Journal of Health Promotion and Behavior (2026), 11(02): 188-201
Master's Program in Public Health, Universitas Sebelas Maret

Original article
Open Access

Implementation of Community Empowerment Model for Accelerating Stunting Reduction in Indonesia

Heni Hastuti[1,2], Endang Sutisna Sulaeman[1,2], Anak Agung Alit Kirti Estuti Narendra Putri[1,2], Amalia Khurotul Mahzunah[1]

[1]Department of Public Health and Preventive Medicine, Faculty of Medicine, Universitas Sebelas Maret, Indonesia
[2]Center for the Study of Health Promotion and Empowerment of Community Service Institutions, Universitas Sebelas Maret, Indonesia

Received: March 05, 2026; Accepted: April 13, 2026; Available online: April 16, 2026

ABSTRACT

Background: According to the World Health Organization (WHO), Indonesia ranks the third highest prevalence of stunting in Asia. In response to this condition, WHO has set a target to reduce stunting by 40%. This study aims to formulate an implementative community empowerment model consisting of 1) input, including information, motivation, behavioral skills, and community organization and development; 2) process, comprising the empowerment process; and 3) output, namely behavioral performance for accelerating stunting reduction in Indonesia. In addition, this study seeks to identify the factors influencing community empowerment in stunting prevention and to analyze the relationship between empowerment components and behavioral performance in accelerating stunting reduction efforts.

Subjects and Method: A concurrent mixed-methods design integrating quantitative and qualitative approaches was employed. The study was conducted in Karanganyar Regency, Central Java, Indonesia, from June to August 2023. The quantitative component used quota sampling, with 15 samples per exogenous variable, resulting in 225 members of the Stunting Reduction Acceleration Team. Data were collected through structured questionnaires and analyzed using path analysis. The qualitative component involved 24 purposively selected informants. Data were collected through in-depth interviews and analyzed using content analysis.

Results: Information-motivation-behavioral skills and community organization and development significantly influenced the empowerment process (OR=5.11; 95% CI=2.46 to 10.61; p<0.001 and OR= 13.04; 95% CI=6.30 to 27.01; p<0.001, respectively). Community organization and development significantly improved stunting prevention performance (OR=3.64; 95% CI=1.62 to 8.16; p=0.002), whereas information-motivation-behavioral skills showed a protective effect (OR=0.43; 95% CI=0.21 to 0.88; p=0.021). The empowerment process was not significantly associated with performance (OR=1.12; 95% CI=0.50 to 2.52; p=0.770).

Conclusion: Community organization and development are important determinants of behavioral performance in stunting prevention and contribute to accelerating stunting reduction efforts.

Keywords: health promotion, empowerment model, stunting

Correspondence:
Heni Hastuti. Center for the Study of Health Promotion and Empowerment of Community Service Institutions, Universitas Sebelas Maret, Indonesia. Email: henihastuti1988@staff.uns.ac.id.

Cite this as:
Hastuti H, Sulaeman ES, Putri AAAKEN, Mahzunah AK (2026). Implementation Of Community Empowerment Model for Accelerating Stunting Reduction in Indonesia. *J Health Promot Behav*. 11(02): 188-201. https://doi.org/10.26911/thejhpb.2026.11.02.05.

Heni Hastuti. Published by Master's Program of Public Health, Universitas Sebelas Maret, Surakarta. This open-access article is distributed under the terms of the Creative Commons

Attribution 4.0 International (CC BY 4.0). Re-use is permitted for any purpose, provided attribution is given to the author and the source is cited.

BACKGROUND

Stunting refers to a condition in which a child's height falls more than two standard deviations below the median of the World Health Organization (WHO) child growth standards (WHO, 2009). In addition, this condition is an irreversible outcome of nutritional inadequacy and recurrent infections in the first 1000 days of life (WHO, 2014). As a result, reducing stunting has become a central objective of the six Global Nutrition Targets for 2025 and a crucial indicator in the second Sustainable Development Goal, Zero Hunger (Department of Economic and Social Affairs, 2016). According to the WHO, Indonesia has the third-highest stunting prevalence in Asia (WHO, 2017). The results from the 2021 Survey on Nutrition Status in Indonesia showed a decrease in the prevalence of the condition from 24.4% in 2021 to 21.6% in 2022. The data suggest that one in five children in the country is affected by stunting. In 2022, the prevalence of stunting in Central Java Province was recorded at 20.9%, and a slightly higher value of 22.3% was reported in Karanganyar Regency (Ministry of Health of Indonesia, 2021).

To address this situation, Indonesian government is actively promoting efforts to reduce the prevalence of stunting to 17% in 2023 and 14% in 2024, with an annual reduction target of approximately 2.7% (Presidential Regulation of the Republic of Indonesia Number 72 of 2021 concerning the Acceleration of Reducing Stunting). The WHO has also set a target to decrease the number of children under 5 years old experiencing stunting by 40% (WHO, 2014). A previous study reported that stunting was not only related to height but could influence learning ability, mental development, and the emergence of chronic diseases in affected children (Martha et al., 2020).

Several reports showed that the mitigation of stunting largely depended on government effort and had not yet comprised community empowerment (Martha et al., 2020). According to a previous study, empowerment is a process where individuals gain significant control over decisions and actions affecting the health. Additionally, it is a social, cultural, political, or psychological process through which individuals and social groups can articulate their needs, raise concerns, develop strategies for participating in decision-making, and take actions to address these needs (WHO, 2021). Despite its importance, there are still limited studies on the effect of the implementation of community empowerment models on stunting reduction.

In this current study, empowerment and health behavior models were applied at the intrapersonal and community levels (Frost, 2008; Glanz, Rimer and Viswanath, 2008), including information motivation behavioral (IMB) skills model (Fisher, Fisher and Harman, 2003; Fisher et al., 2006), community organization and building model (Minkler and Wallerstein, 2019), and empowerment process model 2010 (Cattaneo and Chapman, 2010). The IMB model asserts that individuals need accurate information, strong motivation, and practical skills to adopt healthy behaviors or avoid risky behaviors. Consistent with previous research, the IMB model framework includes three key constructs that influence behavioral change: information and knowledge about the behavior, individual motivation to engage in the behavior, and the behavioral skills nece-

ssary to carry out the behavior (Fisher, Fisher and Harman, 2003; Fisher et al., 2006). The Community Organization and Community Building model comprises six dimensions: empowerment, critical awareness, community capacity, social capital, issue selection, and participation and relevance (Minkler and Wallerstein, 2019). The empowerment process model is comprised of six dimensions, including strength-oriented goals, self-efficacy, knowledge, competence, action, and impact (Cattaneo and Chapman, 2010).

Therefore, this study aims to formulate an implementation community empowerment model for accelerating stunting reduction in Indonesia. The findings of this study are expected to offer insights into how the implementation of the Information Motivation Behavioral Skills model, community organization and development, and the empowerment process impact the behavioral performance in stunting reduction.

SUBJECTS AND METHOD

1. Study Design

The present study employed a mixed-method design, incorporating both quantitative and qualitative analyses. The quantitative analysis was predominant, while the qualitative analysis was less extensive (Padgett, 2012). In addition, quantitative study adopted a survey method, while qualitative analysis used a case study. The procedures were carried out in the Karanganyar Regency, Central Java Province, Indonesia, from June 2022 to August 2023.

2. Population and Sample

The study population consisted of stunting reduction acceleration team in 15 Urban Villages and 162 Villages. Quantitative analysis was performed using a quota sampling method, selecting 15 samples per exogenous variable (15 variables), leading to a total sample of 225 respondents (Hair et al., 2010). In addition, data collection was carried out through questionnaires. The qualitative study employed purposive sampling, involving 24 informants, and data collection entailed in-depth interviews.

The inclusion criteria in this study were being a member of stunting reduction acceleration team at the village level and being willing to participate as a respondent. Meanwhile, individuals outside the village study location and those who did not complete the questionnaire were excluded.

3. Study Variables

Quantitative data collection was carried out with questionnaire with 15 exogenous variables, including the information motivation behavioral skills model with 3 dimensions, namely information, motivation, and skills; community organization and community development model with 6 dimensions, namely empowerment, critical awareness, community capacity, social capital, issue selection, and participation and relevance; and empowerment process model with 6 dimensions, including strength-oriented goals, self-efficacy, knowledge, competence, action, and impact. The endogenous variable was the performance of the village-level stunting reduction acceleration team.

4. Operational Definition of Variables

Information-Motivation-Behavioral Skills (IMB) Model

Information: The level of respondents' knowledge about stunting prevention, assessed through items measuring awareness, accuracy, and completeness of related information.

Motivation: The personal and social motivation of respondents to engage in stunting-prevention activities, measured through attitudes and perceived support.

Behavioral Skills: The respondent's ability and confidence to perform required stunting-prevention tasks, measured

through self-reported skills and competencies.

Community Organization and Community Development (COCD) Model

Empowerment: The extent to which respondents feel they have control and influence in stunting-prevention activities.

Critical Awareness: The degree of respondents' understanding and reflection on stunting issues in their community.

Community Capacity: The community's collective ability (resources, leadership, collaboration) to implement stunting-reduction programs.

Social Capital: The strength of social networks, trust, and cooperation supporting stunting-prevention initiatives.

Issue Selection: The process by which communities identify and prioritize key stunting-related problems.

Participation and Relevance: The level of community involvement and perceived relevance of stunting-reduction efforts.

Empowerment Process Model

Strength-Oriented Goals: The extent to which respondents set positive, capacity-building goals in stunting-reduction efforts.

Self-Efficacy: Respondents' confidence in their ability to carry out stunting-prevention tasks effectively.

Knowledge: The understanding of stunting causes, prevention strategies, and program procedures.

Competence: The practical ability to perform assigned roles within the stunting-reduction program.

Action: The actual implementation of activities aimed at reducing stunting.

Impact: The perceived outcomes or changes resulting from the actions taken.

5. Study Instruments

The tools used included questionnaires, writing materials, data recapitulation sheets, and Likert Summated Ranking. Prior to the implementation of the instruments, validity and reliability tests were conducted. The validity of the instruments was ascertained through the implementation of the product-moment correlation method, while the reliability of the instruments was determined employing the Cronbach's alpha method. Qualitative data collection was performed through in-depth interviews, using a guide and writing tools.

6. Data analysis

Quantitative data analysis included univariate, bivariate, and multivariate analyses. Multivariate analysis was conducted to determine the direct and indirect influences between exogenous and endogenous variables, using path analysis. Qualitative data analysis was performed using content analysis, which included data reduction, presentation, and conclusion. Qualitative data validation was achieved through triangulation, comprising data source, method, theory, and study team triangulation. The conclusion was drawn by combining the results of quantitative and qualitative analysis.

7. Research Ethics

The present study was approved by the Research Ethics Committee of the Faculty of Medicine and Dr. Moewardi Hospital, Surakarta, Indonesia, with reference number 483/III/HREC/2023, issued on March 31, 2023.

RESULTS

1. Sample Characteristics

The characteristics of respondents showed that 95.3% were females (203 individuals), 40.8% were aged 36-45 years (87 individuals), and 94.9% were married, (202 individuals). In terms of education, a significant portion had completed Senior High School (SMA/MA or equivalent), with 104 individuals (48.8%). The predominant occupation was housewives, accounting for

116 respondents (54.5%). In Stunting Reduction Team, a significant number served as Integral Health Post Cadres, totaling 114 individuals (53.5%). Furthermore, the majority had been working in Stunting Reduction Team for 1-5 years (72.8%).

Table 1. Respondent Characteristics (n=213)

Characteristics	n	%
Sex		
Man	10	4.7
Women	203	95.3
Age		
≤ 25 years	2	0.9
26-35 years	36	16.9
36-45 years	87	40.8
46-55 years	72	33.8
56-65 years	16	7.5
Marital Status		
Married	202	94.9
Widowed	11	5.2
Education		
Completed Elementary School	14	6.6
Completed Junior High School	63	29.6
Completed Senior High School	104	48.8
Completed Diploma 1/Diploma 3/Diploma 4	20	9.4
Completed Bachelor's/Master's/Doctorate	12	5.6
Occupation		
Housewife	116	54.5
Entrepreneur	33	15.5
Village Official	12	5.6
Health Worker	8	3.8
Government Employee/Teacher	11	5.2
Farmer/Laborer	21	9.9
Private Sector Employee	12	5.6
Position in Stunting Reduction Team		
Health Worker	17	8.0
Family Planning Counselor and/or Family Planning Field Officer (PLKB)	1	.5
Family Welfare Movement Empowerment Team (TP-PKK)	8	3.8
Family Planning Assistant (PPKBD) and/or Sub-PPKBD	4	1.9
Human Development Cadre (KPM)	12	5.6
Integral Health Post Cadre	114	53.5
Village Chief/Head of Community Welfare Affairs/Head of Hamlet/Head of Neighborhood	57	26.8
Years of Work		
Less than 1 year	3	1.4
1-5 years	155	72.8
6-10 years	35	16.4
More than 10 years	20	9.4

2. Multivariate Analysis

IMB and Community Organizing and Development (COD), play a crucial role in shaping the community empowerment process. IMB has a significant influence on empowerment (OR=5.11; 95% CI=2.46 to 10.61; p<0.001), indicating that improvements in information, motivation, and behavioral skills strengthen the community's ability to identify problems and take action. COD demonstrates an even stronger effect (OR= 13.04; 95% CI=6.30 to 27.01; p<0.001), highlighting that strengthening community organizations, social capacity, and collective participation is essential for facilitating an effective empowerment process.

In terms of stunting prevention performance, a different pattern emerges. COD significantly enhances performance (OR= 3.64; 95% CI=1.62 to 8.16; p=0.002), underscoring the importance of community engagement and local capacity building. In contrast, IMB shows a protective effect (OR= 0.43; 95% CI=0.21 to 0.88; p= 0.021), suggesting that strengthening IMB components reduces the likelihood of poor performance. Meanwhile, the empowerment process does not significantly influence performance (OR=1.12; 95% CI=0.50 to 2.52; p=0.779), indicating that empowerment improvements alone are insufficient to directly drive behavioral change without support from other factors such as COD and IMB.

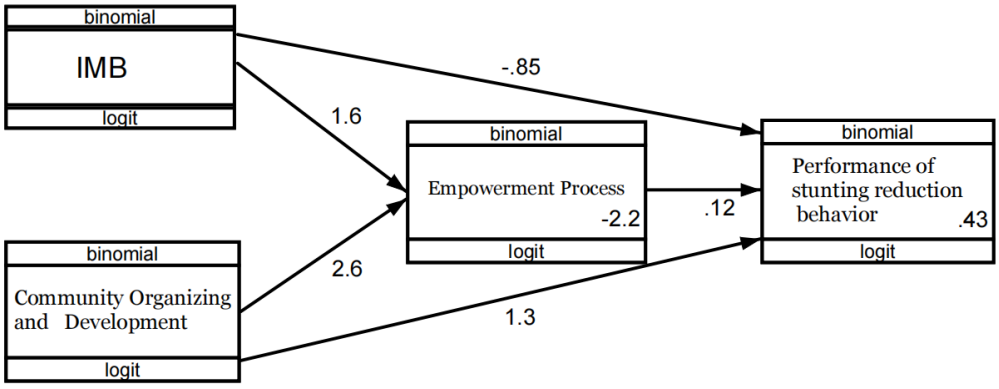


Figure 1. Path-analysis diagram

Table 2. The results of path analysis

Dependent Variables		Independent Variables	OR	95% CI		p
				Lower Limit	Upper Limit	
Direct effect						
Empowerment Process	←	Behavioral Skills Motivational Information Model	5.11	2.46	10.61	<0.001
	←	Community Organizing and Development	13.04	6.30	27.01	<0.001
Indirect effect						
Performance of stunting reduction behavior	←	Behavioral Skills Motivational Information Model	0.43	0.21	0.88	0.021
	←	Community Organizing and Development	3.64	1.62	8.16	0.002
	←	Empowerment Process	1.12	0.50	2.52	0.779

3. Qualitative Study

Informant characteristics

Table 3 presents the characteristics of respondents included in this qualitative study. Informants were members of the village stunting reduction team, totaling 24 individuals. The results showed that 66.67% (16 individuals) were female and 33.33% (8 individuals) were male, with ages ranging from 26 to 62 years. In terms of educational background, 10 informants (41.67%) had completed senior high school or equivalent, 9 informants (37.50%) held a D3 Midwifery qualification, and 5 informants (20.83%) had completed higher education. Based on occupation or role, 10 informants (41.67%) served as village heads and village officials, 8 informants (33.33%) were midwives and nutrition officers, and 6 informants (25.00%) were health cadres.

Table 3. Characteristics of Respondents (n=24)

Characteristics	n	%
Sex		
Male	8	33.33
Female	16	66.67
Education Level		
Senior High School or Equivalent	10	41.67
D3 Midwifery	9	37.50
Higher Education	5	20.83
Occupation/Role		
Village Heads and Village Officials	10	41.67
Midwives and Nutrition Officers	8	33.33
Health Cadres	6	25.00

In-Depth Interview Results

How does the implementation of the information-motivation-behavior skills model impact the performance of stunting reduction behaviors?

“To reduce the incidence of stunting, accurate information, motivation, and skills are needed" (Fisher, Fisher and Harman, 2003; Fisher et al., 2006); "If someone has accurate information, they become motivated to adopt clean and healthy living (PHBS) and parenting behaviors” (Wallerstein and Duran, 2006; Cattaneo and Chapman, 2010; Padgett, 2012); "Without accurate information, motivation, and skills, stunting reduction programs and activities cannot proceed effectively” (Hair et al., 2010; Minkler and Wallerstein, 2019; Angelia et al., 2020).

How does community organization and development implementation impact the performance of stunting reduction behaviors?

“It is necessary to empower community in stunting reduction" (Wallerstein and Duran, 2006; Minkler and Wallerstein, 2019); "Engaging community in promotion, education, and communication activities, providing information and health education about stunting, and early awareness of stunting" (Wallerstein and Duran, 2006); "Addressing health and nutrition issues" (Cattaneo and Chapman, 2010; Minkler and Wallerstein, 2019); "Education for cadres, women of childbearing age, and pregnant women" (WHO, 2009; Minkler and Wallerstein, 2019); "Conducting stunting deliberations, coordination with health cadres, and cross-sectoral coordination" (Department of Economic and Social Affairs, 2016; WHO, 2017); "Empowering to change mindsets" (Presidential Regulation of the Republic of Indonesia Number

72 of 2021 concerning the Acceleration of Reducing Stunting; Kemenkes RI, 2021); "Empowering food resilience through the promotion and education of appropriate technology" (WHO, 2021).

"Weighing toddlers at integrated health posts, monitoring the fulfillment of toddler nutrition needs, providing supplementary food, and milk" (Martha et al., 2020; Kemenkes RI, 2021); "Health examinations and home visits" (Department of Economic and Social Affairs, 2016; WHO, 2017); "Socialization." (Presidential Regulation of the Republic of Indonesia Number 72 of 2021 concerning the Acceleration of Reducing Stunting; Ministry of Health of Indonesia, 2021); "Distribution of nutrition aid packages and education to mothers of toddlers" (Minkler and Wallerstein, 2019); "Conducting classes for prospective brides, pregnant women, toddler integrated health posts, and adolescent integrated health posts" (Padgett, 2012); "Promoting exclusive breastfeeding" (Angelia et al., 2020).

"Changing parents' mindset about the importance of early detection of stunting" (WHO, 2014); "Limited village budget resulting in insufficient funds for stunting prevention" (Presidential Regulation of the Republic of Indonesia Number 72 of 2021 concerning the Acceleration of Reducing Stunting; Martha et al., 2020; Kemenkes RI, 2021); "Parenting guidance and changing parents' mindset." (WHO, 2021).

How is empowerment process implemented in the performance of stunting reduction behaviors?

"The strength of the goal lies in changing mindset and meeting the nutrition needs of toddlers" (WHO, 2017; 2021); "Collaborating across sectors and committing to implementing stunting reduction programs" (Department of Economic and Social Affairs, 2016); "Providing parenting education" (Presidential Regulation of the Republic of Indonesia Number 72 of 2021 concerning the Acceleration of Reducing Stunting; Minkler and Wallerstein, 2019).

"Competence in managing integrated health posts and parenting education for community and parenting practices" (WHO, 2021); "Providing clean water and environmental sanitation" (WHO, 2021); "Providing supplementary feeding" (WHO, 2017); "Education and socialization on the recognition and prevention of stunting and providing information on plate content." (Minkler and Wallerstein, 2019; Martha et al., 2020); "Caring for each other" (WHO, 2014); "Encouraging community to care for each other" (Ministry of Health of Indonesia, 2021); "Mutual support and monitoring of each other" (WHO, 2014); "Using village funds more effectively" (Department of Economic and Social Affairs, 2016).

"Personal actions by adopting clean and healthy living (PHBS) behaviors, collaborating across sectors, and engaging community" (Cattaneo and Chapman, 2010; Minkler and Wallerstein, 2019); "Village assistance in the form of milk for stunted toddlers and direct cash assistance to mothers of stunted toddlers" (Ministry of Health of Indonesia, 2021); "Setting an example, collaborating with village officials, and stunting acceleration team" (Martha et al., 2020).

"The specific intervention actions are carried out by the health sector to address the direct causes of stunting, focusing on the First 1000 Day of Life program through two main methods, such as nutritional intervention for mothers before and during pregnancy, as well as intervention for children aged 6 months to 2 years. Meanwhile, sensitive interventions are conducted by all stakeholders related to the indirect causes of stunting" (WHO, 2017); "Cooperation across sectors is needed" (Ministry of Health of Indonesia, 2021).

"The self-efficacy of knowledge and experience increases care as well as self-confidence" (WHO, 2014; Department of Economic and Social Affairs, 2016); "Mothers begin to independently manage the nutrition of the plates" (Kemenkes RI, 2021); "Lack of community knowledge about child-rearing practices" (WHO, 2017).

DISCUSSION

The IMB model is both a conceptual and empirical approach that can be applied across various health behavior domains, such as breast self-examination, the use of motorcycle safety equipment, and adherence to complex treatment regimens. According to the IMB model, information that is directly relevant to health behavior performance and easily accessible within individuals' social ecological systems is a key determining factor of health behavior. In addition, the model demonstrated that motivation was an additional factor contributing to the effectiveness of health behaviors in relation to health. Personal motivation (attitude toward individual performance in health promotion behavior) and social motivation (social support for engaging in health promotion behavior) played significant roles in influencing health promotion behavior. Several studies showed that behavioral skills were an additional essential factor determining whether individuals with good information and motivation could effectively implement a health promotion attitude. The constructs of information, motivation, and behavioral skills in IMB model were considered determinants that could be generalized in health promotion behavior, across populations, including child-rearing, clean and healthy living, and exclusive breastfeeding (Fisher, Fisher and Harman, 2003)

Organizing and developing communities was essential in health promotion and empowerment because it reflected one of the most fundamental principles in this field, namely "starting from where community is." Health promotion and empowerment professionals needed to understand community needs, which were more likely to succeed in the process of change and foster community ownership of programs and actions. Community organization was also important given the evidence that the engagement of individuals in the society could be a significant factor in enhancing the perception of control, empowerment, individual capacity to address health behavior issues, and health status (Wallerstein and Duran, 2006).

As demonstrated in prior research, the Empowerment Process Model has been identified as a significant factor in the enhancement of health behaviors, including initiatives aimed at the reduction of stunting. This model operates through the cultivation of capacity, the instigation of motivation, the promotion of creativity, and the allocation of authority to implementers in field settings. However, the results of the quantitative analysis in this study demonstrate contradictory findings, namely that the implementation of empowerment measures does not result in a significant enhancement of the performance of stunting reduction acceleration teams at the village level. This condition suggests that, despite enhancements in aspects of empowerment, including strengthened goals, self-efficacy, knowledge, and competence, these gains have not been translated into enhanced program performance. One potential explanation for this phenomenon is the absence of optimal structural support, adequate resource availability, and interdisciplinary coordination. Consequently, enhanced individual competencies may not be sufficiently robust to elicit substantial performance en-

hancements in the execution of stunting reduction programs (Angelia et al., 2020).

In line with previous studies, low maternal education, living in rural areas, poor sanitation, and culture were determinants of child stunting in Indonesia (Budiastutik and Nugraheni, 2019). According to Beal et al. (2018), children from households with unrepaired and untreated latrines and poor drinking water had a higher risk. Community and social factors, particularly poor access to health services and living in rural areas, were also associated with child stunting. Sukamto et al. (2021) indicated that factors related to stunting from the perspective of public health officials included poverty, low education, poor feeding practices, inadequate parenting, infections, and poor sanitation. More collaboration between various sectors and health cadres, as well as proper monitoring and evaluation of each program, were needed. Siregar, Surdayati and Nurmaini (2020) concluded that education and family guidance could be provided to parents in preparing a balanced and healthy menu for children. Furthermore, it was recommended that parents must prepare a healthy daily menu and monitor children nutrition.

Aprillia et al. (2023) found that women empowerment significantly affected the health of mothers and families, specifically children. Community empowerment could also enhance the knowledge of mothers and families about factors influencing stunting, leading to a reduction in the occurrence and improvement of access to maternal and family health services. Women empowerment through a home visit method enhanced the role and contribution of women in decision-making and helped maximize potential in the family, specifically regarding children nutrition. A substantial body of research has demonstrated that the empowerment of women and communities is a pivotal factor in enhancing children's health and development. Abreha, Walelign and Zereyesus (2020) demonstrated that enhancing women's access to education, information, media, savings, and roles in household decision-making is associated with a reduced risk of stunting, malnutrition, pneumonia, and anemia in children. In a similar vein, Bliznashka et al. (2021) discovered that women's empowerment exerts a favorable influence on children's cognitive development, growth, early learning, and nutritional status. At the community level, Sudartini, Suryadi and Purwanto (2022) posit that community empowerment strengthens aspects of authority, opportunity, responsibility, and support. The integration of concepts and empirical findings produces an empowerment model that supports independence. Thamrin et al. (2021) also emphasized that addressing stunting necessitates the utilization of social capital through family empowerment during the initial 1,000 days of life and the promotion of health services. However, Farianingsih, Ma'rufi and Rokhmah (2020) found that the role of the government and community participation were still not optimal.

However, the results of this study demonstrate a pattern that does not align entirely with these findings. A quantitative analysis revealed that the IMB model exerted a substantial influence on the performance of the stunting reduction acceleration team (OR=0.43; 95% CI=0.21 to 0.88; p=0.021). Furthermore, the community organization and development model demonstrated a significant impact on performance (OR=3.64; 95% CI=1.62 to 8.16; p=0.002). However, the analysis revealed that empowerment did not demonstrate a significant effect (OR=1.12; 95% CI=0.50 to 2.52; p=0.779). These findings suggest that enhancing individual capacity or ability alo-

ne is insufficient to improve team performance. Instead, factors related to community organization, social capacity building, and individual information, motivation, and skills appear to be more decisive in the success of efforts to accelerate stunting reduction.

Miller et al. (2020) posited that comprehensive multisectoral interventions were more efficacious in enhancing key growth indicators and quality eating patterns in children. The provision of livestock management training and nutritional education, when considered in isolation, exerted a negligible influence on the observed outcomes. Furthermore, the combination of nutrition training with community social capital development has been associated with enhanced child growth and nutritional outcomes in comparison to training programs that do not incorporate these additional components. Miller et al. (2020) also provided empirical evidence supporting the positive impact of sensitive nutrition programs that included livelihood promotion and community empowerment. In low-income communities, the integration of livestock-based programs with other components, such as nutrition training and community social capital development, was associated with enhanced child growth and nutritional outcomes in comparison to training-only programs within the context of food vulnerability.

As indicated by Mediani et al. (2022), motivation was found to be significantly influenced by the level of education, marital status, and age. The study's findings suggest that the role and functions of health cadres should be strengthened to enhance the prevention and early detection of stunting. This strengthening should include the provision of continuous guidance, stunting prevention training, and recognition. Podungge, Talib and Nggilu (2023) also showed that the village budget sources available to the Village Government for implementing stunting prevention programs were inadequate. This was reflected in the insufficient allocation of village funds for such programs. Additionally, the targeting accuracy in stunting prevention efforts was not optimal.

In conclusion, the development of a viable model for community empowerment in reducing stunting was achieved through a systems approach. The results of the study indicate that the system is comprised of the following components: Firstly, the input components encompass information, motivation, and skills within the framework of information–motivation–behavioral skills (IMB). Additionally, elements of community organization and development, including empowerment, critical awareness, community capacity, social capital, problem selection, and community organization, are included. Secondly, the process components encompass empowerment capabilities such as goal orientation, self-efficacy, knowledge, competence, action, and perceived impact. Finally, the output components are represented by the performance of the stunting reduction acceleration team. The initial model's assumptions were contradicted by the findings of the quantitative analysis. The analysis demonstrated that IMB and community organization and development contributed significantly to team performance. However, the empowerment aspect in the process did not have a significant effect. The present study has several limitations. First, data collection was conducted during the COVID-19 pandemic, requiring modifications to the questionnaire administration and interview procedures. Second, the mandatory use of personal protective equipment (PPE) may have limited interviewer–respondent interaction. Third,

participants' responses may have been influenced by their reliance on government measures and by their relatively low confidence in their own ability to manage the pandemic, potentially introducing response bias.

FINANCIAL SUPPORT AND SPONSORSHIP

This work was supported by Universitas Sebelas Maret.

ACKNOWLEDGEMENT

The author would like to express gratitude to Sebelas Maret University for its financial support, which facilitated the successful execution of this research. The authors would like to express their profound gratitude to all respondents, village governments, and the stunting reduction acceleration team who participated in the data collection process and made invaluable contributions.

CONFLICT OF INTEREST

There are no conflicts of interest.

REFERENCES

Abreha SK, Walelign SZ, Zereyesus YA (2020). Associations between women's empowerment and children's health status in Ethiopia. PLoS One. 15(7): e0235825. https://doi.org/10.-1371/journal.pone.0235825.

Angelia N, Batubara BM, Zulyadi R, Hidayat TW, Hariani RR (2020). Analysis of community institution empowerment as a village government partner in the participative development process. Budapest Int Res Critics Inst J Humanit Soc Sci. 3(2): 1352-1359. https://doi.org/10.33258-/birci.v3i2.991.

Aprillia R, Astuti AW, Fatimah S, Annisa L, Pondawati LWO, Zahra T, Febrianti CP, Arofah TH (2023). Community empowerment with stunting risk factors based on home visit approach: Scoping review. Women Midwives Midwifery. 3(1): 61–76. https://doi.-org/10.36749/wmm.3.1.61-76.2023.

Beal T, Tumilowicz A, Sutrisna A, Izwardy D, Neufeld LM (2018). A review of child stunting determinants in Indonesia. Matern Child Nutr. 14(4): e126-17. https://doi.org/10.1111/mcn.126-17.

Bliznashka L, Udo IE, Sudfeld CR, Fawzi WW, Yousafzai AK (2021). Associations between women's empowerment and child development, growth, and nurturing care practices in sub-Saharan Africa. PLoS Med. 18(9): e1003781. https://doi.org/10.1371/-journal.pmed .1003781.

Budiastutik I, Nugraheni SA (2019). Determinant of stunting in Indonesia: A review article. Int J Healthc Res. 1(2): 43–49. https://doi.org/10.12928/ijh-r.v1i2.753.

Cattaneo LB, Chapman AR (2010). The process of empowerment: A model for use in research and practice. Am Psychol. 65(7): 646–659. https://doi.-org/10.103 7/a0018854.

Department of Economic and Social Affairs (2016). Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture. United Nations. Available at: https:-//sdgs.un.org/goals/goal2.

Farianingsih, Ma'rufi I, Rokhmah D (20-20). Study of the role of government and community participation in stunting countermeasures system in Lumajang Regency. Sci J Health Sci. 2(1): 14–22. https://doi.org/10.1537-3/22501991.

Fisher JD, Fisher WA, Amico KR, Harman JJ (2006). An information-motiva-

tion-behavioral skills model of adherence to antiretroviral therapy. Health Psychol. 25(4): 462–473. https://doi.org/10.1037/0278-6133.25.4.462.

Fisher WA, Fisher JD, Harman J (2003). The information-motivation-behavioral skills model. In: Social Psychological Foundations of Health and Illness. Wiley. 82–106. https://doi.org/10.1002/9780470753552.ch4.

Frost R (2008). Health Promotion Theories and Models for Program Planning and Implementation. University of Arizona.

Glanz K, Rimer B, Viswanath K (2008). Health Education: Theory, Research, and Practice. 4th ed. Jossey-Bass.

Hair JF, Black WC, Babin BJ, Anderson R (2010). Multivariate Data Analysis. 7th ed. Pearson.

Martha E, Nadira NA, Sudiarti T, Mayangsari AP, Enjaini EF, Ryanthi TP, Bangun DE (2020). The empowerment of cadres and traditional birth attendants in the early detection and prevention of stunting. Indones J Public Health. 15(2): 153. https://doi.org/10.20473/ijph.v15i2.2020.153-161.

Mediani HS, Hendrawati S, Pahria T, Mediawati AS, Suryani M (2022). Factors affecting knowledge and motivation of health cadres in stunting prevention. J Multidiscip Healthc. 15: 1069–1082. https://doi.org/10.2147/JMDH.S356736.

Miller LC, Neupane S, Joshi N, Lohani M, Rogers BL, Neupane S, Ghosh S, Webb P (2020). Multisectoral community development in Nepal. Public Health Nutr. 23(1): 146–161. https://doi.org/10.1017/S136898001900260X.

Ministry of Health of Indonesia (2021). Buku Saku Hasil Survei Status Gizi Indonesia (SSGI) 2021. [in Indonesian version]. retrieved from https://www.badankebijakan.kemkes.go.id/buku-saku-hasil-studi-status-gizi-indonesia-ssgi-tahun-2021/.

Minkler M, Wallerstein N (2019). Improving health through community organization and community building. In: Community Organizing and Community Building for Health and Welfare. Rutgers Univ Press. 37–58. https://doi.org/10.36019/9780813553146-005.

Padgett D (2012). Qualitative and Mixed Methods in Public Health. SAGE Publications. https://doi.org/10.4135/9781483384511.

Podungge H, Talib T, Nggilu R (2023). Effectiveness of stunting prevention programs with village funds. JNX Multidiscip J. 9(4): 50–57. https://doi.org/10.17605/OSF.IO/XCKM4.

Presidential Regulation of the Republic of Indonesia No. 72 (2021). Concerning the Acceleration of Reducing Stunting.

Siregar FA, Surdayati E, Nurmaini (2020). Community empowerment in the prevention of stunting. Abdimas Talenta J Community Serv. 5(2): 503–508. https://doi.org/10.32734/abdimastalenta.v5i2.4963.

Sudartini S, Suryadi S, Purwanto B (2022). Model of community empowerment of self-reliant active standby village. Seybold Rep. 17(109): 854–874. https://doi.org/10.5281/zenodo.7081510.

Sukamto I, Hartono, Setyowati R, Mulyani S (2021). Community health center worker perspectives on stunting. Teikyo Med J. 44(05): 1769–1779.

Thamrin M, Andi A, Arlin A, Andi A (2021). Disruption of stunting social capital. Indian J Public Health Res Dev. 12(2):

153–158. https://doi.org/10.37506/-ijphrd.v12i2.14109.

Wallerstein NB, Duran B (2006). Using community-based participatory research to address health disparities. Health Promot Pract. 7(3): 312–323. https://doi.org/10.1177/1524839906289376.

WHO (2009). WHO Child Growth Standards. Retrieved from https://-www.who.int/tools/child-growth-standards/standards.

WHO (2014). Global Nutrition Targets 2025: Stunting Policy Brief. Retrieved from https://www.who.int/publications/i/item/WHO-NMH-NHD-14.3.

WHO (2017). Stunting prevalence among children under 5 years. Retrieved from https://www.who.int/data/gho-/data/indicators/indicator-details/-GHO/gho-jme-stunting-prevalence

WHO (2021). Health Promotion Glossary of Terms 2021. Retrieved from https://-www.who.int/publications/i/item/9789240038349.