Research Paper

Parenting Strategies in Families at Risk of Stunting: Parental Response to Challenge Ecology in Rural Areas of Indonesia

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ABSTRACT

Background: Parents of stunted children in rural communities face complex parenting pressures, ranging from challenges in managing children's behavior, to limited access to services and social support. This study aims to identify parenting strategies as forms of adaptation to these challenges.

Methods: This study adopted a qualitative approach. The study participants were selected through purposive sampling among parents of stunted children. Thematic analysis was conducted based on focus group discussion (FGD) data with 20 parents in Jember, East Java Province, Indonesia in 2024. Ecological systems theory was used as a guiding framework to interpret multilevel influences on parenting practices.

Results: The results revealed 8 main strategies: adjusting children's eating patterns, accepting developmental progress in a realistic manner, negotiating parenting roles within the extended family, fostering collaboration between fathers and mothers, managing emotional and spiritual resilience, providing creative stimulation using simple media, actively and selectively seeking information, and strengthening family communication. These strategies reflect responsive, adaptive, and contextually grounded actions, aligned with the ecological systems theory that situates parenting within multilayer interactions among individuals, families, communities, and cultures.

Conclusion: The findings provide a foundation for developing interventions that strengthen existing family resources, integrate emotional, spiritual, and practical support, and ensure alignment with the local sociocultural context to enhance the effectiveness of stunting prevention efforts.

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Highlights

- Stunting remains a major child health problem influenced not only by nutrition but also by parenting and family context.
- Families at risk of stunting develop various adaptive parenting strategies to cope with daily challenges.
- This study identified 8 key parenting strategies used by parents of stunted children in a rural Indonesian setting.
- Parenting practices are shaped by interactions within family, community, and cultural environments, consistent with ecological systems theory.

Plain Language Summary

Stunting is a condition where children do not grow as expected for their age due to long-term nutritional and environmental challenges. However, child growth is not influenced by food alone. The way parents care for, interact with, and support their children also plays an important role. This study explored how parents in families at risk of stunting manage everyday parenting challenges. Through group discussions with parents in a rural area of Indonesia, we found that parents use various practical strategies. These strategies include adjusting children's eating habits, working together between mothers and fathers, involving extended family members, finding health information, providing simple learning activities at home, and maintaining emotional and spiritual strength. These strategies show that parenting is shaped not only by individual parents but also by family relationships, community support, and cultural values. Understanding these real-life parenting experiences can help health workers and policymakers design support programs that are more suitable for families facing similar challenges.

Introduction

The World Health Organization (WHO) defines stunting as chronic malnutrition in which a child's height-for-age Z-score is less than minus two standard deviations (Organization., 2006). In 2020, the United Nations International Children's Emergency Fund (UNICEF) in collaboration with the WHO and the World Bank reported that 24.1% of children under 5 years of age in Southeast Asia were stunted (UNICEF, 2021b). Among countries in the region, Indonesia remains one of those with the highest stunting prevalence, ranking second after Timor-Leste, with a prevalence of 33.1% (Wulandari et al., 2025). Although the Indonesian government has prioritized stunting reduction as a national agenda since 2017, progress has remained relatively slow. Between 2012 and 2020, the national stunting rate decreased by only 2.7 percentage point, from 34.5% to 31.8%. This decline is still below the regional average reduction of 3.6 percentage points and substantially lower than the 5.8 percentage point reduction achieved by five target countries (Lao PDR, Cambodia, the Philippines, Myanmar, and Vietnam) (Wulandari et al., 2025). The prevalence of stunting in Indonesia is not only caused by problems related to nutrition and sanitation, but is also closely associated with the quality of parenting practices applied within households. In situations of limitation, such as in rural communities, parents are often required to make complex parenting decisions without adequate support from social systems or access to accurate information (Utami et al., 2019; Erick, 2023). A qualitative study revealed that mothers face various challenges and constraints in raising toddlers at risk of stunting, particularly in rural areas. A lack of understanding regarding the importance of healthy parenting and proper nutrition becomes a major factor contributing to the persistence of stunting (Azzahra et al., 2024). Therefore, it is important to understand how parents develop adaptive strategies that are not only functional in nature but also promote resilience and empowerment in child-rearing.

Parenting is a crucial foundation in both the prevention and management of stunting, especially in communities with high vulnerability such as rural areas. The quality of parent-child interaction plays a central role in ensuring the fulfilment of children's nutritional, emotional, and developmental stimulation needs. Factors influencing this function include the quality of the parent–child relationship, the child's characteristics, the ability of parents to observe carefully, and parents' expe-

riences shaped by their surrounding environment. When parenting functions effectively, it results in more nurturing practices, reduced parental stress and psychological problems, and improved child well-being (Putri & Rong, 2021). One study categorized parenting patterns into 3 main groups: parenting related to feeding and nutritional intake, parenting focused on health aspects, and parenting shaped by mothers' backgrounds and family conditions (Fitroningtyas, 2021). However, evidence from stunting-locus settings suggests that these domains are closely interconnected in practice, as parenting decisions are often shaped by household resources, maternal capacity, partner support, extended family involvement, and broader sociocultural influences (Nugrahani et al., 2025; Rohmah et al., 2025a).

A number of studies have highlighted the importance of quality parenting in stunting prevention. However, there remains a limited body of research examining how parents, particularly in rural communities, respond to ecological challenges in ways shaped by their social, economic, cultural, and environmental contexts. These challenges are not only characterized by poverty and limited access to services, but also by pressures from social norms, extended family values, and gender inequality in parenting roles (Beal et al., 2018; Prasiska et al., 2024). Studies in various developing countries have revealed that parents' adaptive strategies in response to economic and social pressures play a crucial role in shaping family resilience in the face of parenting challenges (Silva et al., 2021). In addition, further studies confirm that adaptive strategies in response to these pressures are an essential element of family resilience when addressing the challenges of child-rearing (Guy-Evans, 2025).

Child stunting remains a complex public health problem in Indonesia, particularly in rural communities where parenting pressures arise not only from nutritional deficiencies and limited access to health services, but also from intertwined social, economic, and cultural dynamics. Ecological systems theory emphasizes that these challenges should be understood across multiple interacting system layers that shape a child's development, including the microsystem (direct parent-child interactions), mesosystem (family connections with health services), exosystem (policies, employment, and social networks), and macrosystem (cultural norms, gender systems, and structural poverty) (Bronfenbrenner, 1979; UNICEF, 2021).

This approach positions parenting strategies not merely as individual decisions, but as adaptive responses to social, economic, and cultural dynamics influencing families. Studies from developing countries show that adaptive strategies in response to economic and social pressures are key factors for family resilience in addressing caregiving challenges, including the risk of stunting (Guy-Evans, 2025).

This article is part of a broader qualitative study aimed at developing a parenting model for families caring for children with stunting in Indonesia. It draws on initial findings that explore the dynamics of parenting in rural areas, revealing the diverse challenges faced by parents in carrying out their roles (Rohmah et al., 2025b). These challenges include children's behavioral dynamics that do not align with parental expectations, social and cultural pressures from the surrounding environment, limited access to information and health services, lack of spousal involvement, and the economic vulnerability of families. The findings suggest that parenting in the context of stunting requires not only the fulfilment of children's physical needs, but also parents' capacity to adapt emotionally and socially within environments marked by limitations. Building on this understanding, this part of the study aims to further examine parenting strategies as adaptive responses to ecological challenges in rural Indonesian communities.

Materials and Methods

This study is part of a broader qualitative investigation on parenting practices among parents of children with stunting in rural communities. This study applies ecological systems theory as both a conceptual and analytical framework. Specifically, the theory informed the design of the focus group discussion (FGD) guide by structuring questions around experiences at the micro-, meso-, exo-, and macro-levels. During analysis, the theory was used as an interpretive lens to organize and interpret themes, particularly in explaining how parenting strategies are shaped by interactions within the family, community networks, health services, and broader sociocultural and structural conditions. A qualitative descriptive approach was employed to purposively explore parent's experiences in implementing parenting strategies for stunted children. The data presented in this article were derived from the same FGD transcripts used in the main study by the authors. The FGD involved 20 parents (mothers and fathers) living in areas with a high prevalence of stunting, who were selected through purposive sampling. Although both manuscripts draw on the same data source, they address different research questions; the present article focuses specifically on parenting strategies within the framework of ecological systems theory. The FGD method was chosen because it allows participants to share narratives interactively and reflec-

tively within their social context, enabling researchers to explore diverse perspectives and experiences through guided group discussion (Bachtiar et al., 2024; Krueger & Casey, 2014).

The inclusion criteria were as follows: having a child aged 6–59 months identified as stunted based on length/height-for-age measurements according to the WHO child growth standards, living with the child and being directly involved in daily caregiving, and willingness to participate in the discussion process actively. We conducted FGDs in 4 small groups (5 participants each), stratified by parent gender (mothers' and fathers' groups), to encourage more open and balanced sharing of their experiences.

The FGDs were conducted face-to-face in September 2024 in a village community hall. The principal researcher moderated each session, assisted by a note-taker. Discussions lasted approximately 60–90 minutes and followed a semi-structured guide exploring parenting challenges, family support systems, interactions with health services, and sociocultural influences on child-care practices. Example questions included: "Can you describe your daily parenting practices to support your child's growth?" "What challenges do you face and what strategies do you use to overcome them?" "How are parenting roles shared and negotiated within the nuclear and extended family?" "How do you seek and evaluate information about child nutrition and health?", and "How do you manage emotional stress and maintain resilience while caring for your child?". Discussions were audio-recorded and complemented with field notes to capture contextual information and non-verbal cues. We transcribed all recordings verbatim and checked them for accuracy before analysis.

Data were analyzed using thematic analysis. To strengthen the interpretation of findings, this study applied Bronfenbrenner's ecological systems theory (1979), which conceptualizes parenting as an outcome of multilayer interactions within the microsystem, mesosystem, exosystem, and macrosystem (Bronfenbrenner, 1979). After initial themes were generated, the framework was used as an interpretive lens to examine how parenting strategies and dynamics emerging from participants' experiences were shaped by structural, social, and cultural influences across family, community, and broader sociocultural contexts.

Data analysis was carried out using Braun and Clarke's (2006) thematic approach, which included verbatim transcription, repeated readings, manual coding, grouping codes into initial themes, and iterative theme reviews to ensure alignment with both the theoretical framework and the research focus (Braun & Clarke, 2006). This approach enabled holistic and context-sensitive data interpretation consistent with ecological principles. This article's analysis focuses on parenting strategies as an expansion and differentiation of themes previously reported in the same study.

Data trustworthiness

Trustworthiness was established using Lincoln and Guba's criteria (credibility, transferability, dependability, and confirmability) (Lincoln & Guba, 1985). Credibility was enhanced through triangulation of perspectives by including both mothers and fathers, member checking with participants, and the use of verbatim quotations to represent participants' voices. Dependability was ensured by maintaining an audit trail documenting the research process, including data collection procedures, coding steps, and theme development. The team strengthened confirmability through reflexive discussions and systematic documentation of analytic decisions to minimize researcher bias. Transferability was supported by providing rich descriptions of the study setting, participant characteristics, and context to allow readers to assess the applicability of findings to other settings.

Table 1 presents the participants' demographic characteristics.

Results

Thematic analysis of the FGD data revealed 8 forms of parenting strategies developed by parents of stunted children as adaptive responses to parenting challenges. These strategies demonstrated flexibility, emotional sensitivity, and creativity in daily caregiving practices.

To enhance transparency of the analytic process, Table 2 summarize the main themes, subthemes, and representative codes derived from the data is presented. This table shows how parents' narratives were systematically organized into themes that reflect adaptive parenting strategies within the ecological context.

Adjustment of feeding based on children's needs and preferences

This strategy encompasses various parental adjustments to children's preferences and conditions in feeding practices. Five key aspects emerged: (1) modifying the form and texture of food to make it easier to consume,

(2) substituting food ingredients to adapt to children's tastes, (3) creating a conducive eating environment and atmosphere, (4) presenting food attractively to increase eating interest, and (5) adjusting meal frequency and portion sizes according to children's tolerance.

Parents demonstrated flexibility and creativity in addressing children's eating difficulties. They made adaptive adjustments based on children's preferences to ensure adequate nutritional intake, even if they did not always align with ideal guidelines. This strategy reflects not only practical skills but also caring values, attentiveness, and sensitivity to children's individual needs. Feeding, therefore, was not perceived merely as a biological obligation, but as part of a nurturing process that valued the child's comfort and experiences. "I made soft rice mixed with tempeh and a little soy sauce, because if it's just vegetables, he doesn't want to eat" (M05). If my child doesn't like rice, I substitute cassava or taro so that he still gets carbohydrates. Sometimes I blend eggs directly with rice" (M06). "I mix egg with flour so he wants it; sometimes I also make cute shapes" (F08).

From an ecological perspective, this strategy represents interactions between the microsystem (parent-child relationship), exosystem (access to local food and parents' working conditions), and macrosystem (cultural values surrounding child feeding patterns). Parents were not only reacting to children's behavior but also actively using available resources and values in their environment to design adaptive, sustainable feeding practices.

Realistic acceptance of children's development

This strategy reflects parental efforts to respond to developmental delays with empathy and realism. Four main aspects were identified: (1) acceptance of developmental variations, (2) adjustment of expectations through self-reflection, (3) maintaining consistency in caregiving while fostering optimism, and (4) flexible adaptation in daily parenting practices.

Parents responded to delays such as late talking or walking with strategies that emphasized accepting each child's uniqueness. Parents responded to developmental delays with responsiveness and patience, emphasizing realistic acceptance of each child's uniqueness and developmental pace. This approach reduced social pressure and internal anxiety while allowing parents to celebrate little progress as positive indicators. Some coped with anxiety by sharing experiences with peers or partners, seeking reassurance through social comparisons. "I don't force my child to walk quickly; what matters is that my child is healthy and happy" (M010). "I used to worry that my child hadn't walked yet, but after seeing friends' children at the same stage, I calmed down" (M03). "In my opinion, each child develops differently… my task is to guide and follow my child's own pace" (F05).

According to ecological systems theory, parental acceptance of developmental delays reflects interactions across system levels. At the microsystem level, patience and flexible caregiving provide the child with direct emotional support. At the mesosystem level, social support reduces parental anxiety, while macrosystem cultural norms lower social expectations for child welfare (Bronfenbrenner, 1979; UNICEF, 2021). Thus, acceptance is not merely a personal attitude, but an adaptive alignment with environmental resources and norms.

Negotiating parenting with the extended family

This strategy highlights parents', particularly mothers', efforts to navigate differences in parenting values and practices held by grandparents or other extended family members. Five aspects characterized this negotiation: (1) educating extended family about child feeding patterns, (2) compromising on long-term caregiving, (3) maintaining consistency in principles despite differing views, (4) preserving parental authority while showing respect, and (5) using an educative approach to communicate changes. "I can't forbid directly, but I said: 'If mother gives snacks before meals, later he won't want to eat rice" (M03). "I usually yield to my in-laws, but I gradually let them know about my methods" (M09). "I explain to my family that GTM (food refusal) is normal; children don't need to be forced or scared" (M03).

Bronfenbrenner's ecological theory explains this strategy as a complex interaction between the microsystem (parent-child), mesosystem (relations between nuclear and extended families), and macrosystem (cultural norms about obedience and maternal roles). Parents demonstrated the capacity to mediate traditional values with newer parenting approaches that better support children's development (Bronfenbrenner, 1979; UNICEF, 2021). This finding confirms that effective parenting strategies depend not only on individual behavior but also on social negotiation within cultural expectations.

Collaboration between fathers and mothers in parenting

This theme consists of 4 aspects: (1) joint involvement in daily care, (2) reflective communication between partners, (3) alignment of parenting goals through discus-

Table 1. The participants' demographic characteristics

Code	Age (y)	Age at Marriage (y)	Occupation	Education	Family Type	Number Of Children	Child's Gender	Child's Age (months)	Child's Weight (kg)	Child's Height (cm)
M01	29	28	Housewife	Junior high school	Nuclear family	1	Female	6	6.7	75
F01	32	31	Odd jobs	Elementary school						
M02	28	24	Housewife	Junior high school	Extended family	1	Female	28	10.3	82
F02	30	26	Farmer	Elementary school						
M03	21	19	Housewife	Senior high school	Nuclear family	1	Male	12	7.5	72
F03	25	23	Self-employed	Senior high school						
M04	25	20	Housewife	Senior high school	Extended family	1	Female (twins)	48	12.5	81
F04	29	24	Village government staff	Bachelor's degree						
M05	25	20	Housewife	Senior high school	Nuclear family	2	Male	10	6.7	73
F05	27	22	Islamic elementary school teacher	Bachelor's degree						
M06	22	19	Housewife	Junior high school	Nuclear family	1	Female	36	10.6	85.7
F06	23	20	Self-employed	Senior high school						
M07	29	19	Housewife	Senior high school	Nuclear family	2	Female	19	6.4	70
F07	30	20	Private employee	Senior high school						
M08	21	19	Housewife	Junior high school	Nuclear family	1	Male	12	6.3	65
F08	25	23	Farmer	Junior high school						
M09	23	20	Self-employed	Senior high school	Nuclear family	1	Male	23	8.4	77
F09	25	22	Farmer	Senior high school						
M010	27	19	Factory labourer	Senior high school	Nuclear family	2	Female	36	10	95.7
F010	29	21	Farmer	Senior high school						

sion, and (4) flexible distribution of parenting time. FGD findings revealed cooperative, egalitarian care practices, reflected in an adaptive distribution of roles that responds to family needs. "…So when our child is sick or fussy, my husband already understands… "So there is a distribution of work, although it is not formally written" (M010). "…Thank God, my husband and I work together well… if I am busy and my child defecates, my husband helps me take care of him…" (M07). "If I work, my husband bathes and feeds him. Later, I take over in the afternoon to play with him" (M07).

This collaborative parenting pattern not only strengthens emotional support within families but also reflects cross-system interactions in ecological theory, influencing children's holistic development. In the microsystem, the mother and father complement one another's roles; for instance, the mother accompanies the child to health services, while the father engages in play at home. At the mesosystem level, spousal communication and joint decision-making strengthen role harmony and coordination. This finding signifies a shift in fathers' roles from being mere supporters to becoming equal partners in caregiving, including feeding and play, reflecting not only changes at the microsystem level but also strengthened coordination within the mesosystem (e.g. spousal communication and shared parenting decisions) and evolving macrosystem norms regarding gender roles in childcare.

Table 2. Themes, subthemes, and examples of codes derived from the data

Main Theme	Subtheme / Category	Examples of Codes (from FGD Data)
Adjustment of feeding based on children's needs and preferences	• Food texture modification • Ingredient substitution • Creating a positive mealtime atmosphere • Attractive food presentation • Flexible portion and frequency	Softening rice for easier swallowing; mixing eggs with rice; replacing rice with cassava or taro; making food into fun shapes; reducing portion size when the child refuses to eat
Realistic acceptance of children's development	• Acceptance of developmental variation • Adjusting parental expectations • Maintaining optimism • Flexible caregiving responses	Not forcing the child to walk early; comparing development with peers to reduce anxiety; focusing on progress rather than delay; following the child's own pace
Negotiating parenting with the extended family	• Educating grandparents • Compromising without conflict • Maintaining parenting principles • Respectful communication • Gradual behavioral change	Explaining picky eating and food refusal to grandparents; allowing snacks but limiting timing; politely correcting feeding habits; balancing obedience and parental authority
Collaboration between fathers and mothers in parenting	• Shared daily caregiving • Reflective spousal communication • Alignment of parenting goals • Flexible time sharing	Fathers feeding or bathing children; alternating caregiving schedules; discussing childcare decisions together; cooperative handling of sick or fussy children
Emotional management and spiritual resilience	• Self-affirmation • Spiritual coping • Stress regulation • Emotional withdrawal for recovery • Strengthening self-confidence	Telling oneself to stay patient; praying during stressful moments; taking deep breaths; pausing before responding to tantrums; viewing parenting as a trust
Creative stimulation using simple media	• Homemade educational toys • Learning through daily activities • Environmental exploration • Role play • Music-based stimulation	Toys from used bottles; teaching self-care routines; outdoor play; pretend games; singing and sound-guessing activities
Active and selective information-seeking	• Participation in health services • Consultation with health workers • Online learning • Social media use • Critical information filtering	Regular attendance at Integrated Health Posts; asking midwives for advice; following pediatricians on Instagram; adapting online advice to child condition
Communicative parenting	• Egalitarian dialogue with children • Gentle and respectful language • Daily conversations for bonding	Talking rather than ordering; careful word choice to avoid hurting feelings; routine conversations to build emotional closeness

Client- Centered Nursing Care

Emotional management and spiritual resilience

This strategy reflects parents' efforts to manage negative emotions, practice patience, and achieve calmness through prayer and spiritual reflection. Five aspects were identified: (1) self-affirmation, (2) spiritual support, (3) stress regulation techniques, (4) resilience through solitude, and (5) reflection and self-confidence building. Mothers developed internal mechanisms to maintain emotional balance and psychological resilience, including self-talk, affirmations, and relaxation techniques to manage stress. Spiritual beliefs functioned as protective factors, reinforcing both moral responsibility and psychological strength in parenting. "I get tired, but I always tell myself, 'Be patient,' you can do this" (M06). "I always remember that this is a trust, so I must stay strong" (M03). "If I start feeling stressed, I take a moment alone, breathe, then continue again" (F02). "When my child has a tantrum, I stay quiet first, take a breath, then recite a prayer to be patient" (M04). This strategy illustrates how the microsystem (direct parenting) and macrosystem (spiritual and cultural values) interact to shape adaptive responses to parenting pressures.

Creative stimulation using simple media

Creativity in child stimulation at home involved 5 aspects: (1) educational toys made from everyday materials, (2) stimulation through daily activities, (3) exploration of the surrounding environment, (4) role play and symbolic games, and (5) motor and affective stimulation through music.

Parents, particularly mothers, used structured, enjoyable stimulation strategies, including joint play, daily routines, encouraging independence, and involving children in household activities. “Even though my child cannot speak fluently yet, I still talk to him, teach him to wash hands, comb his hair, and choose his clothes” (M06). “I run around with him, sometimes play football, sometimes draw. I also make toys from used bottles; he likes it very much and at the same time learns colors” (F04). “I use used bottles to play guessing games with sounds. He likes it when he can guess” (F09).

Creative stimulation in families with limited resources reflects adaptive strategies across ecological system layers. At the microsystem level, parents used local materials, symbolic play, singing, and dialogue to stimulate cognitive, social, and motor aspects. At the mesosystem and exosystem levels, environmental limitations triggered innovation, while family-community interactions provided supportive resources. This strategy highlights stimulation as a protective factor, using social and cultural environments to promote adaptive and sustainable parenting practices (Bronfenbrenner, 1979; UNICEF, 2021).

Active and selective information-seeking

This proactive strategy included 5 aspects: (1) accessing and participating in formal services, (2) utilizing health counseling, (3) learning through online media, (4) using social media for child behavior insights, and (5) independent initiatives to seek information. Mothers regularly attended “integrated health posts” to monitor children’s growth and development, consulted health workers, and sought information on complementary feeding (MPASI) recipes and parenting tips online. “I join the ‘integrated health post’ every month, so I know whether my child’s height and weight are appropriate” (M09). “I sometimes check Instagram parenting and social media; there are many tips on cooking MPASI and handling tantrums” (M08). “…because my child’s growth is slow, I learn from other parents” (M06). “I often follow pediatricians’ Instagram accounts, but I still adjust the advice to my child’s condition” (M07).

Communicative parenting

The communicative theme consists of 3 initial subthemes: (1) establishing an egalitarian dialogue with the child, (2) employing gentle and respectful language, and (3) fostering daily conversations as a means of emotional bonding. Communicative parenting refers to parents’ awareness of the importance of speaking openly, attentively, and respectfully toward both their children and their partners within the parenting context. The findings highlight that effective communication serves not only to convey messages but also to show that the child’s voice is valued, strengthening emotional connections and fostering the child’s self-confidence. “Talks with her child rather than merely giving orders, emphasizing the significance of even small conversations” (M01). “I expressed carefulness in word choice, concerned that the child might feel sad or inferior” (F09).

These findings are closely aligned with the fifth carative factor in Watson’s theory of human caring, namely the promotion and acceptance of the expression of positive and negative feelings. Within this framework, communication imbued with empathy and respect enables children to express both positive and negative emotions safely while nurturing mutual trust. Gentle communication thus bridges a helping, trusting relationship, which is the essence of transpersonal caring.

Findings show that parents’ proactive information-seeking connected microsystem interactions (parent-child and health workers) with mesosystem links (family, health services, and digital media). Parents critically selected information to match their children’s conditions, influenced by exosystem and macrosystem factors such as health policies, cultural norms, and family values. This adaptive approach reflects resilience, reflective capacity, and a strong commitment to nurturing despite limitations (Bronfenbrenner, 1979; UNICEF, 2021).

Discussion

Adjustment of feeding based on children’s needs and preferences

The findings revealed that adjusting feeding practices is an adaptive strategy parents use to respond to their children’s preferences, abilities, and conditions when consuming daily meals. This study identified 5 main adjustments: food modification, ingredient substitution, regulation of the mealtime atmosphere, attractive presentation, and adjustments to feeding frequency and portion sizes. These strategies operate at the microsystem level, involving direct interaction between parents and children during meals, where modifications in food form and texture serve to align with children’s oral motor abilities and sensory preferences. A study by Tournier et al. (2021) emphasizes the importance of adjusting food texture to children’s developmental needs during complementary feeding, as children’s ability to accept different textures increases with age and is strongly influenced by

repeated exposure. Preschool children generally prefer foods without particles and with softer textures, largely due to food neophobia and sensory sensitivity (Chow et al., 2024). These findings reinforce that gradual adjustment of food texture by parents represents an adaptive microsystem-level response to enhance children's acceptance of meals.

Beyond texture, substituting local ingredients such as pumpkin flour and tempeh in snacks for children aged 3–5 years not only increases fiber and nutrient content but also reflects interactions between the exosystem (availability of local food) and the macrosystem (cultural values and dietary habits). Research indicates that such substitutions are well received by children and have potential for stunting prevention (Sofiyatin, 2022). Furthermore, the findings align with evidence from Peru, which highlights that children's feeding practices are influenced by complex interactions across ecological system levels, ranging from individual attributes and the physical environment (microsystem), family health service relationships (mesosystem), to public policy (macrosystem) (Rozas & Busse, 2022). Thus, food modification strategies that account for children's sensory aspects, local availability, and social environmental dynamics should be developed contextually to support healthy eating practices in children.

Realistic acceptance of child development

The study revealed that parental acceptance of developmental delays reflects a caregiving strategy grounded in empathy, reflection, and realism when responding to the child's overall condition. This strategy is evident in accepting developmental variations, adjusting expectations, providing consistent caregiving with optimism, and flexibly adapting parenting. According to Bronfenbrenner's ecological theory, this strategy operates across system levels. At the microsystem level, parents' acceptance of developmental variation shows up in empathetic daily interactions, while at the macrosystem level, family values and cultural norms shape how parents interpret their child's condition.

Parental acceptance of developmental variation provides a foundation for empathetic, realistic parenting strategies. This finding aligns with previous studies showing that parents of children with special needs undergo a complex emotional process of adjusting expectations, developing coping strategies, and ultimately achieving resilience and positive growth as they navigate the realities of caregiving (Alós et al., 2022; Magidigidi-Mathiso et al., 2025). Optimism has also been shown to significantly predict parental resilience in facing parenting challenges (Broll et al., 2025). From an ecological perspective, optimism is not only shaped by internal individual factors. It is also reinforced by social support within the mesosystem (e.g. family and community networks), which strengthens parental coping capacity. Consistent caregiving behavior grounded in optimism reflects a form of psychological resilience essential for sustainable child-rearing.

In addition, evidence from a systematic review confirms that daily routines are positively associated with various aspects of child development, including cognitive, socioemotional, and mental health outcomes (Selman & Dilworth-Bart, 2024). Within the ecological framework, routines serve as protective factors at the microsystem and mesosystem levels, creating stable structures for children even in challenging caregiving environments.

Negotiation of parenting with extended family

The findings revealed that parents, particularly mothers, use negotiation strategies in parenting to address intergenerational differences in values and caregiving practices in rural communities that still uphold the extended family's role. These strategies include educating extended family members about feeding practices, compromising on traditional values, maintaining consistent principles, exercising authority respectfully, and adopting an educational approach to change. From Bronfenbrenner's ecological perspective, these dynamics sit at the intersection of the microsystem (direct interactions among parents, children, and grandparents) and the macrosystem (cultural values that position the extended family as a significant authority in caregiving).

These findings align with global studies showing intergenerational negotiation in parenting practices, particularly around child feeding. For example, research in China revealed that differences in beliefs between parents and grandparents reflect tensions between past experiences and modern nutritional orientations (Zhang et al., 2015). Similarly, a study in the United Kingdom found that grandparents tended to apply less adaptive practices, such as using food for emotional regulation. However, they could also contribute positively by fostering healthy mealtime environments and aligning with parental feeding practices when highly involved (Farrow, 2014).

Unlike previous studies that highlighted intergenerational differences in formula preferences, sweet snack provision, and disparities in sources of information

(Quak et al., 2025; Eli et al., 2017), this study found that value differences between parents and grandparents are often negotiated through measured compromises by parents and adaptive compliance by grandparents. This finding aligns with Clark, who reported that parents maintain control by setting boundaries while still allowing space and showing appreciation for grandparents who support their parenting rules (Clark et al., 2020).

Within the ecological framework, such negotiation reflects an adaptive mesosystem mechanism, where cross-microsystem relationships (parents' and grandparents' households) interact to shape parenting practices. At the same time, the chronosystem comes into play as traditional and modern values converge as times change, access to information grows, and nutritional knowledge advances. Thus, parental negotiation strategies not only ensure consistent caregiving but also maintain harmonious, collaborative relationships with previous generations while prioritizing the child's best interests.

Collaboration between fathers and mothers in parenting

The findings revealed that collaboration between fathers and mothers is fundamental to parenting, particularly in families facing the challenges of stunting. This study identified collaboration in child-rearing through cooperative caregiving, reflective communication, value alignment, and flexible sharing of parenting time. From Bronfenbrenner's ecological theory perspective, this collaboration lies at the core of the microsystem, where direct and intensive interactions between parents shape the quality of children's daily experiences.

These findings align with previous research identifying 38 practical strategies parents use to manage children's daily routines equitably, including scheduled coordination between partners, structured activity planning, adaptability to sudden changes, and flexible turn-taking in caregiving (Schaber et al., 2024). Fathers' involvement in everyday caregiving is higher in families with stable relationship structures and an equitable division of roles (Meggiolaro & Ongaro, 2019).

Paternal involvement not only alleviates the mother's burden but also strengthens the mesosystem, where positive interactions between parental roles create a more supportive home environment. This dynamic enhances mothers' emotional well-being and supports healthy family functioning, particularly when parents raise cooperatively (D'Orsi et al., 2023). Support for cooperative parenting practices has also been shown to be positively correlated with healthier child feeding behaviors, both among mothers and fathers (Douglas et al., 2021).

Thus, these findings affirm that parental collaboration functions not only as an internal household strategy but also as both a product and driver of mutually reinforcing cross-ecological interactions. A collaborative parenting approach can support children's health and the long-term balance of family relationships.

Emotional regulation and spiritual resilience

The findings indicated that emotional regulation and spiritual resilience are critical elements supporting parents' psychological stability when facing the challenges of raising children with stunting. From Bronfenbrenner's ecological perspective, these factors operate across multiple system levels, ranging from the microsystem (direct parent-child interactions and spiritual support within the nuclear family), mesosystem (interrelations across environments such as religious communities, parental support groups, and health services), to the macrosystem (cultural values and religious norms shaping parental interpretations of caregiving challenges).

This strategy encompasses self-affirmation, spiritual support, stress regulation, resilience in solitude, and reflective practices to strengthen self-confidence. Previous studies show that family beliefs about stunting, such as the perception that stunting is hereditary or will resolve with time, significantly influence parenting practices. When such beliefs are not accompanied by open communication and strong family organizational structures, they may undermine family resilience in preventing and addressing stunting (Rahmadiyah et al., 2024).

The present findings support the importance of self-affirmation and spiritual support in parenting children with chronic conditions. Spiritual interventions have been shown to enhance self-efficacy and reduce maternal psychological burden significantly (Bagheri et al., 2025). Meaningful spiritual practices are not only emotionally relevant but also clinically effective in strengthening parental resilience, enhancing life meaning, and sustaining adaptive caregiving behavior (Pandya, 2016).

These findings also reinforce earlier evidence that parents' ability to regulate negative emotions influences their parenting self-efficacy and children's eating habits (Sagui-Henson et al., 2020). Within the ecological framework, emotional regulation can be viewed as an internal protective factor within the microsystem, which is further reinforced by social and spiritual support in the

mesosystem. A supportive macrosystem, shaped by religious values and community norms, also plays a crucial role in sustaining these strategies.

Creative stimulation using simple media

The findings revealed that parents demonstrated creativity in stimulating their children's development by using simple media available in their environment. These strategies included simple toys, daily activity-based stimulation, environmental exploration, role play, and music to support child development. From Bronfenbrenner's ecological theory perspective, these strategies operate at the microsystem level through direct parent-child interactions, where daily activities and play provide avenues for stimulation. The mesosystem is reflected in community support and the use of local physical environments that provide resources for creative play. At the same time, the macrosystem shapes these practices through cultural values that emphasize using local resources and simple yet meaningful caregiving practices.

This parenting creativity was evident in the use of educational toys made from readily available materials, stimulation through daily routines, exploration of the surrounding environment, symbolic play and role play, and the use of music to foster children's motor and affective development. Using music and singing as part of daily activities provides stimulation that is inexpensive, easily accessible, and effective in supporting children's communication and emotional development (Papadimitriou et al., 2021). These findings highlight that parenting strategies based on environmental exploration and daily activities, including musical stimulation, tangibly impact children's growth and development.

In addition, using educational toys made from available materials underscores the relevance of the loose parts concept. A systematic review indicated that similar play materials significantly promote creativity, problem-solving, and divergent thinking in children (Cankaya et al., 2025). Within the ecological framework, this practice not only optimizes the use of local physical resources but also encourages social interactions that stimulate cognitive development, while integrating cultural values of independence and creativity. Thus, parents' creativity in using simple media to stimulate children reflects the synergy among local resources, caregiving interactions, and supportive cultural values, collectively strengthening a stimulating developmental environment for children.

Active and selective information seeking

The findings revealed that parents proactively enriched their parenting knowledge through active, selective information-seeking practices. These strategies included accessing formal services, participating in health education, engaging in online learning, using social media, and independently seeking reliable information. Within Bronfenbrenner's ecological framework, these practices operate at the microsystem level through direct parent-child interactions supported by continuously updated knowledge. The mesosystem is reflected in connections between families and health services, online communities, and social networks as information sources. The exosystem operates through health policies, service infrastructure, and access to information technology, while the macrosystem shapes parenting and literacy through norms, cultural values, and global trends.

The strategies identified in this study included participating in formal services, engaging in health education, learning through online media, using social media to understand children's behavior, and independently seeking relevant and reliable information. These findings align with previous research showing that health dialogues effectively increase parental participation in formal services. Through structured, participatory approaches, such dialogues provide opportunities for active involvement by both parents and children while strengthening their understanding of relevant health issues (Håkansson et al., 2019). This condition reflects responsive, service-based parenting and underscores the importance of open communication between parents and healthcare providers (Håkansson et al., 2019).

At the same time, parents also actively and selectively sought information, using digital media to access knowledge about children's health and development. Approximately 91% of parents accessed information through digital platforms, with search engines and parenting websites as primary sources because they are accessible at all times (Jaks et al., 2019). Limited access to health services and the need for greater independence in caregiving encouraged parents to seek practical information from various sources, including family, friends, and trusted, credible, accessible, and relevant online communities (Hendry et al., 2024).

Thus, active and selective information-seeking strategies illustrate the integration of individual factors, social environments, and structural support as emphasized in ecological theory. This approach shows that knowledge-based parenting depends not only on personal motiva-

tion but also on the availability of resource networks that support parents' ongoing learning.

Communicative parenting

The findings indicate that open, gentle, and attentive communication between parents and children, as well as between partners within the family, constitutes a crucial pillar in fostering attachment and caring-based parenting. Such communication creates space for children to express themselves, strengthens emotional bonds, and supports psychosocial development, while also facilitating the transmission of values and parenting practices sensitive to the child's needs. Previous studies have also emphasized the central role of parental communication in building a caring foundation for children. Munna et al. (2021) demonstrated that open, compromising, and supportive communication patterns, expressed through play, storytelling, and ice-breaking activities, effectively enhanced emotional development in children aged 4–5 years, particularly during periods of social and physical distancing. This finding is further supported by Permatasari et al. (2020), who found that family intimacy during the pandemic depended not only on the time spent together, but on fathers, mothers, and children's ability to understand their roles and communicate effectively. These studies highlight that attentive, harmonious communication within the family, both between parents and children and between partners, is central to fostering a responsive, communicative parenting climate. In line with Bronfenbrenner's ecological systems theory, such open and supportive interactions are key microsystem processes that shape emotional attachment and caregiving foundations, while broader mesosystem and exosystem factors, such as social coordination and cultural context, also influence them, making family communicative quality a vital determinant of children's psychosocial development.

This study has several limitations that should be acknowledged. First, the qualitative design and purposive sampling limit the generalizability of the findings to contexts beyond similar rural settings in Indonesia. Second, data were collected through FGDs, which may have influenced participants' responses due to social desirability or group dynamics. Third, although both fathers and mothers were included, the findings primarily reflect parental perspectives and do not capture the views of other key stakeholders such as grandparents, health workers, or community leaders. Finally, this study focused on families with stunted children aged 6–59 months, and therefore the findings may not apply to younger infants or non-stunted populations. Despite these limitations, the study provides rich, contextually grounded insights into adaptive parenting strategies within an ecological framework.

Study implications

This study underscores the relevance of Bronfenbrenner's ecological systems theory in understanding caregiving strategies for children experiencing stunting, where the eight identified strategies are systematically embedded within ecological layers. At the microsystem level, direct parent-child interactions such as feeding routines and play-based stimulation form the foundation of responsive care; the mesosystem reflects collaboration among parents, extended family, and health professionals; the exosystem involves access to healthcare services, information networks, and community resources; and the macrosystem is shaped by cultural values, intergenerational norms, and spiritual beliefs. Practically, these findings provide actionable insights to strengthen caregiving capacity through low-cost, locally sourced educational play, shared caregiving time between parents, and the integration of self-affirmation or spiritual practices to manage stress. At the community and policy levels, fostering intergenerational dialogues, culturally grounded participatory nutrition education, integrated parenting consultations, and equitable digital access to evidence-based parenting resources can enhance the contextual adaptability and sustainability of stunting interventions across diverse sociocultural settings.

Conclusion

Based on the thematic analysis, parents of stunted children develop 8 adaptive parenting strategies in response to various challenges within their social environment. These strategies reflect flexibility in decision-making, sensitivity to children's needs, and creativity in creating a supportive environment. Bronfenbrenner's ecological theory serves as the primary framework for understanding how interactions within the microsystem (nuclear family and children), mesosystem (extended family and health services), and exosystem (media and surrounding environment) mutually influence and shape contextual and adaptive parenting patterns. Parental efforts to use resources across ecological levels, along with effective communication and collaboration between systems, strengthen parenting effectiveness in supporting the optimal development of stunted children. Open, gentle, and attentive communication within the family provides a strategic foundation for caring-based parenting that responds to children's needs, while also shaping emotional

attachment and fostering psychosocial development within the family's ecological framework.

Ethical Considerations

Compliance with ethical guidelines

The Ethics Committee of the Faculty of Health Sciences, Muhammadiyah University of Jember, granted ethical clearance for the study protocol (Code: 0115/KEPK/FIKES/XII/2024). The research adhered to the WHO-CIOMS Ethical Guidelines (2016). All participants were informed of their right to withdraw at any time without consequences, and we ensured data confidentiality by using anonymous codes throughout transcription and publication of the study results.

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Authors' contributions

Conceptualization, study design, data analysis and interpretation: Nikmatur Rohmah; Data collection: Awatiful Azza and Ely Rahmatika Nugrahani; Writing and final approval: All authors.

Conflict of interest

The authors declared no conflict of interest

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