

ORIGINAL ARTICLE

Lessons Learned from the Increasing Stunting Prevalence in North Lampung, Indonesia: A Qualitative Case Study

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ABSTRACT

Introduction: Quantitative studies on stunting are abundant globally and in Indonesia, yet qualitative evidence on factors driving increases in stunting prevalence remains limited. This study explores determinants of rising stunting prevalence in North Lampung, Indonesia. **Methods:** A qualitative case study was conducted involving 22 informants: five members of the North Lampung regency stunting reduction acceleration team from various regional government organizations; four representatives from sub-district and village-level government and functional officers in local health and education units; and 13 families at risk of stunting or with stunted toddlers. Participants were purposively selected from July to August 2023. Data were collected through in-depth interviews and focus group discussions and analyzed thematically. **Results:** Four major themes emerged: (1) Individual factors, including self-awareness, parenting practices, knowledge, socio-economic conditions, and stigma; (2) Environmental factors, covering sanitation, cultural practices, and land use; (3) Commitment factors, related to leadership and institutional roles, funding, and program implementation; and (4) Cross-sector collaboration, particularly inter-organizational coordination. **Conclusion:** Addressing stunting requires shared responsibility beyond government efforts alone. Strengthening advocacy and optimizing cross-sector collaboration through a penta-helix approach—integrating government, academia, business, community, and media—are essential to accelerate stunting reduction.

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INTRODUCTION

Stunting is a condition of growth failure in children under five years of age due to chronic malnutrition, especially during the first 1,000 days of life. Stunted children are those whose body length or height for age, compared to a z-score value, is less than -2 SD (Standard Deviation), and severely stunted children are those with a z-score value less than -3 SD (1). According to the Joint Child Malnutrition Estimates (JME) 2023 released by the

United Nations Children's Fund (UNICEF), the WHO, and the World Bank Group, the global prevalence of stunting among children under five in 2022 is estimated to be 22.3 percent, or approximately 148.1 million children. Of this number, about 52 percent, or 76.6 million children, are from Asia, and 43 percent, or 63.1 million children, are from Africa (2).

Stunting can occur from the time the fetus is still in the mother's womb and is only visible when the child is two years old (3). Estimates suggest that by 2025, 127 million children under five could suffer from stunting if this condition persists. Therefore, the World Health Organization (WHO) set a target to reduce the incidence of stunting by 100 million children under

five (4). According to the 2018 Indonesian Basic Health Research report, stunting affected 30.8 percent of children under five in Indonesia, or approximately 7 million children (5). This places Indonesia fifth in the world for the highest prevalence of stunting, and it must have a target for reducing stunting rates (6). In the 2020-2024 National Medium-Term Development Plan, the Indonesian government aims to reduce the national prevalence of stunting to 14% by 2024. Although the prevalence of stunting decreased to 24.2% in 2021 (7), the results of the 2022 Indonesian Nutritional Status Survey showed that the stunting rate was still relatively high at 21.6% (8).

Stunting is associated with an increased risk of illness, death, and impaired motor and mental development (9). Additionally, stunting makes children more susceptible to illness. Stunted children tend to become overweight and have a higher risk of developing non-communicable diseases such as hypertension, diabetes, cancer, and others in adulthood (10). Based on 2021 Indonesian Nutritional Status Survey data, North Lampung Regency ranked 8th highest in Lampung Province for stunting prevalence (20.2%) (7). However, in 2022, the prevalence of stunting in North Lampung Regency actually increased to 24.7%, making North Lampung regency the second highest regency out of 15 regencies/cities in Lampung Province with stunting prevalence (8). This figure is far from the target of reducing the prevalence of stunting in the North Lampung regency to 17.1% by 2022 (7).

Quantitative research on risk factors for stunting has been widely conducted both globally (11,12) and in Indonesia (13,14). However, qualitative research on the factors influencing the increasing prevalence of stunting has not been widely conducted. The purpose of this study is to explore the factors influencing the increase in stunting prevalence in the North Lampung regency. The results of this research are expected to provide input regarding concrete steps that can be implemented to address obstacles and challenges in accelerating cross-sectoral stunting management at the regional level.

MATERIALS AND METHODS

Study Design and Study Settings

This qualitative case study was conducted from July to August 2023, in one of the villages in Abung Semuli District, North Lampung Regency, Lampung Province, Indonesia, which in 2023 was the location for the implementation of the North Lampung regency-level stunting case audit, agreed upon across sectors during the routine stunting team meeting.

Additionally, based on the 2021 Family Data Collection by the National Population and Family Planning Agency, Abung Semuli district was also the 11th district with the highest number of families at risk of stunting out of a

total of 23 districts in North Lampung regency. Data from the verification and validation of that data show that there are 16 families at risk of stunting in the area that was used as our study location.

Participants

We recruited 22 informants, including five individuals from the North Lampung regency stunting reduction acceleration team representing 5 regional government organizations within the Specific Intervention Services, Sensitive Intervention Services, Behavior Change and Family Support, Coordination and Convergence, and Data, Monitoring, Evaluation, and Knowledge Management sectors. Additionally, four individuals were from the sub-district and village government levels, as well as functional officials at the regional technical implementation unit of the North Lampung regency health and education offices. We also purposively recruited 13 individuals from families at risk of stunting and families with stunted children under five.

As for the inclusion criteria: 1) Personnel included in the stunting reduction acceleration team at the North Lampung regency level and those directly involved and knowledgeable about the stunting reduction acceleration convergence action in North Lampung regency, originating from regional government organizations. Additionally, functional officials working at the regional technical implementation unit, who were directly involved and knowledgeable about stunting reduction efforts at the village or work area level, were recruited as part of the data validation efforts; 2) Family members categorized as stunting risk families based on the 2021 Family Data Collection by the National Population and Family Planning Agency, as well as families with stunting toddlers in the selected locations for the stunting case audit, were also included. This study excluded officials and family members who declined to participate as informants.

Data Collection

A semi-structured interview guide, consisting of open-ended questions related to factors influencing stunting, particularly those causing the increase in stunting prevalence, was used to collect data. In-depth face-to-face interviews were conducted with nine informants directly involved in the stunting reduction acceleration team. Additionally, a focus group discussion (FGD) was conducted with 13 high-risk stunting family members and families with stunting toddlers for data collection purposes.

Both the face-to-face, in-depth interview and the FGD were performed in Bahasa Indonesia, lasting between 45 and 60 minutes, and being audio-recorded. Notes were recorded during the interviews and FGD to augment the interview scripts. Data retrieval ceased upon reaching saturation, as no additional information could be acquired. The number of participants did not increase.

Data Analysis

The collected data was then analyzed using thematic analysis. The data analysis procedures encompassed data familiarization, first code generation, topic identification, theme review, and theme definition and nomenclature. The data presentation used in this study is narrative text. Data validation techniques use source and method triangulation.

Ethical Consideration

The Health Research Ethics Committee of the Faculty of Medicine at Universitas Lampung, Indonesia, approved this study (Number 2388/UN26.18/PP.05.02.00/2023). Data collection was conducted using in-depth interviews and FGD guidelines after ethical clearance was obtained. Research permits have also been approved by the North Lampung District Investment and Integrated One-Stop Service Agency and all regional government organizations and regional technical service units that were used as research locations.

We explained the purpose and benefits of this research to all informants before the data collection process, ensuring their identities remained confidential. Informed consent from the participants was also obtained before the interviews and FGDs were conducted.

RESULTS

Of the nine informants selected from the Regency-level Stunting Reduction Acceleration Team, they came from different regional government organizations, but all informants were involved in efforts to accelerate stunting reduction at the district level (n=5). Additionally, for data validation purposes, several functional officials at the sub-district, village, and relevant regional technical implementation unit levels who were also involved and understood the stunting reduction acceleration program in the research location (n=4) were selected. Based on the characteristics of the informants, the majority are female, with an age range of 25–49 years (Table I).

Of the 13 respondents from families at risk of stunting and families with stunted toddlers, their ages ranged from 17 to 26 years. All informants were female, and the majority were housewives. The characteristics of the FGD informants are presented in Table II.

Results of in-depth interviews with the stunting reduction acceleration team

Based on the results of in-depth interviews with nine individuals involved in stunting reduction efforts at various levels within regional government organizations and the regional technical implementation units, four themes emerged from the in-depth interviews regarding factors influencing the increase in stunting prevalence in North Lampung Regency. The themes include: 1) Individual factors, including individual awareness, parenting practices, knowledge, socio-

Table I. Characteristics of in-depth interview informants (n=9)

Code	Age (year)	Gender	Relevance of job description in stunting reduction acceleration team
C1	40	Female	Coordination, convergence, and planning field
C2	47	Male	District level officials
C3	39	Male	Sensitive intervention services and specific interventions field
C4	39	Female	Behavior changes and family support field
C5	37	Female	Sensitive intervention services and specific interventions field
C6	41	Female	Village government officials
C7	40	Female	Behavior changes and family support field
C8	49	Female	Functional officials at the regional technical implementation unit
C9	25	Female	Functional officials at the regional technical implementation unit

Note: C – Code

Table II. Characteristics of FGD informants (n=13)

Code	Age (year)	Gender	Employment status	Description
C1	25	Female	Housewife	Families with stunted toddlers
C2	23	Female	Housewife	Families with stunted toddlers
C3	26	Female	Housewife	Families with stunted toddlers
C4	25	Female	Housewife	Families with stunted toddlers
C5	24	Female	Housewife	Families with stunted toddlers
C6	25	Female	Housewife	Families with stunted toddlers
C7	26	Female	Self-employed	Stunting risk family
C8	20	Female	Self-employed	Stunting risk family
C9	25	Female	Housewife	Stunting risk family
C10	25	Female	Housewife	Stunting risk family
C11	25	Female	Housewife	Stunting risk family
C12	17	Female	Housewife	Stunting risk family
C13	24	Female	Housewife	Stunting risk family

Note: C – Code

economic conditions, and stigma; 2) Environmental factors, covering sanitation, cultural practices, and land use; 3) Commitment factors, related to leadership and institutional roles, funding, and program implementation; and 4) Cross-sector collaboration, particularly inter-organizational coordination (Table III).

Theme 1: Individual Factors

Individual factors are interpreted as factors that cause an increase in the prevalence of stunting originating from the individual or the community itself. Individual factors consist of five sub-themes: individual awareness, parenting style, knowledge, socio-economic status, and stigma. The majority of informants stated that individual awareness in society regarding the prevention and reduction of stunting is still low (quotes 1-5), parental care, especially in providing food and nutritional intake, is still inadequate (quotes 6-9), parental knowledge about stunted children and families at risk of stunting

Table III. The emerged themes based on informants' responses (n=22)

Theme	Sub-theme	Quote from an interview with the regional-level stunting reduction acceleration team and functional staff at the regional technical implementation unit	Quote of the FGD with families at risk of stunting and families with stunting toddlers
Individual factors	Individual awareness	Q1: "When given counselling by the cadres, they are looked down upon." (C3) Q2: "When we give advice, some of them say, 'My children!'" (C6) Q3: "There are still many toddlers who don't come to the Integrated Service Post, the achievement is still below the 75% target." (C4) Q4: "The awareness that health is important is weak, non-existent." (C2) Q5: "They really don't want to, they don't care." (C8)	
	Parenting practices	Q6: "Only the mother came, the father never came, it's difficult." (C1) Q7: "The father sometimes prioritizes buying cigarettes over buying nutritious food." (C5) Q8: "The parents aren't diligent in feeding their children, they're not creative enough." (C6) Q9: "It turns out this child is often left alone because the parents are working, so they eat chips." (C2)	
	Knowledge	Q10: "If their understanding of nutrition is also lacking, it's difficult." (C6) Q11: "If socialization is only with the patients (stunted), prevention hasn't even started yet." (C6) Q12: "Mothers' knowledge about exclusive breastfeeding is still lacking." (C4)	Q54: "I don't know" (when asked about stunting prevention) (C13)
	Socio-economic conditions	Q13: "There are also those who come from wealthy families" (C6) Q14: "Economically less prosperous" (C5) Q15: "Working mothers sometimes don't bring their children to the health post because they are busy." (C4) Q16: "Not everyone is poor, some are also rich" (C8) Q17: "Stunting is not always directly proportional to poverty" (C3)	Q55: "Not much help, sir" (C3) Q56: "My husband is just a day laborer" (C1) Q57: "Yes, it's difficult, sir..." (C11) Q58: "I hope we can get help with home renovation" (C4)
Environmental factors	Stigma	Q18: "We even marked the homes of families at risk of stunting, but they threw it away, maybe they were embarrassed." (C6) Q19: "We once told them to go to the Integrated Service Post for monitoring, but they were offended and didn't want to go anymore." (C6) Q20: "The person concerned was the one who felt inferior, so a reaction of rejection arose." (C6) Q21: "As soon as we told them their child had stunting, they didn't want to go to the Integrated Service Post." (C8)	
	Sanitation	Q22: "There are still houses where the toilet and well are too close together." (C2) Q23: "Two villages are not open defecation free yet." (C2) Q24: "The kitchen and livestock pen are sometimes combined into one." (C2) Q25: "ODF is a rather difficult task in some focus villages." (C8) Q26: "The houses are indeed unhealthy, and there may be no solution; the goat pen is only about one meter from the house." (C8)	Q59: "The livestock pen next to the house" (C5)
	Cultural practices	Q27: "Born with honey rubbed on them, some were given bananas at one month old, coffee, or green coconut water." (C4)	
	Land use	Q28: "The parents of these stunted children are even too lazy to plant the avocado seedlings that have been distributed." (C6) Q29: "The community has land, but they don't utilize it." (C2) Q30: "The yards are large, but there are no plants." (C8)	
Commitment factors	Leadership and institutional roles	Q31: "There's a lack of support from the leadership; if the top leadership starts taking action, it's impossible for those below not to comply." (C1) Q32: "The political will is lacking; no one is truly concerned." (C5) Q33: "Actually, if the stunting reduction acceleration team were at its maximum, with a push from the leadership, and if from the beginning it was truly directed toward stunting management, it would work." (C5) Q34: "Only a few district government organizations are active and understand; the rest are just on paper." (C7) Q35: "There's a lack of activity from the regional head in viewing stunting as a national priority program." (C1) Q36: "In other districts, the regional head is involved in overseeing the Indonesian Nutritional Status Survey, meaning they can monitor it properly." (C1)	
	Funding	Q37: "It seems the realization of Village Funds in 2022 is a bit low for stunting." (C6). Q38: "What's the point of a policy if it's not supported by budget?" (C5) Q39: "The foster parent program is funded personally, by setting aside from our income." (C5). Q40: "Maybe not all district government organizations have a special fund for stunting." (C4). Q41: "Because there's no budget, well, it's just like this." (C1).	
	Program implementation	Q42: "I'm also confused about the Foster Parent program; it's a good program in theory, but the implementation is unclear." (C5) Q43: "Execute it faster; don't just keep having meetings without any action." (C6) Q44: "So there is no specific achievement targets related to stunting reduction activities." (C5) Q45: "All existing programs don't address the root of the problem." (C5) Q46: "If we're ready with the Foster Parent program, the problem is we don't know the technical details yet." (C2)	
	Cross-sector collaboration	Q47: "Stunting reduction acceleration team meetings at the district level have never been held." (C7) Q48: "I'm also confused about where that report came from. Suddenly, during the stunting discussion, I was told there were 16 cases of stunting here." (C6) Q49: "I wasn't involved at all during the survey." (C6) Q50: "It's like they're just passing the buck." (C5) Q51: "There's still sectoral ego. This is the task of that agency, not ours. Things are still running independently." (C7) Q52: "Activity planning lacks coordination." (C8) Q53: "The Foster Parents program is only at the top level. The information flow down here isn't very clear, and there's no evaluation or follow-up." (C8)	Q60: "Milk is available from the health center, but not everyone gets it." (C6) Q61: "The target group is not accurate." (C10) Q62: "The same people always receive assistance." (C12)

Note: C - Code; Q - quote

is still low (quotes 10-12), the majority of families are economically weak although some stunted children come from affluent backgrounds (quotes 13-17), and there is still stigma and feelings of shame when a child is diagnosed with stunting (quotes 18-21) (Table III).

Theme 2: Environmental Factors

Environmental factors are external factors originating from the surrounding environment, including both the living environment and community culture. Environmental factors consist of three sub-themes: sanitation, culture practices, and land use. Poor sanitation in homes and the environment was a contributing factor to the increase in stunting cases (quotes 22-26), in addition to cultural practices in the community that were still inconsistent with exclusive breastfeeding (quote 27), and the sub-optimal use of yard land for alternative food sources (quotes 28-30) (Table III).

Theme 3: Commitment Factors

Commitment factors are interpreted as commitment from both regional leaders and regional government organization heads to accelerate the reduction of stunting. Commitment factors consist of three sub-themes: leadership and institutional roles, funding, and program implementation. The commitment of leaders and some regional government organizations is felt to be less than optimal in accelerating the reduction of stunting (quote 31-36), and limited budget realization was also a factor hindering the implementation of activities focused on families at risk of stunting or families with stunting toddlers (quote 37-41). Although innovative programs have been created by the regional government, execution in the field still seems less than optimal (quote 42-46) (Table III).

Theme 4: Cross-sectoral cooperation factors

Cross-sectoral cooperation factors consist of one sub-theme: inter-organizational coordination. Cross-sectoral coordination is felt to be less than optimal, making it an equally important factor contributing to the increase in stunting prevalence (quote 47-53) (Table III).

Results of focus group discussion with families at risk of stunting and families with stunted toddlers

Based on the results of the FGD with 13 informants from at-risk families and families with stunted toddlers, three themes emerged from the FGD results as a form of data validation from the in-depth interviews previously conducted regarding the factors influencing the increase in stunting prevalence in our study area.

The themes include: 1) Individual factors with two sub-themes: knowledge and socio-economic status; 2) Environmental factors consist of one sub-theme: sanitation; and 3) cross-sectoral collaboration factors with one sub-theme: inter-organizational coordination (Table III).

Theme 1: Individual Factors

Individual factors are interpreted as factors contributing to the increase in stunting prevalence from community members. These individual factors consist of two sub-themes: knowledge and socio-economic status. The informants interviewed appeared confused and uncertain when responding to questions about the definition of stunting and how to prevent it (quote 54), and indeed, the majority of the informants came from low-income families (quote 55-58) (Table III).

Theme 2: Environmental Factors

Environmental factors are external factors originating from the surrounding environment, including both the living environment and community culture. Environmental factors consist of one sub-theme: sanitation. Poor sanitation in residents' homes and the environment is one of the contributing factors to stunting in this area (quote 59) (Table III).

Theme 3: Cross-sectoral Collaboration Factors

Cross-sectoral collaboration factors consist of one sub-theme: coordination. Cross-sectoral coordination is perceived as still suboptimal, leading to uneven or inaccurate targeting of stunting-related assistance recipients (quotes 60-62) (Table III).

The summary of the in-depth interview results with nine informants and the FGD with 13 informants, presented in Table III.

DISCUSSION

Based on the results of the qualitative analysis, four themes emerged from in-depth interviews regarding factors influencing the increase in stunting prevalence in North Lampung Regency: 1) Individual factors, 2) Environmental factors, 3) Commitment factors, and 4) Cross-sectoral cooperation factors. Meanwhile, for the results of the FGD, which served as a form of data validation, three themes emerged: 1) Individual factors, 2) Environmental factors, and 3) Cross-sectoral cooperation factors.

Individual Factors

Individual Awareness

The still-low level of individual awareness regarding the prevention and reduction of stunting is one of the factors contributing to the increase in stunting prevalence. This is because malnutrition can occur from infancy in the womb and in the early stages after birth, but the condition of stunting only becomes apparent after the age of two years (15). Stunting prevention can be achieved by raising public awareness about the importance of a healthy lifestyle, including providing nutritious and balanced meals (16), conducting classes for pregnant women, providing reproductive health education to adolescents and explaining the impact of early marriage,

promoting personal and environmental hygiene, and maintaining healthy home gardens (16). Given the high number of early marriage cases occurring at our study location, we consider education about early marriage necessary.

Parenting practices

Parenting practices in the prevention and management of stunting are very important. Feeding practices influence the incidence of stunting (17). These poor practices or parenting styles are demonstrated by behaviors such as paying too little attention to self-care during pregnancy, consuming non-nutritious foods, not exclusively breastfeeding infants aged 0-6 months, and making poor food choices or failing to provide supplementary feeding to children (18).

The characteristics of the community-based informants reveal that most of them are housewives with low levels of education. A mother's ability in nutritional parenting depends on her knowledge and experience regarding nutrition (19). This knowledge serves as the foundation for decision-making and raising awareness about stunting prevention (20). In eight sub Saharan African countries, children of mothers in the high nutrition knowledge group had 17% lower odds of stunting and 22% lower odds of wasting than those of low knowledge mothers (21).

Knowledge

In this study, based on interview results, it was found that the majority of parents with stunted children and families at risk of stunting still have low knowledge, particularly regarding efforts to prevent stunting. Maternal knowledge about nutrition plays a crucial role in reducing childhood stunting rates in sub-Saharan Africa (21). An Indonesian study found maternal knowledge was a strong predictor of behavior in fulfilling nutritional needs among stunted children under five (22).

Some strategies that can be implemented to increase the knowledge of families with stunted children, families at risk of stunting, including for counselors and extension workers in efforts to prevent stunting, can include providing education about immediate breastfeeding, exclusive breastfeeding, complementary breastfeeding, and breastfeeding up to 2 years (15), providing training for counsellors/health cadres (23), and local government efforts to provide facilitators to increase the knowledge and skills of extension workers (24).

Socio-economic conditions

The majority of families with stunted children under five and families at risk of stunting at the stunting locus in this study come from low-income families where the mother is a housewife and the husband is a daily wage laborer. This data is consistent with previous research showing that poverty is related to the incidence of stunting in toddlers (25). At broader scales, low household wealth

or poorest quintile consistently predicts higher stunting in Kenya (26). A Chinese national study found children in the lowest income group had 2.58 higher odds of stunting than those in the highest income group. This means that improving the socioeconomic status of the community can help accelerate the decline in stunting incidence (27).

Although some stunted toddlers in this study also came from relatively well-off families with working parents. This is likely related to parenting styles. Mothers who work outside the home can lead to children being neglected, as toddlers rely heavily on their caregivers or other family members. In China, maternal employment and more working days were significant predictors of stunting (28).

Stigma

The results of this study indicate that there is still stigma in society toward toddlers and families with stunted children. Negative stigma manifests as stereotypes, discrimination, and social rejection, causing stunted children to withdraw (29). The phenomenon has resulted in parents refusing to attend an "integrated service post," a community-based health center to provide a range of services for mothers and children under five in Indonesia, making it difficult to monitor children's growth and development. In Northwest Ethiopia, among mothers of undernourished (including stunted) children, perceived stigma about having an undernourished child doubled the odds of maternal depression (30).

Social stigma is a negative social judgment and devaluation of a person or group of people because of a certain characteristic and specific disease (31), expressed through stereotypes, prejudice, and discrimination (32). Negative stigma and discrimination still pose challenges in controlling stunting in children. Caregivers of undernourished or stunted children often experience blame, shame, and social judgment, which is linked to maternal depression and poorer caregiving and feeding practices, reinforcing child undernutrition (14).

Environmental factors

Sanitation

Improving sanitation infrastructure in homes and the environment, as well as reducing open defecation rates, will help accelerate the decline in stunting. In rural Cambodia, improved community sanitation reduced stunting risk in infants 1–6 months, while open defecation was associated with over twice the prevalence of stunting (33). This is consistent with a systematic review and meta analysis of developing countries that found that lack of sanitation significantly increased stunting in most included studies, supporting WASH (water, sanitation, hygiene)—especially sanitation—as a key vulnerability factor (34). In the village where this research was conducted, there are still two villages that

are not open defecation free (ODF), and there are still houses with septic tank and well distances <10 meters, which do not meet the criteria and standards for healthy latrines (35).

Additionally, limited home space and families unwilling to relocate livestock pens due to fear of theft contribute to poor sanitation in homes and living environments. To address this issue, we need strong cross-sectoral commitment and cooperation. The village community empowerment agency, along with village officials and the village-level stunting reduction acceleration team, need to undertake integrated strategic efforts, such as conducting home renovations using village funds, which has been provided by the Indonesian government as the national priority program for the prevention and reduction of stunting (36).

Cultural practices

In this study, it was found that cultural factors that pose a risk of causing stunting in toddlers include applying honey to newborns and giving other foods or drinks such as bananas, coffee, and green coconut water when the baby is less than six months old. Introducing complementary foods before 6 months provides no nutritional advantage in healthy term infants in developed settings and can reduce total human milk intake (37). Compared with 6 months of exclusive breastfeeding, mixed feeding from 3 to 4 months is associated with a higher risk of gastrointestinal infection in infancy (38). Systematic and local studies show that traditional beliefs about child feeding, low responsive feeding, and time constraints for childcare are linked to stunting in Asian settings (18). In Indonesia, traditional feeding practices such as food restrictions during pregnancy, prelacteal feeds, and food taboos for toddlers (e.g., avoiding red meat and eggs) markedly increased stunting odds (39).

Land use

The practice of simultaneous utilization of backyard land affects the reduction in stunting incidence. Lack of motivation and experience in utilizing backyard land within a family can indirectly affect the increase in stunting cases due to unproductive land and insufficient family food (40). Owning or using a home/backyard garden is associated with higher dietary diversity and better nutritional outcomes for households and children in Guatemala (41).

It was found that families with stunted toddlers tend to be lazy about utilizing their yard space to grow plants that can be a source of food. The village government provided them with seedlings, but they still showed reluctance to utilize the available yard space. The family's daily food needs from backyard gardens will greatly help with family food availability and food security to prevent stunting (40). Lack of motivation, skills, and experience to cultivate backyard land can therefore keep land unproductive, limiting vegetable

availability, dietary diversity, and income—factors repeatedly tied to higher stunting prevalence (42).

Commitment factors

Leadership and institutional roles

Based on the results of in-depth interviews with informants from the district-level stunting reduction acceleration team, most acknowledged that commitment, particularly from the leadership and regional government organizations within the district-level stunting reduction acceleration team, still needs to be optimized. The regent, as the steering committee chairman, had actually committed to issuing a policy in the form of a decree regarding the stunting reduction acceleration team for North Lampung regency. The decree already includes the composition of the North Lampung regency stunting reduction acceleration team, complete with the institutions/agencies, positions within the team, and the details of each member's duties (43).

Strong political leadership and the presence of a government bureaucracy that ultimately fostered cooperation between development partners and civil society, including community involvement, significantly contributed to the program's commitment to accelerating the reduction of stunting. A narrative review highlights that multisectoral national strategies only work when backed by supportive policies and leadership that integrate nutrition into health, education, agriculture, WASH, and social protection (15).

Funding

One of the main causes hindering the acceleration of stunting reduction efforts in North Lampung regency is the lack of budget support, especially from the regional budget, for activities specifically intended for stunting toddlers or families at risk of stunting. This data is consistent with the results of in-depth interviews with the district-level stunting reduction acceleration team; most of the informants mentioned that difficulties in the implementation stage were due to limited funding.

There needs to be an increase in the budget and implementation of programs/activities related to stunting reduction at the village level, in accordance with the mandate of presidential regulation (44). Qualitative study on national convergence policy notes that, once local leaders understood stunting, district stunting budgets increased meaningfully, and convergence implementation improved; villages can legally use village fund allocation for nutrition-specific and -sensitive actions, but many still allocate only 0.3–4.4% for nutrition-specific activities (45).

Program implementation

In terms of planning, the regional government has actually attempted innovation by creating the Foster Parents program through North Lampung Regent's

Decree (43). The decree mandates that officials, from heads of regional government organizations, heads of sections, sub-district heads, heads of state elementary and junior high schools, and heads of public health centres, coordinate, synergize, and provide assistance at locations designated as stunting foster parents for toddlers at the sub-district level down to villages and urban areas within North Lampung regency. Each person appointed is responsible for being a foster parent to one to two stunted toddlers according to the division in the decree. The assistance provided consists of nutritious food such as chicken eggs, chicken meat, and milk, which is distributed regularly and delivered directly to each target recipient. Next, evaluations will be conducted every six months, and activities must be reported to the Regent through the Deputy Regent, who serves as the head of the stunting reduction acceleration team.

Actually, this innovation program is already excellent in helping to accelerate the reduction of stunting in North Lampung Regency, but it seems that most of the designated regional government organizations/agencies/regional technical service units have not yet implemented this program. In situations like this, strong, hands-on leadership plus systematic monitoring and evaluation are critical for stunting teams to keep programs on track and effective (46). Convergence actions of stunting only worked where district heads and stunting reduction acceleration team leaders understood stunting, issued local regulations, and treated stunting targets as their performance indicators; where this commitment was weak, implementation stalled at village level (47).

Cross-sector collaboration

Inter-organizational coordination

Local governments need to strengthen advocacy by optimizing cross-sectoral cooperation through a penta-helix approach consisting of government, academics, the business world, communities, and the mass media (48), so that full support from various parties in efforts to accelerate the reduction of stunting is truly obtained. The concept of the penta-helix is becoming an innovative model for sustainable development collaboration. A penta-helix organization's networking approach, which collaboratively brings together five stakeholder roles to generate innovation synergistically, is its main characteristic (49).

This cross-sectoral coordination and cooperation is still one of the main obstacles, which is why efforts to accelerate the reduction of stunting in North Lampung Regency are felt to be less than optimal. Based on the results of in-depth interviews, it was found that the implementation of tasks by the district-level stunting reduction acceleration team is still low because the district-level stunting reduction acceleration team does not yet fully understand their duties and functions. A

previous study demonstrated that strong advocacy, political leadership, and a penta-helix style of cooperation involving the non-governmental organizations (NGOs), corporate social responsibility (CSR), universities, professional organizations, and media supported the convergence of anti-stunting actions across various sectors (50).

CONCLUSION

This qualitative case study highlights the complex, multidimensional factors contributing to the increase in stunting prevalence in North Lampung Regency, Lampung Province, Indonesia. Four major determinants emerged: low individual awareness and inadequate parenting practices; environmental deficits, particularly poor household sanitation and persistent cultural feeding practices; weak leadership commitment marked by insufficient funding and suboptimal program execution; and limited cross-sectoral coordination within the stunting reduction governance structure. These findings demonstrate that stunting is not merely a household-level nutritional issue but a systemic challenge influenced by socio-cultural norms, environmental conditions, institutional readiness, and governance performance.

The persistence—and in some areas, worsening—of stunting reflects gaps in translating national policies into local action. Although innovations such as the Foster Parent Program exist, implementation remains inconsistent due to unclear technical guidance, limited budgets, and weak monitoring systems. Without stronger political commitment and integrated actions across sectors, North Lampung will struggle to achieve national targets for stunting reduction.

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