



Systematic Review: Empowerment of Pregnant Women Through "My Plate" ("Isi Piringku") Education in Stunting Prevention and Nutritional Status Improvement Across the Life Cycle

Abdul Basit *, Laila Refiana Said **

Doctoral Program in Development Studies, Lambung Mangkurat University, Banjarmasin, South Kalimantan, Indonesia

*Email (corresponding author): basit.promkes@gmail.com

**Email (corresponding author): lrsaid@ulm.ac.id

Abstract. Stunting remains a critical public health issue with long-term effects on children's physical and cognitive development. Although the 2024 Indonesian Nutrition Status Survey (SSGI) reported a national stunting prevalence decline to 19.8%, disparities persist, notably in South Kalimantan at 22.9%, surpassing the WHO threshold. Nutritional education for pregnant women through the "My Plate" ("Isi Piringku") initiative is considered a strategic intervention, yet its effectiveness has not been comprehensively reviewed. This study aims to evaluate the effectiveness of "My Plate"-based nutritional education in preventing stunting and improving nutritional outcomes across the life cycle. A Systematic Literature Review was conducted using the PRISMA method, sourcing articles from PubMed, ScienceDirect, DOAJ, and Google Scholar. Inclusion criteria included peer-reviewed articles published between 2015 and 2025 with relevant topics. Data were analyzed using a narrative-thematic synthesis. Most studies employed quantitative experimental or quasi-experimental designs. Nutritional education emerged as the predominant intervention (62.5%), surpassing supplementation and other nutrition-sensitive strategies. "My Plate" education demonstrated positive effects on pregnant women's nutritional knowledge, attitudes, and practices, and contributed to lowering stunting risk. Key challenges identified included low nutritional literacy, limited food access, and economic constraints. Involvement of husbands and families enhanced behavioral change in dietary practices. In conclusion, "My Plate"-based nutritional education effectively empowers pregnant women to prevent stunting, aligning with Sustainable Development Goals (SDG) 2 (Zero Hunger) and 3 (Good Health and Well-being) by improving maternal and child nutrition and supporting sustainable health outcomes.

Keywords: Stunting, nutritional education, my plate, empowerment of pregnant women, nutritional status

1. Introduction

Stunting remains a critical global health challenge, impairing children's physical growth and cognitive development. In 2020, an estimated 149.2 million children under five experienced stunted growth, with Asia and Sub-Saharan Africa bearing the highest burden (WHO, 2021). Indonesia has made commendable progress, reducing its national stunting prevalence from 21.5% in 2023 to 19.8% in 2024, thus meeting the World Health Organization's target of under 20% (SSGI, 2024; SKI, 2023). Nevertheless, significant regional disparities

persist: for instance, South Kalimantan's rate remains elevated at 22.9% in 2024, despite a modest decline from 24.7% in 2023 (SSGI, 2024; SKI, 2023).

Beyond reflecting inadequate childhood nutrition, stunting is also indicative of maternal undernutrition before, during, and after pregnancy. Given the complex interplay of biological, socio-economic, and behavioral determinants, interventions must commence in the pre-conception period and extend through the critical first 1,000 days of life (Black et al., 2013). Empowering pregnant women is therefore essential, as they are primary agents of household dietary practices. Evidence shows that enhancing maternal nutrition knowledge improves fetal development, reduces low birth weight risk, and bolsters child health outcomes (Lassi et al., 2016; Victora et al., 2021). Over time, such empowerment contributes to intergenerational human capital development (Ruel & Alderman, 2013).

Nutrition education has emerged as a key strategy in stunting prevention. Indonesia's "Isi Piringku" ("My Plate") initiative exemplifies this approach, offering an intuitive, evidence-based model that allocates the diet into carbohydrates (35%), proteins (15%), vegetables (30%), and fruits (20%) (Ministry of Health, 2020). By translating complex dietary guidelines into a simple visual tool, *Isi Piringku* seeks to facilitate mothers' comprehension and application of balanced meal planning (Soares et al., 2019). Studies indicate that participants exposed to this program demonstrate significant improvements in nutrient knowledge, dietary attitudes, and feeding practices (Haines & Ruhl, 2016).

However, persistent barriers—such as limited health literacy, poor access to reliable information, and food insecurity—impede widespread adoption, particularly in rural and high-stunting regions where only one-third of pregnant women fully understand the *Isi Piringku* framework (Heryani et al., 2023). To address these challenges, educational efforts must evolve into comprehensive empowerment models that integrate cognitive (knowledge), affective (attitudes), and psychomotor (skills) domains (Sutrisna et al., 2021). Embedding local food culture—using affordable, familiar ingredients like tempeh, leafy greens, and seasonal fruits—can further enhance relevance and sustainability (Azrimaidaliza et al., 2022; Widodo et al., 2023).

The theoretical underpinnings of *Isi Piringku* align with established behavior change models, such as the Health Belief Model and Social Cognitive Theory, which emphasize perceived risk and self-efficacy as drivers of action. Interventions that bolster these constructs have achieved notable gains in exclusive breastfeeding, timely complementary feeding, and overall dietary quality (Bhutta et al., 2013; Darlis et al., 2022). Adopting a life-course perspective highlights the enduring benefits of maternal nutrition education, which not only optimizes birth outcomes but also cultivates healthier dietary norms across generations (Victora et al., 2021; Tran & Nguyen, 2017).

Although promising, the *Isi Piringku* initiative's scalability and long-term impact require systematic evaluation. This study employs a structured review of peer-reviewed literature to assess how maternal empowerment via *Isi Piringku* influences stunting reduction and nutritional outcomes. The findings aim to inform evidence-based policies and program designs in Indonesia and comparable contexts within the Global South, supporting Sustainable Development Goals 2 (Zero Hunger) and 3 (Good Health and Well-being) by promoting nutrition across all life stages (United Nations, 2015; Bappenas, 2020).

2. Methods

This research adopts a Systematic Literature Review (SLR) approach to examine the impact of the *Isi Piringku* (My Plate) educational initiative in empowering pregnant women, particularly for stunting prevention and improved nutritional outcomes across the life course. The review begins by defining a central objective: to evaluate the effectiveness of *Isi Piringku* as a maternal empowerment strategy. The methodology follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework (Moher et al., 2015) to ensure transparency and rigor.

The primary research question addressed is: “How effective is the empowerment of pregnant women through *Isi Piringku* nutritional education in preventing stunting and improving nutritional outcomes across life stages?” To answer this, an extensive literature search was conducted using four major databases—PubMed, ScienceDirect, DOAJ, and Google Scholar—guided by the PICOS/R criteria: Population (pregnant women or mothers of toddlers), Intervention (*Isi Piringku* nutrition education), Comparison (no or alternative intervention), Outcomes (stunting prevention and nutritional improvement), and Study design (quantitative, qualitative, or mixed methods).

Strict inclusion criteria were applied, selecting only peer-reviewed studies from 2015–2025 in English or Indonesian that focused on pregnant women or caregivers and the *Isi Piringku* initiative. Opinion pieces and non-peer-reviewed sources were excluded. A two-stage screening process—title/abstract review followed by full-text assessment—narrowed the studies, and a structured template was used for data extraction.

The final stage involved a thematic narrative synthesis to classify empowerment strategies and identify how nutrition education interventions influenced maternal behavior and stunting outcomes. The findings aim to inform future policy and guide the design of community-based nutrition empowerment programs for pregnant women.

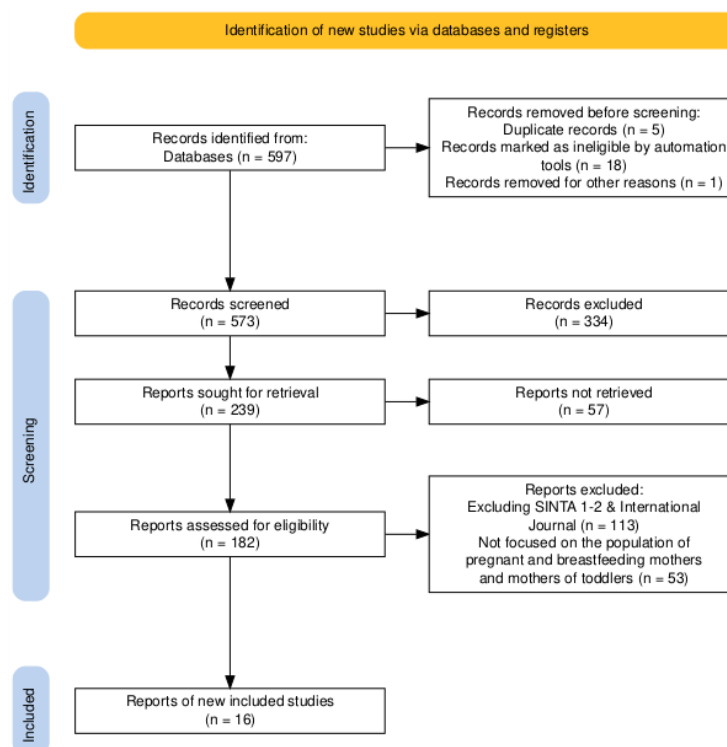


Figure 1. Flow diagram of the systematic review using the PRISMA guidelines (https://estech.shinyapps.io/prisma_flowdiagram/)

Figure 1 illustrates the procedural flow of this systematic review, conducted using the PRISMA framework to ensure transparency and reproducibility. An initial search yielded 597 articles, with 18 automatically filtered out by the publisher. Most entries came from Google Scholar (348), narrowed to 330 using a publication year filter (2015–2025). After excluding one inaccessible full-text article from PubMed, the total articles retrieved were: Google Scholar (330), PubMed (37), ScienceDirect (37), and DOAJ (12), totaling 578. Following the removal of five duplicates, 573 unique articles proceeded to screening.

Title screening eliminated 334 articles due to irrelevance, and 57 more were excluded during abstract evaluation for not aligning with the study’s scope. This left 182 articles for full-text review. Of these, 113 were excluded for not meeting journal indexing or credibility standards. The remaining 69 articles underwent final screening, with 53 removed for not addressing the target population of pregnant women, breastfeeding mothers, or caregivers. Ultimately, 16 studies met all criteria and were selected for in-depth analysis.

3. Results and Discussion

3.1. Results Systematic Literature Review

The reviewed literature predominantly employed quantitative methods, including pre-experimental, experimental, quasi-experimental designs, and analytical models like linear and logistic regression, as well as randomized controlled trials (RCTs). These were complemented by qualitative studies, especially those using intervention-based and cross-sectional approaches, reflecting diverse efforts to assess maternal empowerment strategies.

Effective programs often featured active participation from pregnant women and their communities, with locally adapted interventions tailored to specific needs. This enhanced both relevance and sustainability. A notable trend was the integration of digital technologies in delivering nutrition education.

For example, the Nutrimenu Program (Briawan et al., 2024) aimed to improve maternal understanding of balanced nutrition, with 54% of participants demonstrating improved attitudes toward healthy eating, indicating positive behavioral shifts linked to stunting prevention. Similarly, Rahmawati et al. (2024) utilized a multi-platform education model, including structured nutrition content for healthcare providers, targeted dietary information for pregnant women, and YouTube-based education. This approach significantly improved maternal nutrition knowledge, highlighting the value of integrative communication in enhancing literacy during pregnancy.

Table 1. Mother Empowerment Programs Identified in the SLR

Mother/ Caregiver Empowerment Program	Number of Articles Included		Program Targets	Empowerment Activities Identified
	n	%		
Nutrition Education	10	62,50	Pregnant women, Mothers of toddlers, Husbands, Women of	(1) Execution of nutrition courses at the community level; domestic visits; dissemination of information via YouTube channels; (2) Maternal toddler classes; Enhanced understanding via the Golden Nutrition Booklet (GNB); (3) Nutrimenu Program;

Mother/ Caregiver Empowerment Program	Number of Articles Included		Program Targets	Empowerment Activities Identified
	n	%		
			Reproductive Age (WRA)	(4) Guiding healthcare professionals in nutritional education interventions for pregnant women; (5) Interactive nutritional education; Interpersonal communication techniques; Spousal participation in maternal nutrition initiatives; (6) Maternal Mentorship; nutritional instruction and guidance for expectant moms; (7) Mentorship for expecting mothers; First 1000 Days of Life (FHD) program for expectant moms.
Nutrition Intervention	3	18,75	Pregnant women	The Special Nutritious Food (SNF) intervention and Social and Behavior Change Communication (SBCC) constitute an evidence-based strategy designed to foster positive health behaviors and alter social norms via strategic, culturally relevant communication and community involvement; nutritional intervention through dietary supplementation; and the distribution of iron tablets (Fe tablets) for pregnant women.
Agriculture	2	12,50	Pregnant women	Maternal-sensitive agricultural initiative; Nutrition-sensitive agricultural program (participatory video).
Household Economic Improvement	1	6,25	Pregnant women, Mothers of toddlers	Behavior change and economic empowerment intervention to promote endline behavior change.
Total	16	100,00		

Source: Secondary Data 2025

Table 2. Characteristics of Selected Articles

Researcher	Objective	Study Design and Methods	Study Subject	Program/ Intervention	Main Results
Rahmawati , et al (2024), Indonesia	This initiative aims to establish thorough nutrition education standards for healthcare professionals , develop evidence- based nutritional recommenda- tions for pregnant	Descriptive, quantitative	Wagir Subdistrict, Malang Regency	Nutrition instruction utilizing three methodologi- es: community classes, home visits, and a YouTube channel.	Enhanced understanding following nutrition education via antenatal classes, encompassing village sessions, home visits, and a YouTube channel.

Researcher	Objective	Study Design and Methods	Study Subject	Program/ Intervention	Main Results
	women, and produce accessible teaching materials to improve maternal nutrition.				
Emaniar, et al. (2023), Indonesia - Bandarharjo	The aim is to enhance mothers' comprehension of suitable feeding habits for toddlers, particularly emphasizing the significance of fruits, vegetables, and balanced nutrition in early childhood development.	Quasi-experimental (<i>uji wilcoxon</i>)	Bandarharjo Subdistrict	This campaign delivers nutrition education to mothers of toddlers – focusing on stunting prevention – through practical nutritious meal demonstrations, posters on processed fruits & vegetables, supplementary feeding (PMT) to improve maternal-child health.	Exhibited a substantial enhancement in mothers' comprehension of stunting and its prevention.
Wahidah et al. (2023), Indonesia - Surakarta	To assess the influence of the Golden Diet Booklet (GNB) on the modifications in knowledge and attitudes toward the adoption of a balanced diet among women of	Quasi-experimental (dependent sample t-test)	Ngoresan, Surakarta	Golden Nutrition Booklet (GNB); A health education campaign focused on balanced nutrition, distributed through a booklet.	Golden Nutrition Booklet (GNB); A health education campaign focused on balanced nutrition, distributed through a booklet.

Researcher	Objective	Study Design and Methods	Study Subject	Program/ Intervention	Main Results
	reproductive age.				
Briawan, Alfiah, & Putri (2024), Indonesi - Bandarharjo	To evaluate the effectiveness of the Nutrimentu program on maternal knowledge, attitudes, and practices	Pre-post intervention study	Bogor	Nutrimenu Program	Fifty-four percent of mothers shown an enhancement in their positive attitude scores regarding balanced eating. This signifies a potentially crucial advancement in stunting prevention.
Muhamad, et al (2023), Indonesia - Gorontalo	To assess the efficacy of nutritional education for short-statured pregnant women in mitigating gestational stunting	Quasi-experimental (Quantitative approach)	Tilango Health Center	Post-intervention, pregnant women significantly improved ANC knowledge, attitudes, and practices, aided by healthcare professional support, enabling them to choose and prepare nutritious foods that reduce gestational stunting risk..	Post-intervention, pregnant women significantly improved ANC knowledge, attitudes, and practices, aided by healthcare professional support, enabling them to choose and prepare nutritious foods that reduce gestational stunting risk.
Permatasari, et al. (2021), Indonesia - Bogor	To evaluate the impact of nutrition and reproductive health education on pregnant women, focusing on	Quasi-experimental	194 pregnant women in Bogor participated between August and November 2019	Interactive education: Instruction on nutrition and reproductive health provided via small group	Education on nutrition and reproductive health provided through small group sessions employing interactive techniques can improve the

Researcher	Objective	Study Design and Methods	Study Subject	Program/ Intervention	Main Results
	the enhancement of their knowledge, attitudes, and practices on maternal nutrition and reproductive health.			sessions employing interactive techniques.	knowledge, attitudes, and habits of pregnant women.
Gamboa, et al (2020), Indonesia – Sumatera dan Kalimantan	To evaluate the impact of participation in IPC activities on the knowledge, attitudes/intents, and consumption of IFA supplements and iron-rich foods among pregnant women in Indonesia.	Linear and logistic regression models	North Sumatra, West Kalimantan, and Central Kalimantan	Interpersonal communication (IPC) strategy	Low-intensity promotion of IFA supplements and iron-rich foods (ATIKA) may boost knowledge but fails to change behavior. Effective stunting prevention must strengthen education, tackle barriers, address perceived vulnerability, and enhance self-efficacy to expand intervention impact in Indonesia.
Soofi, et al. (2024), Afghanistan, Badakshan	To evaluate the effectiveness of specialized nutritious food (SNF) and social and behavior change communication (SBCC) interventions in reducing stunting in children under 2 years of age throughout the critical	Quasi-experimental design	Badakshan, Afghanistan	Intervention using specialized nutritious foods (SNF) and social and behavior change communication (SBCC)	Specialized nutritious foods delivery combined with Social and Behavior Change Communication during the first 1,000 days reduced stunting and underweight and improved feeding practices for children under 12 years old.

Researcher	Objective	Study Design and Methods	Study Subject	Program/ Intervention	Main Results
	1000 days of life in Badakhshan, Afghanistan.				
Birungi, et al. (2021), Rwanda	To examine the behavioral determinants affecting suboptimal maternal and child feeding behaviors in Rwanda, despite heightened nutritional awareness.	Qualitative anthropological study using Focused Ethnographic Studies (FES) approach	A total of 30 households comprising pregnant women, lactating mothers, and children aged 6 to 60 months	Behaviour change and economic empowerment intervention s to promote the latter behavioural changes.	Households prioritize food quantity over quality due to poverty and norms, despite adequate nutrition knowledge. Behavior change and economic empowerment may improve diets
Ashorn et al. (2015), Malawi	To evaluate the impact of providing small-quantity lipid-based nutrient supplements (SQ-LNS) to mothers throughout pregnancy and the first six months postpartum, alongside their infants aged 6 to 18 months, on improving neonatal and child growth.	Design experiment	The study took place in three Mangochi District facilities: a district hospital, a semi-private rural hospital, and a public health center	Small-quantity lipid-based nutrient supplements (SQ-LNS)	The administration of SQ-LNS to women during pregnancy and postpartum, as well as to infants aged 6 to 18 months, did not yield enhanced child growth results in this rural region of Malawi.
Nguyen et al. (2018), Bangladesh	(1) This study evaluates how a nutrition-focused MNCH	A cluster-randomized design integrated with cross-	Approximately 1,000 women and 700 husbands participated in	Involvement of husbands in a maternal nutrition	A nutrition-focused MNCH program encouraging spousal involvement

Researcher	Objective	Study Design and Methods	Study Subject	Program/ Intervention	Main Results
	program versus a standard one affects husbands' awareness, knowledge, and self-efficacy in supporting their wives' healthy nutrition practices, (2) To examine how these behavioral determinants and support explain women's supplement use and dietary diversity.	sectional surveys.	the surveys conducted in Bangladesh.	program; Nutrition-focused MNCH program promoting and facilitating husband involvement during their wives' pregnancies.	markedly improved husbands' awareness, knowledge, self-efficacy, and support, which in turn significantly boosted women's micronutrient supplement use and dietary diversity.
Heckert, Olney, Ruel (2019), Burkina Faso	To investigate the influence of women's empowerment on newborn nutritional outcomes	Randomized controlled trial (RCT)	Mothers of children aged 3 to 12 months at the program's initiation, residing in randomly selected villages in Burkina Faso.	Agriculture program focused on nutrition	Women's empowerment is a vital avenue by which nutrition interventions can improve child nutritional status. Initiatives designed to enhance child nutrition must incorporate strategies that prioritize the empowerment of mothers.
Kadiyala, et al. (2021), India	This research seeks to evaluate the efficacy of nutrition-sensitive agriculture (NSA) treatments,	A cluster-randomized controlled trial (RCT)	Keonjhar District, Odisha, India, consisting of 148 village clusters	An agriculture initiative focused on nutrition, using participatory videos and women's	Nutrition-sensitive agriculture programs with participatory videos and women's groups enhanced dietary diversity among rural Indian mothers and

Researcher	Objective	Study Design and Methods	Study Subject	Program/ Intervention	Main Results
	in conjunction with interactive films and women's group talks, in enhancing maternal and child nutrition outcomes.			group meetings.	children but did not significantly improve maternal nutrition or reduce child wasting; further interventions are needed to tackle malnutrition.
Siregar, Nurachma, Raihanah (2023), Indonesia, Samarinda	To assess the influence of parental support on actions designed to prevent stunting	Pre-experimental design	32 pregnant women at the Samarinda Health Center	Assistance for pregnant mothers	Assistance for pregnant mothers can significantly improve stunting prevention behaviors. This indicates the importance of educational and counseling support for pregnant women.DOAJ
Sari & Meyleni (2024), Indonesia, Ciamis	To examine the relationship between demographic characteristics and knowledge and attitudes regarding iron (Fe) supplementation.	Quantitative with experimental design	151 respondents at Sadananya Public Health Center, Ciamis	Fe tablets	A notable association was seen between age and knowledge of iron (Fe) supplementation. No substantial link was seen between educational achievement or pregnancy history and awareness of iron supplementation.
Mirasari, et al. (2023), Indonesia, Surabaya	To assess the efficacy of the 1000 HPK Movement educational initiative in Manukan Kulon Village.	Quantitative with Wilcoxon Test	35 pregnant women, breastfeeding mothers, and mothers with children < 2 years old	1000 HPK	Following dietary advice and participatory discussions, participants demonstrated an improved comprehension of the 1000 HPK Movement.

3.2. Discussion

Improving maternal agency during pregnancy significantly influences both maternal-fetal nutrition and long-term generational health. Nutrition education based on the *Isi Piringku* (My Plate) framework supports healthier household eating habits by increasing maternal literacy on balanced diets, leading to more nutrient-dense food choices (Heryani et al., 2023). Adequate maternal nutrition is vital for fetal development, with deficiencies linked to low birth weight—a key stunting risk factor (Black et al., 2013; Victora et al., 2021). A systematic literature review of 16 studies showed that while many interventions aimed to enhance maternal knowledge and behavior, none used *Isi Piringku* as a central tool for stunting prevention. Instead, it was incorporated within broader maternal empowerment models involving caregivers and families to support nutrition-related behavior change.

3.2.1. Mother Empowerment Programs in Stunting Prevention

Tables 1 and 2 summarize various maternal empowerment programs associated with stunting prevention. The majority (62.5%) consisted of nutrition education initiatives targeting women of reproductive age, pregnant women, and mothers with young children. These programs aimed to foster knowledge, attitudinal shifts, and behavior changes regarding stunting prevention. Rahmawati et al. (2024) used a triadic model—community nutrition classes, home visits, and YouTube content—which proved effective in increasing maternal nutritional knowledge. Similarly, Emaniar et al. (2023) focused on mothers of toddlers through awareness campaigns, food preparation demos, nutrition posters, and supplementary feeding (PMT), significantly improving feeding practices.

Muhamad et al. (2023) highlighted interventions for short-statured pregnant women, noting improvements in knowledge, attitudes, and practices related to antenatal care (ANC) and diet, driven by support from healthcare providers and community cadres. Permatasari et al. (2021) demonstrated that small interactive group sessions on nutrition and reproductive health led to behavioral change among pregnant women. Gamboa et al. (2020) explored interpersonal communication (IPC) and found that while campaigns for iron-folic acid (IFA) supplementation increased awareness, they lacked sufficient impact on behavioral change, highlighting the need to address risk perception, self-efficacy, and behavioral barriers.

In Samarinda, Siregar et al. (2023) found that structured support for pregnant women resulted in improved behavior regarding stunting prevention. Mirasari et al. (2023) reported positive outcomes from participatory counseling and discussion during the first 1,000 days of life in Surabaya, enhancing maternal nutrition knowledge.

Beyond education, direct nutritional interventions were also studied. Ashorn et al. (2015) conducted a randomized controlled trial in Malawi, testing Small-Quantity Lipid-Based Nutrient Supplements (SQ-LNS) from pregnancy through early infancy. The results showed no significant child growth benefits, suggesting that supplementation alone is ineffective without concurrent behavior-change efforts. Sari and Meyleni (2024) found maternal age influenced knowledge of iron supplementation, while education level and pregnancy history had no significant effects.

The involvement of husbands was also significant. Nguyen et al. (2018) found that male partner inclusion in enhanced Maternal, Newborn, and Child Health (MNCH) programs in Bangladesh improved maternal dietary diversity and micronutrient intake due to increased spousal awareness and support.

Alternative strategies, such as nutrition-sensitive agriculture, have shown promise. Heckert, Olney, and Ruel (2019) reported improved nutrition outcomes from agricultural programs targeting maternal empowerment. Kadiyala et al. (2021) studied a trial in rural India using participatory videos and women's group discussions, which increased dietary diversity but had limited effects on anthropometric outcomes, underscoring the need for integrated approaches.

Lastly, economic empowerment also played a role. Birungi et al. (2021) examined a community-based program involving 30 families with pregnant or nursing women. Despite strong nutrition awareness, actual dietary practices were limited by financial constraints, cultural norms, and household priorities, emphasizing the importance of addressing socioeconomic and cultural barriers to improve maternal and child nutrition effectively.

3.2.2. "Isi Piringku" (My Plate) Nutrition Education in Stunting Prevention and Improving Nutritional Status Across the Life Cycle

The Isi Piringku program marks a significant shift in Indonesia's nutrition education, replacing the outdated 4 Sehat 5 Sempurna model and food pyramid with a more intuitive plate-based guide. This visual format divides the plate into 35% carbohydrates, 15% protein (from animal and plant sources), 30% vegetables, and 20% fruits (Ministry of Health, 2020). While the model promotes balanced nutrient intake, its effectiveness hinges on mothers' ability to understand, internalize, and consistently apply it at home. However, implementation remains limited—especially in rural and high-stunting areas—where only 32% of pregnant women fully grasp the Isi Piringku concept (Heryani et al., 2023). Barriers such as poor health literacy, limited access to reliable information, and food insecurity significantly hinder widespread adoption.

Beyond disseminating information, Isi Piringku aims to foster cognitive and behavioral change in maternal nutrition practices. Improved nutritional literacy enables healthier behaviors, such as exclusive breastfeeding, appropriate complementary feeding (MP-ASI), and the consistent preparation of balanced meals. These behavior changes are critical to breaking the cycle of undernutrition and stunting (Pelto et al., 2016). From a life-cycle perspective, maternal nutrition during pregnancy not only influences fetal development but also impacts lactation, infant feeding success, and long-term family dietary patterns (Victora et al., 2021). Low birth weight, a predictor of future stunting, is directly linked to maternal nutrition (Kozuki, 2015). Therefore, interventions should also engage key family influencers—husbands and mothers-in-law—who often shape household dietary decisions (Lassi et al., 2016).

Traditional education programs alone often fall short in creating lasting behavioral change. A more empowering model is required—one that strengthens not just knowledge, but also motivation, practical skills, and supportive environments. Real empowerment involves cognitive (knowledge), affective (attitude), and psychomotor (skills) components (Sutrisna et al., 2021). Integrating local food culture into educational content further enhances program relevance and sustainability. Using affordable, locally available foods—like freshwater fish, moringa, tempeh, and seasonal fruits—can improve community acceptance (Azrimaidaliza et al., 2022; Widodo et al., 2023).

The theoretical basis of Isi Piringku aligns with behavior change models like the Health Belief Model and Bandura's Social Cognitive Theory, which stress perceived risk and self-efficacy as motivators. Educational interventions that strengthen these traits have led to

improved breastfeeding practices, timely complementary feeding, and better household diets (Bhutta et al., 2013; Darlis et al., 2022). Over the life course, maternal nutrition literacy enhances breastfeeding, supports future pregnancies, and promotes intergenerational learning, creating healthier families (Victora et al., 2021).

This study underscores the need for evidence-based, community-driven interventions like Isi Piringku in stunting prevention efforts. These initiatives support Sustainable Development Goals (SDGs), especially Goal 2 (Zero Hunger) and Goal 3 (Good Health and Well-being). Goal 2.2 targets the elimination of all forms of malnutrition, including stunting and wasting in children under five, while Goals 3.1 and 3.2 focus on reducing maternal and child mortality. Isi Piringku thus functions as a preventive and promotive strategy rooted in community empowerment (UN, 2015; Bappenas, 2020).

Conclusion

Isi Piringku has proven effective in improving maternal nutrition knowledge, attitudes, and behaviors, all of which are critical for preventing stunting. However, challenges remain in ensuring its widespread and sustained adoption, particularly in underserved regions. To enhance its impact, Isi Piringku should be delivered through inclusive platforms, complemented by targeted nutrition support and family-centered approaches. These efforts must be supported by policies that strengthen local food systems and promote household economic resilience.

Funding

This research was self-funded by the authors as part of the literature review process for the Doctoral Dissertation Proposal in the Development Studies Doctoral Program at Lambung Mangkurat University, Banjarmasin.

Acknowledgments

The authors would like to acknowledge Prof. Laila Refiana Said, S.Psi, M.Si., Ph.D., lecturer of the Economic Issues and Community Empowerment course, and all individuals who contributed valuable assistance during this research.

Conflicts of Interest

The authors assert that there are no conflicts of interest pertaining to this research. The planning, data gathering, analysis, and report writing were executed autonomously, devoid of any external influence or interference.

References

- Ashorn, P., Alho, L., Ashorn, U., Cheung, Y. B., Dewey, K. G., Gondwe, A., Harjunmaa, U., Lartey, A., Phiri, N., Phiri, T. E., Vosti, S. A., Zeilani, M., & Maleta, K. (2015). Supplementation of maternal diets during pregnancy and for 6 months postpartum and infant diets thereafter with small-quantity lipid-based nutrient supplements does not promote child growth by 18 months of age in rural malawi: A randomized controlled trial. *Journal of Nutrition*, 145(6), 1345–1353. <https://doi.org/10.3945/jn.114.207225>

- Azrimaidaliza, Femelia, W., Nur, N. C., & Putri, R. (2022). Mencegah Stunting Melalui Edukasi Gizi Seimbang pada Ibu Hamil dan Ibu Balita di Puskesmas Lapai. *Panrita Abdi - Jurnal Pengabdian Pada Masyarakat*, 6(4), 934–943.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. H Freeman/Times Books/ Henry Holt & Co.
- Bhutta, Z. A., Das, J. K., Rizvi, A., Gaffey, M. F., Walker, N., Horton, S., Webb, P., Lartey, A., & Black, R. E. (2013). Evidence-based interventions for improvement of maternal and child nutrition: What can be done and at what cost? In *The Lancet* (Vol. 382, Issue 9890, pp. 452–477). Elsevier B.V. [https://doi.org/10.1016/S0140-6736\(13\)60996-4](https://doi.org/10.1016/S0140-6736(13)60996-4)
- Birungi, A., Koita, Y., Roopnaraine, T., Matsiko, E., & Umugwaneza, M. (2023). Behavioural drivers of suboptimal maternal and child feeding practices in Rwanda: An anthropological study. *Maternal and Child Nutrition*, 19(1). <https://doi.org/10.1111/mcn.13420>
- Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., De Onis, M., Ezzati, M., Grantham-Mcgregor, S., Katz, J., Martorell, R., & Uauy, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. In *The Lancet* (Vol. 382, Issue 9890, pp. 427–451). Elsevier B.V. [https://doi.org/10.1016/S0140-6736\(13\)60937-X](https://doi.org/10.1016/S0140-6736(13)60937-X)
- Briawan, D., Alfiah, E., & Putri, P. A. (2024). Nutrimenu: nutrition education program to increase knowledge, attitude, and practices on the indonesian balanced nutrition. *Jurnal Gizi Dan Dietetik Indonesia (Indonesian Journal of Nutrition and Dietetics)*, 12(2), 59. [https://doi.org/10.21927/ijnd.2024.12\(2\).59-79](https://doi.org/10.21927/ijnd.2024.12(2).59-79)
- Emaniar, A. E., Octafania, N. S., Buchori, A. M., Anggraeni, D. A., Widyawati, R. W., Mawardhani, A. Y., Astuti, D. F., Anggrenana, R. S., Putri, M. S., A. Z., Roosana, M. R., Kurniawati, Y. D., Septianingrum, B. D., & Veria Setyawati, V. A. (2023). Increasing Maternal Knowledge In Preventing Stunting Through Community-Based Nutrition Education. *Advance Sustainable Science Engineering and Technology*, 5(2), 0230205. <https://doi.org/10.26877/asset.v5i2.16252>
- Eriksen, M. B., & Frandsen, T. F. (2018). The impact of patient, intervention, comparison, outcome (PICO) as a search strategy tool on literature search quality: a systematic review. *Journal of the Medical Library Association*, 106(4), 420–427. <https://doi.org/10.5195/jmla.2018.345>
- Gamboa, E., Broadbent, E., Quintana, N., Callaway, S., Donoso, P., Linehan, M., Wibowo, L., Santika, O., West, J. H., Hall, P. C., & Crookston, B. T. (2020). Interpersonal communication campaign promoting knowledge, attitude, intention, and consumption of iron folic acid tablets and iron rich foods among pregnant Indonesian women. *Asia Pacific Journal of Clinical Nutrition*, 29(3), 545–551. [https://doi.org/10.6133/apjcn.202009_29\(3\).0013](https://doi.org/10.6133/apjcn.202009_29(3).0013)
- Haines, P. S., & Ruhl, E. S. (2016). Nutrition and maternal health: Implications for stunting prevention and intervention. *Journal of Maternal-Fetal and Neonatal Medicine*, 29(3), 210–215. DOI: 10.3109/14767058.2015.1054471
- Heckert, J., Olney, D. K., & Ruel, M. T. (2019). Is women's empowerment a pathway to improving child nutrition outcomes in a nutrition-sensitive agriculture program?: Evidence from a randomized controlled trial in Burkina Faso. *Social Science and Medicine*, 233, 93–102. <https://doi.org/10.1016/j.socscimed.2019.05.016>

- Heryani, H., Endang Purwati, A., Setiawan, H., Firmansyah, A., Solihah, R., & Heryani Emai, H. (2023). Edukasi Isi Piringku sebagai Upaya Pencegahan Stunting. *Kolaborasi: Jurnal Pengabdian Masyarakat*, 3(2), 139–144. <https://doi.org/https://doi.org/10.53803/kolaborasi.v3i2.241>
- Kadiyala, S., Harris-Fry, H., Pradhan, R., Mohanty, S., Padhan, S., Rath, S., James, P., Fivian, E., Koniz-Booher, P., Nair, N., Haghparast-Bidgoli, H., Mishra, N. K., Rath, S., Beaumont, E., Danton, H., Krishnan, S., Parida, M., O'Hearn, M., Kumar, A., ... Allen, E. (2021). Effect of nutrition-sensitive agriculture interventions with participatory videos and women's group meetings on maternal and child nutritional outcomes in rural Odisha, India (UPAVAN trial): a four-arm, observer-blind, cluster-randomised controlled trial. *The Lancet Planetary Health*, 5(5), e263–e276. [https://doi.org/10.1016/S2542-5196\(21\)00001-2](https://doi.org/10.1016/S2542-5196(21)00001-2)
- Kementerian PPN/Bappenas. (2020). *Rencana Aksi Nasional Pencapaian Tujuan Pembangunan Berkelanjutan (TPB/SDGs) 2020–2024*. Jakarta: Kementerian Perencanaan Pembangunan Nasional/Bappenas.
- Kementerian Kesehatan Republik Indonesia. (2025). *Laporan Nasional Survei Status Gizi Indonesia (SSGI) Tahun 2024*. Badan Kebijakan Pembangunan Kesehatan.
- Kementerian Kesehatan Republik Indonesia. (2020). *Pedoman Gizi Seimbang: Isi Piringku untuk Semua Umur*. Direktorat Jenderal Kesehatan Masyarakat.
- Kozuki. (2015). The association between birthweight and stunting in children under 5 years old. *Journal of Nutrition*, 145(10), 2211–2218.
- Lassi, Z. S., Das, J. K., Zahid, G., Imdad, A., & Bhutta, Z. A. (2016). Impact of Education and Empowerment for Maternal and Child Health: A Systematic Review and Meta-Analysis. *Reproductive Health*, 13(1), 1–17.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group. (2015). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLOS Medicine*, 6(7), e1000097. <https://doi.org/10.1371/journal.pmed.1000097>
- Muhamad, Z., Mahmudiono, T., Abihail, C. T., Sahila, N., Wangi, M. P., Suyanto, B., & Binti Abdullah, N. A. (2023). Preliminary Study: The Effectiveness of Nutrition Education Intervention Targeting Short-Statured Pregnant Women to Prevent Gestational Stunting. *Nutrients*, 15(19). <https://doi.org/10.3390/nu15194305>
- Nency Mirasari, Arifin, V. B., Werdaningtyas, R., Nastiti, Y. D., Ridho'i, R., Perdana, M. D. R., Tassya, N. I., Rosanti, H. A., Willa, & Ramli, L. (2023). Stunting Prevention Through First 1.000 Days Of Life (Hpk) Program Education in Manukan Kulon Sub-District, Tandes District, Surabaya. *Jurnal Layanan Masyarakat (Journal of Public Services)*, 7(4), 523–535. <https://doi.org/10.20473/jlm.v7i4.2023.523-535>
- Nguyen, P. H., Frongillo, E. A., Sanghvi, T., Wable, G., Mahmud, Z., Tran, L. M., Aktar, B., Afsana, K., Alayon, S., Ruel, M. T., & Menon, P. (2018). Engagement of husbands in a maternal nutrition program substantially contributed to greater intake of micronutrient supplements and dietary diversity during pregnancy: Results of a cluster-randomized program evaluation in Bangladesh. *Journal of Nutrition*, 148(8), 1352–1363. <https://doi.org/10.1093/jn/nxy090>
- Pelto, G. H., Martin, S. L., & van Liere, M. (2016). Approaches to Improve Nutrition: Lessons from the POSHAN Initiative. *Maternal & Child Nutrition*, 12(S1), 95–112.

- Permatasari, T. A. E., Rizqiya, F., Kusumaningati, W., Suryaalamshah, I. I., & Hermiwahyoeni, Z. (2021). The effect of nutrition and reproductive health education of pregnant women in Indonesia using quasi experimental study. *BMC Pregnancy and Childbirth*, 21(1). <https://doi.org/10.1186/s12884-021-03676-x>
- Rahmawati, W., Dewi, M., Habibie, I. Y., Fahmi, I., & Priambada, S. (2024). Expanding pregnant women's nutrition education access via an integrated model. *Caring Jurnal Pengabdian Masyarakat*, 4(3), 18–30. <https://doi.org/10.21776/ub.caringjpm.2024.004.03.3>
- Ruel, M. T., & Alderman, H. (2013). Nutrition-sensitive interventions and programmes: How can they help to accelerate progress in improving maternal and child nutrition? In *The Lancet* (Vol. 382, Issue 9891, pp. 536–551). Elsevier B.V. [https://doi.org/10.1016/S0140-6736\(13\)60843-0](https://doi.org/10.1016/S0140-6736(13)60843-0)
- Sari, A., & Meyleni, R. (2024). Demographics, knowledge, and attitudes toward fe supplementation for stunting prevention at public health center, Ciamis-Indonesia. *Pharmaciana*, 14(2), 164. <https://doi.org/10.12928/pharmaciana.v14i2.27665>
- Siregar, N., Nurachma, E., & Raihanah, S. (2023). The effect of pregnant mother assistance on stunting prevention behavior. *Healthcare in Low-Resource Settings*, 11(2). <https://doi.org/10.4081/hls.2023.11728>
- Soares, R. A., et al. (2019). The impact of maternal education on child nutritional status: Evidence from the Demographic and Health Surveys. *International Journal of Pediatric Obesity*, 38(12), 228–235. DOI: 10.1016/j.ijo.2018.12.016
- Soofi, S. B., Khan, G. N., Sajid, M., Hussainyar, M. A., Shams, S., Shaikh, M., Ouma, C., Azami, S., Naeemi, M., Hussain, A., Umer, M., Hussain, I., Ahmed, I., & Ariff, S. (2024). Specialized nutritious foods and behavior change communication interventions during the first 1000 d of life to prevent stunting: a quasi-experimental study in Afghanistan. *American Journal of Clinical Nutrition*, 120(3), 560–569. [<https://doi.org/10.1016/j>]
- Sutrisna, A., Darmayanti, T., & Wulandari, A. (2021). Model Pemberdayaan Ibu Hamil Berbasis Komunitas dalam Pencegahan Stunting di Daerah Tertinggal. *Jurnal Gizi Dan Pemberdayaan Masyarakat*, 9(2), 85–92. <https://doi.org/https://doi.org/10.21109/kesmas.v9i2.4122>
- Sutrisna, B., Wulandari, E., & Nasution, A. (2021). *Isi Piringku Intervention in Rural Indonesia: Knowledge, Behavior, and Maternal Health*.
- Tran, B. X., & Nguyen, H. T. (2017). Social determinants and the nutrition education interventions for maternal health: A review. *Public Health Nutrition*, 20(8), 1455–1463. DOI: 10.1017/S1368980017000039
- United Nations (UN). (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*. <https://sdgs.un.org/2030agenda>
- Victora, C. G., Christian, P., Vdaletti, L. P., Gatica-Domínguez, G., Menon, P., & Black, R. E. (2021). Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. In *The Lancet* (Vol. 397, Issue 10282, pp. 1388–1399). Elsevier B.V. [https://doi.org/10.1016/S0140-6736\(21\)00394-9](https://doi.org/10.1016/S0140-6736(21)00394-9)

-
- Wahidah, N. J., Hatta Novika, R. G., Nurhidayati, S., Sari, A. N., Maulina, R., Maulida, L. F., Fatmawati, R. A., Mufidah, T. H., Azizah, A. N., Haquw, A. D., Khasanah, N. I., Setiani, S. O., & Amalia, Z. A. (2023). Impact of Golden Nutrition Booklet (GNB) in knowledge and attitude changes of balanced nutrition implementation in women childbearingage. *Journal of Health Technology Assessment in Midwifery*, 6(1), 63–69. <https://doi.org/10.31101/jhtam.3055>
- Widodo, W., Mulyani, T., & Rahmawati, E. (2023). Edukasi Gizi Berbasis Lokal dalam Pencegahan Stunting. *Global Nutrition Journal*, 11(1), 77–85.
- World Health Organization. (2020). *Prevalence of stunting among children under five years of age (%)*.
- World Health Organization. (2021). *Levels and trends in child malnutrition: UNICEF/WHO/World Bank Joint Child Malnutrition Estimates*.
-

CC BY-SA 4.0 (Attribution-ShareAlike 4.0 International).

This license allows users to share and adapt an article, even commercially, as long as appropriate credit is given and the distribution of derivative works is under the same license as the original. That is, this license lets others copy, distribute, modify and reproduce the Article, provided the original source and Authors are credited under the same license as the original.

