

Father Involvement for Feeding Practice and the Prevalence of Stunted Children: A Cross-Sectional Study in Indonesia

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Abstract

Background: Stunting remains one of the most significant nutritional challenges, alongside wasting, underweight, and obesity, that threaten children's growth and development. In Indonesia, fathers' involvement in parenting is still relatively low. Parenting patterns in which mothers are solely responsible, without involving fathers, can negatively affect a child's nutritional status due to insufficient monitoring. This study aims to analyze the association between father involvement in feeding and the prevalence of stunting in children aged 24-59 months in families in Jember Regency.

Materials and Methods: This research employed a descriptive analytic design with a cross-sectional approach. Data were collected using the Infant and Young Child Feeding (IYCF) questionnaire to assess the level of fathers' involvement in feeding, while stunting status was measured using a digital scale and a microtoise. The sample consisted of 212 father-child pairs, with the unit of analysis being the father-child pair. A stratified random sampling technique was applied across villages and posyandu. Data were analyzed using the Chi-square test to determine the unadjusted bivariate associations between variables.

Results: The research findings indicate that 52% of fathers have low involvement in feeding their children. Among the children, 70.8% were classified as stunted ($-3 \leq \text{HAZ} < -2$), categorized as severely stunted ($\text{HAZ} < -3$). The unadjusted bivariate chi-square test revealed a significant association ($\chi^2 = 5.599$; $p\text{-value} = 0.018$).

Conclusion: This study provides evidence of a protective association between fathers' involvement in child feeding practices and stunting status, underscoring the need for education and empowerment programs targeting fathers as a strategy to reduce stunting.

Key Words: Children, Family, Father involvement, Feeding practices, Stunted.

* Please cite this article as: Salsabila A.M, Susanto T, Rasni H, Winarto A, Munawaroh L. Father Involvement for Feeding Practice and the Prevalence of Stunted Children: A Cross-Sectional Study in Indonesia. J Ped Perspect 2026; 14 (6):20171-20185. DOI: 10.22038/jpp.2026.95313.5645

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1- INTRODUCTION

The occurrence of stunted growth remains one of the most significant nutritional problems affecting children, alongside wasting, underweight, and obesity, all of which threaten their growth and development (1–3). Globally, 149 million children, or 22.3%, experienced stunting in 2022 (4). According to the Nutrition Status Monitoring Survey, the prevalence of stunting in Indonesia in 2022 was 21.6%, with the Jember region reporting a higher prevalence of 34.9% (5). The high prevalence of stunting is attributed to several factors, including poor maternal nutrition during pregnancy, low family income, inadequate antenatal care visits, improper complementary feeding practices, lack of paternal involvement in childcare, and ineffective parenting patterns (6–14). These factors contribute to stunting, particularly those related to child-rearing.

Parenting responsibilities should be shared equally by mothers and fathers; however, the involvement of fathers in child care remains insufficient (14, 15). In Indonesia, father involvement in parenting is still relatively low (16). The country ranks third globally for the highest rate of fatherlessness (17). According to a 2021 survey conducted by Statistics Indonesia (BPS), only 37.17% of children aged 0-5 years receive paternal involvement in their care (18). Parenting practices that help prevent stunting include proper feeding of children (19, 20). Poor feeding practices by caregivers increase the likelihood of stunting by 10.74 times (21, 22). Fathers' involvement in caregiving, especially in feeding, can make a significant contribution to a child's growth and development within the family.

Stunted growth remains one of the most significant nutritional challenges among wasting, underweight, and obesity, all of which threaten children's growth and development (23-25). In Indonesia,

fathers' involvement in parenting is still relatively low. Parenting patterns in which mothers are solely responsible, without involving fathers, can negatively affect a child's nutritional status due to insufficient monitoring. This study aims to analyze the association between father involvement in feeding and the prevalence of stunting in children aged 24 to 59 months in families in Jember Regency, Indonesia.

Fathers who are actively involved and well-informed about parenting are more likely to promote optimal feeding practices, including providing nutritious food and monitoring their child's growth and development, thereby supporting better nutritional outcomes (26). According to UNICEF (2020), fathers must participate in providing the nutrition children need; therefore, it is recommended that fathers be involved in feeding their children (27). Low paternal involvement, with most child-rearing responsibilities falling solely on mothers, is one possible cause of stunting (28, 29). Therefore, this study aims to determine whether there is a relationship between paternal involvement in feeding and the prevalence of stunting in children aged 24 to 59 months in families in Jember Regency, Indonesia.

2- MATERIALS AND METHODS

2-1. Study Design

This study employs a descriptive-analytical method with a cross-sectional design, conducted from January to March 2025. The research was carried out in the service areas of the Public Health Center Rambipuji, Sumberjambe, and Ledokombo, located in Jember Regency, Indonesia.

2-2. Participant

The population of this study consists of 875 children under the age of five, of whom 663 are stunted. The sample

size was calculated using the following formula:

$$n = z_{1-\frac{\alpha}{2}}^2 \sum_{h=1}^L \frac{N h^2 P_h (1-P_h)}{W_h} / \left[N^2 d^2 + z_{1-\frac{\alpha}{2}}^2 N h P_h (1-P_h) \right]$$

A total of 212 samples were collected for this study, consisting of father-child pairs. The unit of analysis was the father-child pairs. Children aged 24 to 59 months were selected because this age range more accurately reflects the occurrence of stunting and ensures consistency in height measurements. In contrast, children under 24 months, classified as toddlers, are still receiving breast milk and have the potential for catch-up growth; therefore, their length or height may not yet fully reflect stunting.

The sampling in this study employed probability sampling using the stratified random sampling method. Stratification was conducted twice: first by village and then by Posyandu, as illustrated in Figure 1. This approach ensured appropriate representation across the study area.

This study employs the following inclusion criteria: 1) stunted children aged 24-59 months registered at the posyandu in 11 stunting locus villages within the service areas of the Public Health Centers in Rambipuji, Sumberjambe, and Ledokombo; and 2) stunted children aged 24-59 months who have been living with their father for at least the past six months at the time of data collection. The exclusion criteria for children are: 1) stunted children aged 24-59 months with edema; 2) stunted children aged 24-59 months who are ill (e.g., diarrhea or pulmonary tuberculosis); 3) stunted children aged 24-59 months with congenital lower extremity abnormalities (such as congenital talipes equinovarus (CTEV) / Club foot and Calcaneovalgus), 4) stunted children aged 24-59 months listed in secondary data for the area but who no longer reside there upon visit; 5)

fathers of children aged 24-59 months who are unwilling to participate as respondents; and 6) fathers of children aged 24-59 months with disabilities affecting hearing or speech. After applying the sampling technique and selection criteria, a final sample of 212 fathers with stunted children was obtained.

2-3. Data Collection Procedures

Quantitative data were obtained through a questionnaire and anthropometric measurements. The measurement tools used in this research are divided into three instruments. The first is a respondent characteristic questionnaire (sociodemographic), which includes father characteristics (age, education level, occupation, income, marital status, family type) and child characteristics (age, gender, date of birth, height, weight, edema status, immunization, and history of exclusive breastfeeding). The independent variable, which is the father's involvement in feeding, is measured using the Infant and Young Child Feeding (IYCF) questionnaire (30). This questionnaire comprises three indicators: knowledge, attitude, and practice of fathers, with a total of 38 questions rated on a 1-5 Likert scale. Interpretation of the questionnaire uses a cut-off point value: scores below the cut-off indicate low father involvement, while scores above the cut-off indicate high father involvement.

The next tool used to measure the dependent variable, stunting incidence, involves anthropometric measurements of children using a microtoise and digital scales. The results of stunting measurements in children are converted into z-scores using the WHO Anthro application or classified as stunted and severely stunted according to height-for-age (HAZ) based on WHO anthropometric standards.

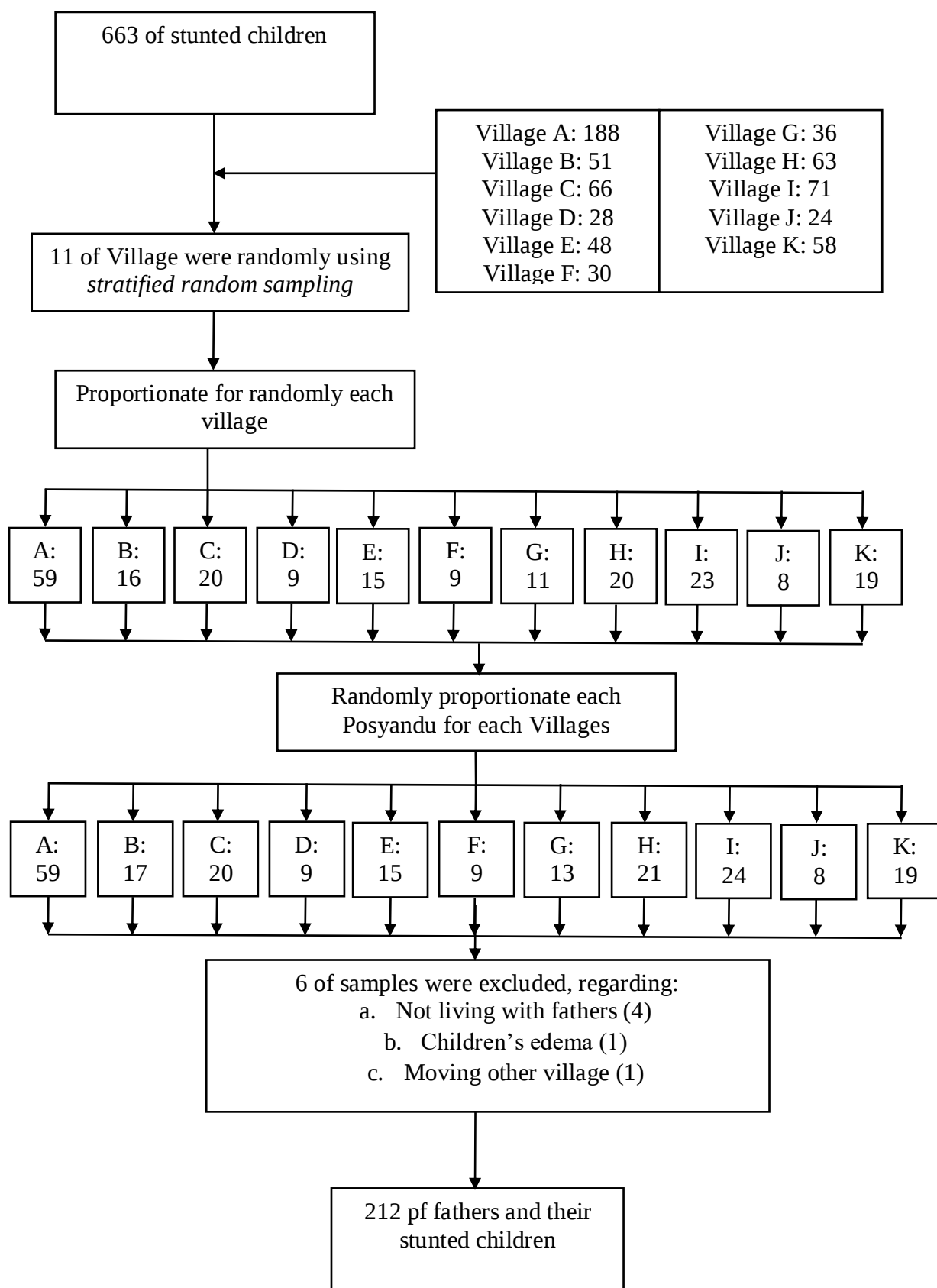


Figure-1: Stratified sampling method.

Children with a z-score between -3 SD and -2 SD ($-3 \leq z < -2$) are classified as stunted, while children with a z-score below -3 SD ($z < -3$) are classified as severely stunted.

Data collection began with meetings involving the nutrition officers of the Public Health Centers in Rambipuji, Ledokombo, and Sumberjambe to obtain data on stunted children aged 24-59 months. The researcher then met with community health cadres and conducted home visits alongside them. During these visits, the researcher explained the purpose and objectives of the study to the respondents and obtained their consent by providing an informed consent form.

2-4. Data Analysis

Data analysis was conducted after all data had been collected. The entire dataset underwent checking, coding, and was entered into the computer. The data were analyzed using SPSS version 26. Categorical data are presented as percentages, while numerical data are presented as means, medians, and standard deviations. The relationship between fathers' involvement in feeding and the prevalence of stunting in children was analyzed using the Chi-square test. The unadjusted association between fathers' involvement in a simple bivariate Chi-square test. Odds ratios (OR) were calculated through simple bivariate cross-tabulation without multivariable regression adjustments.

2-5. Research Ethics

This research was ethically approved by the Health Research Ethics Committee of the Faculty of Nursing, University of Jember, under approval number 021/UN25.1.14/KEPK/2025. The ethical approval was granted and valid from January 24, 2025, to April 24, 2025.

3- RESULTS

Table 1 shows that stunted children in Jember Regency have an average age of 40.5 months. Most of these children are female (53.3%). The majority were exclusively breastfed for six months (79.7%) and have received complete immunization (96.2%). Additionally, the average age of the fathers of stunted children is 33.7 years. Most fathers have an elementary school education (48.1%) and work as farmers (57.1%), with incomes below the regional minimum wage (82.5%).

In Table 2, the results indicate a significant difference in paternal involvement in feeding (p-value < 0.001). Each indicator of paternal involvement in feeding also shows significant differences, with the knowledge indicator (p-value = 0.001) and the attitude and practice indicator (p-value < 0.001). Additionally, the depiction of the level of paternal involvement in feeding is shown in Figure 2.

The results presented in Table 3 indicate no significant difference in children's height (p-value = 0.058). In contrast, the weight of stunted children shows a significant difference (p-value = 0.001). Furthermore, the findings reveal a significant difference in the nutritional status of stunted children as measured by HAZ (p-value = 0.000). Similar significant differences were observed in body mass index-for-age (BAZ) (p-value = 0.022) and weight-for-height (WHZ) (p-value = 0.046). However, no significant difference was found in the nutritional status measured by weight-for-age (WAZ) (p-value = 0.200).

The prevalence of stunting and nutritional status among children aged 24-59 months is illustrated in Figure 3. The results indicate that the majority of children in Jember Regency are classified as stunted ($-3 \leq \text{HAZ} < -2$), accounting for 70.8%. Additionally, Meanwhile, 29.2% of children are categorized as severely stunted ($\text{HAZ} < -3$). Regarding nutritional

status based on WAZ, most children have a normal weight (46.2%). Similarly, assessments based on WHZ show that 75% of children have normal nutrition, and based on BAZ, 75.5% are also within the normal range.

Bivariate analysis was conducted using the chi-square test. The results presented in Table 4 indicate a significant association between paternal involvement in feeding and the prevalence of stunting in children aged 24-59 months in Jember Regency ($\chi^2 = 5.599$; p-value = 0.018).

Table-1. Distribution of respondent characteristics in Jember Regency, February-March 2025 (n=212).

Variable	Father	Children
Age		
Mean (SD)	33.78 years (7.05)	40.52 months (9.450)
Md (P ₂₅ -P ₂₇)	32 years (29-39)	40 months (33-48)
Gender n(%)		
Male	212 (100)	98 (46.7)
Female	-	114 (53.3)
History of exclusive breastfeeding n(%)		
Yes		168 (79.2)
No		44 (20.8)
Children's height		
Mean (SD)		87.64 (5.38)
Md (P ₂₅ -P ₂₇)		87.20 (83.75-92)
Categories (HAZ) n(%)		
Short		150 (70.8)
Very short		62 (29.2)
History of immunization n(%)		
Complete		203 (96.2)
Uncomplete		8 (3.8)
Education level n(%)		
Not in school	5 (2.4)	
Elementary school	102 (48.1)	
Junior high school	54 (25.5)	
Senior high school	44 (20.8)	
Bachelor	7 (3.2)	
Father's work n(%)		
Private employee	44 (20.8)	
Farmer	121 (57.1)	
Civil servant	2 (0.9)	
Entrepreneur	45 (21.2)	
Monthly income n(%)		
< Minimum income regional area	175 (82.5)	
≥ Minimum income regional area	37 (17.5)	
Marital status n(%)		
Married	212 (100)	
Divorced	0	
Type of family n(%)		
Nuclear family	113 (53.3)	
Extended family	99 (46.7)	

Note: n(%): frequency (%), **mean:** average, **Md:** median, **P₂₅-P₂₇:** Percentiles 25-75, **Minimum income regional area:** IDR. 2.838.842.

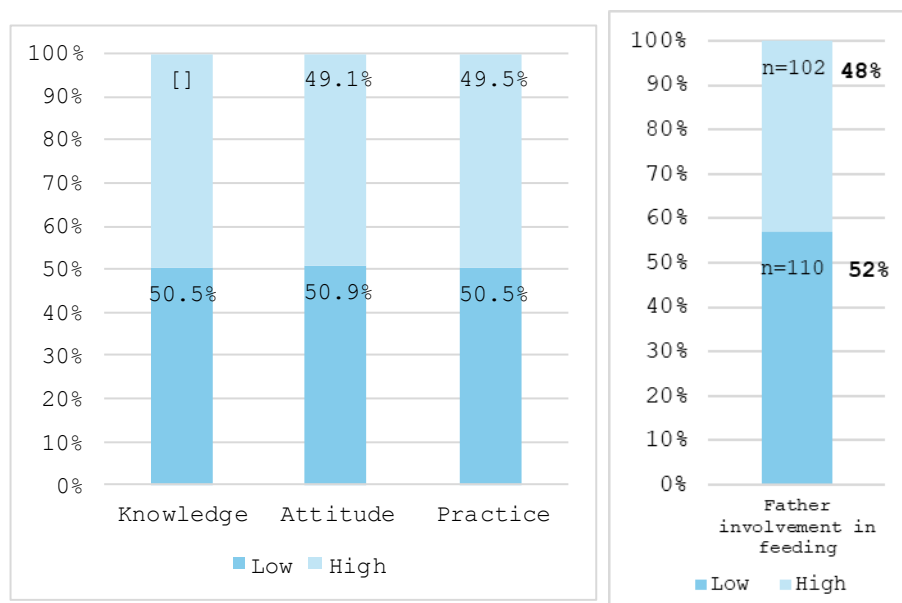


Figure-2: The level of fathers' involvement in feeding. (n=212; (%): percentage of respondents).

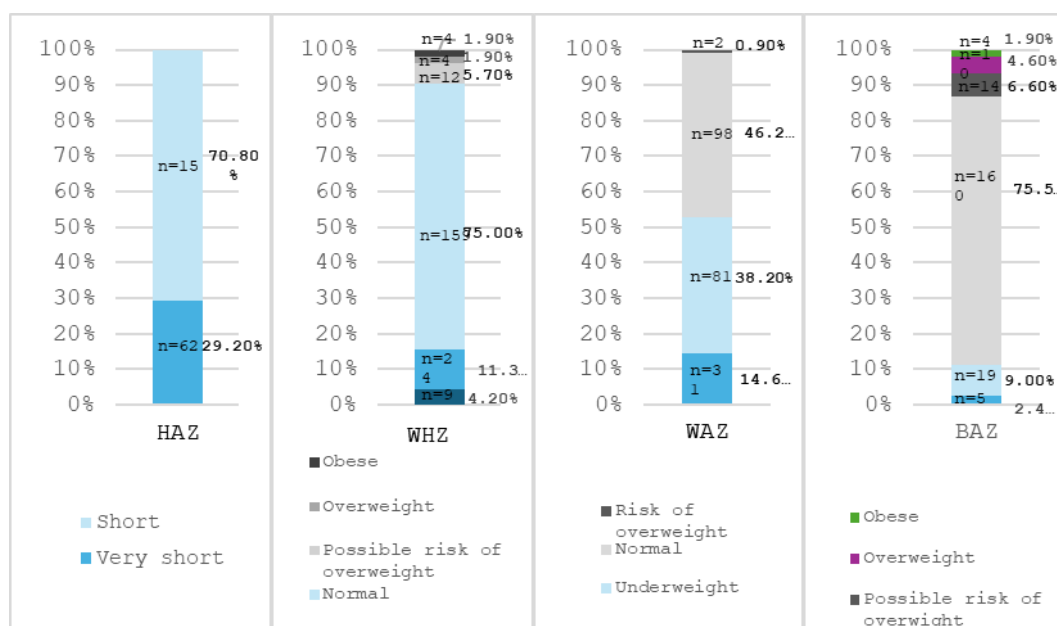


Figure-3: Nutrition status of children.

Table-2. Distribution of significance values for the father's involvement indicator in feeding in Jember Regency, February-March 2025 (n=212).

Father Involvement Indicators	Md (P ₂₅ -P ₇₅)	Z	P-value
Knowledge	66 (58-77)	0.082	0.001
Attitude	14 (13-16)	0.136	<0.001
Practice	29 (23-38.75)	0.112	<0.001
Total father involvement score	107 (94-132)	0.126	<0.001

Note: Md: Median, Z: score of the Kolmogorov-Smirnov Test, P-value: significance of the Kolmogorov-Smirnov Test.

The table also reports an unadjusted OR calculation of 0.481 (95% CI: 0.261–0.887), derived from a simple bivariate cross-tabulation, suggesting that paternal involvement in feeding is protective against stunting in children.

The findings reveal that 52% of fathers have low involvement in feeding their

children. Among the stunted children, 70.8% were classified as moderately stunted ($-3 \leq \text{HAZ} < -2$), while 29.2% were severely stunted ($\text{HAZ} < -3$). The unadjusted bivariate chi-square test confirmed a significant association ($\chi^2=5.599$; p-value = 0.018).

Table-3. Distribution of nutritional status of children aged 24-59 months in Jember Regency, February-March 2025 (n=212).

Variable	Md (P ₂₅ -P ₇₅)	Z	P-value
Height	87.2 (83.75-92)	0.60	0.058
Weight	11.5 (10.5-12.5)	0.82	0.001
Nutritional status			
height-for-age (HAZ)	-2.61 (-3.11 - -2.27)	0.100	0.000
weight-for-age (WAZ)	-2.06 (-2.68 - -1.48)	0.044	0.200
body mass index-for-age (BAZ)	-0.33 (-1.17 – 0.37)	0.067	0.022
weight-for-height (WHZ)	-0.63 (-1.50 – 0.05)	0.062	0.046

Note: Md: Median, P₂₅-P₇₅: Percentiles 25-75; Z: score of Kolmogorov-Smirnov Test; P-value: Significant of Kolmogorov-Smirnov Test

Table-4. The relationship between father involvement in feeding and the incidence of stunting in children aged 24-59 months in Jember Regency, February-March 2025 (n=212).

Father involvement in feeding	Stunting		χ^2	P-value	OR	95% CI
	Short n (%)	Very short n (%)				
High	80 (53.3)	22 (35.5)	5.599	0.018	0.481	0.261– 0.887
Low	70 (46.7)	40 (64.5)				

4- DISCUSSION

Father's involvement in feeding is related to the incidence of stunting in children aged 24-59 months. A father who provides support and is involved in parenting ensures that the child's nutrition is met, and a father who focuses on the family will prevent the child from experiencing stunting (31). The involvement and role of the father are important because if the father's role is lacking, it will burden the mother, which will ultimately negatively impact the quality of parenting and increase the risk of stunted children (14). Thus, further identification is needed regarding the father's involvement in feeding and its relation to the prevalence of stunting in children aged 24-59 months.

4-1. Father's Involvement in Feeding

The results of this study indicate that the father's involvement in feeding stunted children in the area has a low level of engagement (52%). This is likely due to differences in education levels. Most fathers' education levels in the area are elementary school graduates or equivalent (48.1%). When a father attains a good level of education, he is likely to be able to care for his child better and more skillfully amidst various activities; conversely, if the father's education is low, it will place the burden of childcare solely on the mother (32). The level of education is one of the factors that causes a lack of knowledge about parenting, leading to inadequate parenting that can affect the child's growth and development.

The results of this study also show that fathers' knowledge and perceptions regarding their involvement in feeding are still low (50.5%), although some others have high knowledge. The father's high knowledge is related to the understanding that their involvement will make his wife happy. This research also shows that there is a low level of knowledge and perception, specifically on the understanding of nutritious food patterns for children. The low level of knowledge has the potential to hinder stunting prevention efforts because it impacts the suboptimal care of children, especially in terms of feeding. This is in line with previous research, which states that fathers who have knowledge and information will significantly influence their level of involvement in feeding (33). Therefore, education from health cadres regarding the necessity of fathers' involvement is needed so that fathers can be optimally engaged.

Additionally, the fathers' attitudes toward involvement in feeding are mostly still low (50.9%), while the rest have high attitudes. The father's attitude with a low score is related to the adaptation to changes in attitudes towards feeding children. Meanwhile, some fathers with a high score are those who are willing to accept suggestions from their partners regarding feeding the child. The father's attitude towards involvement in parenting will impact the practices he undertakes related to involvement in feeding (34). Parents' attitudes towards feeding their children greatly influence the child's nutritional status (22). Therefore, encouragement from partners and education regarding fathers' attitudes towards involvement in feeding is important for determining fathers' involvement practices with their children to prevent stunting in children.

In line with the low knowledge and attitudes among fathers, this study found that most of the fathers' involvement in feeding practices is also low (50.5%),

while some others have high involvement in feeding practices. Some of the high practices of fathers are related to fathers often playing with their children during their free time. The low involvement practices of fathers in that area are mostly related to fathers who never feed their children independently; they always depend on and rely on the mother. These results are in line with previous research, which shows that father involvement has a significant influence on the quality of child feeding practices (35). Meanwhile, the level of father involvement with the child will affect the nutrition the child receives (36,37). Family education related to feeding practices will significantly influence the improvement of knowledge, attitudes, and feeding practices (38). Therefore, providing education and counseling to families regarding toddler feeding is very necessary.

4-2. The Incidence of Stunting among Children

The results of this study show that 70.8% of stunted children aged 24-59 months have short body proportions, and some have very short body proportions. These findings are supported by the z-score of height for age results, which show a highly significant difference, indicating that the stunting conditions experienced by children vary, with a proportion of children being short and very short. These results may be influenced by possible economic factors, with 57.1% of families working as farmers and 82.5% of families earning below the minimum income in the regional area. Family income affects the family's purchasing power and significantly impacts children's nutritional issues (39). Therefore, family support from healthcare professionals regarding providing nutritious food within their budget and continuing supplementary feeding programs is necessary to address stunting in children.

Other findings related to WHZ and BA show significant differences, indicating that there are variations between weight and height relative to age. In terms of weight-for-height, 75% of children are standard, and in terms of body mass index-for-age, 75.5% of children are normal. This is in accordance states that stunted children can have normal weight and nutritional status despite their height being stunted (40). This indicates that stunted children are not only caused by current nutritional aspects but are also influenced by long-term nutrition. Therefore, both parents need to optimize the care of children from the first 1000 days of life to monitor the child's growth and development, thus enabling the optimal detection of nutritional status.

Next, the findings on the nutritional status of children measured through WAZ did not show significant differences, which may be due to the varying ages of the children in this study and their weights appearing uniform. In this study, 46.2% of children had normal nutrition. The results are consistent with previous research, which states that there is no relationship between stunting and weight because high fat reserves are not sufficient to support bone growth (41). Therefore, fathers need to understand the dietary needs of children so that the children's nutrition is met, which can support their growth.

4-3. Father's Involvement in Feeding and the Prevalence of Toddler Stunting

The results of this study show a relationship between fathers' involvement in feeding and the prevalence of stunting in children aged 24-59 months. After conducting a chi-square test, a significant relationship was found between fathers' involvement in feeding and the incidence of toddler stunting ($p\text{-value} = 0.018$). The father's involvement is as important as the mother's in fulfilling the nutritional needs of children because it will affect their growth and development. According to

previous research, the pattern of the father-child relationship influences the child's nutritional status (42). The results are consistent with previous research, which states that father involvement in parenting is related to the nutritional status of children, because the father, as the head of the family, is capable of managing all the child's health needs through nutritional fulfillment and also helping the mother in parenting so that the child can be optimally healthy (43). Father's involvement in parenting, especially in feeding, can improve children's health and prevent stunting among children.

Father's involvement in feeding is associated with the prevalence of stunting in children aged 24-59 months in Jember Regency. A father who provides support and is involved in parenting ensures that the child's nutrition is met, and a father who focuses on the family demonstrates a protective association against the child experiencing stunting. In this study, fathers have low involvement in feeding, at 52%. This may be because fathers work as farmers and spend a significant amount of their time in the fields, so when they return from the fields, they tend to rest more and rarely help with household chores or childcare. In some rural areas of Indonesia, most child-rearing responsibilities, such as feeding children, bathing children, and managing the household, fall on mothers, while fathers are busy earning a living and being the breadwinners of the family (44). This indicates that the community still adheres to a patriarchal culture and that there is still no gender equality, which increases the prevalence of stunting in children due to unequal caregiving (45). When fathers increase their involvement in parenting, it will provide balanced care in feeding the child, ensuring the child's nutritional needs are met.

Involving fathers in child nutrition will align the goals of both parents to meet the child's needs, thereby creating a healthy

family relationship (41). Previous research that shows the necessity of involving fathers in nutritional interventions, including feeding practices, and emphasizes the need for change so that both mothers and fathers are key actors in interventions to improve the child's nutritional status (19). In the Dynamic Model of Family Assessment and Intervention theory, it is explained that the health of individual family members is greatly influenced by the family's dynamics (42). One of the family dimensions that affects individual health is the role of family caregiving. This role needs to be enhanced to support fathers' involvement in toddler care. One way to improve the family caregiving role is through programs supporting fathers' involvement in feeding, such as the Bina Keluarga Balita (BKB) program, an initiative by the National Population and Family Planning Board (BKKBN). This program includes an innovative "Ayah Hebat" (Great Father) initiative that educates fathers requiring their involvement. This father empowerment program is one of the solutions to increase fathers' involvement, particularly in feeding.

This study has several limitations. First, certain variables were not examined, including fathers' smoking habits and children's birth order. Second, paternal involvement was not operationalized in sufficient detail, particularly with respect to its specific indicators. Third, the unequal number of respondents between the children group and the fathers' group may have introduced potential bias. Finally, the study relied solely on unadjusted bivariate chi-square analysis; multivariable analysis was not performed. Therefore, the findings are unadjusted and may be influenced by confounding factors such as socioeconomic status, maternal education, household food security, child age, sex, and feeding practices. Because of

the cross-sectional design and lack of adjustment, strict causal conclusions regarding prevention cannot be fully drawn from this study.

5- CONCLUSION

This study provides evidence of the protective association of fathers' involvement in child feeding practices with stunted status, underscoring the need for education and empowerment programs targeting fathers as a strategy to address stunting in children. This study shows that there is an inverse association between fathers' involvement in feeding and the prevalence of stunting in children aged 24-59 months. Fathers' involvement demonstrates a protective association against the occurrence of stunting in children. With fathers' involvement in feeding, it is hoped that children's growth will be more optimal. Therefore, research is needed to determine the relationship between fathers' involvement in feeding and the prevalence of stunting in children.

6-ACKNOWLEDGMENT

The authors would like to thank you for Center of Agronursing for Community, Family & Elderly Health, Faculty of Nursing, Universitas Jember, for facilitating the study. The participants in 3 of the public health centers of Jember District who volunteered to attend this study.

7- FUNDING

There was no funding for this study.

8- CONFLICT OF INTEREST

The authors declared no conflicts of interest.

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