

# Maternal parenting style and risk of stunting in children under five: Evidence from rural Indonesia

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## Abstract

Stunting remains a significant public health concern in Indonesia and is often associated with inadequate parenting practices that affect a child's nutritional status and growth. This study aimed to examine the association between maternal parenting style and the incidence of stunting among children aged 2–5 years in a rural area of East Java, Indonesia. A cross-sectional analytical design was used, involving 118 mothers who were selected through simple random sampling. Data on parenting styles were collected using structured questionnaires, while stunting was assessed through height-for-age measurements based on World Health Organization growth standards. Parenting styles were categorized as authoritarian, democratic, or permissive. Data were analyzed using the Spearman rank correlation test. The findings revealed that the authoritarian parenting style was the most dominant and was significantly associated with a higher incidence of stunting in children under five. These results underscore the importance of early parental engagement and caregiving approaches in preventing growth failure among young children. Community health workers, including nurses, are encouraged to strengthen parenting education and promote positive parenting styles as part of integrated health services at community health posts.

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## 1. Introduction

Stunting remains a persistent public health concern globally, particularly in developing countries, due to its long-term impact on physical growth, cognitive development, and psychosocial well-being. Defined as a failure to reach age-appropriate height, stunting reflects chronic undernutrition and inadequate caregiving during critical growth periods. In Indonesia, stunting is one of the most significant public health concerns. According to the World Health Organization (2020), the global prevalence of stunting in children under five was approximately 22%, affecting 149.2 million children. Indonesia is among the 17 countries experiencing a triple burden of malnutrition—stunting, wasting, and overweight (Global Nutrition Report, 2020). In Indonesia, the prevalence of stunting in children is around 37%. This is the goal of the six global nutrition targets and is a significant goal in sustainable development (Beal et al., 2018). In 2021, the national stunting prevalence in Indonesia reached 24.4% or 5.33 million children under five. Although East Java has shown some improvement, with prevalence decreasing from 23.5% to 13.1% in Jombang Regency between 2018 and 2021, the problem remains serious in specific areas such as Jarak Kulon (13.79%) and Kesamben Ngoro (8.16%) (Direktorat Jendral Kesehatan Masyarakat, 2017).

Children under 5 years of age who are low in height for age are a physical sign of stunting (Gusnedi et al., 2023). Factors that can influence stunting in children include non-exclusive breastfeeding for the first

6 months, low family economic status, premature birth, short birth length, and low education (Beal Ty, 2018). This series is also supported by the fact that parenting style contributes to stunting. Inappropriate or authoritarian parenting has been associated with poor nutritional outcomes and developmental delays in children (Aramico *et al.*, 2016). Parents who apply rigid, one-directional communication and coercive discipline may hinder the child's growth both physically and emotionally. This pattern often lacks compromise and empathy, potentially leading to inadequate nutritional practices and limited health-seeking behaviors. Research shows that a child's developmental quality and potential are closely linked to the parenting style caregivers adopt (Latifah *et al.*, 2021). Conversely, democratic parenting, which emphasizes open communication and balanced control, is associated with healthier growth patterns and stronger social skills in children (Sofiani *et al.*, 2020).

The figures are still high in many regions; policies, programs, and interventions supporting maternal and child health and nutrition can potentially improve child growth and development (Vaivada *et al.*, 2020). Despite numerous national efforts to address stunting, knowledge gaps remain in understanding how parenting styles influence child nutrition at the community level, particularly in rural settings. Existing studies suggest that many parents are unaware of the impact of their caregiving approaches on children's health outcomes (Julianti & Jusmaeni, 2021). While counselling and education are often recommended, empirical evidence on the effectiveness of parenting styles in preventing stunting is still limited in Indonesia, especially within village-level health services like Posyandu. Therefore, this study aimed to examine the relationship between maternal parenting style and the incidence of stunting among children aged 2–5 years in a rural area of Jombang, East Java. This research contributes to developing community-based nursing interventions and parenting education programs that may reduce the risk of chronic undernutrition in early childhood.

## **2. Method**

### **2.1 Research Design and Participants**

This study employed an analytical observational design using a cross-sectional approach, which is appropriate for simultaneously examining associations between parenting style and stunting status (Nursalam, 2017). The target population included all mothers with children aged 2–5 years residing in Jombok Village, Ngoro District, Jombang Regency, East Java, Indonesia. A total of 168 mothers met the population criteria. Using a simple random sampling technique, 118 respondents were selected as the study sample. Inclusion criteria comprised mothers with children between 24 and 59 months willing to participate and provided informed consent. Exclusion criteria included mothers whose children had physical disabilities or chronic illnesses that could affect growth parameters.

### **2.2 Instruments and Data Collection**

Data on maternal parenting style were collected using a structured questionnaire adapted from established parenting frameworks, consisting of Likert-scale items assessing behavioral tendencies. The scale ranged from 1 to 4, with response options: 1 = never, 2 = sometimes, 3 = often, and 4 = always. Parenting styles were classified into three categories based on total scores: democratic (73–96), authoritarian (49–72), and permissive (24–48). Subject matter experts reviewed the instrument's content validity, and internal consistency was checked using Cronbach's alpha in a preliminary study. Stunting status was assessed by measuring children's height using a standard centimeter tape, following WHO measurement protocols. The results were converted into height-for-age Z-scores using the formula:  $Z\text{-score} = (\text{individual value} - \text{median reference value}) / \text{standard deviation of reference population}$  (Direktorat Jendral Kesehatan Masyarakat, 2017). Children with Z-scores below  $-2.0$  SD were categorized as stunted, while those above  $-2.0$  SD were considered not stunted. Data was collected by trained enumerators at Posyandu sites under the supervision of the research team between October and November 2022. Before participation, all respondents received detailed explanations and signed informed consent forms.

### **2.3 Data Analysis**

Data were analyzed using univariate and bivariate statistical techniques. Univariate analysis used statistical description to describe each variable's frequency and percentage distribution (Subhaktiyasa *et al.*, 2025). Bivariate analysis was conducted using the Spearman rank correlation test, which is suitable for evaluating the relationship between ordinal-level parenting styles and stunting status. A significance level

of  $\alpha = 0.05$  was set for hypothesis testing (Sugiyono, 2019). All analyses were performed using SPSS version 25.

## 2.4 Ethical Considerations

This study adhered to the ethical principles, including informed consent, confidentiality, voluntary participation, and the right to withdraw at any time. Ethical approval was obtained from the Health Research Ethics Commission of ITS Kes Insan Cendekia Medika Jombang with clearance number 077/KEPK/ITSKES.ICME/X/2022. All participants were informed about the study objectives, procedures, and potential risks. Data confidentiality and anonymity were ensured throughout the research, and no identifying information was collected. As the study involved a vulnerable population of mothers and children under five, appropriate safeguards and clear ethical protocols were implemented.

## 3. Results and Discussion

### 3.1 Results

This section presents the findings following the study's objectives. The results are structured into five sub-sections: maternal characteristics, child characteristics, maternal parenting styles, stunting incidence, and the statistical association between parenting styles and stunting. Descriptive statistics are presented first, followed by inferential analysis using the Spearman rank correlation test.

Table 1. Distribution of Maternal Characteristics

Variable	Category	Frequency	Percentage (%)
Age (years)	27 – 30	17	15
	31 – 34	24	20
	35 – 38	45	38
	39 – 42	32	27
Education level	Elementary school	51	43
	Junior high school	41	35
	Senior high school	21	18
	College	5	4
Occupation	Government employees	10	8
	Private	52	44
	Self-employed	56	48

Table 1 shows that most respondents were mothers aged 35–38 (38%), followed by those aged 39–42 (27%). Nearly half (43%) had only completed elementary school, and just 4% had a college-level education. Regarding occupation, a significant proportion were self-employed (48%) or worked in the private sector (44%). These maternal background characteristics may influence child-rearing behaviors and knowledge related to nutrition and health.

Table 2. Distribution of Child Characteristics

Variable	Category	Frequency	Percentage (%)
Age (years)	2 – 3	67	57
	4 – 5	51	43
Gender	Male	51	43
	Female	67	57
Height (cm)	< 85	10	8
	85 – 90	46	39
	91 – 95	46	39
	96 – 100	16	14

Table 2 indicates that most of the children were aged 2–3 years (57%), and the gender distribution showed more females (57%) than males (43%). The height distribution reveals that many children fell within the 85–95 cm range, suggesting potential growth concerns in this critical developmental stage.

Table 3. Distribution of Maternal Parenting Styles

Parenting Style	Frequency	Percentage (%)
Democratic	23	19
Authoritarian	62	53
Permissive	33	28

Table 3 shows that most mothers (53%) practiced an authoritarian parenting style characterized by strict rules and limited communication. A smaller proportion followed a permissive style (28%), and only 19% applied a democratic parenting approach, emphasizing reasoning and mutual respect. These findings may reflect the dominant parenting culture in rural communities with lower educational backgrounds.

Table 4. Distribution of Stunting Incidence in Children

Stunting Status	Frequency	Percentage (%)
stunting	72	61
not stunting	46	39

Table 4 reveals that a significant number of children (61%) were categorized as stunted, based on the WHO height-for-age Z-score classification. This high prevalence underscores the ongoing challenges of chronic malnutrition among children in rural settings and the need for targeted public health interventions.

Table 5. Cross-tabulation of Maternal Parenting Style and Stunting Status

Parenting style	Incidence of child stunting				Total	
	Stunting		Not stunting		f	%
	f	%	f	%		
Democratic	9	8	14	11	23	19
Authoritarian	37	31	25	22	62	53
Permissive	26	22	7	6	33	28
Uji Rank Spearman nilai $p = 0,000$						

The cross-tabulation in Table 5 illustrates the relationship between parenting style and stunting status. Among mothers with an authoritarian style, 37 children (31%) were stunted. Democratic parenting was associated with the lowest incidence of stunting (8%), while 22% of stunted children had permissive mothers. The Spearman rank correlation test yielded a p-value of 0.000, indicating a statistically significant association between maternal parenting style and the incidence of stunting in children under five ( $\alpha < 0.05$ ).

### 3.2 Discussion

This study aimed to examine the relationship between maternal parenting style and the incidence of stunting in children aged 2–5 years in a rural Indonesian setting. The findings revealed a significant association between parenting style and stunting status, with authoritarian parenting emerging as the most dominant style among respondents and being associated with a higher risk of child stunting. The high prevalence of authoritarian parenting (53%) aligns with the socio-demographic background of the sample, in which nearly half of the mothers had only completed elementary school and many worked in the informal sector. Authoritarian parenting, characterized by strict control, limited emotional engagement, and one-way communication, may hinder children's ability to develop autonomy and healthy behavioral habits. According to Putri (2018), children raised under authoritarian parenting tend to exhibit indecisiveness, low self-esteem, and reduced problem-solving capacity. These psychosocial conditions can affect children's appetite, feeding behavior, and response to caregiving, factors critical in preventing stunting.

The study also found that children of authoritarian and permissive mothers were more likely to experience stunting, whereas democratic parenting was associated with a lower incidence. This finding aligns with the study by Rahardjo (2010), which emphasized the role of maternal knowledge and behavior in shaping children's nutritional outcomes. Maternal education plays a critical role in the development of parenting style, particularly in promoting democratic approaches that are conducive to child health. This study shows that higher-education mothers may have more access to information, better decision-making skills, and improved capacity to guide their children with supportive discipline and appropriate nutrition.

In addition to maternal education, maternal age may also influence parenting behavior. Most mothers in this study were between 35 and 38 years old, which may reflect a level of maturity and experience in caregiving. However, maturity alone is insufficient without accompanying knowledge and access to health information. Latifah et al. (2021) emphasized that children's development is primarily influenced by the quality of parenting provided, not just the caregiver's age. Child characteristics such as age and gender may also affect the risk of stunting. In this study, most children were aged 2–3 years and were female.

Children at this developmental stage are susceptible to environmental, nutritional, and emotional influences. Feeding challenges often arise at this age, requiring mothers to employ more responsive and flexible parenting strategies. Sholikah et al. (2017) emphasized that parenting includes physical care, responsive feeding, emotional support, and health maintenance activities such as immunization and hygiene. Stunting remains a long-term indicator of chronic malnutrition and inadequate care. As explained by Fikawati (2017), stunting often begins in utero and may not become apparent until the child reaches two years of age. The high rate of stunting (61%) in this study suggests that many children had experienced prolonged nutritional deprivation and suboptimal caregiving early in life. Poor parenting practices, including lack of stimulation, inadequate feeding, and rigid behavioral control, may exacerbate the problem.

Interestingly, while authoritarian parenting was significantly associated with stunting, it is worth noting that permissive parenting also contributed to a substantial proportion of stunted children. It may be due to the permissive style's lack of structure, guidance, and nutritional regulation. On the other hand, democratic parenting fosters open communication, mutual respect, and responsiveness—attributes that support better feeding practices and child development (Sofiani et al., 2020). The study also observed that maternal occupation may contribute to nutritional outcomes. Nearly half of the mothers were private workers or self-employed, which may limit the time available for meal preparation and responsive feeding. It is consistent with the findings of Rosidah et al. (2017), who highlighted the impact of maternal workload on child nutrition and growth. In addition, the mother's education and opinion will also have an impact on the mother's parenting pattern towards her child regarding the need to eat Silesi meat (Mulatu, Silesi; Gedif, Azeb; Tadesse, Fikir; Zemene, Workie; Berhanu, Mengstu; Workie, 2025).

Although the results demonstrated a strong correlation between parenting style and stunting, the interpretation must be cautious. Other internal and external factors—genetic predispositions, household food security, environmental hygiene, and access to health services—may also contribute to stunting (Rakhmawati, 2015). Therefore, while parenting style is an influential factor, it is part of a broader set of determinants affecting child growth. This study reinforces the importance of empowering mothers with knowledge and skills related to positive parenting and child nutrition. The findings highlight the need for nursing interventions in community settings, particularly through Posyandu and Puskesmas, to promote democratic parenting styles, responsive feeding, and early growth monitoring. As frontline community health professionals, nurses are critical in providing health education, counseling, and psychosocial support for mothers to prevent stunting and improve child development outcomes.

#### **4. Conclusion**

This study demonstrated a significant relationship between maternal parenting style and the incidence of stunting in children aged 2–5 years in a rural Indonesian community. Authoritarian parenting was found to be the most prevalent style and was associated with a higher risk of child stunting, while democratic parenting was linked to more favorable growth outcomes. These findings underscore the critical role of caregiving behavior in early childhood nutrition and development and highlight the importance of promoting positive, responsive parenting through health education at the community level. The study contributes to the field of community nursing by reinforcing the need for targeted interventions, particularly by nurses at integrated health posts (Posyandu), to monitor child growth and support maternal health literacy. However, the study is limited by its cross-sectional design, which restricts causal inference, and relies on self-reported data. Future research should explore longitudinal designs, incorporate broader environmental and genetic factors, and assess the effectiveness of parenting interventions in reducing stunting. Enhancing maternal capacity through community-based nursing initiatives may be a critical pathway to improve nutritional outcomes and support holistic child development in low-resource settings. Stunting in children is a series of cause-and-effect processes influenced by the household environment, the environment, socio-economic factors, and culture. Thus, the solution requires a multi-aspect approach.

## Conflict of Interest

The authors declare no conflict of interest.

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