

Health education and interprofessional collaboration to improve maternal knowledge on stunting prevention

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Abstract

Stunting is characterized by growth failure due to chronic malnutrition. A health education initiative utilizing an interprofessional collaboration approach is needed to decrease incidents of stunting. This study aimed to analyze the impact of health education with interprofessional collaboration on mothers' knowledge about stunting. It used a quasi-experimental design with a pretest-

posttest control design. The research was conducted at a public health center, involving 230 mothers with children aged 0-24 months. Data analysis was performed using the Wilcoxon test. According to the findings, the majority of mothers lacked knowledge before the IPC intervention, accounting for 83.5%. However, this improved significantly afterward, with 70.4% demonstrating good knowledge. Statistical analysis revealed a significant increase in maternal knowledge ($p=0.000$). The IPC program positively influenced maternal knowledge about stunting. It is hoped that policymakers will collaborate with health workers through IPC programs to reduce the prevalence of stunting.

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Introduction

Stunting remains a significant global health issue due to chronic undernutrition.^{1,2} It is associated with poor maternal health and nutrition, poor socioeconomic conditions, frequent illnesses, and inappropriate child feeding in early life.² Stunting is estimated to affect 155 million toddlers worldwide. Children who experience stunting face a higher risk of mortality and suffer from impaired cognitive, verbal, and physical abilities, placing a greater financial burden on their parents due to higher care costs.³ Stunting is a critical indicator among the various factors that influence a child's growth and development.⁴ The early years of life, particularly from birth to 2 years old, are crucial, as stunting can negatively impact a child's physical and cognitive development as they grow older.⁵⁻⁷ The consequences of stunting are both short- and long-term, leading to increased morbidity and mortality, poor child development and learning capacity, higher risk of infection and non-communicable diseases in adulthood, and reduced productivity and economic potential.^{8,9}

According to the World Health Organization (WHO), the global prevalence of stunting in 2022 reached 149 million children under the age of 5.¹⁰ In Indonesia, the prevalence of stunting has increased significantly from 28.5% in 2017 to 30.8% in 2018.¹¹ According to the 2022 Indonesian Nutritional Status Survey (SSGI), East Java had the highest stunting prevalence among all provinces in Indonesia, with a rate of 34.9%.¹² Nationally, the overall stunting rate was 21.6%. Within East Java, Jember Regency reported a stunting prevalence of 19.6%. Appropriate prevention and intervention are essential and should involve multiple sectors and disciplines.¹³

Indonesia has implemented national strategies to reduce stunting by accelerating the learning process and improving mechanisms for sharing knowledge and innovation.⁷ The WHO also emphasizes the importance of various stakeholders in preventing and addressing stunting. Effective prevention and management of stunting requires interprofessional collaboration and coordination among multiple disciplines.⁸ Stunting is a complex issue that impacts many aspects of health.¹⁴ The responsibility for preventing and managing stunting can be shared across various professions through Interprofessional Collaboration (IPC).¹⁵ The IPC

approach to lowering the risk of stunting emphasizes knowledge sharing and health education promotion.¹⁶ It is considered a potential solution to help reduce stunting in toddlers while also encouraging relevant agencies and institutions to provide maximum support.^{16,17} Previous research has demonstrated that cross-sector collaboration decreases stunting rates. A moderate increase in toddler height and knowledge was observed among mothers who participated in nutrition classes using the IPC approach.^{17,18} IPC can provide significant benefits to team members, allowing them to achieve better results than they would individually.^{16,19} Collaborative teamwork is essential for healthcare providers, as it can reduce workload and enhance job performance satisfaction.²⁰ IPC enhances knowledge, attitudes, and behaviors related to nutrition among mothers and their stunted toddlers.²¹

Research on stunting prevention has been conducted worldwide, focusing not only on nutritional issues but also on supporting factors, such as parenting patterns, socioeconomic status, education, and sanitation.²²⁻²⁵ A critical factor closely associated with stunting is the influence of policymakers in a specific area.⁹ Policymakers can implement direct interventions to effectively address stunting. Therefore, collaboration through health education with interprofessional collaboration (HEI collab) is aligned with the government's efforts. This study aimed to analyze the effect of the HEI collab on mothers' knowledge of stunting in toddlers. The HEI collab program involves a collaborative health team that includes nurses, midwives, nutritionists, pharmacists, and sanitarians.

Materials and Methods

Study design

This study employed a quasi-experimental research design fea-

turing a pretest-posttest control group methodology. This approach allows for the comparison of outcomes between the treatment and control groups before and after the intervention.

Sample

This study was conducted at a public health center with a population of 383 stunted toddlers. We employed a stratified random sampling technique, which involved selecting samples based on specific strata within the population, according to the inclusion and exclusion criteria. The final sample consisted of 230 respondents, with 115 assigned to the intervention group and 115 assigned to the control group. The inclusion criteria for this study were as follows: i) mothers with children aged 0-24 months; ii) complete respondent data; and iii) willingness to participate. Children were excluded from the study if they had any pathological conditions such as Down syndrome, Marfan syndrome, bone disorders, or Turner syndrome.

Instruments and data collection

This study employed the Stunting-Related Knowledge questionnaire, which consists of 10 questions that have been validated and proven reliable to assess the level of knowledge of respondents.²⁶ The questionnaire focused on mothers' understanding of stunting prevention, covering topics such as the definition of stunting, its causes, risk factors, signs and symptoms, impacts, and prevention strategies. Scores were assigned based on the following responses: a correct answer received a score of 1, whereas an incorrect answer received a score of 0. The assessment results were categorized as follows: "good" for scores of 76-100% (score 8-10), "fair" for scores of 56-75% (score 7), and "poor" for scores below 55% (score <6). The experimental group participated in an IPC program, which involved a multidisciplinary team comprising nurses, midwives, nutritionists, and sanitarians. This program consisted of three meetings: the first focused on assessing the participants' initial knowledge, the second on delivering educational con-

Table 1. Characteristics of respondents.

Respondent's characteristic	Category	Intervention group		Control group	
		n	%	n	%
Mother's age	17-25 years	17	14.8	3	2.6
	26-35 years	77	67	96	83.5
	36-45 years	21	18.3	16	13.9
Toddler's age	0-6 Months	3	2.6	0	0
	7-11 Months	18	15.7	33	28.7
	12-23 Months	42	36.5	39	33.9
	24-59 Months	52	45.2	43	37.4
Number of children	1-2	89	77.4	92	80
	>2	26	22.6	23	20
Education	Elementary school	45	39.1	52	45.2
	Junior high school	17	14.8	18	15.7
	Senior high school	48	41.7	40	34.8
	Vocation degree	2	1.7	1	0.9
	Bachelor's degree	3	2.6	4	3.5
Occupation	Housewives	93	80.9	94	81.7
	Farmer	13	11.3	11	9.6
	Merchant	5	4.3	4	3.5
	Entrepreneur	3	2.6	4	3.5
	Teacher	1	0.9	2	1.7
Ethnic	Madurese	70	60.9	71	61.7
	Javanese	45	39.1	44	38.3
Religion	Islam	115	100	115	100

tent, and the third on evaluating the outcomes of the education. During the meetings, the nurses provided information on parenting and nutrition for children, while midwives discussed topics related to child growth and development as well as proper nutrition for mothers and children. Sanitation experts educated the participants about environmental sanitation practices to prevent stunting. In contrast, the control group did not receive the IPC program and continued their usual activities.

Data analysis

The collected data were analyzed using the Wilcoxon test. Data coding, collection, cleaning, editing, tabulation, and analysis were performed using SPSS version 25.0. Prior to data analysis, the Kolmogorov-Smirnov test was conducted to assess the distribution of data in each group.

Ethical clearance

This study was conducted after obtaining ethical approval from the KEPK of the Faculty of Health Sciences, Muhammadiyah University, Jember, on July 19, 2024 (No. 0196/KEPK/FIKES/XII/2024). Written informed consent was obtained from each participant prior to the study.

Results

In the intervention group, the majority of respondents were aged 26-35 years (67%), housewives (80.9%), Madurese (60.9%), and Muslim (100%). The respondents' education level was primarily senior high school at 41.7%, and they had children under five years old (45.2%). The majority had 1-2 children (77.4%). In the control group, most of the respondents were aged 26-35 (83.5%). Most mothers had children under 5 years of age (37.4%), with the majority having 1-2 children (80%). The education level in the control group was mostly elementary school (45.2%), and the participants were housewives (81.7%), Madurese (61.7%), and Muslims (100%) (Table 1).

As shown in Table 2, the majority of mothers in the intervention group had poor knowledge before the IPC intervention (83.5%), which improved significantly afterward, with 70.4% demonstrating good knowledge. In contrast, most mothers in the control group, who received only leaflets, had less knowledge before the intervention (77.7%). After the intervention, 71 respondents (61.4%) were categorized as having a low level of knowledge, while 37 (32.2%) had a moderate level of knowledge. Statistical analysis revealed a significant increase in maternal knowledge from pretest to posttest, with a p-value of 0.000.

Table 2. Knowledge level of intervention and control groups.

Category	Intervention group		Control group		Pretest		Posttest	
	n	%	n	%	n	%	n	%
Good knowledge	5	4.3	81	70.4	10	9.1	7	6.1
Fair knowledge	14	12.2	31	27	16	13.2	37	32.2
Poor knowledge	96	83.5	3	2.6	89	77.7	71	61.7
Total	115	100	115	100	115	100	115	100
Wilcoxon signed-rank test	p=0.000				p=0.000			

Discussion

This finding demonstrated that IPC intervention had a positive impact on maternal knowledge about stunting. This aligns with previous research showing that the effectiveness of IPC in reducing community stunting rates is supported by collaborative techniques, including each professional's ability to understand both individual and team roles, share knowledge, and promote preventive behaviors, particularly among families during the crucial first 1,000 days of a child's life.^{27,28}

IPC in stunting prevention programs involves the active participation of nurses, doctors, midwives, nutritionists, and sanitarians. Therefore, implementing the right strategies is essential to enhance the knowledge, attitudes, and behaviors of mothers with toddlers in efforts to prevent stunting. Research suggests that this collaborative approach can serve as the most effective model to reduce stunting cases in the community and represents one of the most impactful efforts in preventing stunting.^{21,29-32}

Midwives play a crucial role in preventing stunting, beginning from the first 1,000 days of life. They are actively involved both upstream, by safeguarding the health of prospective brides, pregnant women, and postpartum mothers, and downstream, by supporting the growth and development of toddlers.^{33,34}

Based on the study results, the role of midwives in preventing stunting involves providing information, encouragement, facilities, and empowering women to actively address the issue of stunting in their children.³⁵ Other roles of the midwife profession in preventing stunting are related to reproductive health education in schools, healthy marriage education, providing blood tablets for adolescents, implementing standard antenatal care interventions, providing additional food for pregnant women with Chronic Energy Deficiency (CED), and scheduling special visits for CED.³⁶

Nurses also played an active role in preventing stunting. The results of the review from a previous study showed that nurses act as supportive educators, including nutrition educators, health service providers with improved nutrition, family supporters, and facilitators of interprofessional collaboration in preventing stunting.³⁷ This finding is in line with the results of this study, which stated that nurses play a role as educators and community motivators in families with stunted children.^{38,39}

According to the WHO, environmental sanitation involves efforts to control all aspects of the human physical environment and can impact physical development, health, and human endurance. Sanitation is an overlooked aspect of life, even though it can be a source of diseases.⁴⁰ Improper sanitation can contribute to infections, and infectious diseases in infants can result from lack of access to clean water sources and poor sanitation facilities. This causes the energy required for growth to be diverted to fight infection, disrupting the process of nutrient absorption and leading to

stunted growth.^{41,42} Research conducted in developing countries has shown that poor sanitation facilities and contaminated drinking water are often combined, leading to stunting.

Children's health must be prioritized from an early stage, particularly during the "window of opportunity", also known as the golden period of child development, which spans from conception through the first two years of life, or the first 1,000 days.⁴³ Nutritional fulfillment must be considered during pregnancy because it requires more essential nutrients.⁴⁴ In addition to meeting the mother's own needs, nutrition during pregnancy is also needed for the growth and development of the fetus in her womb. Growth disorders in the womb can cause low birth weight, which increases the risk of stunting.^{45,46} Research on children aged 3-24 months with low birth weight and low maternal body mass index shows a high risk of stunting. Besides the pregnancy process, providing complementary feeding is crucial for preventing stunting. Complementary feeding is the transition from an initial intake of only breast milk to semi-solid foods. Complementary feeding should be introduced after the baby is 6 months old in stages, considering the time and type of food, to meet their energy need.⁴⁷ Therefore, providing breast milk and complementary feeding has a critical impact on stunting.^{44,48}

Conclusions

Implementing interprofessional collaboration interventions has been shown to positively impact maternal knowledge of stunting. Practical stunting prevention and intervention efforts require collaboration across various sectors and interdisciplinary fields. IPC involves the participation of various professionals, including midwives, nurses, hygienists, and nutritionists, who work together to deliver comprehensive care. Policymakers can use the IPC approach to develop health promotion programs that integrate multiple disciplines, ultimately enhancing maternal knowledge and contributing to the prevention of stunting in children.

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