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Increasing awareness of stunting risks and self-efficacy in children among stunting resilient families in Indonesia: a quasi-experimental study

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Abstract

Stunting poses an urgent public health challenge with long-term consequences for child development. Despite various national initiatives in Indonesia, stunting persists due to limited awareness and low caregiving efficacy at the household level. This study evaluates the "Stunt Resilient Family" intervention model, designed to enhance family awareness of stunting risks and improve caregiving efficacy for stunted children. Employing a one-group pre-test/post-test design, data were collected from 77 families in the Nusa Penida 1 Community Health Center area. Statistically significant improvements were found in family awareness across key demographics—adolescents, pregnant women, toddlers—as well as in caregiving efficacy ($p < 0.05$). Family efficacy, defined as the confidence and capability of caregivers to provide adequate care for stunted children, improved notably. These results suggest that community-based, family-centered education can effectively address stunting and may be adapted for broader implementation across similar contexts in low- and middle-income countries (LMICs) *(Afr J Reprod Health 2026; 30 [2]: 145-151).*

Keywords: Adolescent, Female, Growth Disorders, Malnutrition, Pregnancy

Résumé

Le retard de croissance représente un défi urgent de santé publique, ayant des conséquences à long terme sur le développement de l'enfant. Malgré diverses initiatives nationales en Indonésie, ce problème persiste en raison d'une sensibilisation limitée et d'une faible efficacité des soins au niveau des ménages. Cette étude évalue le modèle d'intervention « Famille résiliente face au retard de croissance », conçu pour renforcer la sensibilisation des familles aux risques de retard de croissance et améliorer leur efficacité dans la prise en charge des enfants retardés. En adoptant un plan quasi-expérimental avec pré-test et post-test sur un seul groupe, les données ont été recueillies auprès de 77 familles de la zone du centre de santé communautaire de Nusa Penida 1. Des améliorations statistiquement significatives ont été observées dans la sensibilisation des familles, couvrant les principaux groupes démographiques — adolescents, femmes enceintes et jeunes enfants — ainsi que dans l'efficacité des soins ($p < 0,05$). L'efficacité familiale, définie comme la confiance et la capacité des aidants à prodiguer des soins adéquats aux enfants retardés, s'est nettement améliorée. Ces résultats suggèrent que l'éducation communautaire centrée sur la famille peut efficacement contribuer à la lutte contre le retard de croissance et pourrait être adaptée à une mise en œuvre plus large dans des contextes similaires des pays à revenu faible et intermédiaire (PRFI). *(Afr J Reprod Health 2026; 30 [2]: 145-151).*

Mots-clés: Adolescente, Femme, Troubles de la croissance, Malnutrition, Grossesse

Introduction

Stunting is a significant global health concern, particularly in low- and middle-income countries, where it reflects chronic malnutrition, repeated infections, and inadequate caregiving practices during the critical growth period of early childhood.[1] The World Health Organization (WHO) estimates that approximately 22% of children under the age of five are stunted, representing a silent yet pervasive crisis with far-reaching implications for individual and societal development.[2] Stunting not only hinders physical growth but also adversely affects cognitive development, learning capacity, and future economic productivity. In Indonesia, the prevalence of stunting remains alarmingly high, with national health surveys reporting rates that consistently exceed the WHO's threshold for a public health problem.[3]

The multifaceted nature of stunting underscores the need for comprehensive interventions targeting the root causes of this issue.

Factors contributing to stunting include inadequate maternal nutrition, suboptimal infant and young child feeding practices, poor sanitation, and limited access to healthcare services.[4,5] These factors are often compounded by a lack of awareness and knowledge among families about stunting risks and effective preventive measures. In the context of family-centered care, the role of caregivers—primarily parents—is critical in ensuring proper nutrition, health monitoring, and responsive care for children under five years old.[6]

In response to the pressing need to combat stunting, the Indonesian government has launched various programs and initiatives, such as the National Strategy to Accelerate Stunting Reduction (2021–2024).[7] However, the effectiveness of these programs depends largely on the active participation of families and communities. Evidence suggests that empowering families with the knowledge, skills, and confidence to address stunting can significantly enhance the success of broader public health initiatives.[8] This calls for innovative, culturally sensitive, and practical intervention models tailored to local contexts.

To fill this gap, the "Stunt Resilient Family" intervention model was developed. This model integrates culturally sensitive, behaviorally informed education with support mechanisms to strengthen family-level capacity to care for stunted children. Unlike traditional nutrition programs, this intervention emphasizes caregiver empowerment and behavior change.

This study aims to evaluate the model's effectiveness in enhancing family awareness of stunting risks and improving caregiving efficacy in the Nusa Penida 1 Community Health Center area, contributing novel evidence to support localized, family-driven stunting prevention.

Methods

Study design

This study utilized a survey and quasi-experimental design with a one-group pretest-posttest approach to evaluate the effectiveness of the "Stunt Resilient Family" intervention model. The research aimed to assess its impact on increasing family awareness of stunting risks and improving the efficacy of caring for stunted children.

Setting and sample

The study was conducted in the Nusa Penida 1 Community Health Center service area, targeting families with at least one stunted child under five years old. Using total sampling, 77 families met the inclusion criteria and participated in the study. The primary respondents were the caregivers responsible for the daily care of the children.

Intervention

The intervention centered on a structured education and assistance program based on the "Stunt Resilient Family" (SRF) module.[9–12] The module covered key topics, including stunting risks for teenagers, pregnant women, and toddlers; nutritional knowledge such as balanced diets, exclusive breastfeeding, and appropriate complementary feeding; and the importance of regular health monitoring and preventive measures. Additionally, the module emphasized behavioral strategies to enhance family confidence and capability in providing effective care for stunted children.

The SRF Program followed five phases: (1) preparation through module development and facilitator training; (2) baseline assessment of family awareness and efficacy; (3) program implementation combining education and home visits over four to six weeks; (4) post-test and evaluation to assess progress; and (5) sustainability planning through integration with Posyandu and village health funding mechanisms.The intervention was delivered through a combination of group educational sessions and one-on-one interactions. Home visits were also conducted to provide personalized support and ensure that families could apply the knowledge and strategies outlined in the module.

The SRF Program consisted of three main components: education, behavioral coaching with home visits, and community engagement.The educational component was delivered through structured modules covering the definition, causes, and impacts of stunting, emphasizing that it is preventable and reversible. Families learned about stunting risks across different life stages—addressing adolescent nutrition and anemia prevention, adequate dietary intake during pregnancy, and

appropriate feeding and growth monitoring for toddlers.

Sessions also covered hygiene, sanitation, and caregiver empowerment, focusing on building confidence, identifying early growth problems, and using local health services. The behavioral coaching and home visit component was implemented weekly for four to six weeks. Trained health workers and nursing students provided personalized guidance, observed caregiving practices, and supported families in applying the knowledge gained from group education sessions.

Finally, peer and community engagement activities established caregiver support groups, community discussions with local leaders, and continuous health messaging through WhatsApp groups, posters, and local radio to sustain awareness and reinforce behavior change.

Data collection

Data collection occurred at two points: before and after the intervention. Structured questionnaires were used to evaluate the families' awareness of stunting risks and their perceived efficacy in caring for stunted children. Demographic data, such as the respondent's gender, education level, occupation, and relationship to the child, were also collected. The pretest provided baseline data, while the posttest assessed changes resulting from the intervention.

Data analysis

Data were analyzed using both univariate and bivariate methods. Descriptive statistics, including means, medians, standard deviations, and minimum-maximum values, were used to summarize continuous data, while categorical data were reported as frequencies and percentages. To measure differences between pretest and posttest scores, the Wilcoxon Signed-Rank Test was employed, as the data were ordinal and non-normally distributed. Statistical significance was set at a 95% confidence level ($p \leq 0.05$).

Ethical considerations

Ethical approval for the study was obtained prior to its implementation. Informed consent was collected from all participants, ensuring they understood the purpose and scope of the research. Participant anonymity and confidentiality were strictly maintained throughout the study. Furthermore, the intervention was designed to respect and align with the cultural and social norms of the local community.

Results

Most of the respondents were female (81.8%), had an elementary school education (35.1%), most of them worked as entrepreneurs (64.9%), and most of the respondents were mothers (80.5%).Table1

Based on the data in Table 1, it can be seen that before the intervention, the majority of respondents had insufficient awareness (83.1%) in efforts to prevent stunting for teenagers, 14.3% had sufficient, and only 1.3% had good. After the intervention, the majority of respondents had sufficient awareness (54.5%) in efforts to prevent stunting in adolescents, 26% had good, and only 19.5% had poor. The results of further analysis show that there are differences in family stunting risk awareness for adolescent children before and after the intervention (p *value* >α=0.05). Based on the data in Table 2, before the intervention, the majority of respondents had insufficient awareness (68.8%) in preventing stunting for pregnant women, and 31.2% had sufficient awareness. After the intervention, the majority of respondents had sufficient awareness (45.5%) in preventing stunting for pregnant women, 15.6% had good, and only 39% had poor. The results of further analysis showed that there were differences in awareness of family stunting risk for pregnant women before and after the intervention (p *value* >α=0.05). Based on the data in Table 3, it can be seen that before the intervention, the majority of respondents had insufficient awareness (97.4%) in preventing stunting for toddlers, and as many as 1.3% had sufficient and good awareness. After the intervention, the majority of respondents had sufficient awareness (46.8%) in preventing stunting for toddlers, 22.1% had good, and only 31.2% had insufficient. The results of further analysis showed that there were differences in family stunting risk awareness for toddlers before and after the intervention (p *value* >α=0.05).

Based on Table 4, it can be seen that before the intervention, the majority of respondents had poor efficacy (96.1%) in caring for stunted children, 2.6% had good efficacy, and 1.3% had fair efficacy.

Table 1: Differences in awareness of the risk of family stunting for adolescents before and after intervention

Variable	Pre test		Post Test		P Value
	f	%	F	%	
Awareness (teen)					
Good	1	1,3	20	6	0,000
Sufficient	11	4,3	42	,5	
Insufficient	64	1	15	,5	
Total	77		77	00	

Table 2: Differences in awareness of the risk of family stunting for pregnant women before and after intervention

Variable	Pre test		Post Test		P Value
	F	%	f	%	
Precautions (pregnant women)					
Good	0	0	12	15,6	0,000
Sufficient	24	31,2	35	45,5	
Insufficient	53	68,8	30	39	
Total	77	100	7	100	

Table 3: Differences in awareness of the risk of family stunting for toddlers before and after intervention

Variable	Pre test		Post Test		P Value
	f	%	F	%	
Awareness (toddler)					
Good	1	1,3	17	22,1	0,000
Sufficient	1	1,3	36	46,8	
Insufficient	75	97,4	24	31,2	
Total	77	100	77	100	

Table 4: Differences in family efficacy in caring for stunted children before and after intervention

Variable	Pre test		Post Test		P Value
	f	%	F	%	
Family Efficacy					
Good	2	6	23	9,9	0,000
Fair	1	,3	38	9,4	
Poor	74	96,1	16	0,8	
Total	77	100	77	100	

After the intervention, the majority of respondents had sufficient efficacy (49.4%) in caring for stunted children, 29.96% had good efficacy, and 20.8% had poor efficacy. The results of further analysis showed that there were differences in the efficacy of families caring for stunted children before and after the intervention (p *value* >α=0.05).

Discussion

The study revealed that family awareness of stunting risks significantly improved after the intervention, particularly for adolescents, pregnant women, and toddlers. Prior to the intervention, the majority of respondents exhibited insufficient awareness in stunting prevention across all categories. For example, 83.1% of families demonstrated inadequate awareness of stunting risks in adolescents. Adolescence is a critical developmental stage, and a lack of awareness during this period can increase the risk of stunted children in the future. The improvement observed after the intervention highlights the effectiveness of targeted education

and assistance in addressing this gap. These findings align with previous research, which showed that educating adolescents about stunting prevention, including checking hemoglobin levels and consuming blood supplement tablets, significantly improved knowledge and preventive actions.[13] Families play a pivotal role in supporting adolescents to adopt behaviors that mitigate the risk of stunting in their offspring.[12]

Similarly, the study highlighted that insufficient family awareness regarding stunting risks during pregnancy was a key concern, with 68.8% of respondents scoring poorly before the intervention. Adequate nutritional intake during pregnancy is essential for fetal growth and development, especially in the first trimester, when critical organ and nervous system formation occurs.[5] After receiving education and support, families displayed significantly higher levels of awareness, with 15.6% achieving good awareness and 45.5% demonstrating sufficient awareness. These findings are consistent with research emphasizing the importance of maternal education in stunting prevention, which underscores that specific nutritional interventions during pregnancy are critical.[3] This suggests that tailored interventions can effectively empower families to improve maternal and child health outcomes.

The findings for toddlers were equally striking, as 97.4% of families initially demonstrated insufficient awareness of stunting risks. Following the intervention, there was a substantial increase in awareness, with 22.1% achieving good awareness and 46.8% reaching sufficient awareness. This improvement underscores the importance of equipping families with knowledge about stunting prevention strategies, including exclusive breastfeeding, complementary feeding practices, growth monitoring, and maintaining environmental hygiene.[3,14] These results align with previous research, which demonstrated that educational interventions significantly improved knowledge and attitudes toward stunting prevention.[15] However, sustained awareness requires not only awareness but also addressing social and economic barriers, such as access to nutritious food and healthcare services.[16] The study also observed a significant improvement in family efficacy in caring for stunted children. Before the intervention, 96.1% of respondents exhibited poor caregiving efficacy, which decreased to 20.8% post-intervention. Additionally, the proportion of families with good caregiving efficacy increased from 2.6% to 29.9%. These findings are consistent with research demonstrating that family-centered empowerment strategies, such as providing educational modules, enhance caregivers' confidence and ability to meet the needs of stunted children.[17] Self-efficacy plays a crucial role in shaping caregiver behavior, including providing adequate nutrition, utilizing health services, and monitoring child growth and development.[18]

The improvements observed in this study underscore the critical role of education and family-centered interventions in addressing stunting. However, stunting prevention requires a comprehensive approach that considers socio-cultural factors, economic barriers, and healthcare access, alongside educational efforts.[19] Health workers and community leaders must prioritize raising awareness and supporting families through structured programs to achieve sustainable outcomes.

Limitations

This study was limited by its short duration (4 weeks) and single-site setting, restricting generalizability. Self-report bias may have inflated reported improvements. Mitigation strategies included trained enumerators and pre-tested instruments, but future work should incorporate observational and biometric assessments.

No attrition was observed during the study period, but longer-term follow-up is needed to evaluate sustained impact and identify potential dropouts.

Implications

To enhance impact, integration with existing Posyandu services and use of village health funds could institutionalize family-centered interventions. Policy frameworks should allocate resources for caregiver training modules and community health worker support.

Digital tools, such as mobile apps for stunting prevention or WhatsApp-based coaching, could extend reach, especially in remote areas. Cost-effectiveness analyses will be critical in advocating for scale-up.

Conclusion

This study demonstrates the effectiveness of the "Stunt Resilient Family" model in addressing child stunting by empowering families with knowledge, skills, and resources to improve caregiving practices. Through education and community-based interventions in Nusa Penida, families showed notable improvements in their ability to provide proper nutrition, hygiene, and overall care for their children. These findings underscore the importance of family-centered approaches in addressing the multifaceted causes of stunting, which include not only nutritional deficiencies but also environmental and socio-cultural factors. While the intervention achieved significant progress, the study also highlights the challenges of tackling stunting in a holistic manner. The localized nature of the research and its reliance on self-reported data limit the generalizability of the results, pointing to the need for further studies across diverse contexts. Nevertheless, the outcomes provide a strong foundation for future efforts to combat stunting through family-focused strategies, emphasizing the vital role of empowering households as the front line in improving child health and development.

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