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Family Health Tasks and Childhood Stunting in Primary Care: A Cross-Sectional Study in Indonesia

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ABSTRACT

Introduction: Stunting remains a major public health problem in low- and middle-income countries, including Indonesia, and is influenced by biological, environmental, and behavioral factors within the family context. Evidence examining the role of comprehensive family health task performance in relation to stunting severity is still limited. To examine the association between family health task performance and the degree of stunting among children aged 0–24 months attending a primary health care center.

Research Methodology: An analytical cross-sectional study was conducted among 120 families with stunted children in the catchment area of Bantimurung Primary Health Center, South Sulawesi, Indonesia. Family health task performance was assessed using a validated questionnaire covering five domains: recognizing health problems, making health decisions, caring for sick family members, modifying the home environment, and utilizing health facilities. Stunting severity was determined using height-for-age z-scores. Data were analyzed using descriptive statistics and Spearman's rank correlation.

Results: Family health task performance was significantly and negatively correlated with stunting severity ($\rho = -0.341$; $p < 0.05$). Utilization of health facilities ($\rho = -0.421$; $p < 0.01$) and environmental modification ($\rho = -0.356$; $p < 0.05$) showed the strongest associations with reduced stunting severity. Low birth weight and non-exclusive breastfeeding were also significantly associated with more severe stunting.

Conclusion: Better family health task performance, particularly in engaging primary health services and maintaining a healthy home environment, is associated with less severe stunting. Strengthening family-centered interventions in primary care is essential to reducing the severity of stunting in early childhood.

Keywords: Child Nutrition; Family Health; Primary Health Care; Stunting.

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INTRODUCTION

Stunting remains one of the most persistent public health challenges in low- and middle-income countries, reflecting chronic nutritional deprivation and repeated exposure to infection during the most critical periods of growth and development (Alderman *et al.*, 2025). Defined as a height-for-age measurement below minus two standard deviations of the World Health Organization child growth standards, stunting is not merely a problem of physical stature, but a manifestation of long-term biological, social, and environmental disadvantage (Arda, Lalla and Suprapto, 2023). In Indonesia, stunting continues to affect a substantial proportion of children under five years of age, exceeding global public health thresholds and signaling systemic gaps in nutrition, care practices, and health service utilization. The persistence of stunting in many regions, including South Sulawesi, highlights that existing interventions have not yet fully addressed the complex determinants operating at the household and community levels (Aris Tyarini, Kurni Menga and Setiawati, 2025).

The consequences of stunting are profound and multidimensional. In early life, stunted children experience delayed motor and cognitive development, weakened immune function, and increased vulnerability to infectious diseases (Arqam *et al.*, 2026). These early disadvantages extend into adulthood, resulting in lower educational attainment, reduced economic productivity, and a higher risk of non-communicable diseases. From a societal perspective, stunting perpetuates intergenerational cycles of poverty and ill health, undermining national human capital development and long-term economic growth (Astuti, Suindyah Dwiningwarni and Atmojo, 2025). Despite national commitments and multisectoral strategies to reduce stunting prevalence, progress remains uneven, suggesting that key drivers at the family level may be insufficiently understood or addressed (Betancur, Votruba-Drzal and Miller, 2025).

Current evidence consistently shows that a combination of immediate, underlying, and basic factors, including inadequate dietary intake, recurrent illness, poor water and sanitation conditions, low parental education, and socioeconomic constraints, causes stunting (Bhattacharjee *et al.*, 2026). Within this framework, the family occupies a central position as the primary environment in which child feeding, caregiving, hygiene practices, and health-seeking behaviors are shaped (Bos *et al.*, 2024). In particular, the concept of family health tasks emphasizes families' abilities to recognize health problems, make appropriate health decisions, provide care for sick members, create a supportive home environment, and effectively utilize available health services (Chang *et al.*, 2024). These tasks are especially relevant during the first 1,000 days of life, when nutritional insults have the most irreversible consequences (Chen *et al.*, 2025).

However, a critical gap remains in the empirical literature, particularly in the Indonesian primary care context. While numerous studies have examined individual determinants of stunting, such as birth weight, breastfeeding practices, maternal education, or household income, few have assessed family health task performance as an integrated construct and its relationship with the degree of stunting (Datzberger *et al.*, 2024). Most existing studies focus on stunting prevalence or binary outcomes, rather than examining variations in stunting severity and how these may be linked to differences in family practices (Dickson *et al.*, 2024). Moreover, research rarely situates family health behaviors within the operational realities of primary healthcare services, where prevention and early management of stunting are expected.

This gap limits the ability of primary care providers, nurses, and community health workers to design targeted, family-centered interventions. Without a clear understanding of which family health tasks are most strongly associated with stunting severity, health programs may emphasize generic education or supplementation strategies that fail to address practical barriers families face,

such as low health literacy, limited engagement with health facilities, or suboptimal home environments. In areas where health infrastructure is available but underutilized, understanding family-level determinants becomes particularly important to optimize existing resources and improve program effectiveness.

The novelty of this study lies in its focus on the relationship between comprehensive family health task performance and the degree of stunting among children aged 0–24 months within a primary care setting. Rather than examining isolated risk factors, this study adopts a holistic, family-centered perspective that captures multiple dimensions of caregiving and health behavior. By analyzing domain-specific family health tasks alongside stunting severity, the study provides nuanced insights into which aspects of family functioning, such as health facility utilization or environmental modification, are most critical in mitigating growth faltering. Furthermore, by situating the analysis within the catchment area of a primary health center, this research generates context-specific evidence directly relevant to frontline healthcare practice and policy implementation. The findings are expected to inform more precise, family-oriented strategies for stunting prevention and management, supporting Indonesia's national stunting reduction agenda. In doing so, this study contributes novel empirical evidence that bridges the gap between family nursing theory, primary care practice, and child nutrition outcomes, offering a more integrated approach to addressing one of Indonesia's most enduring public health challenges.

RESEARCH METHODOLOGY

Study Design

This study employed an analytical cross-sectional design to examine the relationship between family health task performance and the degree of stunting among children aged 0–24 months. The study was conducted at Bantimurung Primary Health Center, Maros District, South Sulawesi, Indonesia, a government-run primary healthcare facility that provides maternal and child health services, including growth monitoring, nutrition counseling, and community-based health programs. The primary care setting was selected because it represents the first point of contact between families and the healthcare system and plays a central role in Indonesia's stunting prevention strategy.

Population and Sample

The study population consisted of all families with children aged 0–24 months who were identified as stunted and resided within the Bantimurung Primary Health Center catchment area. Eligibility criteria included: (1) children diagnosed with stunting based on height-for-age z-scores, (2) children living with biological parents or primary caregivers, (3) permanent residence within the study area, and (4) caregivers' willingness to participate and provide informed consent. Children with congenital abnormalities or chronic illnesses affecting growth independent of nutritional status, as well as families refusing home visits, were excluded. Sample size was calculated using the Slovin formula with a margin of error of 5%, resulting in a minimum required sample of 120 participants. Consecutive sampling was used, with all eligible families encountered during the data collection period recruited until the target sample size was achieved.

Variables and Operational Definitions

The independent variable was family health task performance, conceptualized according to Friedman's family nursing framework and operationalized across five domains: (1) recognizing family health problems, (2) making appropriate health decisions, (3) caring for sick family members, (4) modifying the family environment to promote health, and (5) utilizing available

health facilities. The dependent variable was the degree of stunting, categorized as mild, moderate, or severe based on height-for-age z-scores. Covariates included child characteristics (age, sex, birth weight, breastfeeding practices) and family socioeconomic characteristics (parental education and household income).

Instruments and Measurements

Data were collected using three main instruments. First, a structured demographic questionnaire was used to obtain information on child and family characteristics. Second, anthropometric measurements were conducted to assess children's length or height using standardized equipment, following World Health Organization procedures. Height-for-age z-scores were calculated and classified to determine stunting severity. Third, family health task performance was assessed using a modified, validated Indonesian-language questionnaire comprising 28 items rated on a 4-point Likert scale. Higher scores indicated better performance of family health tasks. The instrument demonstrated strong content validity following expert review, with a Content Validity Index of 0.96, indicating excellent relevance and clarity of the items.

Data Collection Procedures

Data collection was carried out between August and December 2025. Eligible families were first contacted by telephone and informed about the study objectives, procedures, and ethical considerations. Home visits were subsequently conducted by the research team, consisting of the principal investigator, trained research assistants, and community health workers. During each visit, written informed consent was obtained before data collection. Caregivers completed interviewer-administered questionnaires to accommodate varying literacy levels, followed by anthropometric measurement of the child. Each home visit lasted approximately 45–60 minutes.

Data Analysis

Data were analyzed using statistical software. Descriptive statistics were used to summarize demographic characteristics, family health task performance, and stunting severity. Family health task scores were categorized into good, adequate, and poor performance based on predefined cut-off points. Because the main variables were ordinal and not normally distributed, Spearman's rank correlation test was used to examine the relationship between family health task performance and the degree of stunting. Additional bivariate analyses were conducted to explore associations between selected covariates and the main study variables. Statistical significance was set at $p < 0.05$.

Ethical Considerations

Ethical approval for this study was granted by the Institute for Research and Community Service (Lembaga Penelitian dan Pengabdian kepada Masyarakat, LPPM) of Universitas Islam Makassar (Approval No. 00107082025) prior to the commencement of data collection. The study was conducted in full compliance with internationally recognized ethical standards, including respect for voluntary participation, confidentiality of data, and protection of participants' rights. All participants were adequately informed about the study objectives and procedures and were advised of their right to withdraw at any stage without penalty. Written informed consent was obtained from all participants, and all data were treated confidentially and used solely for research purposes.

Methodological Rigor

To ensure methodological rigor, data collectors received standardized training on questionnaire administration and anthropometric measurement techniques. Validated instruments and standardized measurement protocols were used to enhance reliability and validity. Although

the cross-sectional design limits causal inference, the study provides robust evidence on associations between family health task performance and stunting severity within a real-world primary care context.

RESULT

This section presents the study's findings, focusing on the characteristics of stunted children aged 0–24 months, the distribution of stunting severity, the level of family health task performance, and the relationship between family health tasks and the degree of stunting. Descriptive analyses summarize child and family profiles and domain-specific performance on family health tasks, while inferential analyses examine the association between family health task performance and stunting severity. Additional analyses explore key sociodemographic and health-related factors associated with both family health tasks and stunting outcomes.

Table 1. Child Characteristics, Stunting Degree, and Family Health Task Performance

Variable	Category	n	%
Child characteristics			
Age group	0–5 months	25	20.8
	6–12 months	43	35.8
	12–18 months	45	37.5
	18–24 months	7	5.9
Sex	Male	43	35.8
	Female	77	64.2
Birth weight	Normal (≥2500 g)	86	71.7
	Low birth weight (<2500 g)	34	28.3
Breastfeeding practice	Exclusive	43	35.8
	Predominant	61	50.8
	Partial	16	13.4
Stunting degree			
Mild	−2 to <−1 SD	15	12.5
Moderate	−3 to <−2 SD	86	71.7
Severe	<−3 SD	19	15.8
Family health task performance			
Overall mean score (SD)			62.8 (15.1)
Category	Good (76–100%)	37	30.8
	Adequate (56–75%)	34	28.4
	Poor (≤55%)	49	40.8
Domain scores, mean (SD)	Recognizing health problems		11.9 (3.1)
	Making health decisions		14.3 (3.7)
	Caring for sick members		15.7 (4.0)
	Modifying the environment		11.0 (3.4)
	Utilizing health facilities		10.0 (3.6)

Table 1 summarizes the characteristics of children aged 0–24 months, the distribution of stunting severity, and the level of family health task performance among the 120 participating families. The age distribution shows that the majority of stunted children were concentrated in the 6–18-month age range, accounting for more than seventy percent of the sample. This period coincides with the transition from exclusive breastfeeding to complementary feeding, a critical window during which inadequate dietary quality, inappropriate feeding practices, and increased exposure to infection commonly contribute to growth faltering. The relatively small proportion of children aged 18–24 months suggests that stunting is identified earlier in this population. Female children accounted for nearly two-thirds of the sample. Although sex differences in stunting prevalence remain inconsistent across settings, this distribution reflects local demographic patterns rather than a biological predisposition. Notably, more than one quarter of the children were born with low birth weight, indicating the presence of early-life growth

constraints beginning in utero. Low birth weight is a well-established risk factor for subsequent stunting and reflects the cumulative effects of maternal nutrition, health status, and antenatal care.

Breastfeeding practices were suboptimal. Only 35.8% of children received exclusive breastfeeding, while the majority were exposed to predominant or partial breastfeeding. These practices may compromise nutrient intake and immune protection during the first six months of life, thereby increasing vulnerability to infections and impaired linear growth. With respect to nutritional outcomes, moderate stunting was the most prevalent category, affecting more than seventy percent of children, while severe stunting remained a significant concern at 15.8%. This pattern suggests widespread chronic undernutrition with a substantial proportion of children experiencing more advanced growth deficits. Family health task performance showed considerable variability. Although approximately one-third of families demonstrated good performance, over 40% fell into the poor category, with a mean overall score indicating only moderate execution of recommended health tasks. Domain-specific analysis revealed that families performed relatively well in caring for sick members and making health decisions, but showed weaknesses in environmental modification and in the use of health facilities. These gaps highlight missed opportunities to prevent stunting through improved sanitation, hygiene, and regular engagement with primary healthcare services, underscoring the critical role of family-centered interventions in addressing childhood stunting.

Table 2. Associations Between Family Health Task Performance, Stunting Degree, and Selected Factors (n = 120)

Variable	Comparison	Statistic	Value	*p*-value
Family health tasks vs stunting degree	Spearman correlation	ρ	−0.341	0.034*
Domain-specific correlations				
Recognizing health problems	vs stunting degree	ρ	−0.287	0.075
Making health decisions	vs stunting degree	ρ	−0.312	0.052
Caring for sick members	vs stunting degree	ρ	−0.198	0.225
Modifying the environment	vs stunting degree	ρ	−0.356	0.027*
Utilizing health facilities	vs stunting degree	ρ	−0.421	0.008*
Factors associated with family health tasks				
Parental education	Low–High	Trend	Higher score with education	0.041*
Household income	Low–High	Trend	Higher score with income	0.024*
Factors associated with the stunting degree				
Birth weight	LBW vs normal	Mean HAZ	More severe in LBW	0.018*
Breastfeeding practice	Exclusive vs partial	Mean HAZ	Less severe with exclusive	0.032*

Significant at $p < 0.05$

Table 2 presents the associations among family health task performance, stunting severity, and selected child- and family-related factors among 120 participants. The primary analysis demonstrates a statistically significant negative correlation between overall family health task performance and stunting degree (Spearman's $\rho = -0.341$; $p < 0.05$). This finding indicates that higher levels of family engagement in health-related tasks are associated with less severe stunting, highlighting the importance of family-centered practices in supporting optimal child growth within a primary care context.

Domain-specific analyses further clarify which aspects of family health tasks are most strongly linked to stunting severity. Utilization of health facilities showed the strongest negative correlation with stunting degree ($\rho = -0.421$; $p < 0.01$), suggesting that regular attendance at primary healthcare services, such as growth monitoring, immunization, and nutrition counseling, plays a critical protective role against progressive growth faltering. Environmental modification was also significantly associated with stunting severity ($\rho = -0.356$; $p < 0.05$), underscoring the contribution of household sanitation, hygiene, and safe living conditions to child nutritional

outcomes. In contrast, domains related to recognizing health problems, making health decisions, and caring for sick family members did not reach statistical significance, indicating that reactive care alone may be insufficient to prevent chronic growth impairment.

Socioeconomic factors showed meaningful associations with family health task performance. Higher parental education and household income were significantly associated with better execution of family health tasks, reflecting the roles of knowledge, resources, and access in shaping health behaviors. In terms of child-related factors, low birth weight was significantly associated with more severe stunting, emphasizing the lasting impact of prenatal and early-life conditions. Breastfeeding practices were also significantly related to stunting degree, with exclusive breastfeeding associated with less severe growth deficits. Conclusion of findings: Overall, the results indicate that effective performance of family health tasks, particularly consistent utilization of health facilities and maintenance of a healthy home environment, combined with favorable early-life conditions, is associated with reduced stunting severity. These findings reinforce the central role of families and primary care services in stunting prevention strategies.

DISCUSSION

This study provides empirical evidence that family health task performance is significantly associated with the degree of stunting among children aged 0–24 months in a primary care setting. The findings demonstrate a moderate but statistically significant negative correlation between overall family health task performance and stunting severity, indicating that better execution of family-centered health practices is linked to less severe linear growth faltering. These results reinforce the family's central role as the primary context in which early child nutrition, care, and health-seeking behaviors are shaped, particularly during the first 1,000 days of life.

The predominance of moderate stunting observed in this study suggests widespread chronic undernutrition rather than isolated or acute nutritional deficits (Frank *et al.*, 2026). This pattern is consistent with evidence from other low- and middle-income countries, where stunting often develops gradually as a result of cumulative exposure to inadequate dietary intake, recurrent infections, and suboptimal caregiving practices (Hairuddin, Yulis and Suprapto, 2026). The concentration of stunting among children aged 6–18 months further underscores the vulnerability of the complementary feeding period, when nutritional requirements increase while protection from exclusive breastfeeding declines. These findings highlight the importance of sustained family engagement in preventive practices beyond infancy (Hossain *et al.*, 2025).

One of the most salient findings of this study is the strong association between utilization of health facilities and reduced stunting severity. Families who more consistently engaged with primary healthcare services tended to have children with less severe stunting (Levere, Acharya and Bharadwaj, 2024). Regular contact with primary care enables growth monitoring, early identification of growth faltering, timely nutrition counseling, immunization, and micronutrient supplementation (Ogino, Sato and Nakazuru, 2025). However, despite the availability of these services, utilization remained the weakest family health task domain. This gap suggests that structural availability of services alone is insufficient; families must also possess the knowledge, motivation, and resources required to access and benefit from care. Barriers such as limited health literacy, indirect costs, time constraints, and sociocultural beliefs may reduce service utilization, even in settings with established primary care infrastructure (Pahuja and Sanghvi, 2024).

Environmental modification emerged as another critical domain associated with stunting severity. Families who were better able to maintain hygienic living conditions, safe water sources,

and appropriate sanitation practices had children with less severe growth impairment (Ranganathan *et al.*, 2025). This finding aligns with growing evidence linking poor water, sanitation, and hygiene conditions to chronic inflammation, recurrent enteric infections, and environmental enteric dysfunction, all of which impair nutrient absorption and linear growth (Rempel, Desai and Vermilyea, 2026). The results emphasize that stunting prevention requires not only adequate food intake but also a healthy household environment that minimizes infection risk.

In contrast, domains related to recognizing health problems, making health decisions, and caring for sick family members showed weaker or non-significant associations with stunting severity (Safaria, 2026). While these tasks reflect families' responsiveness to illness, they are largely reactive in nature and may not sufficiently address the long-term processes that lead to chronic growth faltering (Sentika *et al.*, 2024). This distinction underscores the importance of shifting family and health system focus from curative responses toward sustained preventive behaviors, particularly those related to routine health service utilization and environmental health (Setiawan *et al.*, 2026).

Socioeconomic factors played a significant role in shaping family members' performance on health tasks. Higher parental education and household income were associated with better execution of family health tasks, reflecting their influence on health knowledge, decision-making capacity, and access to resources (Sharma *et al.*, 2025). These findings are consistent with international literature demonstrating that socioeconomic disadvantage constrains families' ability to provide optimal care, even when health services are available. Consequently, stunting prevention strategies must account for broader social determinants and avoid placing disproportionate responsibility on families without addressing structural constraints (Supranoto *et al.*, 2025).

Child-related factors, particularly birth weight and breastfeeding practices, were also significantly associated with stunting severity (Trafford, 2025). Children born with low birth weight experienced more severe stunting, highlighting the lasting impact of prenatal nutrition and maternal health. Similarly, exclusive breastfeeding was associated with less severe stunting, reinforcing its protective role in supporting early growth and immune function (Wanka *et al.*, 2025). These findings suggest that effective stunting prevention requires a continuum of care spanning preconception, pregnancy, and early childhood, rather than isolated interventions at a single life stage. From a primary care perspective, the findings underscore the need for family-centered interventions that strengthen families' capacity to perform key health tasks. Nurses, midwives, and community health workers are well-positioned to deliver targeted education, support behavior change, and facilitate access to services through home visits and community-based programs. Interventions that integrate nutrition counseling, growth monitoring, breastfeeding support, and environmental health promotion may be particularly effective in reducing the severity of stunting (Yousafzai *et al.*, 2025).

Several limitations should be considered when interpreting these findings. The cross-sectional design precludes causal inference, and the reliance on self-reported measures of family health tasks may introduce reporting bias. Additionally, the study was conducted in a single primary health center, which may limit generalizability to other settings. Nevertheless, the relatively large sample size and use of a validated family health task instrument strengthen the credibility of the results. In conclusion, this study contributes to the international literature by demonstrating that family health task performance, particularly utilization of health facilities and environmental modification, is closely linked to stunting severity in early childhood. The findings

support a shift toward integrated, family-centered, and preventive approaches within primary care to address the persistent burden of stunting in low- and middle-income settings.

CONCLUSION

This study demonstrates that family health task performance is significantly associated with the degree of stunting among children aged 0–24 months in a primary care setting. Families with better overall performance, particularly in using health facilities and modifying the home environment, tended to have children with less severe stunting. These findings confirm that stunting is not solely a nutritional issue but a multifactorial condition strongly influenced by family-centered health behaviors, early-life conditions, and engagement with primary healthcare services. Strengthening families' capacity to perform essential health tasks is therefore a critical component of effective stunting prevention and management strategies.

Primary care interventions should prioritize family-centered approaches that enhance routine utilization of health services, improve household environmental conditions, and support optimal infant and young child feeding practices, including exclusive breastfeeding. Nurses, midwives, and community health workers should play a proactive role in delivering targeted health education, conducting regular growth monitoring, and providing home-based support for families at risk. Policymakers should integrate family health task-strengthening into existing stunting-reduction programs and address socioeconomic barriers that limit families' ability to adopt recommended practices. Future research using longitudinal designs is recommended to clarify causal pathways and evaluate the effectiveness of family-centered primary care interventions in reducing stunting severity.

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Conflict of Interest

There are no potential conflicts of interest relevant to this article.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to ethical and confidentiality considerations.

Authors' Contributions

IS conceived and designed the study, coordinated data collection, and drafted the manuscript. WL and J contributed to data collection, data analysis, and interpretation of findings. AN and NM participated in data analysis, critically reviewed the manuscript, and contributed to its intellectual content. All authors read and approved the final manuscript.

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