mothers to support practices related to children's nutritional health. The last based on maternal action, the majority of mothers (96.3%) demonstrated 'Quite Good' practices or actions in stunting prevention efforts. This reflects that most mothers have implemented concrete steps to support stunting prevention in toddlers.

DISCUSSION

This study provides a descriptive overview of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices among households with stunted toddlers in Gunung Batu Village, Bogor City. The key finding of this study is that although the majority of mothers demonstrated fairly good levels of knowledge, attitudes, and practices regarding toddler nutrition, all toddlers included in the study were classified as stunted. This finding suggests that adequate maternal cognitive and behavioral factors alone may not be sufficient to prevent stunting in this urban setting. The results highlight the complexity of stunting as a public health problem and underscore the importance of examining maternal factors alongside broader contextual determinants. The average maternal age in this study was 30.69 years,

> **Commented [a9]:** For each sub-variable, compare it with 5-10 related and relevant findings or studies, compare them with your findings, and identify the differences.
> Add the limitations of your study, explain the shortcomings, and provide recommendations for further research.

which falls within the productive reproductive age group. Most respondents had completed senior high school or vocational high school education and were predominantly housewives. These findings are consistent with previous studies in Indonesia, including research conducted in Kenagarian Sijunjung, which reported similar educational backgrounds and employment status among mothers of stunted children (Marzuki & Tahrim, 2024; Saputra et al., 2023) Similarly, a study by the Journal of Nursing Science Research found that most mothers (28 out of 30 respondents, or 93.3%) had good knowledge, which likely correlates with their relatively adequate educational background (Siagian et al., 2024). Maternal education is often closely related to their capacity to process nutritional information, their ability to seek information sources, and their adaptability to health interventions. Research by Ramadhan et al. (2024) in Aceh showed that mothers with higher levels of education tend to have better knowledge and practices of nutritional care, which has an impact on reducing the prevalence of stunting (Ahmad et al., 2021). However, the findings of the present study indicate that even among mothers with relatively adequate educational backgrounds, stunting can persist. This suggests that education alone is insufficient to mitigate stunting when other underlying factors, such as household resources and environmental conditions, are not adequately addressed.

This descriptive study shows that the majority of mothers have a "fair" level of knowledge, attitudes, and practices regarding stunting prevention. However, it should be noted that all toddlers in this study sample were diagnosed with stunting (Chusniah Rachmawati, 2019). This phenomenon indicates that the stunting problem in Gunung Batu Village is multifactorial, not solely caused by a lack of maternal knowledge or attitudes.

Various other determinants, such as family socioeconomic factors, access to nutritious food, environmental sanitation, and comprehensive health services, likely also play a role in stunting. This aligns with research by (Aramico & Siketang, 2017) which states that stunting is caused by various interacting factors, not solely the result of poor nutritional intake in pregnant women or children. Therefore, this descriptive data highlights the need for a more holistic nutritional intervention approach involving various sectors to comprehensively address the factors causing stunting in Gunung Batu Village.

The majority of mothers in this study demonstrated a fairly good level of knowledge regarding toddler nutrition and stunting prevention. This finding is consistent with previous research showing that mothers with secondary education tend to have better nutritional knowledge (Siagian et al., 2024). Adequate knowledge theoretically enables mothers to recognize appropriate feeding practices, understand the importance of balanced nutrition, and utilize
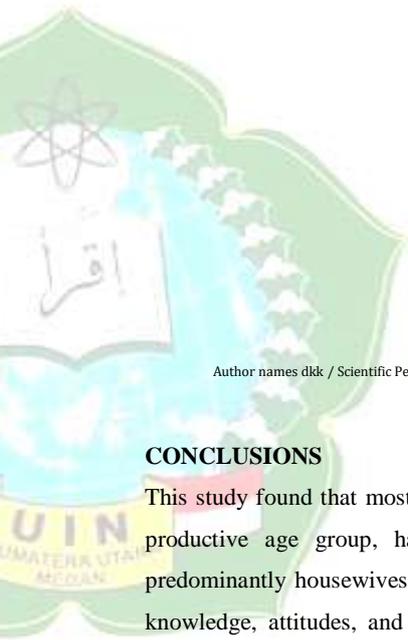
available health services. However, despite relatively good knowledge levels, stunting remained present in all toddlers included in this study. This finding indicates a gap between knowledge and nutritional outcomes. Similar observations have been reported in other descriptive studies, where adequate maternal knowledge did not necessarily translate into improved child growth. This may be due to limitations in food availability, financial constraints, or inadequate household support systems that restrict the application of nutritional knowledge in daily practice.

All respondents in this study were categorized as having fairly good attitudes toward toddler nutrition and stunting prevention. Positive attitudes reflect maternal awareness and willingness to support healthy feeding and child-care practices. Previous studies have shown that positive maternal attitudes are associated with better compliance with nutrition counseling and health recommendations. Nevertheless, positive attitudes alone may not be sufficient to overcome structural barriers such as limited access to diverse foods, suboptimal sanitation, or inconsistent health service utilization. In urban settings like Gunung Batu Village, these barriers may persist despite favorable maternal attitudes, thereby limiting their impact on child nutritional status.

Most mothers in this study also demonstrated fairly good nutritional practices. This finding contrasts with several studies in Southeast Asia that reported poor feeding practices as a major contributor to stunting (Umwali, 2020). The discrepancy suggests that in Gunung Batu Village, stunting may not be primarily driven by inappropriate maternal feeding behaviors alone. It is possible that maternal practices are constrained by external factors, such as household food insecurity, economic limitations, or inadequate environmental sanitation. These constraints may reduce the effectiveness of otherwise appropriate feeding practices and contribute to persistent stunting.

Implications for Local Policy and Practice

The findings of this study have important implications for stunting prevention efforts in Bogor City. While maternal education and behavior-focused interventions remain important, they should be complemented by broader strategies addressing socioeconomic conditions, food access, sanitation, and health service quality. Local stunting reduction programs should integrate nutrition education with social assistance, environmental health improvements, and strengthened primary health care services. Future research in urban areas of Bogor City should adopt analytical designs to explore the interaction between maternal factors and structural determinants of stunting. Such evidence is essential to support more targeted, context-specific, and sustainable stunting prevention strategies at the city level.

CONCLUSIONS

This study found that most mothers of stunted toddlers in Gunung Batu Village were in the productive age group, had a senior high school or vocational education, and were predominantly housewives. The majority of respondents demonstrated fairly good levels of knowledge, attitudes, and practices related to toddler nutrition. Nevertheless, all toddlers included in this study were classified as stunted. These findings indicate that, within the study population, adequate maternal knowledge, attitudes, and practices alone were not sufficient to prevent stunting. The results highlight the need for further analytical research that includes a broader range of variables to better understand the factors associated with stunting among toddlers in urban areas of Bogor City. Such evidence is essential to support the development of comprehensive and context-appropriate stunting prevention strategies.

REFERENCE

Ahmad, F., Utomo, B., & Ramadhan, N. A. (2021). Pelaksanaan Inisiasi Menyusu Dini berdasarkan Jenis Persalinan di Indonesia: Analisis SDKI 2017. *Jurnal Kesehatan Reproduksi*, *8*(2). https://journal.ugm.ac.id/jkr/article/view/52540

Aramico, B., & Siketang, N. W. (2017). Hubungan Asupan Gizi, Aktivitas Fisik, Menstruasi Dan Anemia Dengan Status Gizi Pada Siswi Madrasah Aliyah Negeri (MAN) Simpang Kiri Kota Subulussalam. *Sel Jurnal Penelitian Kesehatan*, *4*(1), 21–30. http://download.garuda.kemdikbud.go.id/article.php?article=1684682&val=7741&title =Hubungan Asupan Gizi Aktivitas Fisik Menstruasi Dan Anemia Dengan Status Gizi Pada Siswi Madrasah Aliyah Negeri Man Simpang Kiri Kota Subulussalam

Bayked, E. M., Yimer, E. M., Gelaw, T., Mohammed, A. S., & Mekonen, N. A. (2024). Dietary knowledge, attitude, practice, and associated factors among pregnant mothers in Ethiopia: a systematic review and meta-analysis. *Frontiers in Public Health*, *12*, 1393764.

Chusniah Rachmawati, W. (2019). *Promosi kesehatan dan ilmu perilaku*. https://repository.unar.ac.id/jspui/bitstream/123456789/5683/1/2.-PROMOSI-KESEHATAN-DAN-ILMU-PERILAKU.pdf

Kemenko, P. M. K. (2025). *Prevalensi Stunting tahun 2024 Turun Jadi 19, 8 Persen, Pemerintah Terus Dorong Penguatan Gizi Nasional*.

Marzuki, D. S., & Tahrim, N. (2024). *Derajat kesehatan masyarakat*. Uwais Inspirasi

Indonesia.
https://books.google.com/books?hl=en&lr=&id=cpnuEAAAQBAJ&oi=fnd&pg=PR6&dq=29.%09Dewi+L.+Profil+Puskesmas+Merdeka+Kota+Bogor.+2017.+1–50+p&ots=E1_KlMTzzM&sig=kj9K3eAXhpbUB5nFpdHu10c19_s

Nurulliah, N. (2025). Prevalensi Stunting di Jawa Barat Turun. In *Pikiran Rakyat Koran*. https://koran.pikiran-rakyat.com/bandung-raya/pr-3039285761/prevalensi-stunting-di-jawa-barat-turun

Rowa, H., & Averus, A. (2025). Kinerja Dinas Kesehatan Kabupaten Bekasi dalam Penanganan Stunting di Kabupaten Bekasi Provinsi Jawa Barat. *Jurnal Ekonomi Dan Statistik Indonesia*, *5*(1), 97–105.
http://www.jurnaljesi.ijmpjournal.org/index.php/jurnaljesi/article/view/185

Saputra, M. R., Malik, R., Ferilda, S., Wahyuni, S., & Nurwiyeni, N. (2023). GAMBARAN TINGKAT PENGETAHUAN, SIKAP, DAN TINDAKAN IBU TENTANG STUNTING DI KENAGARIAN SIJUNJUNG. *Jurnal Kesehatan Saintika Meditory*, *6*(1), 315–324. https://jurnal.syedzasaintika.ac.id/index.php/meditory/article/view/1861

Siagian, R., Sihombing, F. S., Siregar, R., Sibuea, H., Putri, K. N., Lubis, M. N. A., & Oktavia, R. (2024). Gambaran Pengetahuan Ibu Tentang Pencegahan Stunting Pada Anak Balita. *Journal Of Nursing Science Research*, *1*(1), 49–55. https://jurnalilmiah.ici.ac.id/index.php/jnsr/article/view/430

UNICEF, W. (2015). Levels and trends in child malnutrition UNICEF-WHO-World Bank Group joint child malnutrition estimates: key findings of the 2015 edition. *New York: UNICEF, WHO, World Bank Group*.

Utami, G. P., Rahmaniati, M., & Bagus, N. (2024). Kejadian Prevalensi Stunting dengan Indeks Pembangunan Manusia dengan Pendekatan Spasial di Jawa Barat Tahun 2021. *Jurnal Manajemen Informasi Kesehatan (Health Information Management)*, *9*(1), 63–72. https://ojs.stikessaptabakti.ac.id/jmis/article/view/476

Demographic Characteristics, Knowledge, Attitudes, And Actions Of Mothers Related to Nutrition in Stunting Toddlers

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Abstract

Stunting is a chronic nutritional problem that affects children's growth and development. Indonesia still has a high prevalence of stunting, including in urban areas such as Bogor. Understanding maternal characteristics and nutrition-related behaviors is important for planning appropriate interventions. This study aimed to describe maternal demographic characteristics, nutrition-related knowledge, attitudes, and practices, as well as the incidence of stunting among toddlers in Gunung Batu Village, Bogor City. A quantitative descriptive observational design was used. The study included all mothers with stunted toddlers aged 6–59 months registered at the Gunung Batu Community Health Center in February 2025. A total of 54 respondents were selected using a total sampling approach. Data on maternal knowledge, attitudes, and practices were collected using questionnaires, while toddler stunting data were obtained from health center records. Data were analyzed descriptively using frequencies and percentages. The average maternal age was 30.69 years. Most mothers had a senior high school/vocational education (42.59%) and were housewives (72.22%). All toddlers included in the study (N = 54) were classified as stunted. Most mothers had relatively good levels of knowledge and practices related to toddler nutrition (96.3%), and all respondents reported positive attitudes. Despite adequate maternal knowledge, attitudes, and practices, stunting persisted among all toddlers in this study. These findings suggest that factors beyond maternal nutrition-related behaviors may contribute to stunting and highlight the need for further studies to examine other potential contributors to support more comprehensive stunting prevention efforts.

Keyword: Stunting, Knowledge, Attitude, Practice, Mother, Toddler, Demography

INTRODUCTION

Stunting among toddlers remains one of the most critical global public health and development challenges. Stunting is defined as a height-for-age z-score below −2 standard deviations, reflecting chronic undernutrition and recurrent infections during the most sensitive periods of growth and development. According to the Joint Child Malnutrition Estimates (JME) 2024, an estimated 148 million children under five years of age (22.3%) worldwide were stunted. Although the global prevalence has shown a gradual decline over the past decade, the absolute number of affected children remains alarmingly high, indicating persistent structural and behavioral determinants of child undernutrition (benjohnson, 2025). Stunting is associated with irreversible consequences, including impaired cognitive development, reduced educational

attainment, increased susceptibility to non-communicable diseases, and diminished economic productivity in adulthood.

Recent findings from multiple countries demonstrate that stunting remains a widespread and multifactorial problem. In South Asia, which bears the highest burden globally, India and Pakistan together account for more than one-third of stunted children worldwide, with national prevalences exceeding 30% in several states (benjohnson, 2025). In Sub-Saharan Africa, stunting rates remain persistently high in countries such as Nigeria, Ethiopia, and the Democratic Republic of Congo, where food insecurity, poor maternal nutrition, and limited access to health services continue to impede progress (Akombi et al., 2017; Black et al., 2013). In Latin America, although overall prevalence is lower, urban poor populations in countries such as Guatemala and Peru still experience significant stunting due to socioeconomic inequality and inadequate infant feeding practices (Victora et al., 2021)

In Asia, the most populous region globally, the JME 2024 report estimates that over 57% of all stunted children worldwide (approximately 84.5 million) reside in this region. While South Asia carries the largest share, Southeast Asian countries, including Indonesia, Cambodia, and the Philippines, continue to report moderate-to-high stunting prevalence, particularly among low-income and urban marginalized populations (benjohnson, 2025). Studies conducted in urban slums in Manila, Dhaka, and Ho Chi Minh City have shown that rapid urbanization, food affordability issues, and suboptimal caregiving practices contribute significantly to persistent stunting in cities (Headey et al., 2021; Ruel et al., 2017)

In Indonesia, stunting remains a national development priority. The Indonesian Nutritional Status Survey (SSGI) 2024 reported a decline in national stunting prevalence to 19.8%, down from 21.5% in 2023. Despite this progress, the prevalence remains above the national target of 14% outlined in the 2020–2024 Rencana Pembangunan Hangka Menengah Nasional (RPJMN). Consequently, the Indonesian government has intensified both nutrition-specific and nutrition-sensitive interventions, emphasizing maternal and child nutrition, household food security, and behavior change communication (Kemenko, 2025).

At the provincial level, West Java recorded a stunting prevalence of 15.9% in 2024, reflecting improvement but still exceeding the national target. Marked disparities persist across districts and cities, with some urban areas reporting lower prevalence while others continue to experience substantial burdens. Nutrition-sensitive programs such as the Healthy and Independent Sustainable Yard (ASRI) initiative have been implemented to improve household-

level food availability and dietary diversity, highlighting the increasing focus on family-based nutrition practices (Nurulliah, 2025).

In Bogor Regency, stunting prevalence reportedly declined sharply to 7.59% in 2024, attributed to innovative local strategies such as the Stunting Prevention House (CETING) program and foster parent initiatives. However, district-level data may obscure intra-urban disparities, particularly in densely populated cities such as Bogor City, where socioeconomic inequality, maternal employment patterns, and lifestyle factors may influence caregiving and feeding behaviors. Recent local reports indicate that, despite routine participation in nutrition education programs, cases of stunting persist in several urban health center catchment areas (Rowa & Averus, 2025; Utami et al., 2024).

Evidence from the last five years consistently emphasizes the critical role of maternal knowledge, attitudes, and practices (KAP) in determining child nutritional status. A meta-analysis covering low- and middle-income countries found that children of mothers with inadequate nutrition knowledge were 2.3 times more likely to be stunted compared to those whose mothers had adequate knowledge (Novitasari & Wanda, 2020a). Studies in Bangladesh, Vietnam, and Nepal have demonstrated that poor maternal understanding of complementary feeding timing, meal frequency, and dietary diversity significantly increases the risk of stunting (Din et al., 2023; Headey et al., 2021; Simanjuntak et al., 2019). In Malaysia, recent findings showed that inappropriate feeding practices and low maternal responsiveness were independently associated with stunting among toddlers in urban settings (Bayked et al., 2024). In Indonesia, several studies conducted between 2020 and 2024 reported significant associations between maternal education, nutrition knowledge, feeding attitudes, and child growth outcomes (Umwali, 2020; Wahyuni et al., 2023). However, most of these studies were conducted in rural areas or at the provincial level, leaving urban city-level evidence limited, particularly in Bogor City. This gap restricts the ability of local governments to design context-specific interventions tailored to urban household characteristics. A preliminary survey conducted at the Gunung Batu Community Health Center in January 2025 identified several toddlers classified as stunted despite regular maternal attendance at nutrition counseling sessions. This finding suggests that attendance alone may not translate into adequate knowledge, positive attitudes, or appropriate practices. Therefore, a systematic assessment of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices is urgently needed. This study aims to describe maternal characteristics, knowledge, attitudes, and practices related to toddler nutrition, as well as the characteristics of stunted toddlers in

Gunung Batu Village, Bogor City, in February 2025. The findings are expected to provide locally relevant evidence to support targeted, behavior-focused stunting prevention strategies in urban settings.

METHODS

This study employed a quantitative observational design with a descriptive–analytic approach, conducted in Gunung Batu Village, Bogor City, during February 2025. The study aimed to describe maternal demographic characteristics, nutritional knowledge, attitudes, and practices (KAP), as well as characteristics of stunted toddlers, and to explore bivariate associations between maternal variables and toddler characteristics.

The study population consisted of all mothers with stunted toddlers aged 6–59 months registered in the By Name By Address (BNBA) database of Gunung Batu Village. The BNBA is an official administrative registry maintained by the Community Health Center (Puskesmas) that records children identified with nutritional problems, including stunting, along with individual and household information. A total sampling technique was applied. Based on BNBA data for February 2025, a total of 54 mother–toddler pairs met the eligibility criteria and were included in the study (N = 54). No sample size calculation was performed because the population was relatively small and fully accessible.

Inclusion criteria were mothers who: had toddlers aged 6–59 months classified as stunted in the February 2025 BNBA records; resided in Gunung Batu Village, and provided informed consent. Exclusion criteria included mothers who were unavailable during data collection, declined participation, or had incomplete questionnaire responses. The variables analyzed in this study were grouped as follows: 1) Maternal demographic variables: age, level of education, occupation, and parity; 2) Maternal nutrition-related variables: Knowledge (14 items; Guttman scale; categorized as good/poor); Attitudes (15 items; 5-point Likert scale; categorized as positive/negative), and Practices (12 items; Guttman scale; categorized as appropriate/inappropriate); 3)Toddler characteristics: age (months), sex, and stunting severity (moderate or severe).

Stunting status was determined based on height-for-age z-scores (HAZ) calculated using the WHO Child Growth Standards 2006. Children with HAZ < −2 SD were classified as stunted, while those with HAZ < −3 SD were categorized as severely stunted. Anthropometric measurements were performed by trained health workers at the Posyandu or Puskesmas using standardized equipment, including a length board for children under two years of age and a microtoise for children aged two years and above. Anthropometric data were obtained from

routine nutrition monitoring records for February 2025 at the Gunung Batu Community Health Center.

Data were collected using a structured questionnaire adapted from previously validated and reliable instruments. The questionnaire assessed maternal knowledge, attitudes, and practices related to toddler nutrition and feeding. Prior to data collection, the questionnaire was reviewed for content clarity and relevance. Data collection was conducted through face-to-face interviews by trained enumerators.

Data were analyzed using statistical software. Univariate analysis was conducted to describe the distribution of all study variables. Categorical variables were presented as frequencies and percentages, while numerical variables were summarized using means, medians, standard deviations, and ranges, depending on data distribution. To enhance analytical rigor, bivariate analysis was performed to explore associations between maternal variables (education level, knowledge, attitudes, and practices) and toddler characteristics (age group and stunting severity). The Chi-square test or Fisher's exact test was used for categorical variables, as appropriate. A p-value of < 0.05 was considered statistically significant. Multivariate analysis was not performed due to the limited sample size and the absence of a non-stunted comparison group. This constitutes a limitation of the study, as potential confounding factors could not be fully controlled.

This study received ethical approval from the Lembaga Penelitian dan Pengabdian kepada Masyarakat (LPPM), Christian University of Indonesia (Ethical Approval No.: 021/UKI.LPPM/PPM.00.00/ET.2025).

RESULTS

Table 1 Demographic Characteristics of Respondents Based on Mother's Age

Descriptive Statistics	N
Mean	30.69
Median	29
Mode	28, 36, 40
Minimum	22
Maximum	46
Total Data	54

Based on the collected data, the distribution of maternal ages shows a fairly varied range. The average maternal age was 30.69 years, with a median of 29 years. This indicates that most mothers were in the young to early adult age group. The mode of the data, the most frequently

occurring ages, was 28, 36, and 40 years. The youngest recorded maternal age was 22 years, while the oldest was 46 years, for a total of 54 age data points collected.

Table 2 Demographic Characteristics of Respondents Based on Mother's Education, Mother's Occupation and Monthly Family Income

Descriptive Statistics	Frequency	Percentage
Mother's Education		
Senior High School	23	42.59
Primary School	15	27.78
Junior High School	13	24.07
Higher Education	3	5.55
Mother's Occupation		
Housewife	39	72.22
Trader	12	22.22
Seblak Seller	1	1.85
Teacher or Lecturer	1	1.85
Laborer	1	1.85
Monthly Family Income		
≥ Rp 3.000.000	18	33.33
Rp 1.000.000 - < Rp 2.000.000	17	31.48
Rp 2.000.000 - < Rp 3.000.000	17	31.48
< Rp 1.000.000	2	3.70

From the Table 2, the final educational profile of the mothers in this sample shows that the majority had a secondary education background. High school/vocational high school education was the highest level of education most commonly held by mothers, accounting for 42.59% of the total respondents (23 people). This was followed by elementary school education at 27.78% (15 people) and junior high school at 24.07% (13 people). A further 5.55% (3 people) had a higher education. A review of mothers' occupations shows a dominant role as housewives. 72.22% of respondents (39 people) work as housewives. Furthermore, a significant proportion of other occupations are traders, accounting for 22.22% (12 people). Other occupations, such as selling seblak (spicy rice cakes), teaching or lecturers, and laborers, were each represented by only one respondent, representing 1.85% of each category. Analysis of monthly family income shows that income distribution is relatively even across several categories. The income category "≥ Rp 3,000,000" is the largest group, covering 33.33% (18 families). The other two income categories, namely "Rp 1,000,000 - < Rp 2,000,000" and "Rp 2,000,000 - < Rp 3,000,000", have identical proportions, each at 31.48% (17 families). Meanwhile, only a small portion, namely 3.70% (2 families), have incomes below Rp 1,000,000.

Table 3 Distribution of Mothers' Knowledge Level Regarding Stunting

Category Level	Frequency	Percentage
Mothers' Knowledge		
Fair ($\geq$ 9 score)	52	96.3
Poor ($\leq$ 8 score)	2	3.7
Mothers' Attitude		
Fair ($\geq$ 36 score)	54	100
Poor ($\leq$ 35 score)	0	0
Maternal Action		
Fair ($\geq$ 8 score)	52	96.3
Poor ($\leq$ 7 score)	2	3.7

Note: Knowledge category criteria (Max score 14): Fairly Good $\geq$60 (score $\geq$8.4, rounded up to $\geq$9); Poor <60 (score $\leq$8)

Note: Attitude category criteria (Max score 60): Fair $\geq$60 (score $\geq$36); Poor <60 (score $\leq$35)

Note: Action category criteria (Max score 12): Fair $\geq$60 (score $\geq$7.2, rounded to $\geq$8); Poor <60 (score $\leq$7).

Based on Table 3, the majority of mothers (96.3%) had a "fairly good" level of knowledge about stunting. This indicates that almost all respondents had an adequate understanding of stunting, including its definition, causes, characteristics, impacts, and prevention efforts. Based on data of mothers' attitude, all mothers (100.0%) showed a 'Quite Good' attitude toward stunting prevention efforts. This indicates a positive tendency among mothers to support practices related to children's nutritional health. The last based on maternal action, the majority of mothers (96.3%) demonstrated 'Quite Good' practices or actions in stunting prevention efforts. This reflects that most mothers have implemented concrete steps to support stunting prevention in toddlers.

DISCUSSION

This study provides a descriptive overview of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices (KAP) among households with stunted toddlers in Gunung Batu Village, Bogor City. A key finding is that all toddlers included in the study were classified as stunted despite the majority of mothers demonstrating fairly good levels of knowledge, attitudes, and practices related to nutrition. This finding reinforces the notion that stunting is a multifactorial condition and cannot be explained solely by maternal cognitive and behavioral factors, particularly in urban settings.

Maternal Demographic Characteristics

The mean maternal age in this study was 30.69 years, placing most respondents within the productive reproductive age group. Similar age distributions among mothers of stunted children have been reported in several Indonesian studies conducted in West Java, Central Java, Aceh, and East Nusa Tenggara (Marzuki & Tahrim, 2024; Saputra et al., 2023; Sari et al., 2025). Internationally, studies in Bangladesh, Nepal, and Ethiopia also reported that stunting frequently occurs among children of mothers in their late twenties to early thirties, suggesting that maternal age alone is not a protective factor against chronic undernutrition (Basnet et al., 2021; Headey et al., 2021; Tyas et al., 2019).

Most mothers in this study had completed senior high school or vocational education and were predominantly housewives. This pattern is consistent with findings from other urban and semi-urban Indonesian settings, where mothers of stunted children often have moderate educational attainment but limited economic independence (Hutasoit et al., 2018; Siagian et al., 2024; Sihotang et al., 2023). However, studies from Malaysia, Vietnam, and Peru suggest that higher maternal education is generally associated with lower stunting prevalence, especially when accompanied by stable household income and food security (Bayked et al., 2024; Headey et al., 2021; Victora et al., 2021). The discrepancy indicates that education without sufficient socioeconomic support may be insufficient to prevent stunting, particularly in low-income urban households.

Maternal Knowledge

The majority of mothers in this study demonstrated a fair to good level of nutritional knowledge. This finding aligns with recent studies in Indonesia reporting adequate maternal knowledge among mothers of stunted toddlers, especially in areas with active nutrition counseling programs (Irfan et al., 2024; Siagian et al., 2024). Similar patterns have been observed in studies from Bangladesh and Vietnam, where mothers exhibited good theoretical knowledge of child nutrition but still had stunted children (Basnet et al., 2021; Simanjuntak et al., 2019; Umwali, 2020).

In contrast, meta-analyses and analytical studies from low- and middle-income countries consistently demonstrate that poor maternal knowledge significantly increases the risk of stunting, with odds ratios ranging from 2.0 to 2.5 (Black et al., 2013; Novitasari & Wanda, 2020b). The difference between these analytical findings and the present descriptive results suggests that knowledge alone does not automatically translate into improved nutritional

outcomes, particularly when external constraints—such as food affordability, time limitations, and household decision-making dynamics—restrict the application of that knowledge.

Maternal Attitudes

All respondents in this study were categorized as having fairly good attitudes toward toddler nutrition and stunting prevention. Positive maternal attitudes reflect awareness, concern, and willingness to engage in healthy feeding and caregiving practices. Similar findings have been reported in urban Indonesian studies, where mothers expressed strong agreement with nutrition messages delivered through Posyandu and Puskesmas activities (Hutasoit et al., 2018; Marzuki & Tahrim, 2024; Saputra et al., 2023).

However, evidence from analytical studies in Southeast Asia and Africa indicates that positive attitudes alone are insufficient to prevent stunting when structural barriers persist (Akombi et al., 2017; Headey et al., 2021; Ruel et al., 2017). Studies from urban slums in India, the Philippines, and Nigeria found that mothers with positive attitudes still struggled to provide adequate diets due to food insecurity, poor sanitation, and inconsistent access to health services (Black et al., 2013; Victora et al., 2021). These findings support the results of the present study, suggesting that favorable attitudes may be constrained by contextual limitations beyond maternal control.

Maternal Practices

Most mothers in this study demonstrated fairly good nutritional practices, a finding that contrasts with several studies identifying poor feeding practices as a major contributor to stunting. Research from rural Indonesia, Cambodia, and Myanmar reported inadequate complementary feeding frequency, low dietary diversity, and early cessation of breastfeeding as dominant risk factors for stunting (Basnet et al., 2021; Umwali, 2020; Victora et al., 2021). The discrepancy suggests that in Gunung Batu Village, stunting may not be primarily driven by inappropriate feeding practices alone. Similar observations have been reported in urban Malaysian and Peruvian studies, where even appropriate feeding practices failed to prevent stunting in the presence of recurrent infections, overcrowded housing, and poor environmental sanitation (Bayked et al., 2024). These findings emphasize that maternal practices may be necessary but not sufficient conditions for optimal child growth.

Study Limitations and Recommendations for Future Research

This study has several limitations. First, its descriptive design and the absence of a non-stunted comparison group prevent causal inference and limit the ability to quantify the strength of associations between maternal factors and stunting. Second, the small sample size (N = 54)

restricts statistical power and precludes multivariate analysis to control for confounding variables. Third, data on knowledge, attitudes, and practices were collected using self-reported questionnaires, which may be subject to recall and social desirability bias. Finally, important determinants such as household income, food security, environmental sanitation, infection history, and paternal involvement were not assessed.

Future research should employ analytical or mixed-methods designs, include both stunted and non-stunted children, and incorporate multivariate modeling to disentangle the relative contributions of maternal, household, and environmental factors. Qualitative studies exploring barriers to implementing nutritional knowledge in urban settings may also provide valuable insights. Such evidence is essential to inform integrated, multisectoral stunting prevention strategies that move beyond behavior change alone and address the broader structural determinants of child undernutrition in urban areas.

Implications for Local Policy and Practice

The findings of this study have important implications for stunting prevention efforts in Bogor City. While maternal education and behavior-focused interventions remain important, they should be complemented by broader strategies addressing socioeconomic conditions, food access, sanitation, and health service quality. Local stunting reduction programs should integrate nutrition education with social assistance, environmental health improvements, and strengthened primary health care services. Future research in urban areas of Bogor City should adopt analytical designs to explore the interaction between maternal factors and structural determinants of stunting. Such evidence is essential to support more targeted, context-specific, and sustainable stunting prevention strategies at the city level.

CONCLUSIONS

This study found that most mothers of stunted toddlers in Gunung Batu Village were in the productive age group, had a senior high school or vocational education, and were predominantly housewives. The majority of respondents demonstrated fairly good levels of knowledge, attitudes, and practices related to toddler nutrition. Nevertheless, all toddlers included in this study were classified as stunted. These findings indicate that, within the study population, adequate maternal knowledge, attitudes, and practices alone were not sufficient to prevent stunting. The results highlight the need for further analytical research that includes a broader range of variables to better understand the factors associated with stunting among

toddlers in urban areas of Bogor City. Such evidence is essential to support the development of comprehensive and context-appropriate stunting prevention strategies.

REFERENCE

Akombi, B. J., Agho, K. E., Hall, J. J., Wali, N., Renzaho, A. M. N., & Merom, D. (2017). Stunting, wasting and underweight in sub-Saharan Africa: a systematic review. *International Journal of Environmental Research and Public Health*, *14*(8), 863. https://doi.org/10.3390/ijerph14080863

Basnet, S., Frongillo, E. A., Nguyen, P. H., Moore, S., & Arabi, M. (2021). Factor Structure and Equivalence of Maternal Resources for Care in Bangladesh, Vietnam, and Ethiopia. *Maternal and Child Health Journal*, *25*(6), 938–945. https://doi.org/10.1007/s10995-020-03100-4

Bayked, E. M., Yimer, E. M., Gelaw, T., Mohammed, A. S., & Mekonen, N. A. (2024). Dietary knowledge, attitude, practice, and associated factors among pregnant mothers in Ethiopia: a systematic review and meta-analysis. *Frontiers in Public Health*, *12*, 1393764.
https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1393764/full

benjohnson. (2025). Joint Child Malnutrition Estimates (JME) 2025. In *UNICEF DATA*. https://data.unicef.org/resources/jme/

Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., De Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., & Martorell, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, *382*(9890), 427–451. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)60937-X/fulltext?cc=y%3D

Din, M. A. C., Teng, N. I. M. F., & Manaf, Z. A. (2023). Maternal depression and child feeding practices: determinants to malnutrition among young children in Malaysian rural area. *Women's Health*, *19*, 17455057221147800. https://doi.org/10.1177/17455057221147800

Headey, D. D., Ecker, O., Comstock, A. R., & Ruel, M. T. (2021). *Understanding the demand for "protective foods" in East Africa: An economic analysis with policy recommendations*. Intl Food Policy Res Inst. https://books.google.com/books?hl=en&lr=&id=WLc6EAAAQBAJ&oi=fnd&pg=PA2

&dq=Nguyen,+P.+H.,+Headey,+D.,+Frongillo,+E.+A.,+Tran,+L.+M.,+Rawat,+R.,+Ruel,+M.+T.,+%26+Menon,+P.+(2021).+Changes+in+maternal+nutrition+knowledge+and+child+feeding+practices+and+their+association+with+child+growth+in+Southeast+Asia.&ots=UZjiKuEoTR&sig=S_DUn8Qqk2JEVGYg_Bq-BTGrbZo

Hutasoit, M., Utami, K. D., Afriyliani, N. F., Keperawatan, P., Kesehatan, F., Jenderal, U., & Yani, A. (2018). *PENDAHULUAN Stunting atau pendek adalah kondisi kegagalan pertumbuhan pada balita yang ditandai dengan angka tinggi badan per umur kurang dari -2 (nilai z-score) (WHO , 2018). Kejadian stunting disebabkan kondisi kekurangan gizi kronis dalam rentang w*. 2.

Irfan, D., Daharnis, D., & Zadrian, Z. (2024). Tingkat Pengetahuan dan Sikap Ibu dengan Praktek Pemberian Makanan dalam Pencegahan dan Penatalaksanaan Anak Stunting. *Jurnal Sehat Mandiri*, *19*(1), 143–154. https://doi.org/10.33761/jsm.v18i2.987

Kemenko, P. M. K. (2025). *Prevalensi Stunting tahun 2024 Turun Jadi 19, 8 Persen, Pemerintah Terus Dorong Penguatan Gizi Nasional*.

Marzuki, D. S., & Tahrim, N. (2024). *Derajat kesehatan masyarakat*. Uwais Inspirasi Indonesia. https://books.google.com/books?hl=en&lr=&id=cpnuEAAAQBAJ&oi=fnd&pg=PR6&dq=29.%09Dewi+L.+Profil+Puskesmas+Merdeka+Kota+Bogor.+2017.+1–50+p&ots=E1_KlMTzzM&sig=kj9K3eAXhpbUB5nFpdHu10c19_s

Novitasari, P. D., & Wanda, D. (2020a). Maternal feeding practice and its relationship with stunting in children. *Pediatric Reports*, *12*(Suppl 1), 8698. https://doi.org/10.4081/pr.2020.8698

Novitasari, P. D., & Wanda, D. (2020b). Maternal feeding practice and its relationship with stunting in children. *Pediatric Reports*, *12*(Suppl 1), 8698. https://doi.org/10.4081/pr.2020.8698

Nurulliah, N. (2025). Prevalensi Stunting di Jawa Barat Turun. In *Pikiran Rakyat Koran*. https://koran.pikiran-rakyat.com/bandung-raya/pr-3039285761/prevalensi-stunting-di-jawa-barat-turun

Rowa, H., & Averus, A. (2025). Kinerja Dinas Kesehatan Kabupaten Bekasi dalam Penanganan Stunting di Kabupaten Bekasi Provinsi Jawa Barat. *Jurnal Ekonomi Dan Statistik Indonesia*, *5*(1), 97–105. http://www.jurnaljesi.ijmpjournal.org/index.php/jurnaljesi/article/view/185

Ruel, M. T., Garrett, J., Yosef, S., & Olivier, M. (2017). Urbanization, Food Security and

Nutrition. In S. De Pee, D. Taren, & M. W. Bloem (Eds.), *Nutrition and Health in a Developing World* (pp. 705–735). Springer International Publishing. https://doi.org/10.1007/978-3-319-43739-2_32

Saputra, M. R., Malik, R., Ferilda, S., Wahyuni, S., & Nurwiyeni, N. (2023). GAMBARAN TINGKAT PENGETAHUAN, SIKAP, DAN TINDAKAN IBU TENTANG STUNTING DI KENAGARIAN SIJUNJUNG. *Jurnal Kesehatan Saintika Meditory*, *6*(1), 315–324. http://dx.doi.org/10.30633/jsm.v6i1.1861

Sari, S. F., Prayogo, M. S., ADR, A. Z., Akmalina, N. I., Hariyanti, M., Mubarroq, A. S., Annisa, T. N., Latifah, I., & Hasanah, W. (2025). Strategi pencegahan stunting melalui pelatihan pengolahan PMT berbasis bahan lokal dengan metode Participatory Action Research. *Menulis: Jurnal Penelitian Nusantara*, *1*(8), 476–484. https://padangjurnal.web.id/index.php/menulis/article/view/608

Siagian, R., Sihombing, F. S., Siregar, R., Sibuea, H., Putri, K. N., Lubis, M. N. A., & Oktavia, R. (2024). Gambaran Pengetahuan Ibu Tentang Pencegahan Stunting Pada Anak Balita. *Journal Of Nursing Science Research*, *1*(1), 49–55. https://doi.org/10.33862/jnsr.v1i1.430

Sihotang, W. Y., Hulu, V. T., Samosir, F. J., Pane, P. Y., Hartono, H., Manalu, P., Siagian, M., & Panjaitan, H. I. L. (2023). Determinants of stunting in children under five: a scoping review. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition)*, *12*(1), 9–20. https://www.researchgate.net/profile/Victor-Hulu/publication/386599802_Determinants_of_stunting_in_children_under_five_a_scoping_review/links/675810023f7c7c7a83240ec2/Determinants-of-stunting-in-children-under-five-a-scoping-review.pdf

Simanjuntak, B. Y., Haya, M., Suryani, D., Khomsan, A., & Ahmad, C. A. (2019). Maternal knowledge, attitude, and practices about traditional food feeding with stunting and wasting of toddlers in farmer families. *Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)*, *14*(2), 58–64. http://repository.poltekkesbengkulu.ac.id/658/

Tyas, B. D., Lestari, P., & Akbar, M. I. A. (2019). Maternal Perinatal Outcomes Related to Advanced Maternal Age in Preeclampsia Pregnant Women. *Journal of Family & Reproductive Health*, *13*(4), 191. https://doi.org/10.18502/jfrh.v13i4.2646

Umwali, N. (2020). *Influence of Maternal Nutrition Knowledge on Infant and Young Child Feeding Practices and Nutrition Status of Children in Musanze District, Rwanda*

[University of Nairobi]. https://erepository.uonbi.ac.ke/handle/11295/154143

Utami, G. P., Rahmaniati, M., & Bagus, N. (2024). Kejadian Prevalensi Stunting dengan Indeks Pembangunan Manusia dengan Pendekatan Spasial di Jawa Barat Tahun 2021. *Jurnal Manajemen Informasi Kesehatan (Health Information Management)*, *9*(1), 63–72. https://doi.org/10.51851/jmis.v9i1.476

Victora, C. G., Christian, P., Vidaletti, L. P., Gatica-Domínguez, G., Menon, P., & Black, R. E. (2021). Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. *The Lancet*, *397*(10282), 1388–1399. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00394-9/abstract

Wahyuni, F. C., Karomah, U., Basrowi, R. W., Sitorus, N. L., & Lestari, L. A. (2023). The Relationship between Nutrition Literacy and Nutrition Knowledge with the Incidence of Stunting: A Scoping Review. *Amerta Nutrition*, *7*. https://e-journal.unair.ac.id/AMNT/article/download/52998/27948

Demographic Characteristics, Knowledge, Attitudes, And Actions Of Mothers Related to Nutrition in Stunting Toddlers

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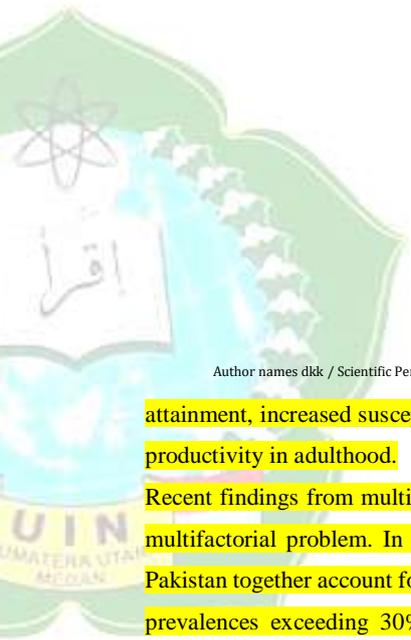[2]Department of Medical Community, Faculty of Medicine, Universitas Kristen Indonesia, Jakarta, Indonesia
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Abstract

Stunting is a chronic nutritional problem that affects children's growth and development. Indonesia still has a high prevalence of stunting, including in urban areas such as Bogor. Understanding maternal characteristics and nutrition-related behaviors is important for planning appropriate interventions. This study aimed to describe maternal demographic characteristics, nutrition-related knowledge, attitudes, and practices, as well as the incidence of stunting among toddlers in Gunung Batu Village, Bogor City. A quantitative descriptive observational design was used. The study included all mothers with stunted toddlers aged 6–59 months registered at the Gunung Batu Community Health Center in February 2025. A total of 54 respondents were selected using a total sampling approach. Data on maternal knowledge, attitudes, and practices were collected using questionnaires, while toddler stunting data were obtained from health center records. Data were analyzed descriptively using frequencies and percentages. The average maternal age was 30.69 years. Most mothers had a senior high school/vocational education (42.59%) and were housewives (72.22%). All toddlers included in the study (N = 54) were classified as stunted. Most mothers had relatively good levels of knowledge and practices related to toddler nutrition (96.3%), and all respondents reported positive attitudes. Despite adequate maternal knowledge, attitudes, and practices, stunting persisted among all toddlers in this study. These findings suggest that factors beyond maternal nutrition-related behaviors may contribute to stunting and highlight the need for further studies to examine other potential contributors to support more comprehensive stunting prevention efforts.

Keyword: Stunting, Knowledge, Attitude, Practice, Mother, Toddler, Demography

INTRODUCTION

Stunting among toddlers remains one of the most critical global public health and development challenges. Stunting is defined as a height-for-age z-score below −2 standard deviations, reflecting chronic undernutrition and recurrent infections during the most sensitive periods of growth and development. According to the Joint Child Malnutrition Estimates (JME) 2024, an estimated 148 million children under five years of age (22.3%) worldwide were stunted. Although the global prevalence has shown a gradual decline over the past decade, the absolute number of affected children remains alarmingly high, indicating persistent structural and behavioral determinants of child undernutrition (benjohnson, 2025). Stunting is associated with irreversible consequences, including impaired cognitive development, reduced educational

attainment, increased susceptibility to non-communicable diseases, and diminished economic productivity in adulthood.

Recent findings from multiple countries demonstrate that stunting remains a widespread and multifactorial problem. In South Asia, which bears the highest burden globally, India and Pakistan together account for more than one-third of stunted children worldwide, with national prevalences exceeding 30% in several states (benjohnson, 2025). In Sub-Saharan Africa, stunting rates remain persistently high in countries such as Nigeria, Ethiopia, and the Democratic Republic of Congo, where food insecurity, poor maternal nutrition, and limited access to health services continue to impede progress (Akombi et al., 2017; Black et al., 2013). In Latin America, although overall prevalence is lower, urban poor populations in countries such as Guatemala and Peru still experience significant stunting due to socioeconomic inequality and inadequate infant feeding practices (Victora et al., 2021)

In Asia, the most populous region globally, the JME 2024 report estimates that over 57% of all stunted children worldwide (approximately 84.5 million) reside in this region. While South Asia carries the largest share, Southeast Asian countries, including Indonesia, Cambodia, and the Philippines, continue to report moderate-to-high stunting prevalence, particularly among low-income and urban marginalized populations (benjohnson, 2025). Studies conducted in urban slums in Manila, Dhaka, and Ho Chi Minh City have shown that rapid urbanization, food affordability issues, and suboptimal caregiving practices contribute significantly to persistent stunting in cities (Headey et al., 2021; Ruel et al., 2017)

In Indonesia, stunting remains a national development priority. The Indonesian Nutritional Status Survey (SSGI) 2024 reported a decline in national stunting prevalence to 19.8%, down from 21.5% in 2023. Despite this progress, the prevalence remains above the national target of 14% outlined in the 2020–2024 Rencana Pembangunan Hangka Menengah Nasional (RPJMN). Consequently, the Indonesian government has intensified both nutrition-specific and nutrition-sensitive interventions, emphasizing maternal and child nutrition, household food security, and behavior change communication (Kemenko, 2025).
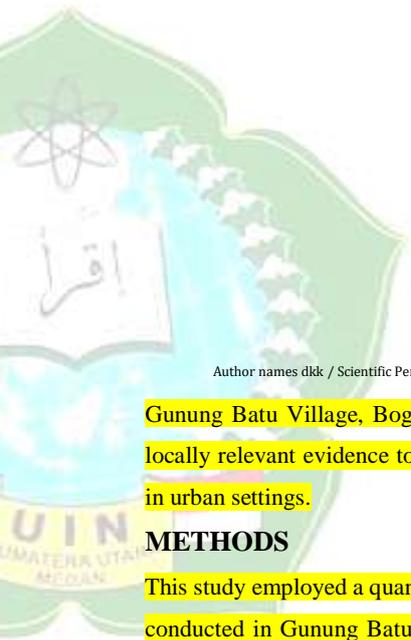
At the provincial level, West Java recorded a stunting prevalence of 15.9% in 2024, reflecting improvement but still exceeding the national target. Marked disparities persist across districts and cities, with some urban areas reporting lower prevalence while others continue to experience substantial burdens. Nutrition-sensitive programs such as the Healthy and Independent Sustainable Yard (ASRI) initiative have been implemented to improve household-

level food availability and dietary diversity, highlighting the increasing focus on family-based nutrition practices (Nurulliah, 2025).

In Bogor Regency, stunting prevalence reportedly declined sharply to 7.59% in 2024, attributed to innovative local strategies such as the Stunting Prevention House (CETING) program and foster parent initiatives. However, district-level data may obscure intra-urban disparities, particularly in densely populated cities such as Bogor City, where socioeconomic inequality, maternal employment patterns, and lifestyle factors may influence caregiving and feeding behaviors. Recent local reports indicate that, despite routine participation in nutrition education programs, cases of stunting persist in several urban health center catchment areas (Rowa & Averus, 2025; Utami et al., 2024).

Evidence from the last five years consistently emphasizes the critical role of maternal knowledge, attitudes, and practices (KAP) in determining child nutritional status. A meta-analysis covering low- and middle-income countries found that children of mothers with inadequate nutrition knowledge were 2.3 times more likely to be stunted compared to those whose mothers had adequate knowledge (Novitasari & Wanda, 2020a). Studies in Bangladesh, Vietnam, and Nepal have demonstrated that poor maternal understanding of complementary feeding timing, meal frequency, and dietary diversity significantly increases the risk of stunting (Din et al., 2023; Headey et al., 2021; Simanjuntak et al., 2019). In Malaysia, recent findings showed that inappropriate feeding practices and low maternal responsiveness were independently associated with stunting among toddlers in urban settings (Bayked et al., 2024). In Indonesia, several studies conducted between 2020 and 2024 reported significant associations between maternal education, nutrition knowledge, feeding attitudes, and child growth outcomes (Umwali, 2020; Wahyuni et al., 2023). However, most of these studies were conducted in rural areas or at the provincial level, leaving urban city-level evidence limited, particularly in Bogor City. This gap restricts the ability of local governments to design context-specific interventions tailored to urban household characteristics. A preliminary survey conducted at the Gunung Batu Community Health Center in January 2025 identified several toddlers classified as stunted despite regular maternal attendance at nutrition counseling sessions. This finding suggests that attendance alone may not translate into adequate knowledge, positive attitudes, or appropriate practices. Therefore, a systematic assessment of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices is urgently needed. This study aims to describe maternal characteristics, knowledge, attitudes, and practices related to toddler nutrition, as well as the characteristics of stunted toddlers in

Gunung Batu Village, Bogor City, in February 2025. The findings are expected to provide locally relevant evidence to support targeted, behavior-focused stunting prevention strategies in urban settings.
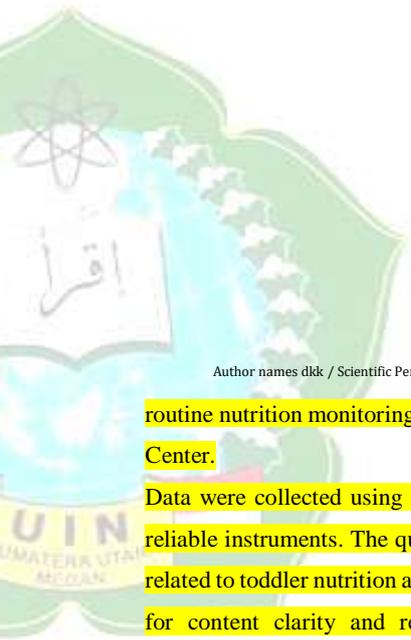
METHODS

This study employed a quantitative observational design with a descriptive–analytic approach, conducted in Gunung Batu Village, Bogor City, during February 2025. The study aimed to describe maternal demographic characteristics, nutritional knowledge, attitudes, and practices (KAP), as well as characteristics of stunted toddlers, and to explore bivariate associations between maternal variables and toddler characteristics.

The study population consisted of all mothers with stunted toddlers aged 6–59 months registered in the By Name By Address (BNBA) database of Gunung Batu Village. The BNBA is an official administrative registry maintained by the Community Health Center (Puskesmas) that records children identified with nutritional problems, including stunting, along with individual and household information. A total sampling technique was applied. Based on BNBA data for February 2025, a total of 54 mother–toddler pairs met the eligibility criteria and were included in the study (N = 54). No sample size calculation was performed because the population was relatively small and fully accessible.

Inclusion criteria were mothers who: had toddlers aged 6–59 months classified as stunted in the February 2025 BNBA records; resided in Gunung Batu Village, and provided informed consent. Exclusion criteria included mothers who were unavailable during data collection, declined participation, or had incomplete questionnaire responses. The variables analyzed in this study were grouped as follows: 1) Maternal demographic variables: age, level of education, occupation, and parity; 2) Maternal nutrition-related variables: Knowledge (14 items; Guttman scale; categorized as good/poor); Attitudes (15 items; 5-point Likert scale; categorized as positive/negative), and Practices (12 items; Guttman scale; categorized as appropriate/inappropriate); 3)Toddler characteristics: age (months), sex, and stunting severity (moderate or severe).

Stunting status was determined based on height-for-age z-scores (HAZ) calculated using the WHO Child Growth Standards 2006. Children with HAZ < −2 SD were classified as stunted, while those with HAZ < −3 SD were categorized as severely stunted. Anthropometric measurements were performed by trained health workers at the Posyandu or Puskesmas using standardized equipment, including a length board for children under two years of age and a microtoise for children aged two years and above. Anthropometric data were obtained from

routine nutrition monitoring records for February 2025 at the Gunung Batu Community Health Center.

Data were collected using a structured questionnaire adapted from previously validated and reliable instruments. The questionnaire assessed maternal knowledge, attitudes, and practices related to toddler nutrition and feeding. Prior to data collection, the questionnaire was reviewed for content clarity and relevance. Data collection was conducted through face-to-face interviews by trained enumerators.

Data were analyzed using statistical software. Univariate analysis was conducted to describe the distribution of all study variables. Categorical variables were presented as frequencies and percentages, while numerical variables were summarized using means, medians, standard deviations, and ranges, depending on data distribution. To enhance analytical rigor, bivariate analysis was performed to explore associations between maternal variables (education level, knowledge, attitudes, and practices) and toddler characteristics (age group and stunting severity). The Chi-square test or Fisher's exact test was used for categorical variables, as appropriate. A p-value of < 0.05 was considered statistically significant. Multivariate analysis was not performed due to the limited sample size and the absence of a non-stunted comparison group. This constitutes a limitation of the study, as potential confounding factors could not be fully controlled.

This study received ethical approval from the Lembaga Penelitian dan Pengabdian kepada Masyarakat (LPPM), Christian University of Indonesia (Ethical Approval No.: 021/UKI.LPPM/PPM.00.00/ET.2025).

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RESULTS

Table 1 Demographic Characteristics of Respondents Based on Mother's Age

Descriptive Statistics	N
Mean	30.69
Median	29
Mode	28, 36, 40
Minimum	22
Maximum	46
Total Data	54

Based on the collected data, the distribution of maternal ages shows a fairly varied range. The average maternal age was 30.69 years, with a median of 29 years. This indicates that most mothers were in the young to early adult age group. The mode of the data, the most frequently
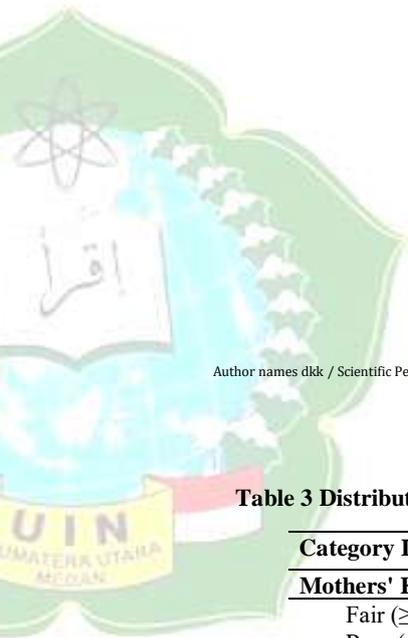
occurring ages, was 28, 36, and 40 years. The youngest recorded maternal age was 22 years, while the oldest was 46 years, for a total of 54 age data points collected.

Table 2 Demographic Characteristics of Respondents Based on Mother's Education, Mother's Occupation and Monthly Family Income

Descriptive Statistics	Frequency	Percentage
Mother's Education		
Senior High School	23	42.59
Primary School	15	27.78
Junior High School	13	24.07
Higher Education	3	5.55
Mother's Occupation		
Housewife	39	72.22
Trader	12	22.22
Seblak Seller	1	1.85
Teacher or Lecturer	1	1.85
Laborer	1	1.85
Monthly Family Income		
≥ Rp 3.000.000	18	33.33
Rp 1.000.000 - < Rp 2.000.000	17	31.48
Rp 2.000.000 - < Rp 3.000.000	17	31.48
< Rp 1.000.000	2	3.70

From the Table 2, the final educational profile of the mothers in this sample shows that the majority had a secondary education background. High school/vocational high school education was the highest level of education most commonly held by mothers, accounting for 42.59% of the total respondents (23 people). This was followed by elementary school education at 27.78% (15 people) and junior high school at 24.07% (13 people). A further 5.55% (3 people) had a higher education. A review of mothers' occupations shows a dominant role as housewives. 72.22% of respondents (39 people) work as housewives. Furthermore, a significant proportion of other occupations are traders, accounting for 22.22% (12 people). Other occupations, such as selling seblak (spicy rice cakes), teaching or lecturers, and laborers, were each represented by only one respondent, representing 1.85% of each category. Analysis of monthly family income shows that income distribution is relatively even across several categories. The income category "≥ Rp 3,000,000" is the largest group, covering 33.33% (18 families). The other two income categories, namely "Rp 1,000,000 - < Rp 2,000,000" and "Rp 2,000,000 - < Rp 3,000,000", have identical proportions, each at 31.48% (17 families). Meanwhile, only a small portion, namely 3.70% (2 families), have incomes below Rp 1,000,000.

Table 3 Distribution of Mothers' Knowledge Level Regarding Stunting

Category Level	Frequency	Percentage
Mothers' Knowledge		
Fair (≥ 9 score)	52	96.3
Poor (≤ 8 score)	2	3.7
Mothers' Attitude		
Fair (≥ 36 score)	54	100
Poor (≤ 35 score)	0	0
Maternal Action		
Fair (≥ 8 score)	52	96.3
Poor (≤ 7 score)	2	3.7

Note: Knowledge category criteria (Max score 14): Fairly Good ≥60 (score ≥8.4, rounded up to ≥9); Poor <60 (score ≤8)

Note: Attitude category criteria (Max score 60): Fair ≥60 (score ≥36); Poor <60 (score ≤35)

Note: Action category criteria (Max score 12): Fair ≥60 (score ≥7.2, rounded to ≥8); Poor <60 (score ≤7).

Based on Table 3, the majority of mothers (96.3%) had a "fairly good" level of knowledge about stunting. This indicates that almost all respondents had an adequate understanding of stunting, including its definition, causes, characteristics, impacts, and prevention efforts. Based on data of mothers' attitude, all mothers (100.0%) showed a 'Quite Good' attitude toward stunting prevention efforts. This indicates a positive tendency among mothers to support practices related to children's nutritional health. The last based on maternal action, the majority of mothers (96.3%) demonstrated 'Quite Good' practices or actions in stunting prevention efforts. This reflects that most mothers have implemented concrete steps to support stunting prevention in toddlers.

DISCUSSION

This study provides a descriptive overview of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices (KAP) among households with stunted toddlers in Gunung Batu Village, Bogor City. A key finding is that all toddlers included in the study were classified as stunted despite the majority of mothers demonstrating fairly good levels of knowledge, attitudes, and practices related to nutrition. This finding reinforces the notion that stunting is a multifactorial condition and cannot be explained solely by maternal cognitive and behavioral factors, particularly in urban settings.
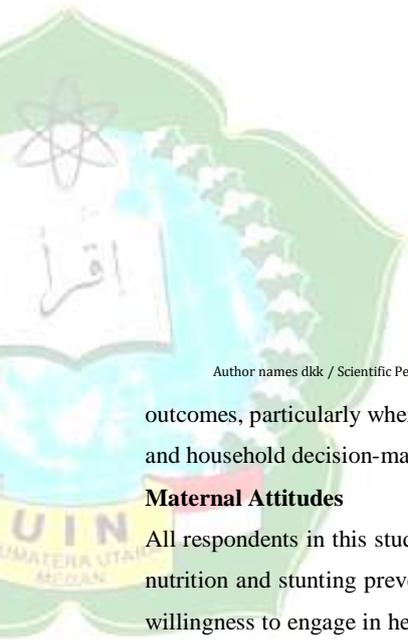
Maternal Demographic Characteristics

The mean maternal age in this study was 30.69 years, placing most respondents within the productive reproductive age group. Similar age distributions among mothers of stunted children have been reported in several Indonesian studies conducted in West Java, Central Java, Aceh, and East Nusa Tenggara (Marzuki & Tahrim, 2024; Saputra et al., 2023; Sari et al., 2025). Internationally, studies in Bangladesh, Nepal, and Ethiopia also reported that stunting frequently occurs among children of mothers in their late twenties to early thirties, suggesting that maternal age alone is not a protective factor against chronic undernutrition (Basnet et al., 2021; Headey et al., 2021; Tyas et al., 2019).

Most mothers in this study had completed senior high school or vocational education and were predominantly housewives. This pattern is consistent with findings from other urban and semi-urban Indonesian settings, where mothers of stunted children often have moderate educational attainment but limited economic independence (Hutasoit et al., 2018; Siagian et al., 2024; Sihotang et al., 2023). However, studies from Malaysia, Vietnam, and Peru suggest that higher maternal education is generally associated with lower stunting prevalence, especially when accompanied by stable household income and food security (Bayked et al., 2024; Headey et al., 2021; Victora et al., 2021). The discrepancy indicates that education without sufficient socioeconomic support may be insufficient to prevent stunting, particularly in low-income urban households.

Maternal Knowledge

The majority of mothers in this study demonstrated a fair to good level of nutritional knowledge. This finding aligns with recent studies in Indonesia reporting adequate maternal knowledge among mothers of stunted toddlers, especially in areas with active nutrition counseling programs (Irfan et al., 2024; Siagian et al., 2024). Similar patterns have been observed in studies from Bangladesh and Vietnam, where mothers exhibited good theoretical knowledge of child nutrition but still had stunted children (Basnet et al., 2021; Simanjuntak et al., 2019; Umwali, 2020).

In contrast, meta-analyses and analytical studies from low- and middle-income countries consistently demonstrate that poor maternal knowledge significantly increases the risk of stunting, with odds ratios ranging from 2.0 to 2.5 (Black et al., 2013; Novitasari & Wanda, 2020b). The difference between these analytical findings and the present descriptive results suggests that knowledge alone does not automatically translate into improved nutritional

outcomes, particularly when external constraints—such as food affordability, time limitations, and household decision-making dynamics—restrict the application of that knowledge.

Maternal Attitudes

All respondents in this study were categorized as having fairly good attitudes toward toddler nutrition and stunting prevention. Positive maternal attitudes reflect awareness, concern, and willingness to engage in healthy feeding and caregiving practices. Similar findings have been reported in urban Indonesian studies, where mothers expressed strong agreement with nutrition messages delivered through Posyandu and Puskesmas activities (Hutasoit et al., 2018; Marzuki & Tahrim, 2024; Saputra et al., 2023).
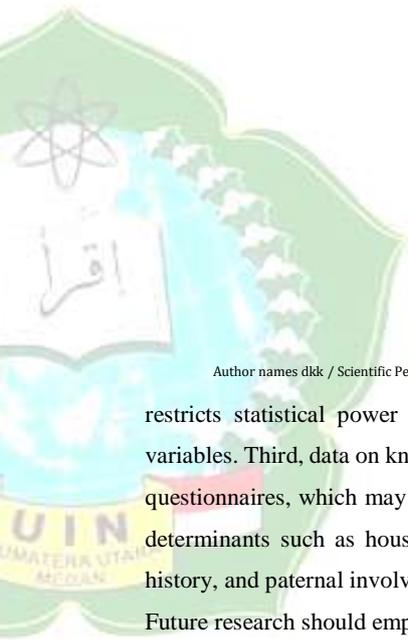
However, evidence from analytical studies in Southeast Asia and Africa indicates that positive attitudes alone are insufficient to prevent stunting when structural barriers persist (Akombi et al., 2017; Headey et al., 2021; Ruel et al., 2017). Studies from urban slums in India, the Philippines, and Nigeria found that mothers with positive attitudes still struggled to provide adequate diets due to food insecurity, poor sanitation, and inconsistent access to health services (Black et al., 2013; Victora et al., 2021). These findings support the results of the present study, suggesting that favorable attitudes may be constrained by contextual limitations beyond maternal control.

Maternal Practices

Most mothers in this study demonstrated fairly good nutritional practices, a finding that contrasts with several studies identifying poor feeding practices as a major contributor to stunting. Research from rural Indonesia, Cambodia, and Myanmar reported inadequate complementary feeding frequency, low dietary diversity, and early cessation of breastfeeding as dominant risk factors for stunting (Basnet et al., 2021; Umwali, 2020; Victora et al., 2021). The discrepancy suggests that in Gunung Batu Village, stunting may not be primarily driven by inappropriate feeding practices alone. Similar observations have been reported in urban Malaysian and Peruvian studies, where even appropriate feeding practices failed to prevent stunting in the presence of recurrent infections, overcrowded housing, and poor environmental sanitation (Bayked et al., 2024). These findings emphasize that maternal practices may be necessary but not sufficient conditions for optimal child growth.

Study Limitations and Recommendations for Future Research

This study has several limitations. First, its descriptive design and the absence of a non-stunted comparison group prevent causal inference and limit the ability to quantify the strength of associations between maternal factors and stunting. Second, the small sample size (N = 54)

restricts statistical power and precludes multivariate analysis to control for confounding variables. Third, data on knowledge, attitudes, and practices were collected using self-reported questionnaires, which may be subject to recall and social desirability bias. Finally, important determinants such as household income, food security, environmental sanitation, infection history, and paternal involvement were not assessed.

Future research should employ analytical or mixed-methods designs, include both stunted and non-stunted children, and incorporate multivariate modeling to disentangle the relative contributions of maternal, household, and environmental factors. Qualitative studies exploring barriers to implementing nutritional knowledge in urban settings may also provide valuable insights. Such evidence is essential to inform integrated, multisectoral stunting prevention strategies that move beyond behavior change alone and address the broader structural determinants of child undernutrition in urban areas.

Implications for Local Policy and Practice

The findings of this study have important implications for stunting prevention efforts in Bogor City. While maternal education and behavior-focused interventions remain important, they should be complemented by broader strategies addressing socioeconomic conditions, food access, sanitation, and health service quality. Local stunting reduction programs should integrate nutrition education with social assistance, environmental health improvements, and strengthened primary health care services. Future research in urban areas of Bogor City should adopt analytical designs to explore the interaction between maternal factors and structural determinants of stunting. Such evidence is essential to support more targeted, context-specific, and sustainable stunting prevention strategies at the city level.

CONCLUSIONS

This study found that most mothers of stunted toddlers in Gunung Batu Village were in the productive age group, had a senior high school or vocational education, and were predominantly housewives. The majority of respondents demonstrated fairly good levels of knowledge, attitudes, and practices related to toddler nutrition. Nevertheless, all toddlers included in this study were classified as stunted. These findings indicate that, within the study population, adequate maternal knowledge, attitudes, and practices alone were not sufficient to prevent stunting. The results highlight the need for further analytical research that includes a broader range of variables to better understand the factors associated with stunting among

toddlers in urban areas of Bogor City. Such evidence is essential to support the development of comprehensive and context-appropriate stunting prevention strategies.

REFERENCE

Akombi, B. J., Agho, K. E., Hall, J. J., Wali, N., Renzaho, A. M. N., & Merom, D. (2017). Stunting, wasting and underweight in sub-Saharan Africa: a systematic review. *International Journal of Environmental Research and Public Health*, *14*(8), 863. https://doi.org/10.3390/ijerph14080863

Basnet, S., Frongillo, E. A., Nguyen, P. H., Moore, S., & Arabi, M. (2021). Factor Structure and Equivalence of Maternal Resources for Care in Bangladesh, Vietnam, and Ethiopia. *Maternal and Child Health Journal*, *25*(6), 938–945. https://doi.org/10.1007/s10995-020-03100-4

Bayked, E. M., Yimer, E. M., Gelaw, T., Mohammed, A. S., & Mekonen, N. A. (2024). Dietary knowledge, attitude, practice, and associated factors among pregnant mothers in Ethiopia: a systematic review and meta-analysis. *Frontiers in Public Health*, *12*, 1393764.
https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1393764/full

benjohnson. (2025). Joint Child Malnutrition Estimates (JME) 2025. In *UNICEF DATA*. https://data.unicef.org/resources/jme/

Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., De Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., & Martorell, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, *382*(9890), 427–451. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)60937-X/fulltext?cc=y%3D

Din, M. A. C., Teng, N. I. M. F., & Manaf, Z. A. (2023). Maternal depression and child feeding practices: determinants to malnutrition among young children in Malaysian rural area. *Women's Health*, *19*, 17455057221147800.
https://doi.org/10.1177/17455057221147800

Headey, D. D., Ecker, O., Comstock, A. R., & Ruel, M. T. (2021). *Understanding the demand for "protective foods" in East Africa: An economic analysis with policy recommendations*. Intl Food Policy Res Inst.
https://books.google.com/books?hl=en&lr=&id=WLc6EAAAQBAJ&oi=fnd&pg=PA2

&dq=Nguyen,+P.+H.,+Headey,+D.,+Frongillo,+E.+A.,+Tran,+L.+M.,+Rawat,+R.,+Ruel,+M.+T.,+%26+Menon,+P.+(2021).+Changes+in+maternal+nutrition+knowledge+and+child+feeding+practices+and+their+association+with+child+growth+in+Southeast+Asia.&ots=UZjiKuEoTR&sig=S_DUn8Qqk2JEVGYg_Bq-BTGrbZo

Hutasoit, M., Utami, K. D., Afriyliani, N. F., Keperawatan, P., Kesehatan, F., Jenderal, U., & Yani, A. (2018). *PENDAHULUAN Stunting atau pendek adalah kondisi kegagalan pertumbuhan pada balita yang ditandai dengan angka tinggi badan per umur kurang dari -2 (nilai z-score) (WHO , 2018). Kejadian stunting disebabkan kondisi kekurangan gizi kronis dalam rentang w. 2.*

Irfan, D., Daharnis, D., & Zadrian, Z. (2024). Tingkat Pengetahuan dan Sikap Ibu dengan Praktek Pemberian Makanan dalam Pencegahan dan Penatalaksanaan Anak Stunting. *Jurnal Sehat Mandiri*, *19*(1), 143–154. https://doi.org/10.33761/jsm.v18i2.987

Kemenko, P. M. K. (2025). *Prevalensi Stunting tahun 2024 Turun Jadi 19, 8 Persen, Pemerintah Terus Dorong Penguatan Gizi Nasional.*

Marzuki, D. S., & Tahrim, N. (2024). *Derajat kesehatan masyarakat*. Uwais Inspirasi Indonesia. https://books.google.com/books?hl=en&lr=&id=cpnuEAAAQBAJ&oi=fnd&pg=PR6&dq=29.%09Dewi+L.+Profil+Puskesmas+Merdeka+Kota+Bogor.+2017.+1–50+p&ots=E1_KlMTzzM&sig=kj9K3eAXhpbUB5nFpdHu10c19_s

Novitasari, P. D., & Wanda, D. (2020a). Maternal feeding practice and its relationship with stunting in children. *Pediatric Reports*, *12*(Suppl 1), 8698. https://doi.org/10.4081/pr.2020.8698
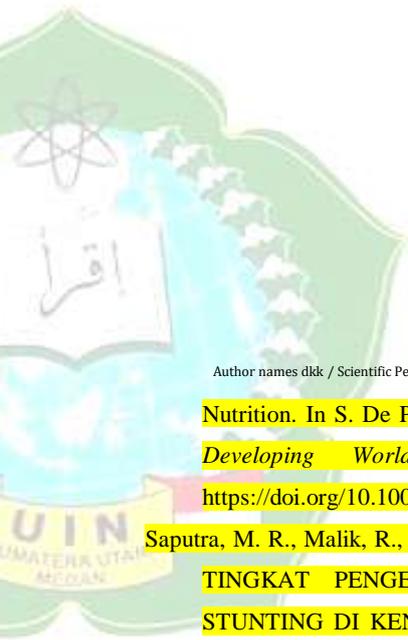
Novitasari, P. D., & Wanda, D. (2020b). Maternal feeding practice and its relationship with stunting in children. *Pediatric Reports*, *12*(Suppl 1), 8698. https://doi.org/10.4081/pr.2020.8698

Nurulliah, N. (2025). Prevalensi Stunting di Jawa Barat Turun. In *Pikiran Rakyat Koran*. https://koran.pikiran-rakyat.com/bandung-raya/pr-3039285761/prevalensi-stunting-di-jawa-barat-turun

Rowa, H., & Averus, A. (2025). Kinerja Dinas Kesehatan Kabupaten Bekasi dalam Penanganan Stunting di Kabupaten Bekasi Provinsi Jawa Barat. *Jurnal Ekonomi Dan Statistik Indonesia*, *5*(1), 97–105. http://www.jurnaljesi.ijmpjournal.org/index.php/jurnaljesi/article/view/185

Ruel, M. T., Garrett, J., Yosef, S., & Olivier, M. (2017). Urbanization, Food Security and

Nutrition. In S. De Pee, D. Taren, & M. W. Bloem (Eds.), *Nutrition and Health in a Developing World* (pp. 705–735). Springer International Publishing. https://doi.org/10.1007/978-3-319-43739-2_32

Saputra, M. R., Malik, R., Ferilda, S., Wahyuni, S., & Nurwiyeni, N. (2023). GAMBARAN TINGKAT PENGETAHUAN, SIKAP, DAN TINDAKAN IBU TENTANG STUNTING DI KENAGARIAN SIJUNJUNG. *Jurnal Kesehatan Saintika Meditory*, *6*(1), 315–324. http://dx.doi.org/10.30633/jsm.v6i1.1861

Sari, S. F., Prayogo, M. S., ADR, A. Z., Akmalina, N. I., Hariyanti, M., Mubarroq, A. S., Annisa, T. N., Latifah, I., & Hasanah, W. (2025). Strategi pencegahan stunting melalui pelatihan pengolahan PMT berbasis bahan lokal dengan metode Participatory Action Research. *Menulis: Jurnal Penelitian Nusantara*, *1*(8), 476–484. https://padangjurnal.web.id/index.php/menulis/article/view/608

Siagian, R., Sihombing, F. S., Siregar, R., Sibuea, H., Putri, K. N., Lubis, M. N. A., & Oktavia, R. (2024). Gambaran Pengetahuan Ibu Tentang Pencegahan Stunting Pada Anak Balita. *Journal Of Nursing Science Research*, *1*(1), 49–55. https://doi.org/10.33862/jnsr.v1i1.430

Sihotang, W. Y., Hulu, V. T., Samosir, F. J., Pane, P. Y., Hartono, H., Manalu, P., Siagian, M., & Panjaitan, H. I. L. (2023). Determinants of stunting in children under five: a scoping review. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition)*, *12*(1), 9–20. https://www.researchgate.net/profile/Victor-Hulu/publication/386599802_Determinants_of_stunting_in_children_under_five_a_scoping_review/links/675810023f7c7c7a83240ec2/Determinants-of-stunting-in-children-under-five-a-scoping-review.pdf

Simanjuntak, B. Y., Haya, M., Suryani, D., Khomsan, A., & Ahmad, C. A. (2019). Maternal knowledge, attitude, and practices about traditional food feeding with stunting and wasting of toddlers in farmer families. *Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)*, *14*(2), 58–64. http://repository.poltekkesbengkulu.ac.id/658/

Tyas, B. D., Lestari, P., & Akbar, M. I. A. (2019). Maternal Perinatal Outcomes Related to Advanced Maternal Age in Preeclampsia Pregnant Women. *Journal of Family & Reproductive Health*, *13*(4), 191. https://doi.org/10.18502/jfrh.v13i4.2646

Umwali, N. (2020). *Influence of Maternal Nutrition Knowledge on Infant and Young Child Feeding Practices and Nutrition Status of Children in Musanze District, Rwanda*

[University of Nairobi]. https://erepository.uonbi.ac.ke/handle/11295/154143

Utami, G. P., Rahmaniati, M., & Bagus, N. (2024). Kejadian Prevalensi Stunting dengan Indeks Pembangunan Manusia dengan Pendekatan Spasial di Jawa Barat Tahun 2021. *Jurnal Manajemen Informasi Kesehatan (Health Information Management)*, *9*(1), 63–72. https://doi.org/10.51851/jmis.v9i1.476

Victora, C. G., Christian, P., Vidaletti, L. P., Gatica-Domínguez, G., Menon, P., & Black, R. E. (2021). Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. *The Lancet*, *397*(10282), 1388–1399. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00394-9/abstract

Wahyuni, F. C., Karomah, U., Basrowi, R. W., Sitorus, N. L., & Lestari, L. A. (2023). The Relationship between Nutrition Literacy and Nutrition Knowledge with the Incidence of Stunting: A Scoping Review. *Amerta Nutrition*, *7*. https://e-journal.unair.ac.id/AMNT/article/download/52998/27948

Demographic Characteristics, Knowledge, Attitudes, And Actions Of Mothers Related to Nutrition in Stunting Toddlers

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Abstract

Stunting is a chronic nutritional problem that affects children's growth and development. Indonesia still has a high prevalence of stunting, including in urban areas such as Bogor. Understanding maternal characteristics and nutrition-related behaviors is important for planning appropriate interventions. This study aimed to describe maternal demographic characteristics, nutrition-related knowledge, attitudes, and practices, as well as the incidence of stunting among toddlers in Gunung Batu Village, Bogor City. A quantitative descriptive observational design was used. The study included all mothers with stunted toddlers aged 6–59 months registered at the Gunung Batu Community Health Center in February 2025. A total of 54 respondents were selected using a total sampling approach. Data on maternal knowledge, attitudes, and practices were collected using questionnaires, while toddler stunting data were obtained from health center records. Data were analyzed descriptively using frequencies and percentages. The average maternal age was 30.69 years. Most mothers had a senior high school/vocational education (42.59%) and were housewives (72.22%). All toddlers included in the study (N = 54) were classified as stunted. Most mothers had relatively good levels of knowledge and practices related to toddler nutrition (96.3%), and all respondents reported positive attitudes. Despite adequate maternal knowledge, attitudes, and practices, stunting persisted among all toddlers in this study. These findings suggest that factors beyond maternal nutrition-related behaviors may contribute to stunting and highlight the need for further studies to examine other potential contributors to support more comprehensive stunting prevention efforts.

Keyword: Stunting, Knowledge, Attitude, Practice, Mother, Toddler, Demography

INTRODUCTION

Stunting among toddlers remains one of the most critical global public health and development challenges. Stunting is defined as a height-for-age z-score below −2 standard deviations, reflecting chronic undernutrition and recurrent infections during the most sensitive periods of growth and development. According to the Joint Child Malnutrition Estimates (JME) 2024, an estimated 148 million children under five years of age (22.3%) worldwide were stunted. Although the global prevalence has shown a gradual decline over the past decade, the absolute number of affected children remains alarmingly high, indicating persistent structural and behavioral determinants of child undernutrition (benjohnson, 2025). Stunting is associated with irreversible consequences, including impaired cognitive development, reduced educational

attainment, increased susceptibility to non-communicable diseases, and diminished economic productivity in adulthood.

Recent findings from multiple countries demonstrate that stunting remains a widespread and multifactorial problem. In South Asia, which bears the highest burden globally, India and Pakistan together account for more than one-third of stunted children worldwide, with national prevalences exceeding 30% in several states (benjohnson, 2025). In Sub-Saharan Africa, stunting rates remain persistently high in countries such as Nigeria, Ethiopia, and the Democratic Republic of Congo, where food insecurity, poor maternal nutrition, and limited access to health services continue to impede progress (Akombi et al., 2017; Black et al., 2013). In Latin America, although overall prevalence is lower, urban poor populations in countries such as Guatemala and Peru still experience significant stunting due to socioeconomic inequality and inadequate infant feeding practices (Victora et al., 2021)

In Asia, the most populous region globally, the JME 2024 report estimates that over 57% of all stunted children worldwide (approximately 84.5 million) reside in this region. While South Asia carries the largest share, Southeast Asian countries, including Indonesia, Cambodia, and the Philippines, continue to report moderate-to-high stunting prevalence, particularly among low-income and urban marginalized populations (benjohnson, 2025). Studies conducted in urban slums in Manila, Dhaka, and Ho Chi Minh City have shown that rapid urbanization, food affordability issues, and suboptimal caregiving practices contribute significantly to persistent stunting in cities (Headey et al., 2021; Ruel et al., 2017)

In Indonesia, stunting remains a national development priority. The Indonesian Nutritional Status Survey (SSGI) 2024 reported a decline in national stunting prevalence to 19.8%, down from 21.5% in 2023. Despite this progress, the prevalence remains above the national target of 14% outlined in the 2020–2024 Rencana Pembangunan Hangka Menengah Nasional (RPJMN). Consequently, the Indonesian government has intensified both nutrition-specific and nutrition-sensitive interventions, emphasizing maternal and child nutrition, household food security, and behavior change communication (Kemenko, 2025).

At the provincial level, West Java recorded a stunting prevalence of 15.9% in 2024, reflecting improvement but still exceeding the national target. Marked disparities persist across districts and cities, with some urban areas reporting lower prevalence while others continue to experience substantial burdens. Nutrition-sensitive programs such as the Healthy and Independent Sustainable Yard (ASRI) initiative have been implemented to improve household-

level food availability and dietary diversity, highlighting the increasing focus on family-based nutrition practices (Nurulliah, 2025).

In Bogor Regency, stunting prevalence reportedly declined sharply to 7.59% in 2024, attributed to innovative local strategies such as the Stunting Prevention House (CETING) program and foster parent initiatives. However, district-level data may obscure intra-urban disparities, particularly in densely populated cities such as Bogor City, where socioeconomic inequality, maternal employment patterns, and lifestyle factors may influence caregiving and feeding behaviors. Recent local reports indicate that, despite routine participation in nutrition education programs, cases of stunting persist in several urban health center catchment areas (Rowa & Averus, 2025; Utami et al., 2024).

Evidence from the last five years consistently emphasizes the critical role of maternal knowledge, attitudes, and practices (KAP) in determining child nutritional status. A meta-analysis covering low- and middle-income countries found that children of mothers with inadequate nutrition knowledge were 2.3 times more likely to be stunted compared to those whose mothers had adequate knowledge (Novitasari & Wanda, 2020a). Studies in Bangladesh, Vietnam, and Nepal have demonstrated that poor maternal understanding of complementary feeding timing, meal frequency, and dietary diversity significantly increases the risk of stunting (Din et al., 2023; Headey et al., 2021; Simanjuntak et al., 2019). In Malaysia, recent findings showed that inappropriate feeding practices and low maternal responsiveness were independently associated with stunting among toddlers in urban settings (Bayked et al., 2024). In Indonesia, several studies conducted between 2020 and 2024 reported significant associations between maternal education, nutrition knowledge, feeding attitudes, and child growth outcomes (Umwali, 2020; Wahyuni et al., 2023). However, most of these studies were conducted in rural areas or at the provincial level, leaving urban city-level evidence limited, particularly in Bogor City. This gap restricts the ability of local governments to design context-specific interventions tailored to urban household characteristics. A preliminary survey conducted at the Gunung Batu Community Health Center in January 2025 identified several toddlers classified as stunted despite regular maternal attendance at nutrition counseling sessions. This finding suggests that attendance alone may not translate into adequate knowledge, positive attitudes, or appropriate practices. Therefore, a systematic assessment of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices is urgently needed. This study aims to describe maternal characteristics, knowledge, attitudes, and practices related to toddler nutrition, as well as the characteristics of stunted toddlers in

Gunung Batu Village, Bogor City, in February 2025. The findings are expected to provide locally relevant evidence to support targeted, behavior-focused stunting prevention strategies in urban settings.

METHODS

This study employed a quantitative observational design with a descriptive–analytic approach, conducted in Gunung Batu Village, Bogor City, during February 2025. The study aimed to describe maternal demographic characteristics, nutritional knowledge, attitudes, and practices (KAP), as well as characteristics of stunted toddlers, and to explore bivariate associations between maternal variables and toddler characteristics.

The study population consisted of all mothers with stunted toddlers aged 6–59 months registered in the By Name By Address (BNBA) database of Gunung Batu Village. The BNBA is an official administrative registry maintained by the Community Health Center (Puskesmas) that records children identified with nutritional problems, including stunting, along with individual and household information. A total sampling technique was applied. Based on BNBA data for February 2025, a total of 54 mother–toddler pairs met the eligibility criteria and were included in the study (N = 54). No sample size calculation was performed because the population was relatively small and fully accessible.

Inclusion criteria were mothers who: had toddlers aged 6–59 months classified as stunted in the February 2025 BNBA records; resided in Gunung Batu Village, and provided informed consent. Exclusion criteria included mothers who were unavailable during data collection, declined participation, or had incomplete questionnaire responses. The variables analyzed in this study were grouped as follows: 1) Maternal demographic variables: age, level of education, occupation, and parity; 2) Maternal nutrition-related variables: Knowledge (14 items; Guttman scale; categorized as good/poor); Attitudes (15 items; 5-point Likert scale; categorized as positive/negative), and Practices (12 items; Guttman scale; categorized as appropriate/inappropriate); 3)Toddler characteristics: age (months), sex, and stunting severity (moderate or severe).

Stunting status was determined based on height-for-age z-scores (HAZ) calculated using the WHO Child Growth Standards 2006. Children with HAZ < −2 SD were classified as stunted, while those with HAZ < −3 SD were categorized as severely stunted. Anthropometric measurements were performed by trained health workers at the Posyandu or Puskesmas using standardized equipment, including a length board for children under two years of age and a microtoise for children aged two years and above. Anthropometric data were obtained from

routine nutrition monitoring records for February 2025 at the Gunung Batu Community Health Center.

Data were collected using a structured questionnaire adapted from previously validated and reliable instruments. The questionnaire assessed maternal knowledge, attitudes, and practices related to toddler nutrition and feeding. Before data collection, the questionnaire was reviewed for content clarity and relevance. Data collection was conducted through face-to-face interviews by trained enumerators.

All collected data were processed and analyzed descriptively. Categorical variables were summarized using frequencies and percentages, while numerical variables were presented as mean values. The results were used to describe maternal characteristics, levels of knowledge, attitudes, and practices related to nutrition, as well as the distribution of stunting cases among toddlers.

This study received ethical approval from the Lembaga Penelitian dan Pengabdian kepada Masyarakat (LPPM), Christian University of Indonesia (Ethical Approval No.: 021/UKI.LPPM/PPM.00.00/ET.2025).

RESULTS

Table 1 Demographic Characteristics of Respondents Based on Mother's Age

Descriptive Statistics	N
Mean	30.69
Median	29
Mode	28, 36, 40
Minimum	22
Maximum	46
Total Data	54

Based on the collected data, the distribution of maternal ages shows a fairly varied range. The average maternal age was 30.69 years, with a median of 29 years. This indicates that most mothers were in the young to early adult age group. The mode of the data, the most frequently occurring ages, was 28, 36, and 40 years. The youngest recorded maternal age was 22 years, while the oldest was 46 years, for a total of 54 age data points collected.

Table 2 Demographic Characteristics of Respondents Based on Mother's Education, Mother's Occupation and Monthly Family Income

Descriptive Statistics	Frequency	Percentage
Mother's Education		
Senior High School	23	42.59
Primary School	15	27.78

Junior High School	13	24.07
Higher Education	3	5.55
Mother's Occupation		
Housewife	39	72.22
Trader	12	22.22
Seblak Seller	1	1.85
Teacher or Lecturer	1	1.85
Laborer	1	1.85
Monthly Family Income		
≥ Rp 3.000.000	18	33.33
Rp 1.000.000 - < Rp 2.000.000	17	31.48
Rp 2.000.000 - < Rp 3.000.000	17	31.48
< Rp 1.000.000	2	3.70

From the Table 2, the final educational profile of the mothers in this sample shows that the majority had a secondary education background. High school/vocational high school education was the highest level of education most commonly held by mothers, accounting for 42.59% of the total respondents (23 people). This was followed by elementary school education at 27.78% (15 people) and junior high school at 24.07% (13 people). A further 5.55% (3 people) had a higher education. A review of mothers' occupations shows a dominant role as housewives. 72.22% of respondents (39 people) work as housewives. Furthermore, a significant proportion of other occupations are traders, accounting for 22.22% (12 people). Other occupations, such as selling seblak (spicy rice cakes), teaching or lecturers, and laborers, were each represented by only one respondent, representing 1.85% of each category. Analysis of monthly family income shows that income distribution is relatively even across several categories. The income category "≥ Rp 3,000,000" is the largest group, covering 33.33% (18 families). The other two income categories, namely "Rp 1,000,000 - < Rp 2,000,000" and "Rp 2,000,000 - < Rp 3,000,000", have identical proportions, each at 31.48% (17 families). Meanwhile, only a small portion, namely 3.70% (2 families), have incomes below Rp 1,000,000.

Table 3 Distribution of Mothers' Knowledge Level Regarding Stunting

Category Level	Frequency	Percentage
Mothers' Knowledge		
Fair (≥ 9 score)	52	96.3
Poor (≤ 8 score)	2	3.7
Mothers' Attitude		
Fair (≥ 36 score)	54	100
Poor (≤ 35 score)	0	0
Maternal Action		
Fair (≥ 8 score)	52	96.3
Poor (≤ 7 score)	2	3.7

Note: Knowledge category criteria (Max score 14): Fairly Good ≥60 (score ≥8.4, rounded up to ≥9); Poor <60 (score ≤8)

Note: Attitude category criteria (Max score 60): Fair ≥60 (score ≥36); Poor <60 (score ≤35)

Note: Action category criteria (Max score 12): Fair ≥60 (score ≥7.2, rounded to ≥8); Poor <60 (score ≤7).

Based on Table 3, the majority of mothers (96.3%) had a "fairly good" level of knowledge about stunting. This indicates that almost all respondents had an adequate understanding of stunting, including its definition, causes, characteristics, impacts, and prevention efforts. Based on data of mothers' attitude, all mothers (100.0%) showed a 'Quite Good' attitude toward stunting prevention efforts. This indicates a positive tendency among mothers to support practices related to children's nutritional health. The last based on maternal action, the majority of mothers (96.3%) demonstrated 'Quite Good' practices or actions in stunting prevention efforts. This reflects that most mothers have implemented concrete steps to support stunting prevention in toddlers.

DISCUSSION

This study provides a descriptive overview of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices (KAP) among households with stunted toddlers in Gunung Batu Village, Bogor City. A key finding is that all toddlers included in the study were classified as stunted despite the majority of mothers demonstrating fairly good levels of knowledge, attitudes, and practices related to nutrition. This finding reinforces the notion that stunting is a multifactorial condition and cannot be explained solely by maternal cognitive and behavioral factors, particularly in urban settings.

Maternal Demographic Characteristics

The mean maternal age in this study was 30.69 years, placing most respondents within the productive reproductive age group. Similar age distributions among mothers of stunted children have been reported in several Indonesian studies conducted in West Java, Central Java, Aceh, and East Nusa Tenggara (Marzuki & Tahrim, 2024; Saputra et al., 2023; Sari et al., 2025). Internationally, studies in Bangladesh, Nepal, and Ethiopia also reported that stunting frequently occurs among children of mothers in their late twenties to early thirties, suggesting that maternal age alone is not a protective factor against chronic undernutrition (Basnet et al., 2021; Headey et al., 2021; Tyas et al., 2019).

Most mothers in this study had completed senior high school or vocational education and were predominantly housewives. This pattern is consistent with findings from other urban and semi-urban Indonesian settings, where mothers of stunted children often have moderate educational attainment but limited economic independence (Hutasoit et al., 2018; Siagian et al., 2024; Sihotang et al., 2023). However, studies from Malaysia, Vietnam, and Peru suggest that higher maternal education is generally associated with lower stunting prevalence, especially when accompanied by stable household income and food security (Bayked et al., 2024; Headey et al., 2021; Victora et al., 2021). The discrepancy indicates that education without sufficient socioeconomic support may be insufficient to prevent stunting, particularly in low-income urban households.

Maternal Knowledge

The majority of mothers in this study demonstrated a fair to good level of nutritional knowledge. This finding aligns with recent studies in Indonesia reporting adequate maternal knowledge among mothers of stunted toddlers, especially in areas with active nutrition counseling programs (Irfan et al., 2024; Siagian et al., 2024). Similar patterns have been observed in studies from Bangladesh and Vietnam, where mothers exhibited good theoretical knowledge of child nutrition but still had stunted children (Basnet et al., 2021; Simanjuntak et al., 2019; Umwali, 2020).

In contrast, meta-analyses and analytical studies from low- and middle-income countries consistently demonstrate that poor maternal knowledge significantly increases the risk of stunting, with odds ratios ranging from 2.0 to 2.5 (Black et al., 2013; Novitasari & Wanda, 2020b). The difference between these analytical findings and the present descriptive results suggests that knowledge alone does not automatically translate into improved nutritional outcomes, particularly when external constraints—such as food affordability, time limitations, and household decision-making dynamics—restrict the application of that knowledge.

Maternal Attitudes

All respondents in this study were categorized as having fairly good attitudes toward toddler nutrition and stunting prevention. Positive maternal attitudes reflect awareness, concern, and willingness to engage in healthy feeding and caregiving practices. Similar findings have been reported in urban Indonesian studies, where mothers expressed strong agreement with nutrition messages delivered through Posyandu and Puskesmas activities (Hutasoit et al., 2018; Marzuki & Tahrim, 2024; Saputra et al., 2023).

However, evidence from analytical studies in Southeast Asia and Africa indicates that positive attitudes alone are insufficient to prevent stunting when structural barriers persist (Akombi et al., 2017; Headey et al., 2021; Ruel et al., 2017). Studies from urban slums in India, the Philippines, and Nigeria found that mothers with positive attitudes still struggled to provide adequate diets due to food insecurity, poor sanitation, and inconsistent access to health services (Black et al., 2013; Victora et al., 2021). These findings support the results of the present study, suggesting that favorable attitudes may be constrained by contextual limitations beyond maternal control.

Maternal Practices

Most mothers in this study demonstrated fairly good nutritional practices, a finding that contrasts with several studies identifying poor feeding practices as a major contributor to stunting. Research from rural Indonesia, Cambodia, and Myanmar reported inadequate complementary feeding frequency, low dietary diversity, and early cessation of breastfeeding as dominant risk factors for stunting (Basnet et al., 2021; Umwali, 2020; Victora et al., 2021). The discrepancy suggests that in Gunung Batu Village, stunting may not be primarily driven by inappropriate feeding practices alone. Similar observations have been reported in urban Malaysian and Peruvian studies, where even appropriate feeding practices failed to prevent stunting in the presence of recurrent infections, overcrowded housing, and poor environmental sanitation (Bayked et al., 2024). These findings emphasize that maternal practices may be necessary but not sufficient conditions for optimal child growth.

Study Limitations and Recommendations for Future Research

This study has several limitations. First, its descriptive design and the absence of a non-stunted comparison group prevent causal inference and limit the ability to quantify the strength of associations between maternal factors and stunting. Second, the small sample size (N = 54) restricts statistical power and precludes multivariate analysis to control for confounding variables. Third, data on knowledge, attitudes, and practices were collected using self-reported questionnaires, which may be subject to recall and social desirability bias. Finally, important determinants such as household income, food security, environmental sanitation, infection history, and paternal involvement were not assessed.

Future research should employ analytical or mixed-methods designs, include both stunted and non-stunted children, and incorporate multivariate modeling to disentangle the relative contributions of maternal, household, and environmental factors. Qualitative studies exploring barriers to implementing nutritional knowledge in urban settings may also provide valuable

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insights. Such evidence is essential to inform integrated, multisectoral stunting prevention strategies that move beyond behavior change alone and address the broader structural determinants of child undernutrition in urban areas.

Implications for Local Policy and Practice

The findings of this study have important implications for stunting prevention efforts in Bogor City. While maternal education and behavior-focused interventions remain important, they should be complemented by broader strategies addressing socioeconomic conditions, food access, sanitation, and health service quality. Local stunting reduction programs should integrate nutrition education with social assistance, environmental health improvements, and strengthened primary health care services. Future research in urban areas of Bogor City should adopt analytical designs to explore the interaction between maternal factors and structural determinants of stunting. Such evidence is essential to support more targeted, context-specific, and sustainable stunting prevention strategies at the city level.

CONCLUSIONS

This study found that most mothers of stunted toddlers in Gunung Batu Village were in the productive age group, had a senior high school or vocational education, and were predominantly housewives. The majority of respondents demonstrated fairly good levels of knowledge, attitudes, and practices related to toddler nutrition. Nevertheless, all toddlers included in this study were classified as stunted. These findings indicate that, within the study population, adequate maternal knowledge, attitudes, and practices alone were not sufficient to prevent stunting. The results highlight the need for further analytical research that includes a broader range of variables to better understand the factors associated with stunting among toddlers in urban areas of Bogor City. Such evidence is essential to support the development of comprehensive and context-appropriate stunting prevention strategies.

REFERENCE

Akombi, B. J., Agho, K. E., Hall, J. J., Wali, N., Renzaho, A. M. N., & Merom, D. (2017). Stunting, wasting and underweight in sub-Saharan Africa: a systematic review. *International Journal of Environmental Research and Public Health*, *14*(8), 863. https://doi.org/10.3390/ijerph14080863

Basnet, S., Frongillo, E. A., Nguyen, P. H., Moore, S., & Arabi, M. (2021). Factor Structure and Equivalence of Maternal Resources for Care in Bangladesh, Vietnam, and Ethiopia.

Maternal and Child Health Journal, *25*(6), 938–945. https://doi.org/10.1007/s10995-020-03100-4

Bayked, E. M., Yimer, E. M., Gelaw, T., Mohammed, A. S., & Mekonen, N. A. (2024). Dietary knowledge, attitude, practice, and associated factors among pregnant mothers in Ethiopia: a systematic review and meta-analysis. *Frontiers in Public Health*, *12*, 1393764.

https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1393764/full

benjohnson. (2025). Joint Child Malnutrition Estimates (JME) 2025. In *UNICEF DATA*. https://data.unicef.org/resources/jme/

Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., De Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., & Martorell, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, *382*(9890), 427–451. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)60937-X/fulltext?cc=y%3D

Din, M. A. C., Teng, N. I. M. F., & Manaf, Z. A. (2023). Maternal depression and child feeding practices: determinants to malnutrition among young children in Malaysian rural area. *Women's Health*, *19*, 17455057221147800.

https://doi.org/10.1177/17455057221147800

Headey, D. D., Ecker, O., Comstock, A. R., & Ruel, M. T. (2021). *Understanding the demand for "protective foods" in East Africa: An economic analysis with policy recommendations*. Intl Food Policy Res Inst.

https://books.google.com/books?hl=en&lr=&id=WLc6EAAAQBAJ&oi=fnd&pg=PA2&dq=Nguyen,+P.+H.,+Headey,+D.,+Frongillo,+E.+A.,+Tran,+L.+M.,+Rawat,+R.,+Ruel,+M.+T.,+%26+Menon,+P.+(2021).+Changes+in+maternal+nutrition+knowledge+and+child+feeding+practices+and+their+association+with+child+growth+in+Southeast+Asia.&ots=UZjiKuEoTR&sig=S_DUn8Qqk2JEVGYg_Bq-BTGrbZo

Hutasoit, M., Utami, K. D., Afriyliani, N. F., Keperawatan, P., Kesehatan, F., Jenderal, U., & Yani, A. (2018). *PENDAHULUAN Stunting atau pendek adalah kondisi kegagalan pertumbuhan pada balita yang ditandai dengan angka tinggi badan per umur kurang dari -2 (nilai z-score) (WHO , 2018). Kejadian stunting disebabkan kondisi kekurangan gizi kronis dalam rentang w. 2.*

Irfan, D., Daharnis, D., & Zadrian, Z. (2024). Tingkat Pengetahuan dan Sikap Ibu dengan

Praktek Pemberian Makanan dalam Pencegahan dan Penatalaksanaan Anak Stunting. *Jurnal Sehat Mandiri*, *19*(1), 143–154. https://doi.org/10.33761/jsm.v18i2.987

Kemenko, P. M. K. (2025). *Prevalensi Stunting tahun 2024 Turun Jadi 19, 8 Persen, Pemerintah Terus Dorong Penguatan Gizi Nasional*.

Marzuki, D. S., & Tahrim, N. (2024). *Derajat kesehatan masyarakat*. Uwais Inspirasi Indonesia. https://books.google.com/books?hl=en&lr=&id=cpnuEAAAQBAJ&oi=fnd&pg=PR6&dq=29.%09Dewi+L.+Profil+Puskesmas+Merdeka+Kota+Bogor.+2017.+1–50+p&ots=E1_KlMTzzM&sig=kj9K3eAXhpbUB5nFpdHu10c19_s

Novitasari, P. D., & Wanda, D. (2020a). Maternal feeding practice and its relationship with stunting in children. *Pediatric Reports*, *12*(Suppl 1), 8698. https://doi.org/10.4081/pr.2020.8698

Novitasari, P. D., & Wanda, D. (2020b). Maternal feeding practice and its relationship with stunting in children. *Pediatric Reports*, *12*(Suppl 1), 8698. https://doi.org/10.4081/pr.2020.8698

Nurulliah, N. (2025). Prevalensi Stunting di Jawa Barat Turun. In *Pikiran Rakyat Koran*. https://koran.pikiran-rakyat.com/bandung-raya/pr-3039285761/prevalensi-stunting-di-jawa-barat-turun

Rowa, H., & Averus, A. (2025). Kinerja Dinas Kesehatan Kabupaten Bekasi dalam Penanganan Stunting di Kabupaten Bekasi Provinsi Jawa Barat. *Jurnal Ekonomi Dan Statistik Indonesia*, *5*(1), 97–105. http://www.jurnaljesi.ijmpjournal.org/index.php/jurnaljesi/article/view/185

Ruel, M. T., Garrett, J., Yosef, S., & Olivier, M. (2017). Urbanization, Food Security and Nutrition. In S. De Pee, D. Taren, & M. W. Bloem (Eds.), *Nutrition and Health in a Developing World* (pp. 705–735). Springer International Publishing. https://doi.org/10.1007/978-3-319-43739-2_32

Saputra, M. R., Malik, R., Ferilda, S., Wahyuni, S., & Nurwiyeni, N. (2023). GAMBARAN TINGKAT PENGETAHUAN, SIKAP, DAN TINDAKAN IBU TENTANG STUNTING DI KENAGARIAN SIJUNJUNG. *Jurnal Kesehatan Saintika Meditory*, *6*(1), 315–324. http://dx.doi.org/10.30633/jsm.v6i1.1861

Sari, S. F., Prayogo, M. S., ADR, A. Z., Akmalina, N. I., Hariyanti, M., Mubarroq, A. S., Annisa, T. N., Latifah, I., & Hasanah, W. (2025). Strategi pencegahan stunting melalui pelatihan pengolahan PMT berbasis bahan lokal dengan metode Participatory Action

Research. *Menulis: Jurnal Penelitian Nusantara*, *1*(8), 476–484. https://padangjurnal.web.id/index.php/menulis/article/view/608

Siagian, R., Sihombing, F. S., Siregar, R., Sibuea, H., Putri, K. N., Lubis, M. N. A., & Oktavia, R. (2024). Gambaran Pengetahuan Ibu Tentang Pencegahan Stunting Pada Anak Balita. *Journal Of Nursing Science Research*, *1*(1), 49–55. https://doi.org/10.33862/jnsr.v1i1.430

Sihotang, W. Y., Hulu, V. T., Samosir, F. J., Pane, P. Y., Hartono, H., Manalu, P., Siagian, M., & Panjaitan, H. I. L. (2023). Determinants of stunting in children under five: a scoping review. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition)*, *12*(1), 9–20. https://www.researchgate.net/profile/Victor-Hulu/publication/386599802_Determinants_of_stunting_in_children_under_five_a_scoping_review/links/675810023f7c7c7a83240ec2/Determinants-of-stunting-in-children-under-five-a-scoping-review.pdf

Simanjuntak, B. Y., Haya, M., Suryani, D., Khomsan, A., & Ahmad, C. A. (2019). Maternal knowledge, attitude, and practices about traditional food feeding with stunting and wasting of toddlers in farmer families. *Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)*, *14*(2), 58–64. http://repository.poltekkesbengkulu.ac.id/658/

Tyas, B. D., Lestari, P., & Akbar, M. I. A. (2019). Maternal Perinatal Outcomes Related to Advanced Maternal Age in Preeclampsia Pregnant Women. *Journal of Family & Reproductive Health*, *13*(4), 191. https://doi.org/10.18502/jfrh.v13i4.2646

Umwali, N. (2020). *Influence of Maternal Nutrition Knowledge on Infant and Young Child Feeding Practices and Nutrition Status of Children in Musanze District, Rwanda* [University of Nairobi]. https://erepository.uonbi.ac.ke/handle/11295/154143

Utami, G. P., Rahmaniati, M., & Bagus, N. (2024). Kejadian Prevalensi Stunting dengan Indeks Pembangunan Manusia dengan Pendekatan Spasial di Jawa Barat Tahun 2021. *Jurnal Manajemen Informasi Kesehatan (Health Information Management)*, *9*(1), 63–72. https://doi.org/10.51851/jmis.v9i1.476

Victora, C. G., Christian, P., Vidaletti, L. P., Gatica-Domínguez, G., Menon, P., & Black, R. E. (2021). Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. *The Lancet*, *397*(10282), 1388–1399. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00394-9/abstract

Wahyuni, F. C., Karomah, U., Basrowi, R. W., Sitorus, N. L., & Lestari, L. A. (2023). The Relationship between Nutrition Literacy and Nutrition Knowledge with the Incidence of Stunting: A Scoping Review. *Amerta Nutrition*, *7*. https://e-journal.unair.ac.id/AMNT/article/download/52998/27948

Demographic Characteristics, Knowledge, Attitudes, And Actions Of Mothers Related to Nutrition in Stunting Toddlers

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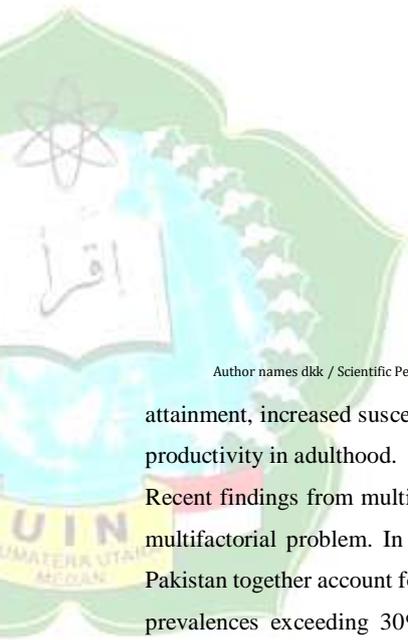[3]General Hospital Universitas Kristen Indonesia, Jakarta, Indonesia

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Abstract

Stunting is a chronic nutritional problem that affects children's growth and development. Indonesia still has a high prevalence of stunting, including in urban areas such as Bogor. Understanding maternal characteristics and nutrition-related behaviors is important for planning appropriate interventions. This study aimed to describe maternal demographic characteristics, nutrition-related knowledge, attitudes, and practices, as well as the incidence of stunting among toddlers in Gunung Batu Village, Bogor City. A quantitative descriptive observational design was used. The study included all mothers with stunted toddlers aged 6–59 months registered at the Gunung Batu Community Health Center in February 2025. A total of 54 respondents were selected using a total sampling approach. Data on maternal knowledge, attitudes, and practices were collected using questionnaires, while toddler stunting data were obtained from health center records. Data were analyzed descriptively using frequencies and percentages. The average maternal age was 30.69 years. Most mothers had a senior high school/vocational education (42.59%) and were housewives (72.22%). All toddlers included in the study (N = 54) were classified as stunted. Most mothers had relatively good levels of knowledge and practices related to toddler nutrition (96.3%), and all respondents reported positive attitudes. Despite adequate maternal knowledge, attitudes, and practices, stunting persisted among all toddlers in this study. These findings suggest that factors beyond maternal nutrition-related behaviors may contribute to stunting and highlight the need for further studies to examine other potential contributors to support more comprehensive stunting prevention efforts.

Keyword: Stunting, Knowledge, Attitude, Practice, Mother, Toddler, Demography

INTRODUCTION

Stunting among toddlers remains one of the most critical global public health and development challenges. Stunting is defined as a height-for-age z-score below −2 standard deviations, reflecting chronic undernutrition and recurrent infections during the most sensitive periods of growth and development. According to the Joint Child Malnutrition Estimates (JME) 2024, an estimated 148 million children under five years of age (22.3%) worldwide were stunted. Although the global prevalence has shown a gradual decline over the past decade, the absolute number of affected children remains alarmingly high, indicating persistent structural and behavioral determinants of child undernutrition (benjohnson, 2025). Stunting is associated with irreversible consequences, including impaired cognitive development, reduced educational

attainment, increased susceptibility to non-communicable diseases, and diminished economic productivity in adulthood.

Recent findings from multiple countries demonstrate that stunting remains a widespread and multifactorial problem. In South Asia, which bears the highest burden globally, India and Pakistan together account for more than one-third of stunted children worldwide, with national prevalences exceeding 30% in several states (benjohnson, 2025). In Sub-Saharan Africa, stunting rates remain persistently high in countries such as Nigeria, Ethiopia, and the Democratic Republic of Congo, where food insecurity, poor maternal nutrition, and limited access to health services continue to impede progress (Akombi et al., 2017; Black et al., 2013). In Latin America, although overall prevalence is lower, urban poor populations in countries such as Guatemala and Peru still experience significant stunting due to socioeconomic inequality and inadequate infant feeding practices (Victora et al., 2021)

In Asia, the most populous region globally, the JME 2024 report estimates that over 57% of all stunted children worldwide (approximately 84.5 million) reside in this region. While South Asia carries the largest share, Southeast Asian countries, including Indonesia, Cambodia, and the Philippines, continue to report moderate-to-high stunting prevalence, particularly among low-income and urban marginalized populations (benjohnson, 2025). Studies conducted in urban slums in Manila, Dhaka, and Ho Chi Minh City have shown that rapid urbanization, food affordability issues, and suboptimal caregiving practices contribute significantly to persistent stunting in cities (Headey et al., 2021; Ruel et al., 2017)

In Indonesia, stunting remains a national development priority. The Indonesian Nutritional Status Survey (SSGI) 2024 reported a decline in national stunting prevalence to 19.8%, down from 21.5% in 2023. Despite this progress, the prevalence remains above the national target of 14% outlined in the 2020–2024 Rencana Pembangunan Hangka Menengah Nasional (RPJMN). Consequently, the Indonesian government has intensified both nutrition-specific and nutrition-sensitive interventions, emphasizing maternal and child nutrition, household food security, and behavior change communication (Kemenko, 2025).

At the provincial level, West Java recorded a stunting prevalence of 15.9% in 2024, reflecting improvement but still exceeding the national target. Marked disparities persist across districts and cities, with some urban areas reporting lower prevalence while others continue to experience substantial burdens. Nutrition-sensitive programs such as the Healthy and Independent Sustainable Yard (ASRI) initiative have been implemented to improve household-

level food availability and dietary diversity, highlighting the increasing focus on family-based nutrition practices (Nurulliah, 2025).

In Bogor Regency, stunting prevalence reportedly declined sharply to 7.59% in 2024, attributed to innovative local strategies such as the Stunting Prevention House (CETING) program and foster parent initiatives. However, district-level data may obscure intra-urban disparities, particularly in densely populated cities such as Bogor City, where socioeconomic inequality, maternal employment patterns, and lifestyle factors may influence caregiving and feeding behaviors. Recent local reports indicate that, despite routine participation in nutrition education programs, cases of stunting persist in several urban health center catchment areas (Rowa & Averus, 2025; Utami et al., 2024).

Evidence from the last five years consistently emphasizes the critical role of maternal knowledge, attitudes, and practices (KAP) in determining child nutritional status. A meta-analysis covering low- and middle-income countries found that children of mothers with inadequate nutrition knowledge were 2.3 times more likely to be stunted compared to those whose mothers had adequate knowledge (Novitasari & Wanda, 2020a). Studies in Bangladesh, Vietnam, and Nepal have demonstrated that poor maternal understanding of complementary feeding timing, meal frequency, and dietary diversity significantly increases the risk of stunting (Din et al., 2023; Headey et al., 2021; Simanjuntak et al., 2019). In Malaysia, recent findings showed that inappropriate feeding practices and low maternal responsiveness were independently associated with stunting among toddlers in urban settings (Bayked et al., 2024). In Indonesia, several studies conducted between 2020 and 2024 reported significant associations between maternal education, nutrition knowledge, feeding attitudes, and child growth outcomes (Umwali, 2020; Wahyuni et al., 2023). However, most of these studies were conducted in rural areas or at the provincial level, leaving urban city-level evidence limited, particularly in Bogor City. This gap restricts the ability of local governments to design context-specific interventions tailored to urban household characteristics. A preliminary survey conducted at the Gunung Batu Community Health Center in January 2025 identified several toddlers classified as stunted despite regular maternal attendance at nutrition counseling sessions. This finding suggests that attendance alone may not translate into adequate knowledge, positive attitudes, or appropriate practices. Therefore, a systematic assessment of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices is urgently needed. This study aims to describe maternal characteristics, knowledge, attitudes, and practices related to toddler nutrition, as well as the characteristics of stunted toddlers in

Gunung Batu Village, Bogor City, in February 2025. The findings are expected to provide locally relevant evidence to support targeted, behavior-focused stunting prevention strategies in urban settings.
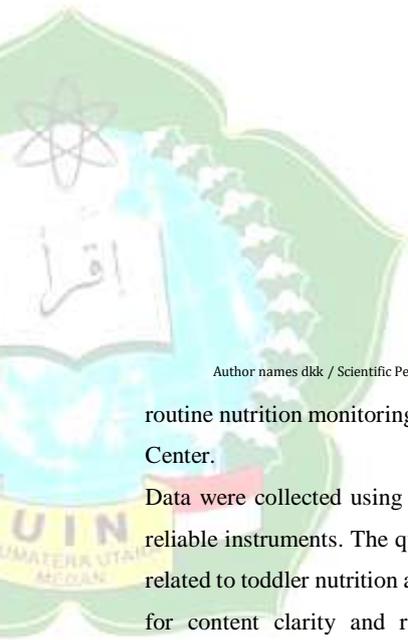
METHODS

This study employed a quantitative observational design with a descriptive–analytic approach, conducted in Gunung Batu Village, Bogor City, during February 2025. The study aimed to describe maternal demographic characteristics, nutritional knowledge, attitudes, and practices (KAP), as well as characteristics of stunted toddlers, and to explore bivariate associations between maternal variables and toddler characteristics.

The study population consisted of all mothers with stunted toddlers aged 6–59 months registered in the By Name By Address (BNBA) database of Gunung Batu Village. The BNBA is an official administrative registry maintained by the Community Health Center (Puskesmas) that records children identified with nutritional problems, including stunting, along with individual and household information. A total sampling technique was applied. Based on BNBA data for February 2025, a total of 54 mother–toddler pairs met the eligibility criteria and were included in the study (N = 54). No sample size calculation was performed because the population was relatively small and fully accessible.

Inclusion criteria were mothers who: had toddlers aged 6–59 months classified as stunted in the February 2025 BNBA records; resided in Gunung Batu Village, and provided informed consent. Exclusion criteria included mothers who were unavailable during data collection, declined participation, or had incomplete questionnaire responses. The variables analyzed in this study were grouped as follows: 1) Maternal demographic variables: age, level of education, occupation, and parity; 2) Maternal nutrition-related variables: Knowledge (14 items; Guttman scale; categorized as good/poor); Attitudes (15 items; 5-point Likert scale; categorized as positive/negative), and Practices (12 items; Guttman scale; categorized as appropriate/inappropriate); 3)Toddler characteristics: age (months), sex, and stunting severity (moderate or severe).

Stunting status was determined based on height-for-age z-scores (HAZ) calculated using the WHO Child Growth Standards 2006. Children with HAZ < −2 SD were classified as stunted, while those with HAZ < −3 SD were categorized as severely stunted. Anthropometric measurements were performed by trained health workers at the Posyandu or Puskesmas using standardized equipment, including a length board for children under two years of age and a microtoise for children aged two years and above. Anthropometric data were obtained from

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routine nutrition monitoring records for February 2025 at the Gunung Batu Community Health Center.

Data were collected using a structured questionnaire adapted from previously validated and reliable instruments. The questionnaire assessed maternal knowledge, attitudes, and practices related to toddler nutrition and feeding. Before data collection, the questionnaire was reviewed for content clarity and relevance. Data collection was conducted through face-to-face interviews by trained enumerators.

All collected data were processed and analyzed descriptively. Categorical variables were summarized using frequencies and percentages, while numerical variables were presented as mean values. The results were used to describe maternal characteristics, levels of knowledge, attitudes, and practices related to nutrition, as well as the distribution of stunting cases among toddlers.

This study received ethical approval from the Lembaga Penelitian dan Pengabdian kepada Masyarakat (LPPM), Christian University of Indonesia (Ethical Approval No.: 021/UKI.LPPM/PPM.00.00/ET.2025).

RESULTS

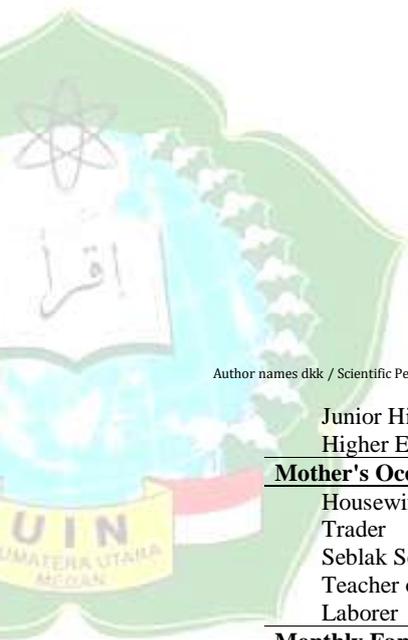**Table 1 Demographic Characteristics of Respondents Based on Mother's Age**

Descriptive Statistics	N
Mean	30.69
Median	29
Mode	28, 36, 40
Minimum	22
Maximum	46
Total Data	54

Based on the collected data, the distribution of maternal ages shows a fairly varied range. The average maternal age was 30.69 years, with a median of 29 years. This indicates that most mothers were in the young to early adult age group. The mode of the data, the most frequently occurring ages, was 28, 36, and 40 years. The youngest recorded maternal age was 22 years, while the oldest was 46 years, for a total of 54 age data points collected.

Table 2 Demographic Characteristics of Respondents Based on Mother's Education, Mother's Occupation and Monthly Family Income

Descriptive Statistics	Frequency	Percentage
Mother's Education		
Senior High School	23	42.59
Primary School	15	27.78

Junior High School	13	24.07
Higher Education	3	5.55
Mother's Occupation		
Housewife	39	72.22
Trader	12	22.22
Seblak Seller	1	1.85
Teacher or Lecturer	1	1.85
Laborer	1	1.85
Monthly Family Income		
≥ Rp 3.000.000	18	33.33
Rp 1.000.000 - < Rp 2.000.000	17	31.48
Rp 2.000.000 - < Rp 3.000.000	17	31.48
< Rp 1.000.000	2	3.70

From the Table 2, the final educational profile of the mothers in this sample shows that the majority had a secondary education background. High school/vocational high school education was the highest level of education most commonly held by mothers, accounting for 42.59% of the total respondents (23 people). This was followed by elementary school education at 27.78% (15 people) and junior high school at 24.07% (13 people). A further 5.55% (3 people) had a higher education. A review of mothers' occupations shows a dominant role as housewives. 72.22% of respondents (39 people) work as housewives. Furthermore, a significant proportion of other occupations are traders, accounting for 22.22% (12 people). Other occupations, such as selling seblak (spicy rice cakes), teaching or lecturers, and laborers, were each represented by only one respondent, representing 1.85% of each category. Analysis of monthly family income shows that income distribution is relatively even across several categories. The income category "≥ Rp 3,000,000" is the largest group, covering 33.33% (18 families). The other two income categories, namely "Rp 1,000,000 - < Rp 2,000,000" and "Rp 2,000,000 - < Rp 3,000,000", have identical proportions, each at 31.48% (17 families). Meanwhile, only a small portion, namely 3.70% (2 families), have incomes below Rp 1,000,000.

Table 3 Distribution of Mothers' Knowledge Level Regarding Stunting

Category Level	Frequency	Percentage
Mothers' Knowledge		
Fair (≥ 9 score)	52	96.3
Poor (≤ 8 score)	2	3.7
Mothers' Attitude		
Fair (≥ 36 score)	54	100
Poor (≤ 35 score)	0	0
Maternal Action		
Fair (≥ 8 score)	52	96.3
Poor (≤ 7 score)	2	3.7

Note: Knowledge category criteria (Max score 14): Fairly Good ≥60 (score ≥8.4, rounded up to ≥9); Poor <60 (score ≤8)

Note: Attitude category criteria (Max score 60): Fair ≥60 (score ≥36); Poor <60 (score ≤35)

Note: Action category criteria (Max score 12): Fair ≥60 (score ≥7.2, rounded to ≥8); Poor <60 (score ≤7).

Based on Table 3, the majority of mothers (96.3%) had a "fairly good" level of knowledge about stunting. This indicates that almost all respondents had an adequate understanding of stunting, including its definition, causes, characteristics, impacts, and prevention efforts. Based on data of mothers' attitude, all mothers (100.0%) showed a 'Quite Good' attitude toward stunting prevention efforts. This indicates a positive tendency among mothers to support practices related to children's nutritional health. The last based on maternal action, the majority of mothers (96.3%) demonstrated 'Quite Good' practices or actions in stunting prevention efforts. This reflects that most mothers have implemented concrete steps to support stunting prevention in toddlers.

DISCUSSION

This study provides a descriptive overview of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices (KAP) among households with stunted toddlers in Gunung Batu Village, Bogor City. A key finding is that all toddlers included in the study were classified as stunted despite the majority of mothers demonstrating fairly good levels of knowledge, attitudes, and practices related to nutrition. This finding reinforces the notion that stunting is a multifactorial condition and cannot be explained solely by maternal cognitive and behavioral factors, particularly in urban settings.

Maternal Demographic Characteristics

The mean maternal age in this study was 30.69 years, placing most respondents within the productive reproductive age group. Similar age distributions among mothers of stunted children have been reported in several Indonesian studies conducted in West Java, Central Java, Aceh, and East Nusa Tenggara (Marzuki & Tahrim, 2024; Saputra et al., 2023; Sari et al., 2025). Internationally, studies in Bangladesh, Nepal, and Ethiopia also reported that stunting frequently occurs among children of mothers in their late twenties to early thirties, suggesting that maternal age alone is not a protective factor against chronic undernutrition (Basnet et al., 2021; Headey et al., 2021; Tyas et al., 2019).

Most mothers in this study had completed senior high school or vocational education and were predominantly housewives. This pattern is consistent with findings from other urban and semi-urban Indonesian settings, where mothers of stunted children often have moderate educational attainment but limited economic independence (Hutasoit et al., 2018; Siagian et al., 2024; Sihotang et al., 2023). However, studies from Malaysia, Vietnam, and Peru suggest that higher maternal education is generally associated with lower stunting prevalence, especially when accompanied by stable household income and food security (Bayked et al., 2024; Headey et al., 2021; Victora et al., 2021). The discrepancy indicates that education without sufficient socioeconomic support may be insufficient to prevent stunting, particularly in low-income urban households.

Maternal Knowledge

The majority of mothers in this study demonstrated a fair to good level of nutritional knowledge. This finding aligns with recent studies in Indonesia reporting adequate maternal knowledge among mothers of stunted toddlers, especially in areas with active nutrition counseling programs (Irfan et al., 2024; Siagian et al., 2024). Similar patterns have been observed in studies from Bangladesh and Vietnam, where mothers exhibited good theoretical knowledge of child nutrition but still had stunted children (Basnet et al., 2021; Simanjuntak et al., 2019; Umwali, 2020).

In contrast, meta-analyses and analytical studies from low- and middle-income countries consistently demonstrate that poor maternal knowledge significantly increases the risk of stunting, with odds ratios ranging from 2.0 to 2.5 (Black et al., 2013; Novitasari & Wanda, 2020b). The difference between these analytical findings and the present descriptive results suggests that knowledge alone does not automatically translate into improved nutritional outcomes, particularly when external constraints—such as food affordability, time limitations, and household decision-making dynamics—restrict the application of that knowledge.

Maternal Attitudes

All respondents in this study were categorized as having fairly good attitudes toward toddler nutrition and stunting prevention. Positive maternal attitudes reflect awareness, concern, and willingness to engage in healthy feeding and caregiving practices. Similar findings have been reported in urban Indonesian studies, where mothers expressed strong agreement with nutrition messages delivered through Posyandu and Puskesmas activities (Hutasoit et al., 2018; Marzuki & Tahrim, 2024; Saputra et al., 2023).

However, evidence from analytical studies in Southeast Asia and Africa indicates that positive attitudes alone are insufficient to prevent stunting when structural barriers persist (Akombi et al., 2017; Headey et al., 2021; Ruel et al., 2017). Studies from urban slums in India, the Philippines, and Nigeria found that mothers with positive attitudes still struggled to provide adequate diets due to food insecurity, poor sanitation, and inconsistent access to health services (Black et al., 2013; Victora et al., 2021). These findings support the results of the present study, suggesting that favorable attitudes may be constrained by contextual limitations beyond maternal control.
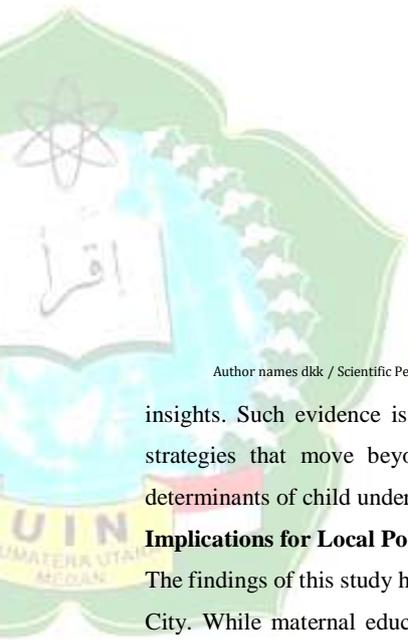
Maternal Practices

Most mothers in this study demonstrated fairly good nutritional practices, a finding that contrasts with several studies identifying poor feeding practices as a major contributor to stunting. Research from rural Indonesia, Cambodia, and Myanmar reported inadequate complementary feeding frequency, low dietary diversity, and early cessation of breastfeeding as dominant risk factors for stunting (Basnet et al., 2021; Umwali, 2020; Victora et al., 2021). The discrepancy suggests that in Gunung Batu Village, stunting may not be primarily driven by inappropriate feeding practices alone. Similar observations have been reported in urban Malaysian and Peruvian studies, where even appropriate feeding practices failed to prevent stunting in the presence of recurrent infections, overcrowded housing, and poor environmental sanitation (Bayked et al., 2024). These findings emphasize that maternal practices may be necessary but not sufficient conditions for optimal child growth.

Study Limitations and Recommendations for Future Research

This study has several limitations. First, its descriptive design and the absence of a non-stunted comparison group prevent causal inference and limit the ability to quantify the strength of associations between maternal factors and stunting. Second, the small sample size (N = 54) restricts statistical power and precludes multivariate analysis to control for confounding variables. Third, data on knowledge, attitudes, and practices were collected using self-reported questionnaires, which may be subject to recall and social desirability bias. Finally, important determinants such as household income, food security, environmental sanitation, infection history, and paternal involvement were not assessed.

Future research should employ analytical or mixed-methods designs, include both stunted and non-stunted children, and incorporate multivariate modeling to disentangle the relative contributions of maternal, household, and environmental factors. Qualitative studies exploring barriers to implementing nutritional knowledge in urban settings may also provide valuable

insights. Such evidence is essential to inform integrated, multisectoral stunting prevention strategies that move beyond behavior change alone and address the broader structural determinants of child undernutrition in urban areas.

Implications for Local Policy and Practice

The findings of this study have important implications for stunting prevention efforts in Bogor City. While maternal education and behavior-focused interventions remain important, they should be complemented by broader strategies addressing socioeconomic conditions, food access, sanitation, and health service quality. Local stunting reduction programs should integrate nutrition education with social assistance, environmental health improvements, and strengthened primary health care services. Future research in urban areas of Bogor City should adopt analytical designs to explore the interaction between maternal factors and structural determinants of stunting. Such evidence is essential to support more targeted, context-specific, and sustainable stunting prevention strategies at the city level.
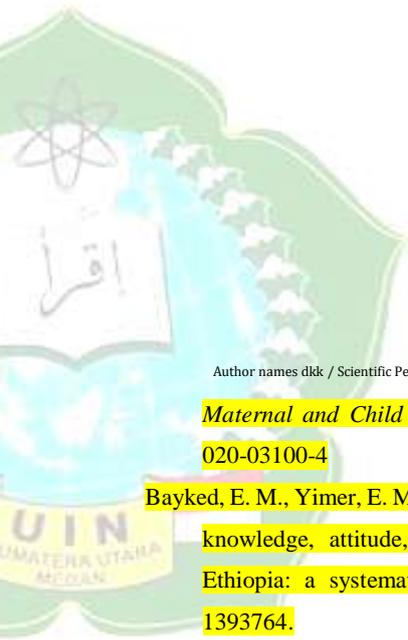
CONCLUSIONS

This study found that most mothers of stunted toddlers in Gunung Batu Village were in the productive age group, had a senior high school or vocational education, and were predominantly housewives. The majority of respondents demonstrated fairly good levels of knowledge, attitudes, and practices related to toddler nutrition. Nevertheless, all toddlers included in this study were classified as stunted. These findings indicate that, within the study population, adequate maternal knowledge, attitudes, and practices alone were not sufficient to prevent stunting. The results highlight the need for further analytical research that includes a broader range of variables to better understand the factors associated with stunting among toddlers in urban areas of Bogor City. Such evidence is essential to support the development of comprehensive and context-appropriate stunting prevention strategies.

REFERENCE

Akombi, B. J., Agho, K. E., Hall, J. J., Wali, N., Renzaho, A. M. N., & Merom, D. (2017). Stunting, wasting and underweight in sub-Saharan Africa: a systematic review. *International Journal of Environmental Research and Public Health*, *14*(8), 863. https://doi.org/10.3390/ijerph14080863

Basnet, S., Frongillo, E. A., Nguyen, P. H., Moore, S., & Arabi, M. (2021). Factor Structure and Equivalence of Maternal Resources for Care in Bangladesh, Vietnam, and Ethiopia.

Maternal and Child Health Journal, *25*(6), 938–945. https://doi.org/10.1007/s10995-020-03100-4

Bayked, E. M., Yimer, E. M., Gelaw, T., Mohammed, A. S., & Mekonen, N. A. (2024). Dietary knowledge, attitude, practice, and associated factors among pregnant mothers in Ethiopia: a systematic review and meta-analysis. *Frontiers in Public Health*, *12*, 1393764.

https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2024.1393764/full

benjohnson. (2025). Joint Child Malnutrition Estimates (JME) 2025. In *UNICEF DATA*. https://data.unicef.org/resources/jme/

Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., De Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., & Martorell, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, *382*(9890), 427–451. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)60937-X/fulltext?cc=y%3D

Din, M. A. C., Teng, N. I. M. F., & Manaf, Z. A. (2023). Maternal depression and child feeding practices: determinants to malnutrition among young children in Malaysian rural area. *Women's Health*, *19*, 17455057221147800. https://doi.org/10.1177/17455057221147800

Headey, D. D., Ecker, O., Comstock, A. R., & Ruel, M. T. (2021). *Understanding the demand for "protective foods" in East Africa: An economic analysis with policy recommendations*. Intl Food Policy Res Inst. https://books.google.com/books?hl=en&lr=&id=WLc6EAAAQBAJ&oi=fnd&pg=PA2&dq=Nguyen,+P.+H.,+Headey,+D.,+Frongillo,+E.+A.,+Tran,+L.+M.,+Rawat,+R.,+Ruel,+M.+T.,+%26+Menon,+P.+(2021).+Changes+in+maternal+nutrition+knowledge+and+child+feeding+practices+and+their+association+with+child+growth+in+Southeast+Asia.&ots=UZjiKuEoTR&sig=S_DUn8Qqk2JEVGYg_Bq-BTGrbZo

Hutasoit, M., Utami, K. D., Afriyliani, N. F., Keperawatan, P., Kesehatan, F., Jenderal, U., & Yani, A. (2018). *PENDAHULUAN Stunting atau pendek adalah kondisi kegagalan pertumbuhan pada balita yang ditandai dengan angka tinggi badan per umur kurang dari -2 (nilai z-score) (WHO , 2018). Kejadian stunting disebabkan kondisi kekurangan gizi kronis dalam rentang w*. 2.

Irfan, D., Daharnis, D., & Zadrian, Z. (2024). Tingkat Pengetahuan dan Sikap Ibu dengan

Praktek Pemberian Makanan dalam Pencegahan dan Penatalaksanaan Anak Stunting. *Jurnal Sehat Mandiri*, *19*(1), 143–154. https://doi.org/10.33761/jsm.v18i2.987

Kemenko, P. M. K. (2025). *Prevalensi Stunting tahun 2024 Turun Jadi 19, 8 Persen, Pemerintah Terus Dorong Penguatan Gizi Nasional*.

Marzuki, D. S., & Tahrim, N. (2024). *Derajat kesehatan masyarakat*. Uwais Inspirasi Indonesia. https://books.google.com/books?hl=en&lr=&id=cpnuEAAAQBAJ&oi=fnd&pg=PR6&dq=29.%09Dewi+L.+Profil+Puskesmas+Merdeka+Kota+Bogor.+2017.+1–50+p&ots=E1_KlMTzzM&sig=kj9K3eAXhpbUB5nFpdHu10c19_s

Novitasari, P. D., & Wanda, D. (2020a). Maternal feeding practice and its relationship with stunting in children. *Pediatric Reports*, *12*(Suppl 1), 8698. https://doi.org/10.4081/pr.2020.8698

Novitasari, P. D., & Wanda, D. (2020b). Maternal feeding practice and its relationship with stunting in children. *Pediatric Reports*, *12*(Suppl 1), 8698. https://doi.org/10.4081/pr.2020.8698

Nurulliah, N. (2025). Prevalensi Stunting di Jawa Barat Turun. In *Pikiran Rakyat Koran*. https://koran.pikiran-rakyat.com/bandung-raya/pr-3039285761/prevalensi-stunting-di-jawa-barat-turun

Rowa, H., & Averus, A. (2025). Kinerja Dinas Kesehatan Kabupaten Bekasi dalam Penanganan Stunting di Kabupaten Bekasi Provinsi Jawa Barat. *Jurnal Ekonomi Dan Statistik Indonesia*, *5*(1), 97–105. http://www.jurnaljesi.ijmpjournal.org/index.php/jurnaljesi/article/view/185

Ruel, M. T., Garrett, J., Yosef, S., & Olivier, M. (2017). Urbanization, Food Security and Nutrition. In S. De Pee, D. Taren, & M. W. Bloem (Eds.), *Nutrition and Health in a Developing World* (pp. 705–735). Springer International Publishing. https://doi.org/10.1007/978-3-319-43739-2_32

Saputra, M. R., Malik, R., Ferilda, S., Wahyuni, S., & Nurwiyeni, N. (2023). GAMBARAN TINGKAT PENGETAHUAN, SIKAP, DAN TINDAKAN IBU TENTANG STUNTING DI KENAGARIAN SIJUNJUNG. *Jurnal Kesehatan Saintika Meditory*, *6*(1), 315–324. http://dx.doi.org/10.30633/jsm.v6i1.1861

Sari, S. F., Prayogo, M. S., ADR, A. Z., Akmalina, N. I., Hariyanti, M., Mubarroq, A. S., Annisa, T. N., Latifah, I., & Hasanah, W. (2025). Strategi pencegahan stunting melalui pelatihan pengolahan PMT berbasis bahan lokal dengan metode Participatory Action

Research. *Menulis: Jurnal Penelitian Nusantara*, *1*(8), 476–484. https://padangjurnal.web.id/index.php/menulis/article/view/608

Siagian, R., Sihombing, F. S., Siregar, R., Sibuea, H., Putri, K. N., Lubis, M. N. A., & Oktavia, R. (2024). Gambaran Pengetahuan Ibu Tentang Pencegahan Stunting Pada Anak Balita. *Journal Of Nursing Science Research*, *1*(1), 49–55. https://doi.org/10.33862/jnsr.v1i1.430

Sihotang, W. Y., Hulu, V. T., Samosir, F. J., Pane, P. Y., Hartono, H., Manalu, P., Siagian, M., & Panjaitan, H. I. L. (2023). Determinants of stunting in children under five: a scoping review. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition)*, *12*(1), 9–20. https://www.researchgate.net/profile/Victor-Hulu/publication/386599802_Determinants_of_stunting_in_children_under_five_a_sco ping_review/links/675810023f7c7c7a83240ec2/Determinants-of-stunting-in-children-under-five-a-scoping-review.pdf

Simanjuntak, B. Y., Haya, M., Suryani, D., Khomsan, A., & Ahmad, C. A. (2019). Maternal knowledge, attitude, and practices about traditional food feeding with stunting and wasting of toddlers in farmer families. *Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)*, *14*(2), 58–64. http://repository.poltekkesbengkulu.ac.id/658/

Tyas, B. D., Lestari, P., & Akbar, M. I. A. (2019). Maternal Perinatal Outcomes Related to Advanced Maternal Age in Preeclampsia Pregnant Women. *Journal of Family & Reproductive Health*, *13*(4), 191. https://doi.org/10.18502/jfrh.v13i4.2646

Umwali, N. (2020). *Influence of Maternal Nutrition Knowledge on Infant and Young Child Feeding Practices and Nutrition Status of Children in Musanze District, Rwanda* [University of Nairobi]. https://erepository.uonbi.ac.ke/handle/11295/154143

Utami, G. P., Rahmaniati, M., & Bagus, N. (2024). Kejadian Prevalensi Stunting dengan Indeks Pembangunan Manusia dengan Pendekatan Spasial di Jawa Barat Tahun 2021. *Jurnal Manajemen Informasi Kesehatan (Health Information Management)*, *9*(1), 63–72. https://doi.org/10.51851/jmis.v9i1.476

Victora, C. G., Christian, P., Vidaletti, L. P., Gatica-Domínguez, G., Menon, P., & Black, R. E. (2021). Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. *The Lancet*, *397*(10282), 1388–1399. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00394-9/abstract

Wahyuni, F. C., Karomah, U., Basrowi, R. W., Sitorus, N. L., & Lestari, L. A. (2023). The Relationship between Nutrition Literacy and Nutrition Knowledge with the Incidence of Stunting: A Scoping Review. *Amerta Nutrition*, 7. https://e-journal.unair.ac.id/AMNT/article/download/52998/27948

Demographic Characteristics, Knowledge, Attitudes, And Actions Of Mothers Related to Nutrition in Stunting Toddlers

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Abstract

Stunting is a chronic nutritional problem that affects children's growth and development. Indonesia still has a high prevalence of stunting, including in urban areas such as Bogor. Understanding maternal characteristics and nutrition-related behaviors is important for planning appropriate interventions. This study aimed to describe maternal demographic characteristics, nutrition-related knowledge, attitudes, and practices, as well as the incidence of stunting among toddlers in Gunung Batu Village, Bogor City. A quantitative descriptive observational design was used. The study included all mothers with stunted toddlers aged 6–59 months registered at the Gunung Batu Community Health Center in February 2025. A total of 54 respondents were selected using a total sampling approach. Data on maternal knowledge, attitudes, and practices were collected using questionnaires, while toddler stunting data were obtained from health center records. Data were analyzed descriptively using frequencies and percentages. The average maternal age was 30.69 years. Most mothers had a senior high school/vocational education (42.59%) and were housewives (72.22%). All toddlers included in the study (N = 54) were classified as stunted. Most mothers had relatively good levels of knowledge and practices related to toddler nutrition (96.3%), and all respondents reported positive attitudes. Despite adequate maternal knowledge, attitudes, and practices, stunting persisted among all toddlers in this study. These findings suggest that factors beyond maternal nutrition-related behaviors may contribute to stunting and highlight the need for further studies to examine other potential contributors to support more comprehensive stunting prevention efforts.

Keyword: Stunting, Knowledge, Attitude, Practice, Mother, Toddler, Demography

INTRODUCTION

Stunting among toddlers remains one of the most critical global public health and development challenges. Stunting is defined as a height-for-age z-score below −2 standard deviations, reflecting chronic undernutrition and recurrent infections during the most sensitive periods of growth and development. According to the Joint Child Malnutrition Estimates (JME) 2024, an estimated 148 million children under five years of age (22.3%) worldwide were stunted. Although the global prevalence has shown a gradual decline over the past decade, the absolute number of affected children remains alarmingly high, indicating persistent structural and behavioral determinants of child undernutrition (benjohnson, 2025). Stunting is associated with irreversible consequences, including impaired cognitive development, reduced educational

attainment, increased susceptibility to non-communicable diseases, and diminished economic productivity in adulthood.

Recent findings from multiple countries demonstrate that stunting remains a widespread and multifactorial problem. In South Asia, which bears the highest burden globally, India and Pakistan together account for more than one-third of stunted children worldwide, with national prevalences exceeding 30% in several states (benjohnson, 2025). In Sub-Saharan Africa, stunting rates remain persistently high in countries such as Nigeria, Ethiopia, and the Democratic Republic of Congo, where food insecurity, poor maternal nutrition, and limited access to health services continue to impede progress (Akombi et al., 2017; Black et al., 2013). In Latin America, although overall prevalence is lower, urban poor populations in countries such as Guatemala and Peru still experience significant stunting due to socioeconomic inequality and inadequate infant feeding practices (Victora et al., 2021)

In Asia, the most populous region globally, the JME 2024 report estimates that over 57% of all stunted children worldwide (approximately 84.5 million) reside in this region. While South Asia carries the largest share, Southeast Asian countries, including Indonesia, Cambodia, and the Philippines, continue to report moderate-to-high stunting prevalence, particularly among low-income and urban marginalized populations (benjohnson, 2025). Studies conducted in urban slums in Manila, Dhaka, and Ho Chi Minh City have shown that rapid urbanization, food affordability issues, and suboptimal caregiving practices contribute significantly to persistent stunting in cities (Headey et al., 2021; Ruel et al., 2017)

In Indonesia, stunting remains a national development priority. The Indonesian Nutritional Status Survey (SSGI) 2024 reported a decline in national stunting prevalence to 19.8%, down from 21.5% in 2023. Despite this progress, the prevalence remains above the national target of 14% outlined in the 2020–2024 Rencana Pembangunan Hangka Menengah Nasional (RPJMN). Consequently, the Indonesian government has intensified both nutrition-specific and nutrition-sensitive interventions, emphasizing maternal and child nutrition, household food security, and behavior change communication (Kemenko, 2025).

At the provincial level, West Java recorded a stunting prevalence of 15.9% in 2024, reflecting improvement but still exceeding the national target. Marked disparities persist across districts and cities, with some urban areas reporting lower prevalence while others continue to experience substantial burdens. Nutrition-sensitive programs such as the Healthy and Independent Sustainable Yard (ASRI) initiative have been implemented to improve household-

level food availability and dietary diversity, highlighting the increasing focus on family-based nutrition practices (Nurulliah, 2025).

In Bogor Regency, stunting prevalence reportedly declined sharply to 7.59% in 2024, attributed to innovative local strategies such as the Stunting Prevention House (CETING) program and foster parent initiatives. However, district-level data may obscure intra-urban disparities, particularly in densely populated cities such as Bogor City, where socioeconomic inequality, maternal employment patterns, and lifestyle factors may influence caregiving and feeding behaviors. Recent local reports indicate that, despite routine participation in nutrition education programs, cases of stunting persist in several urban health center catchment areas (Rowa & Averus, 2025; Utami et al., 2024).

Evidence from the last five years consistently emphasizes the critical role of maternal knowledge, attitudes, and practices (KAP) in determining child nutritional status. A meta-analysis covering low- and middle-income countries found that children of mothers with inadequate nutrition knowledge were 2.3 times more likely to be stunted compared to those whose mothers had adequate knowledge (Novitasari & Wanda, 2020a). Studies in Bangladesh, Vietnam, and Nepal have demonstrated that poor maternal understanding of complementary feeding timing, meal frequency, and dietary diversity significantly increases the risk of stunting (Din et al., 2023; Headey et al., 2021; Simanjuntak et al., 2019). In Malaysia, recent findings showed that inappropriate feeding practices and low maternal responsiveness were independently associated with stunting among toddlers in urban settings (Bayked et al., 2024). In Indonesia, several studies conducted between 2020 and 2024 reported significant associations between maternal education, nutrition knowledge, feeding attitudes, and child growth outcomes (Umwali, 2020; Wahyuni et al., 2023). However, most of these studies were conducted in rural areas or at the provincial level, leaving urban city-level evidence limited, particularly in Bogor City. This gap restricts the ability of local governments to design context-specific interventions tailored to urban household characteristics. A preliminary survey conducted at the Gunung Batu Community Health Center in January 2025 identified several toddlers classified as stunted despite regular maternal attendance at nutrition counseling sessions. This finding suggests that attendance alone may not translate into adequate knowledge, positive attitudes, or appropriate practices. Therefore, a systematic assessment of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices is urgently needed. This study aims to describe maternal characteristics, knowledge, attitudes, and practices related to toddler nutrition, as well as the characteristics of stunted toddlers in

Gunung Batu Village, Bogor City, in February 2025. The findings are expected to provide locally relevant evidence to support targeted, behavior-focused stunting prevention strategies in urban settings.

METHODS

This study employed a quantitative observational design with a descriptive–analytic approach, conducted in Gunung Batu Village, Bogor City, during February 2025. The study aimed to describe maternal demographic characteristics, nutritional knowledge, attitudes, and practices (KAP), as well as characteristics of stunted toddlers. The study population consisted of all mothers with stunted toddlers aged 6–59 months registered in the By Name By Address (BNBA) database of Gunung Batu Village. The BNBA is an official administrative registry maintained by the Community Health Center (Puskesmas) that records children identified with nutritional problems, including stunting, along with individual and household information. A total sampling technique was applied. Based on BNBA data for February 2025, a total of 54 mother–toddler pairs met the eligibility criteria and were included in the study (N = 54). No sample size calculation was performed because the population was relatively small and fully accessible.

Inclusion criteria were mothers who: had toddlers aged 6–59 months classified as stunted in the February 2025 BNBA records; resided in Gunung Batu Village, and provided informed consent. Exclusion criteria included mothers who were unavailable during data collection, declined participation, or had incomplete questionnaire responses. The variables analyzed in this study were grouped as follows: 1) Maternal demographic variables: age, level of education, occupation, and parity; 2) Maternal nutrition-related variables: Knowledge (14 items; Guttman scale; categorized as good/poor); Attitudes (15 items; 5-point Likert scale; categorized as positive/negative), and Practices (12 items; Guttman scale; categorized as appropriate/inappropriate); 3)Toddler characteristics: age (months), sex, and stunting severity (moderate or severe).

Stunting status was determined based on height-for-age z-scores (HAZ) calculated using the WHO Child Growth Standards 2006. Children with HAZ < −2 SD were classified as stunted, while those with HAZ < −3 SD were categorized as severely stunted. Anthropometric measurements were performed by trained health workers at the Posyandu or Puskesmas using standardized equipment, including a length board for children under two years of age and a microtoise for children aged two years and above. Anthropometric data were obtained from

routine nutrition monitoring records for February 2025 at the Gunung Batu Community Health Center.

Data were collected using a structured questionnaire adapted from previously validated and reliable instruments. The questionnaire assessed maternal knowledge, attitudes, and practices related to toddler nutrition and feeding. Before data collection, the questionnaire was reviewed for content clarity and relevance. Data collection was conducted through face-to-face interviews by trained enumerators.

All collected data were processed and analyzed descriptively. Categorical variables were summarized using frequencies and percentages, while numerical variables were presented as mean values. The results were used to describe maternal characteristics, levels of knowledge, attitudes, and practices related to nutrition, as well as the distribution of stunting cases among toddlers.

This study received ethical approval from the Lembaga Penelitian dan Pengabdian kepada Masyarakat (LPPM), Christian University of Indonesia (Ethical Approval No.: 021/UKI.LPPM/PPM.00.00/ET.2025).

RESULTS

Table 1 Demographic Characteristics of Respondents Based on Mother's Age

Descriptive Statistics	N
Mean	30.69
Median	29
Mode	28, 36, 40
Minimum	22
Maximum	46
Total Data	54

Based on the collected data, the distribution of maternal ages shows a fairly varied range. The average maternal age was 30.69 years, with a median of 29 years. This indicates that most mothers were in the young to early adult age group. The mode of the data, the most frequently occurring ages, was 28, 36, and 40 years. The youngest recorded maternal age was 22 years, while the oldest was 46 years, for a total of 54 age data points collected.

Table 2 Demographic Characteristics of Respondents Based on Mother's Education, Mother's Occupation and Monthly Family Income

Descriptive Statistics	Frequency	Percentage
Mother's Education		
Senior High School	23	42.59
Primary School	15	27.78

Junior High School	13	24.07
Higher Education	3	5.55
Mother's Occupation		
Housewife	39	72.22
Trader	12	22.22
Seblak Seller	1	1.85
Teacher or Lecturer	1	1.85
Laborer	1	1.85
Monthly Family Income		
≥ Rp 3.000.000	18	33.33
Rp 1.000.000 - < Rp 2.000.000	17	31.48
Rp 2.000.000 - < Rp 3.000.000	17	31.48
< Rp 1.000.000	2	3.70

From the Table 2, the final educational profile of the mothers in this sample shows that the majority had a secondary education background. High school/vocational high school education was the highest level of education most commonly held by mothers, accounting for 42.59% of the total respondents (23 people). This was followed by elementary school education at 27.78% (15 people) and junior high school at 24.07% (13 people). A further 5.55% (3 people) had a higher education. A review of mothers' occupations shows a dominant role as housewives. 72.22% of respondents (39 people) work as housewives. Furthermore, a significant proportion of other occupations are traders, accounting for 22.22% (12 people). Other occupations, such as selling seblak (spicy rice cakes), teaching or lecturers, and laborers, were each represented by only one respondent, representing 1.85% of each category. Analysis of monthly family income shows that income distribution is relatively even across several categories. The income category "≥ Rp 3,000,000" is the largest group, covering 33.33% (18 families). The other two income categories, namely "Rp 1,000,000 - < Rp 2,000,000" and "Rp 2,000,000 - < Rp 3,000,000", have identical proportions, each at 31.48% (17 families). Meanwhile, only a small portion, namely 3.70% (2 families), have incomes below Rp 1,000,000.

Table 3 Distribution of Mothers' Knowledge Level Regarding Stunting

Category Level	Frequency	Percentage
Mothers' Knowledge		
Fair (≥ 9 score)	52	96.3
Poor (≤ 8 score)	2	3.7
Mothers' Attitude		
Fair (≥ 36 score)	54	100
Poor (≤ 35 score)	0	0
Maternal Action		
Fair (≥ 8 score)	52	96.3
Poor (≤ 7 score)	2	3.7

Note: Knowledge category criteria (Max score 14): Fairly Good ≥60 (score ≥8.4, rounded up to ≥9); Poor <60 (score ≤8)

Note: Attitude category criteria (Max score 60): Fair ≥60 (score ≥36); Poor <60 (score ≤35)

Note: Action category criteria (Max score 12): Fair ≥60 (score ≥7.2, rounded to ≥8); Poor <60 (score ≤7).

Based on Table 3, the majority of mothers (96.3%) had a "fairly good" level of knowledge about stunting. This indicates that almost all respondents had an adequate understanding of stunting, including its definition, causes, characteristics, impacts, and prevention efforts. Based on data of mothers' attitude, all mothers (100.0%) showed a 'Quite Good' attitude toward stunting prevention efforts. This indicates a positive tendency among mothers to support practices related to children's nutritional health. The last based on maternal action, the majority of mothers (96.3%) demonstrated 'Quite Good' practices or actions in stunting prevention efforts. This reflects that most mothers have implemented concrete steps to support stunting prevention in toddlers.

DISCUSSION

This study provides a descriptive overview of maternal demographic characteristics and nutrition-related knowledge, attitudes, and practices (KAP) among households with stunted toddlers in Gunung Batu Village, Bogor City. A key finding is that all toddlers included in the study were classified as stunted despite the majority of mothers demonstrating fairly good levels of knowledge, attitudes, and practices related to nutrition. This finding reinforces the notion that stunting is a multifactorial condition and cannot be explained solely by maternal cognitive and behavioral factors, particularly in urban settings.

Maternal Demographic Characteristics

The mean maternal age in this study was 30.69 years, placing most respondents within the productive reproductive age group. Similar age distributions among mothers of stunted children have been reported in several Indonesian studies conducted in West Java, Central Java, Aceh, and East Nusa Tenggara (Marzuki & Tahrim, 2024; Saputra et al., 2023; Sari et al., 2025). Internationally, studies in Bangladesh, Nepal, and Ethiopia also reported that stunting frequently occurs among children of mothers in their late twenties to early thirties, suggesting that maternal age alone is not a protective factor against chronic undernutrition (Basnet et al., 2021; Headey et al., 2021; Tyas et al., 2019).

Most mothers in this study had completed senior high school or vocational education and were predominantly housewives. This pattern is consistent with findings from other urban and semi-urban Indonesian settings, where mothers of stunted children often have moderate educational attainment but limited economic independence (Lestari et al., 2022; Siagian et al., 2024; Sihotang et al., 2023). However, studies from Malaysia, Vietnam, and Peru suggest that higher maternal education is generally associated with lower stunting prevalence, especially when accompanied by stable household income and food security (Bayked et al., 2024; Headey et al., 2021; Victora et al., 2021). The discrepancy indicates that education without sufficient socioeconomic support may be insufficient to prevent stunting, particularly in low-income urban households.

Maternal Knowledge

The majority of mothers in this study demonstrated a fair to good level of nutritional knowledge. This finding aligns with recent studies in Indonesia reporting adequate maternal knowledge among mothers of stunted toddlers, especially in areas with active nutrition counseling programs (Irfan et al., 2024; Siagian et al., 2024). Similar patterns have been observed in studies from Bangladesh and Vietnam, where mothers exhibited good theoretical knowledge of child nutrition but still had stunted children (Basnet et al., 2021; Simanjuntak et al., 2019; Umwali, 2020).

In contrast, meta-analyses and analytical studies from low- and middle-income countries consistently demonstrate that poor maternal knowledge significantly increases the risk of stunting, with odds ratios ranging from 2.0 to 2.5 (Black et al., 2013; Novitasari & Wanda, 2020b). The difference between these analytical findings and the present descriptive results suggests that knowledge alone does not automatically translate into improved nutritional outcomes, particularly when external constraints—such as food affordability, time limitations, and household decision-making dynamics—restrict the application of that knowledge.

Maternal Attitudes

All respondents in this study were categorized as having fairly good attitudes toward toddler nutrition and stunting prevention. Positive maternal attitudes reflect awareness, concern, and willingness to engage in healthy feeding and caregiving practices. Similar findings have been reported in urban Indonesian studies, where mothers expressed strong agreement with nutrition messages delivered through Posyandu and Puskesmas activities (Marzuki & Tahrim, 2024; Mursyidah, 2024; Saputra et al., 2023; Sitompul et al., 2025).

However, evidence from analytical studies in Southeast Asia and Africa indicates that positive attitudes alone are insufficient to prevent stunting when structural barriers persist (Akombi et al., 2017; Headey et al., 2021; Ruel et al., 2017). Studies from urban slums in India, the Philippines, and Nigeria found that mothers with positive attitudes still struggled to provide adequate diets due to food insecurity, poor sanitation, and inconsistent access to health services (Black et al., 2013; Victora et al., 2021). These findings support the results of the present study, suggesting that favorable attitudes may be constrained by contextual limitations beyond maternal control.

Maternal Practices

Most mothers in this study demonstrated fairly good nutritional practices, a finding that contrasts with several studies identifying poor feeding practices as a major contributor to stunting. Research from rural Indonesia, Cambodia, and Myanmar reported inadequate complementary feeding frequency, low dietary diversity, and early cessation of breastfeeding as dominant risk factors for stunting (Basnet et al., 2021; Umwali, 2020; Victora et al., 2021). The discrepancy suggests that in Gunung Batu Village, stunting may not be primarily driven by inappropriate feeding practices alone. Similar observations have been reported in urban Malaysian and Peruvian studies, where even appropriate feeding practices failed to prevent stunting in the presence of recurrent infections, overcrowded housing, and poor environmental sanitation (Bayked et al., 2024). These findings emphasize that maternal practices may be necessary but not sufficient conditions for optimal child growth.

Study Limitations and Recommendations for Future Research

This study has several limitations. First, its descriptive design and the absence of a non-stunted comparison group prevent causal inference and limit the ability to quantify the strength of associations between maternal factors and stunting. Second, the small sample size (N = 54) restricts statistical power and precludes multivariate analysis to control for confounding variables. Third, data on knowledge, attitudes, and practices were collected using self-reported questionnaires, which may be subject to recall and social desirability bias. Finally, important determinants such as household income, food security, environmental sanitation, infection history, and paternal involvement were not assessed.

Future research should employ analytical or mixed-methods designs, include both stunted and non-stunted children, and incorporate multivariate modeling to disentangle the relative contributions of maternal, household, and environmental factors. Qualitative studies exploring barriers to implementing nutritional knowledge in urban settings may also provide valuable

insights. Such evidence is essential to inform integrated, multisectoral stunting prevention strategies that move beyond behavior change alone and address the broader structural determinants of child undernutrition in urban areas.

Implications for Local Policy and Practice

The findings of this study have important implications for stunting prevention efforts in Bogor City. While maternal education and behavior-focused interventions remain important, they should be complemented by broader strategies addressing socioeconomic conditions, food access, sanitation, and health service quality. Local stunting reduction programs should integrate nutrition education with social assistance, environmental health improvements, and strengthened primary health care services. Future research in urban areas of Bogor City should adopt analytical designs to explore the interaction between maternal factors and structural determinants of stunting. Such evidence is essential to support more targeted, context-specific, and sustainable stunting prevention strategies at the city level.

CONCLUSIONS

This study found that most mothers of stunted toddlers in Gunung Batu Village were in the productive age group, had a senior high school or vocational education, and were predominantly housewives. The majority of respondents demonstrated fairly good levels of knowledge, attitudes, and practices related to toddler nutrition. Nevertheless, all toddlers included in this study were classified as stunted. These findings indicate that, within the study population, adequate maternal knowledge, attitudes, and practices alone were not sufficient to prevent stunting. The results highlight the need for further analytical research that includes a broader range of variables to better understand the factors associated with stunting among toddlers in urban areas of Bogor City. Such evidence is essential to support the development of comprehensive and context-appropriate stunting prevention strategies.

REFERENCE

Akombi, B. J., Agho, K. E., Hall, J. J., Wali, N., Renzaho, A. M. N., & Merom, D. (2017). Stunting, wasting and underweight in sub-Saharan Africa: a systematic review. *International Journal of Environmental Research and Public Health*, *14*(8), 863.

Basnet, S., Frongillo, E. A., Nguyen, P. H., Moore, S., & Arabi, M. (2021). Factor Structure and Equivalence of Maternal Resources for Care in Bangladesh, Vietnam, and Ethiopia. *Maternal and Child Health Journal*, *25*(6), 938–945. https://doi.org/10.1007/s10995-020-

Author names dkk / Scientific Periodical of Public Health and Coastal 4(2),2022 , halaman 87-99 (10pt, all caps, Cambria, Normal)

03100-4

Bayked, E. M., Yimer, E. M., Gelaw, T., Mohammed, A. S., & Mekonen, N. A. (2024). Dietary knowledge, attitude, practice, and associated factors among pregnant mothers in Ethiopia: a systematic review and meta-analysis. *Frontiers in Public Health*, *12*, 1393764. https://doi.org/10.3389/fpubh.2024.1393764

Benjohnson. (2025). Joint Child Malnutrition Estimates (JME) 2025. In *UNICEF DATA*. https://data.unicef.org/resources/jme/

Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., De Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., & Martorell, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, *382*(9890), 427–451.

Din, M. A. C., Teng, N. I. M. F., & Manaf, Z. A. (2023). Maternal depression and child feeding practices: determinants to malnutrition among young children in Malaysian rural area. *Women's Health*, *19*, 17455057221147800. https://doi.org/10.1177/17455057221147800

Headey, D. D., Ecker, O., Comstock, A. R., & Ruel, M. T. (2021). *Understanding the demand for "protective foods" in East Africa: An economic analysis with policy recommendations*. Intl Food Policy Res Inst.

Irfan, D., Daharnis, D., & Zadrian, Z. (2024). Tingkat Pengetahuan dan Sikap Ibu dengan Praktek Pemberian Makanan dalam Pencegahan dan Penatalaksanaan Anak Stunting. *Jurnal Sehat Mandiri*, *19*(1), 143–154. https://doi.org/10.33761/jsm.v18i2.987

Kemenko, P. M. K. (2025). *Prevalensi Stunting tahun 2024 Turun Jadi 19, 8 Persen, Pemerintah Terus Dorong Penguatan Gizi Nasional*.

Lestari, S., Siti Nur Solikah, & POLITEKNIK INSAN HUSADA SURAKARTA. (2022). Gambaran Tingkat Pengetahuan Ibu Dalam Pencegahan Stunting Pada Anak Usia Toodler Di Kedungtungkul Mojosongo Surakarta. *Intan Husada : Jurnal Ilmiah Keperawatan*, *10*(02), 177–183. https://doi.org/10.52236/ih.v10i2.254

Marzuki, D. S., & Tahrim, N. (2024). *Derajat kesehatan masyarakat*. Uwais Inspirasi Indonesia.

Mursyidah, L. (2024). The Role of Posyandu Cadres in Reducing Stunting in the Community. *Indonesian Journal of Cultural and Community Development*, *15*(3), 10–21070. DOI:10.21070/ijccd.v15i3.1117

Novitasari, P. D., & Wanda, D. (2020a). Maternal feeding practice and its relationship with stunting in children. *Pediatric Reports*, *12*(Suppl 1), 8698.

https://doi.org/10.4081/pr.2020.8698

Novitasari, P. D., & Wanda, D. (2020b). Maternal feeding practice and its relationship with stunting in children. *Pediatric Reports*, *12*(Suppl 1), 8698. https://doi.org/10.4081/pr.2020.8698

Nurulliah, N. (2025). Prevalensi Stunting di Jawa Barat Turun. In *Pikiran Rakyat Koran*. https://koran.pikiran-rakyat.com/bandung-raya/pr-3039285761/prevalensi-stunting-di-jawa-barat-turun

Rowa, H., & Averus, A. (2025). Kinerja Dinas Kesehatan Kabupaten Bekasi dalam Penanganan Stunting di Kabupaten Bekasi Provinsi Jawa Barat. *Jurnal Ekonomi Dan Statistik Indonesia*, *5*(1), 97–105.

Ruel, M. T., Garrett, J., Yosef, S., & Olivier, M. (2017). Urbanization, Food Security and Nutrition. In S. De Pee, D. Taren, & M. W. Bloem (Eds.), *Nutrition and Health in a Developing World* (pp. 705–735). Springer International Publishing. https://doi.org/10.1007/978-3-319-43739-2_32

Saputra, M. R., Malik, R., Ferilda, S., Wahyuni, S., & Nurwiyeni, N. (2023). GAMBARAN TINGKAT PENGETAHUAN, SIKAP, DAN TINDAKAN IBU TENTANG STUNTING DI KENAGARIAN SIJUNJUNG. *Jurnal Kesehatan Saintika Meditory*, *6*(1), 315–324. http://dx.doi.org/10.30633/jsm.v6i1.1861

Sari, S. F., Prayogo, M. S., ADR, A. Z., Akmalina, N. I., Hariyanti, M., Mubarroq, A. S., Annisa, T. N., Latifah, I., & Hasanah, W. (2025). Strategi pencegahan stunting melalui pelatihan pengolahan PMT berbasis bahan lokal dengan metode Participatory Action Research. *Menulis: Jurnal Penelitian Nusantara*, *1*(8), 476–484.

Siagian, R., Sihombing, F. S., Siregar, R., Sibuea, H., Putri, K. N., Lubis, M. N. A., & Oktavia, R. (2024). Gambaran Pengetahuan Ibu Tentang Pencegahan Stunting Pada Anak Balita. *Journal Of Nursing Science Research*, *1*(1), 49–55. https://doi.org/10.33862/jnsr.v1i1.430

Sihotang, W. Y., Hulu, V. T., Samosir, F. J., Pane, P. Y., Hartono, H., Manalu, P., Siagian, M., & Panjaitan, H. I. L. (2023). Determinants of stunting in children under five: a scoping review. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition)*, *12*(1), 9–20.

Simanjuntak, B. Y., Haya, M., Suryani, D., Khomsan, A., & Ahmad, C. A. (2019). Maternal knowledge, attitude, and practices about traditional food feeding with stunting and wasting of toddlers in farmer families. *Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)*, *14*(2), 58–64.

Sitompul, Y. R. M. B., Beding, B. M., Angelina, L., Wijaya, C., Rombe, C. V. I., & Patriawati,

K. A. (2025). Training on Procedures for Selecting and Processing Healthy Food as One of the Implementations of the Healthy Kitchen Program to Address Stunting. *Asian Journal of Community Services*, *4*(11), 897–904. https://doi.org/10.55927/ajcs.v4i11.423

Tyas, B. D., Lestari, P., & Akbar, M. I. A. (2019). Maternal Perinatal Outcomes Related to Advanced Maternal Age in Preeclampsia Pregnant Women. *Journal of Family & Reproductive Health*, *13*(4), 191. https://doi.org/10.18502/jfrh.v13i4.2646

Umwali, N. (2020). *Influence of Maternal Nutrition Knowledge on Infant and Young Child Feeding Practices and Nutrition Status of Children in Musanze District, Rwanda* [University of Nairobi].

Utami, G. P., Rahmaniati, M., & Bagus, N. (2024). Kejadian Prevalensi Stunting dengan Indeks Pembangunan Manusia dengan Pendekatan Spasial di Jawa Barat Tahun 2021. *Jurnal Manajemen Informasi Kesehatan (Health Information Management)*, *9*(1), 63–72. https://doi.org/10.51851/jmis.v9i1.476

Victora, C. G., Christian, P., Vidaletti, L. P., Gatica-Domínguez, G., Menon, P., & Black, R. E. (2021). Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. *The Lancet*, *397*(10282), 1388–1399.

Wahyuni, F. C., Karomah, U., Basrowi, R. W., Sitorus, N. L., & Lestari, L. A. (2023). The Relationship between Nutrition Literacy and Nutrition Knowledge with the Incidence of Stunting: A Scoping Review. *Amerta Nutrition*, *7*.

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