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DETERMINANTS OF THE QUALITY OF CARE FOR STUNTED CHILDREN: THE ROLE OF GENDER ROLES, POSYANDU CHECK-UPS, AND HOUSEHOLD CHARACTERISTICS

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Abstract

In 2021, West Java recorded one of the highest stunting rates in Indonesia, with Garut Regency reporting a prevalence of 35.2 percent among children under five. This public health crisis extends beyond nutritional deficiencies and is exacerbated by suboptimal parenting practices and limited access to basic health services such as posyandu. This study aims to analyze the influence of gender roles in parenting, the frequency of child visits to posyandu, and how parental and child characteristics affect the quality of care for stunted children. A cross-sectional design was applied, involving 40 parents of stunted children in Wanamekar Village, Wanaraja District, using purposive sampling. Data were collected through structured questionnaires and analyzed using Pearson correlation and multiple linear regression. The results revealed significant relationships among gender roles in parenting, health service utilization, and caregiving quality. Regression analysis further demonstrated that child's birth order, height, parental age, father's education, mother's occupation, father's income, number of household members, child's health insurance status, and gender-equitable parenting significantly influenced caregiving quality. These findings underscore the importance of integrated, gender-responsive strategies that prioritize equitable parental involvement and access to essential health services. This study offers empirical evidence to support family-centered policy initiatives aimed at improving early childhood development outcomes in resource-limited rural settings.

Keywords: gender roles, parenting, posyandu check-up, quality of care, stunting.

DETERMINASI KUALITAS PENGASUHAN ANAK STUNTING: PERAN GENDER DALAM PENGASUHAN, PEMERIKSAAN POSYANDU, DAN KARAKTERISTIK RUMAH TANGGA

Abstrak

Prevalensi stunting yang tinggi di Provinsi Jawa Barat pada tahun 2021 tercatat di Kabupaten Garut, dengan angka mencapai 35,2 persen. Permasalahan ini tidak hanya disebabkan oleh faktor gizi semata, tetapi juga dipengaruhi oleh pola pengasuhan yang belum optimal serta keterbatasan akses terhadap layanan kesehatan dasar seperti posyandu. Penelitian ini bertujuan untuk menganalisis bagaimana peran gender dalam pengasuhan, frekuensi pemeriksaan anak ke posyandu, serta berbagai karakteristik orang tua dan anak memengaruhi kualitas pengasuhan pada anak stunting. Penelitian ini menggunakan pendekatan kuantitatif dengan desain potong lintang, melibatkan 40 orang tua dari anak-anak stunting di Desa Wanamekar, Kecamatan Wanaraja, Kabupaten Garut. Teknik pengambilan sampel dilakukan secara purposive. Hasil uji korelasi Pearson menunjukkan hubungan signifikan antara peran gender dalam pengasuhan, kunjungan ke posyandu, dan kualitas pengasuhan. Analisis regresi linear menunjukkan bahwa nomor urut anak, tinggi badan anak, usia orang tua, pendidikan terakhir ayah, pekerjaan ibu, pendapatan ayah, jumlah anggota keluarga, kepemilikan asuransi anak, dan peran gender dalam pengasuhan berpengaruh signifikan terhadap kualitas pengasuhan anak stunting. Temuan ini menegaskan pentingnya pendekatan berbasis keluarga dan kesetaraan gender dalam strategi intervensi pengurangan stunting di daerah pedesaan. Penelitian ini memberikan dasar empiris untuk merancang kebijakan yang lebih inklusif dan responsif terhadap dinamika sosial-ekonomi keluarga.

Kata kunci: anak balita, kualitas pengasuhan, pemeriksaan posyandu, peran gender, stunting

INTRODUCTION

Stunting remains a persistent and multifaceted global health concern, particularly in low- and middle-income countries, where it is both a cause and a consequence of broader structural inequities. Characterized by impaired linear growth that results from chronic undernutrition and repeated infections during critical periods of early childhood development, stunting not only compromises physical stature but also has irreversible consequences for cognitive functioning, immune response, and psychosocial development. Children who experience stunting are more likely to perform poorly in school, earn lower incomes as adults, and face elevated risks of chronic diseases later in life, thereby perpetuating cycles of poverty and poor health outcomes (Djogo et al., 2022; Suparji et al., 2024). These long-term effects signify that stunting is not merely a biomedical condition but rather a complex developmental disorder with roots in systemic and intergenerational disadvantages.

Indonesia is among the countries with the highest absolute number of stunted children in the world, and the problem is deeply entrenched within both rural and urban populations. Data from national health surveys indicate that as of 2018, Indonesia ranked fourth globally and second in Southeast Asia in terms of stunting prevalence, with millions of children under five years old failing to reach their full growth potential (Suparji et al., 2024). This national statistic masks critical geographic disparities across the archipelago, with provinces such as West Java exhibiting particularly severe rates. In Garut Regency, for instance, the stunting rate was reported at 35.2 percent in 2021, highlighting a disproportionately high burden concentrated within specific districts (Djogo et al., 2022). Despite efforts by the Indonesian government through large-scale programs such as the National Medium-Term Development Plan (RPJMN) and regional interventions like Jabar Zero New Stunting, the problem remains resilient, signaling the need to reassess and refine existing strategies.

Most intervention programs to date have focused heavily on improving nutritional intake and sanitation, yet these alone have proven insufficient in significantly reducing the prevalence of stunting. Increasing attention is now being directed toward caregiving quality and family dynamics as critical, yet underexplored, contributors to child growth outcomes. In particular, gender roles within the household profoundly shape caregiving practices. Traditional family norms in many Indonesian communities assign primary caregiving responsibilities to mothers, often excluding fathers from meaningful involvement in child-rearing activities (Ratnawati & Prameswari, 2022). This gendered division of labor in parenting has implications not only for caregiving burden and maternal stress but also for the consistency and quality of care received by children. Despite growing evidence supporting the importance of shared parental involvement in improving child development outcomes, few studies have systematically investigated the effect of gender roles on caregiving for stunted children. This pattern is also supported by prior findings that link shared parenting history with improved child nutrition and developmental outcomes in Indonesian households (Hartati et al., 2024).

Another critical, yet insufficiently explored, dimension is the relationship between family participation in community-based health services—particularly posyandu—and the quality of care provided at home. Posyandu, or integrated health posts, are a uniquely Indonesian innovation that provides decentralized maternal and child health services, including growth monitoring, immunization, and nutrition counseling. Regular visits to posyandu enable early detection of growth delays and provide caregivers with health education that can improve caregiving practices (Mairo & Jenjawaty, 2022). Recent community-based initiatives have demonstrated that health education delivered through posyandu networks significantly contributes to stunting reduction efforts by enhancing caregiver awareness and behavioral change (Yuliarni et al., 2023). However, utilization of posyandu services varies considerably across regions and socioeconomic groups, often hindered by barriers such as long distances, lack of transportation, financial constraints, and limited paternal support. Although several studies have examined access to posyandu, there is a lack of empirical evidence exploring how gendered family roles intersect with posyandu utilization to influence the overall quality of stunting care.

Compounding the challenge is the limited availability of integrative frameworks that account for the complex interplay between child characteristics, parental demographics, household resources, caregiving behaviors, and health service utilization. Previous research has often examined these variables in isolation, thereby missing critical interactions that could inform more effective intervention designs. For example, the relationship between a father's income and a child's nutritional status may be moderated by the degree of his involvement in caregiving or by the frequency of health check-ups at posyandu. Similarly, maternal knowledge gained during antenatal care may only translate into effective child care if supported by favorable household dynamics and resource availability (Haq et al., 2022; Permana et al., 2023). The absence of a comprehensive empirical model that captures these relationships constitutes a significant gap in the current body of knowledge.

This research gap is especially concerning given the urgent need to accelerate progress toward Indonesia's national stunting reduction targets. The government has set an ambitious goal to reduce the stunting rate to 14 percent by 2024, a benchmark that will be difficult to achieve without addressing the underlying behavioral, social, and structural determinants of care (Bigool, 2024; Haryani et al., 2023). Achieving this target requires a paradigm shift from fragmented, sector-specific interventions toward integrated family-centered strategies. These strategies must acknowledge the centrality of caregiving quality, the importance of gender-equitable parenting, and the pivotal role of community-based health services in promoting early childhood development. Without such a comprehensive approach, efforts to reduce stunting risk reinforcing the very inequalities they seek to resolve. Evidence from global health studies shows that multiple anthropometric failures often co-occur and significantly impair early child development, especially in resource-limited settings (Jeong et al., 2019).

Equally important to consider are the maternal health behaviors and environmental conditions that shape children's early life trajectories. Adverse intrauterine environments, poor maternal nutrition, and inadequate antenatal care are known precursors of stunting, often leading to low birth weight and delayed developmental milestones (Putri & Astuti, 2021). Beyond the prenatal phase, poor sanitation, limited access to clean water, and overcrowded living conditions expose children to repeated infections that compromise nutrient absorption and immune function (Raharini & Yuniarti, 2023; Nizaruddin & Ilham, 2022). These environmental stressors are frequently compounded by economic deprivation, which restricts parental ability to provide balanced nutrition and timely medical care. Although these factors are well documented, the ways in which they interact with gender roles in parenting and posyandu utilization remain underexplored in existing research.

The socioeconomic profile of the household further complicates caregiving dynamics. Families with higher levels of education and income are generally better equipped to access healthcare services, procure nutritious food, and provide cognitively stimulating environments for children (Suyanto et al., 2024). In contrast, households facing economic instability often lack the resources and time required to ensure consistent caregiving, especially when mothers are engaged in income-generating activities without adequate support from their spouses. Financial constraints may also prevent regular attendance at posyandu or reduce participation in parenting programs, thereby diminishing the efficacy of existing interventions. These disparities point to the necessity of understanding not just individual-level behavior but also the structural conditions under which caregiving occurs.

Given these interconnected challenges, the present study aims to examine the determinants of quality care for stunted children in Indonesia by focusing on three primary domains: gender roles in parenting, household engagement with posyandu services, and relevant child and parent characteristics. Specifically, the study investigates how equitable caregiving practices, as measured through gender role indices, and the frequency of child health check-ups at posyandu are associated with variations in the quality of care provided to stunted children. It further explores the moderating effects of household characteristics, including education, income, and family composition, on these relationships. By adopting a multivariate analytical approach, the study offers a comprehensive perspective on how familial, structural, and behavioral factors jointly influence caregiving quality.

The findings of this study are expected to fill critical gaps in the literature by articulating the relational pathways through which gender, service utilization, and socioeconomic context influence caregiving outcomes for stunted children. In doing so, the research contributes to the growing discourse on gender-responsive health interventions and family-centered development strategies. It also provides empirical insights that can inform the design of targeted public health programs and social policies aimed at reducing stunting prevalence in Indonesia. Ultimately, this study advocates for a holistic, equity-driven, and gender-sensitive approach to child health promotion—one that not only recognizes the role of mothers but also actively involves fathers and the broader family system in ensuring optimal growth and development for all children.

METHODS

This study employed a cross-sectional research design aimed at identifying the determinants that contribute to the quality of caregiving for stunted children. The cross-sectional approach allows for the simultaneous analysis of multiple variables at a single point in time, making it particularly suitable for evaluating associations between caregiving practices and child health outcomes (Wardhana & Zahtamal, 2024; Rangkuti et al., 2024). The research was conducted in Wanamekar Village, Wanaraja District, Garut Regency, West Java. This location was purposively selected based on its classification as a stunting locus

area in 2022 according to the Indonesian Nutrition Status Study (SSGI), which also placed Garut Regency among the districts with the highest prevalence of stunting in the West Java region (Nuliana et al., 2020; Amaha & Woldeamanuel, 2021).

The study recruited 40 participants using a non-probability convenience sampling technique. Participants were selected based on their availability and relevance to the research focus, namely families with stunted children. Although this sampling approach limits generalizability, it enhances the depth of contextual understanding and is appropriate for community-based public health inquiries (Jannah et al., 2022). Structured questionnaires and offline interviews were conducted between March and April 2023 to obtain both quantitative and qualitative data. The purposive selection of informants aligns with previous research that emphasizes the need for contextual specificity in understanding the multifactorial causes of stunting (Nshimyiryo et al., 2019; Chawa et al., 2024).

The primary variables examined in this study include gender roles in parenting, child examination frequency at posyandu (integrated health posts), and the quality of care provided to stunted children. The measurement instruments were adapted from established theoretical frameworks and prior validated instruments. Gender roles in parenting were measured using a stunting care questionnaire developed by Puspitawati (2012), modified to include two critical dimensions: during pregnancy and after childbirth. This variable was rated on an ordinal scale ranging from 1 (mother only) to 4 (father frequently assists), with a Cronbach's alpha reliability score of 0.798, indicating good internal consistency (Lensoni et al., 2023; Hendryani & Susana, 2020).

The variable of child examination at posyandu was adapted from Lawrence Green's (1980) behavioral theory and the Mage Questionnaire (2020), also segmented into prenatal and postnatal phases. It utilized the same ordinal scale as the parenting gender role variable and showed acceptable reliability with a Cronbach's alpha of 0.690. The quality of caregiving for stunted children was measured using a Likert scale based on Puspitawati's (2012) conceptual model, ranging from 1 (not good) to 4 (good). The internal consistency for this variable yielded a Cronbach's alpha of 0.626. All index scores were then categorized into three levels using Puspitawati et al.'s (2021) cut-off criteria: low (<50.0), medium (50.1–55.0), and high (>75.1).

Data analysis was carried out using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to summarize participant demographics, child characteristics, parental roles, frequency of health service utilization, and caregiving quality. These included minimum and maximum values, means, and percentages. Inferential analyses were conducted using the Pearson correlation test to identify relationships between the independent variables—such as parental education, occupation, income, and gender roles in parenting—and the dependent variable, which is caregiving quality. Furthermore, multiple linear regression analysis was applied to evaluate the influence of parental and child characteristics, gender roles, and healthcare utilization on caregiving outcomes (Ramadhanty, 2024; Widyaningsih et al., 2018; Mayla et al., 2025).

The integration of gender role indicators and posyandu check-up frequency provides an intersectional framework for understanding caregiving patterns. This aligns with empirical studies showing that fathers' involvement, alongside mothers', can significantly enhance developmental outcomes in children (Damanik et al., 2025). Furthermore, active participation in health monitoring services such as posyandu has been proven to reduce the risk of growth faltering by promoting early detection and providing tailored advice for parents (Sajalia et al., 2018). The combination of these variables provides a robust analytical foundation to examine caregiving quality as a multifactorial outcome influenced by interpersonal behaviors and institutional health service engagement (Susanto et al., 2019; Hanif et al., 2022).

This study not only investigates proximate factors like parental behaviors and child monitoring but also considers underlying determinants such as socioeconomic status and education. The inclusion of these contextual factors reflects a growing recognition that stunting is not simply a biological issue but a social one, shaped by systemic inequities and institutional access (Sunarni et al., 2022; Irving et al., 2023). Hence, this research approach underscores the importance of holistic health promotion strategies that address household dynamics, gender equity, and healthcare access simultaneously.

By adopting this multidimensional methodology, the study contributes valuable insights to ongoing efforts in stunting reduction. Its findings can inform evidence-based interventions targeting caregiving practices, particularly those emphasizing inclusive parenting and routine health engagement. Moreover, the methodological rigor of combining validated instruments, stratified measurements, and comprehensive statistical analysis sets a model for future investigations into child health and nutrition in similar high-burden settings.

RESULTS

Characteristics of Stunted Children

Among the 40 families surveyed, the demographic distribution of stunted children highlights several patterns warranting close examination. A majority of the children identified as male (55 percent), a trend consistent with several studies indicating a greater biological susceptibility among boys to early childhood undernutrition due to higher growth velocity and metabolic demands. This observation underlines the gendered dimension of biological vulnerability in child growth failure, which often remains underexplored in local health policy interventions.

The age profile of the children ranged from one to five years, with two significant age clusters emerging: two-year-olds (35 percent) and four-year-olds (30 percent). These concentrations suggest that stunting is often detected after infancy, when the consequences of prolonged inadequate nutrition, suboptimal caregiving, and poor sanitation begin to manifest more visibly. The mean age of 2.9 years, with a standard deviation of 1.081 years, situates most of these children within the critical developmental window where irreversible cognitive and physical impairments begin to set in if not addressed. This finding reinforces the international consensus on the importance of prioritizing the first one thousand days of life for stunting prevention.

An analysis of birth order revealed that 65 percent of stunted children were either the first or second child born. While first-borns are often assumed to benefit from greater parental attention, this pattern may also reflect increased exposure to inexperienced caregiving, particularly in households with limited health knowledge. Alternatively, early childbearing in economically disadvantaged families may coincide with inadequate preparation for parenting and limited prenatal care, compounding the child's exposure to risk from the outset. These findings underscore the need for reproductive health education targeted at young, low-income parents.

Anthropometric data further reveal the extent of growth failure. The average weight of 10.4 kilograms is substantially below the expected norms for children within the 1–5-year age group. In terms of height, even the tallest stunted children at each age fell below the World Health Organization's median growth standards, with five-year-olds measuring only 96 centimeters. This pattern reflects moderate to severe chronic undernutrition and likely repeated infections, both of which impair nutrient absorption and linear growth. The cumulative nature of these deprivations demands interventions that are not merely curative but also preventative and structural in scope.

Characteristics of Parents

Parental demographics provide insight into the underlying conditions that shape child health environments. Fathers ranged in age from 23 to 50 years and mothers from 20 to 43 years. The majority of both were within the 18–40-year range, representing what is generally viewed as the optimal age band for parenting. However, despite their biological readiness, these parents demonstrated significant gaps in education, occupational stability, and economic capacity, thereby limiting their ability to provide nurturing care environments.

Educational attainment among parents was overwhelmingly low. Approximately 42.5 percent of fathers and 47.5 percent of mothers had only completed junior high school. This level of education is inadequate for enabling parents to access, process, and act upon health-related information. It also limits their engagement with institutional support mechanisms such as posyandu and health insurance systems. The role of education—particularly maternal education—is well documented as a powerful determinant of child survival and nutrition, and its absence in this population represents a critical constraint on behavior change.

Occupational status illustrates additional vulnerability. Fifty percent of fathers worked as manual laborers and 40 percent were self-employed, predominantly in informal sectors with unpredictable income. Among mothers, 52.5 percent were unemployed, and those who worked were concentrated in low-wage informal activities. These occupational patterns restrict not only financial capacity but also access to social protection, health services, and child-focused programs. Moreover, the limited involvement of fathers in caregiving—implied through their labor-intensive roles—is likely to place the burden of child nutrition and health primarily on under-resourced mothers.

Income data reflect a precarious economic condition. Twenty-five percent of fathers earned less than one million Rupiah per month, while over half of the mothers reported no personal income at all. This not only reduces their decision-making power within the household but also diminishes the household's resilience to food and healthcare costs. Such economic fragility is a structural barrier to achieving adequate childcare, and it magnifies the consequences of any economic shock.

Characteristics of Families

Household-level analysis revealed further structural deficits. Family sizes ranged from three to seven members, with 62.5 percent classified as small families (four or fewer members). However, despite a manageable dependency ratio, these families were still unable to meet minimum nutritional needs, suggesting that poverty, not just family size, is the principal driver of child stunting.

Access to natural resources was limited. Only 7.5 percent of households owned or used a yard for cultivating food, meaning that over 90 percent lacked any supplementary source of homegrown nutrition. In a rural setting, this is a missed opportunity for dietary diversification and economic savings. The limited ability to grow or harvest their own food further entrenches reliance on market purchases, which are often constrained by low and unstable incomes.

Access to health insurance was also limited, with only 22.5 percent of families reporting any coverage, and 77.5 percent fully uninsured. This absence of coverage can delay or deter families from seeking care for common infections, immunizations, or early childhood growth monitoring. The consequences are not merely medical but developmental, as unaddressed health issues directly impair nutritional absorption and psychosocial development.

Participation in family planning was equally split, with 50 percent of mothers having used contraceptives prior to the pregnancy of their stunted child. This suggests varied levels of reproductive health access and knowledge. Additionally, 70 percent of households reported having no fixed monthly income, indicating widespread financial insecurity. Fixed income is not only a predictor of economic stability but also enables predictable access to food, transportation, and healthcare.

Parental Perceptions and Plans

Parental emotional responses to their child's stunting status further reveal critical behavioral and psychosocial dimensions. Forty percent of parents responded "normally," suggesting either a lack of awareness regarding the long-term impact of stunting or its normalization in the community. Thirty-seven and a half percent of parents expressed worry, while 12.5 percent reported sadness. The predominance of neutral or low-empathy responses reflects critical health communication gaps and a broader cultural acceptance of suboptimal child growth.

When asked about planned actions, 45 percent of parents admitted to having no plan at all. Those who did have plans intended to buy vitamins (25 percent) or give additional food (17.5 percent). While these plans suggest some initiative, they are often reactive and fragmented. They also reflect a reliance on individual, uncoordinated solutions rather than engagement with structured health interventions or behavioral change programs. Importantly, the low planning rate illustrates not only knowledge gaps but also an erosion of agency, likely exacerbated by chronic poverty and inadequate health system support.

The findings from this descriptive analysis reveal a constellation of vulnerabilities that reinforce and perpetuate child stunting. These vulnerabilities are not random but structural, stemming from an interplay of limited education, fragile employment, economic precarity, gendered caregiving burdens, and a breakdown in family-health system integration. While each factor individually contributes to the risk of stunting, their convergence within the same households creates a reinforcing cycle of disadvantage.

Moreover, the data underscore a fundamental gap between awareness and action. Even when some parents recognize the problem of stunting, their responses are rarely aligned with evidence-based solutions. This signals a crucial disconnection between health knowledge, health behavior, and the enabling environment required to act on that knowledge. Interventions must therefore go beyond information provision to address deeper structural, psychological, and institutional deficits.

Gender Roles in Childcare

In examining the foundational determinants of care quality for stunted children, one critical dimension lies in the gender dynamics of caregiving. Gender roles in parenting shape how responsibilities are distributed between fathers and mothers, influencing the consistency, attentiveness, and comprehensiveness of childcare. In patriarchal contexts, caregiving is often viewed as a maternal duty, with limited paternal involvement, particularly during the early, yet vital, stages of pregnancy and postnatal development. To capture the extent of this involvement, the study assessed gender roles during two distinct but complementary periods: the pregnancy phase and the period after childbirth.

Table 1 Examples by gender role of caregiving

Dimensions Parenting Gender Roles	Category						Min-Max	Mean ± SD
	Low		Medium		High			
	n	%	n	%	n	%		
Pregnancy Phase	22	55	14	35	4	10	16.7-91.7	50.5 ± 18
Phase After Child Birth	19	47.5	20	50	1	2,5	31.9-79.1	52.7 ± 12
Parenting Gender Roles	20	50	19	47.5	1	2.5	31.2-77	52.1 ± 11

Notes: significant at p<0.1; *) significant at p<0.05; **) significant at p<0.01

Table 1 illustrates a general pattern of low to moderate gender role participation, with an overall mean score of 52.1. During the pregnancy phase, 55 percent of parents displayed low engagement from fathers, suggesting that paternal roles during prenatal care remain peripheral or symbolic. Only 10 percent of respondents reported high involvement, indicating that shared responsibility during pregnancy is far from institutionalized. After childbirth, the proportion of medium engagement increased to 50 percent, implying that some fathers may gradually assume greater responsibility once the child is born. Nonetheless, the stagnation at the high end (2.5 percent) indicates that deeply ingrained social norms about parenting persist, limiting men's proactive engagement in health-related caregiving. These findings call for gender-transformative interventions that redefine caregiving as a shared parental obligation beginning from pregnancy.

Gender Roles in Examination of Children to Posyandu

Another manifestation of caregiving inequality can be observed in parental involvement in health service utilization, particularly through posyandu visits. Posyandu serves as a vital touchpoint for growth monitoring, immunization, and nutrition education. However, the extent to which both parents engage with these services is rarely quantified. In this study, gender roles in posyandu-related behaviors were measured during both the pregnancy and postnatal periods to assess how caregiving practices are operationalized through service access.

Table 2 Distribution of samples based on checking children at Posyandu

Dimensions Examination of children to posyandu	Category						Min-Max	Mean ± SD
	Low		Medium		High			
	n	%	n	%	n	%		
Pregnancy Phase	34	85	6	15	0	0	16.7-91.7	50.5 ± 18
Phase After Child Birth	31	77.5	8	20	1	2,5	31.9-79.1	52.7 ± 12
Examination of children to posyandu	35	87.5	5	12.5	0	0	21.4-71.4	39 ± 12

Notes: significant at p<0.1; *) significant at p<0.05; **) significant at p<0.01

Table 2 reveals a striking pattern of under-engagement from parents—particularly fathers—in health monitoring behaviors. Across all phases, most parents exhibited low participation in checking their children at posyandu, with 85 percent during pregnancy and 77.5 percent postnatally. The aggregate score for posyandu-related behavior was also notably low, with a mean of 39.0, well below the mid-point. These figures suggest that while the service is available, it is underutilized, especially by fathers. The complete absence of high involvement during pregnancy underscores a serious gap in early health investment. Structural barriers such as time, transportation, and gendered perceptions of health-seeking roles likely contribute to this pattern. Strengthening father-inclusive health campaigns and community-based education about shared parenting responsibilities may help improve not only service use but also health outcomes.

Quality of Childcare

Beyond the distribution of caregiving roles and service utilization, it is critical to understand how parents themselves perceive the quality of care they provide. While such perceptions are inherently subjective, they offer insights into caregiver confidence, self-awareness, and readiness to engage in interventions. Measuring self-assessed quality also helps identify disconnects between perceived and actual performance, especially in high-stunting environments where poor outcomes may be normalized.

Table 3 Sample distribution by quality of care

Quality of Parenting	Category						Min-Max	Mean ± SD
	Low		Medium		High			
	n	%	n	%	n	%		
Quality of Parenting	0	0	11	27.5	29	72.5	55-100	82.8 ± 11

Notes: significant at p<0.1; *) significant at p<0.05; **) significant at p<0.01

In Table 3, 72.5 percent of respondents rated their caregiving as high in quality, while 27.5 percent perceived it as moderate. Remarkably, no parent reported low caregiving quality, and the mean score was 82.8 with a relatively narrow spread. While on the surface this suggests positive caregiver self-evaluation, it raises critical concerns about perceptual accuracy. Given the overall high stunting prevalence in the sample, this disconnect between perceived care quality and actual child health outcomes suggests a possible lack of awareness or misalignment between parental expectations and evidence-based caregiving standards. This phenomenon may be driven by low parental education, cultural normalization of short stature, or insufficient interaction with health professionals who could provide accurate feedback on caregiving performance. The high self-assessment scores could indicate psychological defense mechanisms to offset feelings of guilt or helplessness. These findings emphasize the need for behaviorally-informed health education programs that foster accurate self-appraisal and build constructive pathways toward improved caregiving.

Relationship between Stunting Child Characteristics, Parent Characteristics, Other Characteristics, Gender Role in Parenting, Examination of Children to Posyandu, and Quality of Caring for Stunted Children

To understand the multidimensional factors that influence the quality of care for stunted children, it is essential to examine how individual, familial, and contextual variables interrelate. Pearson correlation analysis was conducted to explore the associations among child characteristics, parental sociodemographic factors, gender roles in caregiving, participation in child health examinations at posyandu, and the reported quality of care. These associations help delineate potential pathways through which structural and behavioral determinants converge to shape caregiving practices in households facing child stunting.

Table 4 characteristic correlation coefficientstunting children, parental characteristics, gender roles in caring for and checking children at posyandu and quality of care for stunting children

Variable	Parenting gender roles	Examination of children to posyandu	Quality of care for stunted children
Characteristics of stunted children			
Gender (1=male; 2=female)	0.079	0.005	-0.099
Age (years)	0.053	0.205	0.024
Serial number of biological children (ratio)	-0.126	-0.142	-0.016
body weight (kg)	-0.099	0.211	0.028
Height(cm)	-0.131	0.250	-0.122
Category (tb/u)	0.144	-0.178	-0.047
Characteristics of Parents			
Father's age (years)	-0.080	0.070	0.134
Mother's age (years)	0.246	-0.047	-0.064
Father's last education (score)	0.196	0.010	0.030
Mother's last education (score)	0.117	0.164	0.184
Father's occupation (nominal)	-0.164	-0.004	-0.014
Mother's occupation (nominal)	0.222	0.012	-0.022
Father's income (Rp/month)	0.019	-0.201	-0.078
Mother's income (Rp/month)	0.165	-0.067	0.023
Other characteristics			
Many family members (people)	-0.035	0.116	0.196
The family owns a yard (1=no, 2=yes)	0.212	0.425**	0.141
Family has insurance for children (1=no, 2=yes)	0.278	0.285	0.294
The family participates in Family Planning (KB) when pregnant with a stunted child (1=no, 2=yes)	-0.204	-0.029	-0.034
The family has a fixed monthly income	0.226	-0.050	-0.047

Table 4 characteristic correlation coefficientstunting children, parental characteristics, gender roles in caring for and checking children at posyandu and quality of care for stunting children (continue)

Variable	Parenting gender roles	Examination of children to posyandu	Quality of care for stunted children
(1=no, 2=yes)			
Feelings of father or mother (nominal)	-0.201	0.172	-0.129
Father's or mother's plans (nominal)	0.141	0.076	-0.028
Gender roles in parenting (index)	1	0.407**	0.485**
Gender role in checking children to posyandu (index)	0.407**	1	0.348*
Quality of care for stunting children (index)	0.485**	0.348*	1

Note: significant at p<0.1; *) significant at p<0.05; **) significant at p<0.01

Table 4 indicates statistically significant and theoretically meaningful relationships among the three core behavioral variables in this study: gender roles in parenting, health check-up behaviors at posyandu, and perceived quality of care. The strongest correlation was observed between gender roles in parenting and quality of care ($r = 0.485$; $p < 0.01$), underscoring the critical contribution of equitable caregiving dynamics to nurturing environments. Equally important is the significant correlation between gender roles in parenting and child examination at posyandu ($r = 0.407$; $p < 0.01$), which reveals that families with shared caregiving responsibilities are also more engaged in preventive health services. The link between examination behavior and quality of care ($r = 0.348$; $p < 0.05$) further supports the notion that regular health monitoring translates into improved caregiving practices. Additionally, contextual variables such as yard ownership ($r = 0.425$; $p < 0.01$) were significantly associated with posyandu visits, suggesting that families with land may exhibit greater household resource stability and mobility to access services. These findings imply that improving gender equity and reducing structural constraints may be instrumental in enhancing care quality for stunted children.

Effect of Stunting Child Characteristics, Parental Characteristics, Other Characteristics, Gender Role in the Care and Examination of Children at Posyandu on the Quality of Caring for Stunted Children

To further explore the predictive power of the variables examined, a multiple linear regression analysis was conducted. This analytical technique allows for assessing the simultaneous influence of multiple independent variables on the quality of care provided to stunted children. Prior to interpretation, standard assumptions of regression were evaluated. The normality of residuals, absence of multicollinearity (tolerance > 0.1; VIF < 10), homoscedasticity, and autocorrelation (Durbin-Watson = 1.989) all satisfied diagnostic thresholds, confirming the robustness of the regression model.

Table 5 Coefficient of stunting children's characteristics, parents' characteristics, other characteristics on the quality of stunting children's care

Independent Variable	Quality of Stunting Child Care		
	Unstandardized (β)	Standardized (β)	Sig.
α			
child age	1.753	0.170	0.240
Biological serial number	-5.009	-0.472	0.079*
Height	-0.220	-0.283	0.075*
Category	2.358	0.098	0.708
Father's age	14.603	0.622	0.002**
Mother's age	-18.655	-0.561	0.001**
Father's last education level	5.032	0.337	0.047*
Mother's job	-2.305	-0.271	0.085*
father's income	-2.738	0.888	0.005**
Many family members	11.157	0.491	0.046*
The family has a yard	-5.944	-0.142	0.331
Child insurance	14.712	0.558	0.004**
Parenting gender roles	0.557	0.561	0.001**
Posyandu examination	-0.218	-0.240	0.198
F		3.733	
R-Square		0.651	

Table 5 Coefficient of stunting children's characteristics, parents' characteristics, other characteristics on the quality of stunting children's care (continue)

Independent Variable	Quality of Stunting Child Care		
	Unstandardized (β)	Standardized (β)	Sig.
Adjusted R-Square		0.477	
Df		39	
Sig.		0.002**	

Note: significant at p<0.1; *) significant at p<0.05; **) significant at p<0.01

The regression model explains approximately 47.7 percent of the variance in the quality of care provided to stunted children, suggesting a moderate predictive power. Several variables emerged as significant predictors. Father's age, education level, and income all demonstrated positive effects on care quality. This emphasizes the influential role of paternal resources—both cognitive and economic—in supporting adequate caregiving. Child health insurance was also positively associated, reinforcing the idea that formal health coverage facilitates better service access and follow-up care.

Conversely, maternal age and higher birth order of children were negatively associated with care quality. This may reflect resource dilution in larger families or reduced maternal responsiveness with increasing age or parity. Interestingly, the mother's occupation was marginally significant and negatively associated, possibly indicating a time trade-off between income generation and direct caregiving. Height of the child was also negatively associated with care quality, suggesting that caregivers may provide less attention to children perceived as "taller" despite being stunted. Finally, although not statistically significant, gender role in posyandu visitation exhibited a negative direction, indicating that mere attendance without shared responsibility may not enhance care quality. These results call for more integrative policy frameworks that center paternal involvement, health insurance access, and structural support for maternal roles in enhancing care for vulnerable children.

DISCUSSION

The findings of this study offer a comprehensive lens into the multifactorial dimensions of stunting among children aged one to five years in Wanamekar Village, Wanaraja District, Garut Regency. The mean age of stunted children was 2.9 years, with a disproportionately higher incidence among toddlers aged two to five years compared to those under two. This pattern reflects a biologically critical period where growth velocity naturally slows, and children become increasingly susceptible to cumulative nutritional deficits. Existing literature corroborates this developmental window as a high-risk phase, emphasizing that nutritional interventions prior to the age of two are vital to prevent irreversible impairments in physical and cognitive development (Wool et al., 2021; Rozensztrauch et al., 2023).

The study also identified a notable gender disparity in stunting prevalence, with boys being more affected than girls. This aligns with the understanding that male children typically require higher energy and protein intake due to more rapid growth trajectories, which, in contexts of food insecurity, increases their vulnerability to malnutrition (Khair & Pelentsov, 2019; Parveen & Jan, 2024). Consequently, this gendered susceptibility underscores the importance of designing nutrition-sensitive policies that incorporate sex-specific dietary planning, particularly in food-insecure rural settings (Bagavathy et al., 2024).

Parental characteristics were found to significantly shape caregiving quality and stunting outcomes. Most parents were within the middle adulthood range, with educational attainment generally limited to the junior high school level. This limitation is consequential; lower education levels correlate with restricted access to stable and well-paying employment, thereby constraining household income and the ability to secure adequate nutrition, healthcare, and psychosocial stimulation for young children (Mathiolli et al., 2020; Teasdale & Limbers, 2018). Fathers predominantly worked in manual labor occupations, while mothers were mostly homemakers. While maternal presence at home is typically presumed to facilitate caregiving, recent studies caution against equating time availability with caregiving quality. Without corresponding knowledge and material resources, even full-time caregiving may fall short of supporting optimal child development (Doi et al., 2020; Gramszlo et al., 2020).

Crucially, the data reveal a traditional division of caregiving labor, wherein mothers are the primary caregivers and fathers' involvement remains minimal. This pattern reflects entrenched gender norms that position caregiving as a maternal responsibility. However, the literature increasingly supports the notion that

shared parenting roles lead to improved child health and development outcomes. Active paternal engagement not only redistributes the caregiving burden but also enriches the emotional and developmental environment of the child (Poole et al., 2024; Pirchio et al., 2023). Interestingly, the study found that parents often expressed confidence in their caregiving abilities despite limited access to educational and health resources. This highlights a possible dissonance between perceived and actual caregiving quality and points to the role of parental self-efficacy as both a psychological buffer and a potential target for behavior-change interventions (Broden et al., 2022; Vasey et al., 2019).

Healthcare utilization, particularly visits to the posyandu (integrated community health posts), was notably infrequent. This underutilization poses a major barrier to early detection of growth faltering and timely intervention, particularly in contexts where preventive health infrastructure is underdeveloped. Research consistently emphasizes that regular health consultations, especially in early childhood, are critical in mitigating malnutrition through growth monitoring, vaccination, deworming, and supplementation (Brilli, 2022; Stolper et al., 2022). The low attendance rate reported in this study mirrors broader patterns observed in low-resource settings, where logistical barriers, limited maternal health literacy, and sociocultural beliefs often deter routine engagement with formal healthcare systems. However, the study also found that even among mothers with limited formal education, nutritional awareness was evident through their adoption of home-based food production practices, such as vegetable gardening. This illustrates the capacity for informal learning and the potential for targeted health education interventions to yield tangible benefits (Nemet et al., 2021; Liu et al., 2023).

Statistical analysis revealed a significant positive correlation between increased parental involvement in caregiving and the frequency of posyandu attendance. This finding supports the proposition that caregiving is not only a domestic duty but also a health-seeking behavior, wherein proactive parenting translates into higher health service utilization and, by extension, better child health outcomes (Vasey et al., 2019; Wallace et al., 2021). Furthermore, households characterized by joint caregiving—where fathers and mothers both participate meaningfully—were associated with improved care quality, reinforcing the growing consensus that challenging gendered caregiving norms is essential for holistic child welfare (Jordan et al., 2020; Hansson et al., 2022).

The regression models yielded further insights into family dynamics. Notably, an inverse relationship was observed between the number of children and perceived caregiving quality, suggesting that higher fertility may dilute the time, attention, and resources available per child. Conversely, children with the lowest anthropometric scores were associated with greater reported caregiving intensity, indicating that visible signs of underdevelopment may prompt compensatory caregiving behaviors (Harlow et al., 2023; Ngo et al., 2022). This paradox underscores the complex interplay between perceived need and actual care practices, and it further emphasizes the importance of health education in shaping parental responses to child health indicators.

Moreover, paternal attributes such as higher age, education level, and income were significantly and positively associated with caregiving quality. Older and more educated fathers with greater financial stability are better positioned to support their children's health and development, both directly through provision and indirectly through co-parenting support (Fogarty et al., 2021; Pirchio et al., 2023). In contrast, maternal characteristics—specifically age and occupation—exerted a negative influence, suggesting that young or economically active mothers may face greater role strain, reducing their ability to deliver consistent, high-quality caregiving (Handayani & Daulima, 2020; Murti, 2021). This dynamic reflects the gendered burden of dual roles and speaks to the urgent need for structural supports such as maternity protections and accessible childcare services.

An additional finding of practical relevance was the positive impact of health insurance ownership on caregiving quality. Insurance facilitates access to medical services and reduces out-of-pocket expenses, making preventive and curative interventions more feasible for low-income families. Its presence is a proxy for social protection, and in this study, it was positively linked with enhanced caregiving, further validating its inclusion as a priority in social development policies (Mimmo et al., 2019; Thabet & Zaki, 2018). Furthermore, the synergistic involvement of both parents—particularly the father's active role—emerged as a critical determinant. When both caregivers were engaged, care was perceived as more holistic, stable, and responsive, aligning with a growing body of literature advocating for inclusive, family-centered approaches to child health (Wojnar & Sztefko, 2023; Church et al., 2019).

While the study provides valuable insights, it is not without limitations. The reliance on responses from either the mother or father—but not both—may introduce reporting biases and obscures the dynamics of co-parenting. Future research should consider dyadic methodologies that capture the perspectives and interactions of both parents to build a more comprehensive understanding of caregiving practices and their

impact on child development (Gramszlo et al., 2020; Aungkaprasatchai et al., 2024). Moreover, longitudinal data would better elucidate the causal pathways linking parental factors, caregiving quality, and stunting outcomes over time.

The study reinforces that child stunting is not merely a biomedical issue but a complex social phenomenon shaped by intersecting biological, economic, cultural, and institutional factors. Effective interventions must therefore operate at multiple levels—empowering caregivers through education, ensuring equitable gender roles in parenting, improving access to health services, and strengthening social protection mechanisms. Only through such an integrative and intersectional approach can the cycle of stunting be meaningfully broken.

Managerial Implications

The findings of this study offer several actionable insights for public health managers, local government officials, and non-governmental organizations working in child health and nutrition. First, the pronounced role of paternal characteristics—age, education, and income—in shaping care quality underscores the need for inclusive parenting programs that actively involve fathers. Conventional maternal-focused interventions are insufficient; instead, community health programs must institutionalize father engagement during antenatal and postnatal stages through father-inclusive health campaigns and counseling sessions at posyandu.

Second, the significant relationship between health insurance coverage and caregiving quality highlights a critical opportunity to integrate child-focused nutrition and health services into Indonesia's national health insurance (JKN) scheme. Enhancing awareness and simplifying enrollment procedures for low-income families can facilitate timely access to preventive and therapeutic care, thereby preventing exacerbation of stunting due to treatable illnesses.

Third, given that over 70% of parents rated their caregiving as "high quality" despite clear signs of child underdevelopment, behavioral change strategies must prioritize recalibrating parental self-perceptions. Health promotion efforts should incorporate culturally tailored, evidence-based tools such as visual growth charts, peer comparison frameworks, and motivational interviewing to align parental perceptions with biomedical standards of care.

Lastly, the study suggests that families with access to land (e.g., home gardens) were significantly more likely to engage with health services. This presents a powerful case for multisectoral interventions that combine nutrition-sensitive agriculture with public health messaging. Integrating home gardening initiatives into rural stunting reduction programs may yield dual benefits of dietary diversification and improved health service uptake.

Theoretical Implications

This research extends the conceptual understanding of caregiving quality for stunted children by reinforcing the interconnectedness of structural determinants (education, income, health insurance) and behavioral constructs (gender roles, health-seeking behaviors). It contributes to the growing body of literature advocating for an intersectional approach to child nutrition that moves beyond mother-centric models. Notably, the study introduces empirical evidence that gender-equitable parenting correlates significantly with both increased health service utilization and higher perceived care quality.

Furthermore, the strong positive associations between caregiving quality, posyandu attendance, and shared gender roles provide empirical support for ecological and role-based frameworks of parenting, such as Bronfenbrenner's Ecological Systems Theory and Lamb's Model of Father Involvement. The study's findings also complement the Health Belief Model, highlighting the role of perceived susceptibility and self-efficacy in influencing parental care behavior.

By exploring perceived caregiving quality in a high-stunting context, the study challenges the assumption that caregiver self-assessment aligns with actual child health outcomes. This dissonance suggests a need to integrate psychosocial theories of perception, such as Festinger's Cognitive Dissonance Theory, into future frameworks of caregiver behavior, particularly in low-resource settings where normalization of poor growth may distort perception.

Limitations

Despite its strengths, this study presents several limitations that must be acknowledged. First, the reliance on cross-sectional data restricts the ability to draw causal inferences regarding the determinants of care quality and their effect on stunting outcomes. Longitudinal studies are needed to capture the temporal dynamics between structural vulnerabilities and caregiving trajectories. Second, data collection was limited to one parent per household, either the mother or father. This approach restricts the analytical depth needed to

explore co-parenting interactions and joint decision-making processes. Consequently, the study may underrepresent the complexity of intra-household caregiving negotiations and shared responsibilities. Third, perceived caregiving quality was self-reported, which may be subject to social desirability bias. Parents may overestimate their care performance, particularly in communities where stunting is normalized. Complementing perception-based measures with observational or third-party assessments in future studies would enhance validity. Finally, while the sample provides critical insights into rural West Java, its generalizability is limited. Cultural, infrastructural, and policy differences across other regions of Indonesia may produce varying patterns in caregiving behavior and stunting prevalence.

CONCLUSION AND SUGGESTION

This study provides compelling evidence that the quality of care for stunted children in rural areas of Indonesia is shaped by the combined effects of structural constraints, caregiving behaviors, and parental perceptions. Although a significant proportion of parents rated their caregiving performance as high, this perception stands in contrast with the anthropometric reality that their children remain stunted. This discrepancy suggests a normalization of growth failure within the community and limited access to objective health evaluations that could help recalibrate parental awareness. The study found that quality of care is strongly associated with gender equity in parenting roles, where households that shared responsibilities between mothers and fathers were more likely to engage in routine health check-ups and deliver higher perceived care quality.

The presence of health insurance for children, higher paternal education, greater income, and a moderate number of family members were all linked with better caregiving practices, emphasizing the importance of social protection and paternal capacity in shaping household caregiving environments. In contrast, older maternal age, employment status of mothers, higher birth order of children, and the child's height were negatively associated with care quality. These findings indicate that maternal burden, economic fragility, and perceptions based on visible child size can distort caregiving prioritization. The low levels of paternal engagement during both pregnancy and postnatal periods, particularly in posyandu visits, further highlight a persistent gendered division of childcare responsibilities that undermines collaborative health-seeking behaviors. Collectively, these insights affirm that efforts to improve caregiving quality must move beyond individual-level interventions and target the broader social and institutional systems that perpetuate inequity and vulnerability in early childhood care.

Based on the study's findings, several specific and actionable recommendations can be put forward to strengthen the caregiving environment for stunted children in low-income rural settings. First, parenting interventions must intentionally engage both mothers and fathers, beginning from pregnancy, through community health programs that promote shared caregiving responsibilities and challenge traditional gender roles. Health workers should be trained to facilitate father-inclusive counseling and communication strategies during routine services at posyandu. Second, expanding the coverage and accessibility of health insurance is essential. Simplified registration systems, targeted outreach to uninsured households, and automatic enrollment mechanisms for children in high-risk regions can ensure that financial constraints do not prevent timely access to preventive care and treatment. Third, behavioral change communication must be redesigned to correct the mismatch between parental perceptions and actual caregiving performance. Tools such as visual growth tracking, peer comparison benchmarks, and structured caregiver feedback during health visits can be used to recalibrate awareness and motivate behavior change. Fourth, local governments should support household-level food security through home gardening programs integrated into community health and nutrition campaigns, as access to even small plots of land was found to correlate with greater engagement in child health monitoring. Fifth, maternal education programs should be strengthened not only to improve caregiving knowledge but also to empower women in balancing employment with childcare demands. Finally, future programs should be designed with an integrated, multi-sectoral approach that addresses economic vulnerability, health access, and caregiving capacity as interconnected elements of a holistic child development framework. By addressing these key determinants collectively and contextually, the cycle of stunting can be more effectively disrupted and replaced with sustainable pathways to child health and resilience.

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