



The Effectiveness of Stunting Prevention Programs in Indonesia : A Systematic Review

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Abstract: Stunting remains a major nutritional problem in developing countries, including Indonesia. This research aims to identify the effectiveness of stunting prevention programs in Indonesia. The research method employed in this study is a systematic review based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Article searches were conducted using five database; Scopus, ScienceDirect, ProQuest, Google Scholar, and Portal Garuda. The inclusion criteria for this research are articles published in the last 10 years, from 2014 to 2023, with a population in the Indonesian region. Based on the reviewed articles, it was found that the most effective stunting prevention measures include providing nutritional education to influential parties such as community health workers, mothers of toddler, and women of childbearing age or prospective mothers, interprofessional collaboration, and supplementary feeding. Trained community health workers are capable of reducing the stunting rates. Therefore the government should strengthen community health worker training to optimize stunting prevention through nutritional education.

Keywords: Stunting prevention; Stunting prevention program; Systematic review

Introduction

The nutritional problems in toddlers remain a primary concern in the population structure. Nutritional issues in toddlers include stunting, wasting, and overweight (World Health Organization, 2020). At present, stunting remains a major issue in developing countries, including Indonesia. Stunting is the failure to reach the linear growth potential as indicated by a height for age Z-score (HAZ) of less than -2 standard deviations with reference to the current growth standards due to suboptimal health and nutritional status (World Health Organization, 2013). Stunting is one of the forms of growth failure resulting from the accumulation of nutritional deficiencies that occur from pregnancy to 24 months of age (Syakur et al., 2023). The consequences of malnutrition during the first 1000 days of life are permanent and difficult to rectify (Sitompul et al., 2023). Stunting in children becomes a serious issue because it is associated with several risks of diseases, higher future mortality, obesity, non-communicable diseases, shorter

adulthood, and decreased productivity (Maulina et al., 2023).

Stunting is widely recognized for its significant impact on individuals and communities, including cognitive development delays, poor school performance, decreased physical capacity, and when entering adulthood, it hinders economic (Haile et al., 2023). Poor nutrition in early childhood will affect low intelligence levels in the future (Rosalina et al., 2023). The problem of stunting in toddlers also has implications, motor skills, and can lead to mortality. Stunting occurs due to multiple factors, with these factors interrelated and possibly varying in different regions (Ummah et al., 2023). Several internal and external factors can influence the occurrence of stunting, internal factors are directly related to the growth and development of infants and include exclusive breastfeeding, child-rearing practices, complementary feeding, mineral and protein intake, infectious diseases, and genetics. External factors are related to the family's low economic status, such as maternal employment,

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family income, and maternal intellectual level. In the study (Amalo et al., 2023). it is also mentioned that among children aged 24 to 59 months, there is a significant relationship between economic status and stunting, indicating that the lower the family’s economic status, the higher the prevalence of stunting. Poor parenting practices, limited healthcare services such as Ante Natal Care (ANC), or maternal health services during pregnancy, are also factors contributing to the occurrence of stunting (Yahya et al., 2023). Therefore, addressing stunting not only impacts the health sector but extends to other factors such as social and economic aspects, stunting prevention has become a specific focus of both central and local governments in recent years (Utari et al., 2023). The prevalence of stunting in toddlers worldwide according to the World Health Organization (WHO) is 21,9%. The majority of toddlers experiencing stunting are from Asia (World Health Organization, 2020). Based on data from the Indonesian Nutrition Status Survey (SSGI) in 2022, the prevalence of stunting in Indonesia toddlers decreased from 24.4% in 2021 to 21,6% in 2022 (SSGI, 2023).

In order to expedite the reduction of stunting in line with the established terget, the Indonesian government has formulated 5 pillar national stunting reduction strategy set in 2018. National policymakers and the World Bank have discussed these five pillars, developed based on Indonesian knowledge and global best leadership, national media campaigns, integration of national programs with regional and community initiatives, nutrition and food security policies, and monitoring and evaluation. The implementation of convergent actions to reduce stunting is carried out through 8 convergent actions, which include situation analysis (business planning), action planning, stunting discussions, village role regulations, human development, staff development, data management systems, measuring and publishing stunting data, and evaluating performance annually (Siswati et al., 2022a).

In an effort to reduce the prevalence of stunting, the government has also implemented various program to achieve this goal. The government’s efforts include both direct measures (specific nutritional interventions) and indirect measures (sensitive nutritional interventions) to prevent and reduce disruptions. The priority targets in this regard are individuals involved in the first 1000 days of life, namely pregnant women, breastfeeding mothers,

and children aged 0-2 years, meanwhile, important targets include children aged 24-59 months, adolescents, and women of reproductive age (Satriawan et al., 2018). In formulating policies, the government cannot rely on a single study. Instead, data from various research sources are needed as the foundation for policy development. Therefore, it is essential to conduct comprehensive research on the prevention of stunting programs in Indonesia, as stunting also has long-term effects on human life, and the current stunting rates in Indonesia are relatively high. Hence, this research is crucial to understand the extent to which the existing stunting prevention programs have been succesful in addressing this issue. Through this research, we can also identify the most effective strategies to combat stunting and pinpoint areas that require improvement, which can be beneficial for the government in crafting more precise and efficient policies related to stunting prevention programs.

A systematic review study is a research that involves the examination of a specific topic, focusing on a predefined question, evaluated, selected, and systematically concluded based on pre-established criteria, using relevant and high quality research evidence (Adisasmito et al., 2007). This research aims to identify the effectiveness of stunting prevention programs in Indonesia. The findings of this study can be used by the Indonesian government to formulate policies for stunting prevention.

Method

We conducted this research as a systematic review, following the PRISMA guidelines (Figure 1). We utilized five database for article searches; Scopus, ScienceDirect, ProQuest, Google Scholar, and Portal Garuda. The keywords for this article search were organized based on the PICOS Framework. In this study, we will focus on several key aspects; Stunting, Stunting programs, and Toddlers. This aids us in establishing our criteria when searching for articles with the predetermined keywords. We set the inclusion criteria to be articles published within the last 10 years, from 2014 to 2023, with a population in the Indonesian region. The exclusion criteria are as follows; paid articles, textbooks, and articles not written in English or Bahasa Indonesia.

Table 1. Summary of Journal Literature Search Results

Writer	Title	Research Purposes	Program	Study Desain	Results
(Maryati et al., 2022)	The Effect of Interactive Education Program in Preventing Stunting for Mothers with	Evaluating the impact of interactive education programs on stunting prevention in mothers	The interactive education program includes parenting	Rct (Randomized controlled trial)	There was a substantial effect on illness in the last week, and with increasing age, children in all categories experienced a reduction in stunting rates.

Writer	Title	Research Purposes	Program	Study Desain	Results
	Children under 5 Years of Age in Indonesia: A Randomized Controlled Trial	with children under 5 years of age in Indonesia.	practices for mother.		Dietary pattern diversity showed an improvement in the intervened caregivers compared to the control group. This is evidenced by the better ratings in more varied dietary practices. The impact size on food diversity ranged from 0.30 to 0.53.
(Siswati et al., 2022)	Impact of an Integrative Nutrition Package through Home Visit on Maternal and Children Outcome: Finding from Locus Stunting in Yogyakarta, Indonesia	Understanding how home visits provided Polri influence maternal knowledge and behavior in monitoring child growth and development, infant feeding, stunted child's weight, height, and child developmental scores.	Integrative nutrition package (Inp)	Experimental	The impact of Polri intervention on maternal knowledge and practices in CGM (Child Growth Monitoring), CDM (Child Development Monitoring), and PMBA (Infant group showed better improvements and had greater outcomes for both mothers and children compared to the control group.
(Andriani et al., 2017)	The Differences in Knowledge, Attitude, and Motivation of Mothers After Receiving the Mother Smart Grounding (Msg) Program in the Prevention of Stunting in the Working Area of the Puuwatu Health Center, Kendari City in 2017.	To determine the differences in knowledge, attitudes, and motivation of mothers with toddlers after participating in the mother smart grounding (Msg) program for stunting prevention in the Puuwatu Health Center's working area, Kendari City in 2017	Program Mother Smart Grounding (Msg)	Pre-Experimental	There are differences in the knowledge, attitudes, and motivation of mothers with toddlers before and after receiving the intervention, namely the Mother Smart Grounding (Msg) program.
(Astuti et al., 2021)	The Effectiveness of the Interprofessional Collaboration (Ipc) Program on The Attitude of Mothers and Health Cadres on Stunting at Puskesmas Karanganom Klaten Central Java Republic of Indonesia.	To ascertain the effectiveness of interprofesional collaboration on the attitudes of mothers and health cadres toward stunting.	Interprofession al Collaboration (Ipc) Program	Quasi-eksperimen	There is a difference in knowledge before and after the program is implemented, with the average results showing that the attitudes of mothers and health cadres toward stunting have improved. Therefore, interprofessional collaboration is effective in enhancing the attitudes of mothers and heakth cadres regarding stunting.
(Effendy et al., 2020)	Nutrition education in Southeast Sulawesi Province, Indonesia: A cluster randomized controlled study	Evaluating the impact of nutrition education intervention on infant feeding practices and the nutritional status of toddlers.	Nutrition education	Rct	There was a change in the Dietary Diversity Score (Dds) in toddlers after receiving nutrition education, increasing from an average of 2.37 to 3.87. However, there was no significant difference in height for age (Tb/U) between the treatment group and the control group. These result indicate that nutrition education delivered through nutrition

Writer	Title	Research Purposes	Program	Study Desain	Results
(Muthia et al., 2020)	Evaluation of Stunting Prevention Program Implementation From the Perspective of Specific Nutrition Intervention of the 1000 Hpk Movement at Pegang Baru Health Center, Pasama District.	Analyzing the evaluation of the implementation of stunting prevention programs, with a focus on the specific nutritional intervention of the 1000 days movement.	Spesifik Nutritional Interventions	Qualitative	<p>classes combined with regular home visits by influencers provides significant benefits and has the potential to be adopted to complement other nutrition program in the community and healthcare centers.</p> <p>The results indicate that stunting prevention through specific intervention programs has been reasonably effective, but it has not yet achieved a reduction in stunting below 20%. This is due to several constraints, including the lack of dedicated budget for the program, limited human resource to carry out the intervention, the absence of standard operating procedures (Sop), Top-down planning, and the absence of record keeping for reports.</p>
(Siswati et al., 2022)	Effect of a Short Course on Improving the Cadres' Knowledge in the Context of Reducing Stunting through Home Visits in Yogyakarta, Indonesia	To determine the influence of a short course on the knowledge of cadres	Short course for cadres	Single group pre-test post-test	There was an improvement in the knowledge of cadres regarding Cgm, Cdm, and Pmba, and this short course increased their self-efficacy, self-confidence, and their ability to support stunted children through home visits.
(Wicaksono et al., 2021)	The Laktasi Program (Smart Parents Indonesia Education Class) in Reducing Stunting.	Establishing the Laktasi program as an effort to enhance child nutrition and reduce stunting in the Summersuko village.	Laktasi Program	Pre-eksperimental	<p>There was an increase in the weight and height of toddlers.</p> <p>The Laktasi program can provide insights to mothers dealing with child nutrition and stunting issues.</p>
(Prastiwi et al., 2020)	The Effect of Health Officer Role to the Program of Stunting Prevention on First 1000 Days of Life in Indonesia	Analyzing the impact of healthcare worker implementation on the stunting prevention program during the first 1000 days of life	Stunting prevention program in the first 1000 days of life.	Quantitative	There is an influence of the basic role of healthcare worker on the occurrence of stunting and stunting prevention. The result of this study also indicate that a good specific nutrition intervention has the highest probability 0.703 times, of preventing stunting compared to poor specific nutrition intervention.
(Tambuwan et al., 2019)	The Influence of Health Promotion on Pregnant Mothers' Knowledge Regarding the 1000 Hpk in Molas Subdistrict, Bunaken District, Manado City.	To determine the effect of health promotion on the knowledge of pregnant mothers regarding the first 1000 days of life in the Molas Village,	Health Promotion (Counseling)	True-Experiment	Health promotion, in the form of lectures and leaflet media, is effective in providing health knowledge that can improve the knowledge of pregnant mothers because information is conveyed not only verbally but also in written form.

Writer	Title	Research Purposes	Program	Study Desain	Results
(Purwanti et al., 2019)	The Gastizi 1000 Program in Enhancing the Capacity of Posyandu Cadres.	Bunaken District, Manado City. Analyzing the effectiveness of the prevent stunting program eith nutritional improvement during the first 1000 days of life (Gastizi 1000) in enhancing the capacity of posyandu cadres.	Gastizi 1000 Program	Quasi-Experiment	There is an increase in the knowledge and skills of cadres regarding stunting and nutrition during the first 1000 days of life after participating in the Gastizi program.
(Fatmah & Utomo, 2023)	Effectiveness of orange almond potato cookie vs. orange potato cookie supplementation on nutritional wellbeing of the Indonesian stunted preschool-aged children during Covid-19 pandemic	Evaluating the impact of including almond potato cakes and orange in the food menu on the nutritional status of preschool children experiencing stunting.	Providing Supplementary Food	non-randomized pre-post intervention	There was a significant increase in the mean Z-score for age in the intervention group. Consumption of almond potato cake and orange has the potential to improve the nutritional well-being of preschool-age children experiencing stunting.
(Sari et al., 2023)	Balanced Nutritional Menu for Stunting Prevention in Toddlers in the Village of Kudus District.	Enhancing the attitudes and behaviors of subjects regarding toddler nutrition and food types for stunting prevention.	Nutrition Education	Community Empowerment	There was an increase in the knowledge of the subjects after being provided with education. Subjects, particularly the cadres, are expected to become agents of change in the behavior of preventing toddler stunting. Meanwhile, mothers with toddlers are expected to change their behavior in providing food to their children.
(Wijayanti et al., 2019)	The impact of Pmba training for posyandu cadres on improving	To determine the impact of PMBA (Feeding Training for Infants and Children) training on posyandu cadres in improving the nutritional status of stunted children in the Sleman District Health Center Area	Pmba Training for posyandu cadres	Qualitative	Pmba training can enhance the cadres' knowledge about how to provide counseling to the community, enabling them to offer effective consultations to the target population of the stunting program. It can also help change parents' accordance with balanced nutritional guidelines.
(Muhammad et al., 2020)	Nutritional Education for Mothers by Trained Cadres Increase	Analyzing the impact of nutritional education provided to mothers by trained cadres on the intake of protein toddlers in the nutrition recovery center in the Sedayu District, Bantul Regency, Special Region of Yogyakarta.	Nutrition Education	Quasi-Experiment	The results showed that nutritional education by trained cadres significantly increased energy and protein intake in toddlers, in contrast to the control group that did not receive the intervention. Nutritional education for mothers involving trained cadres can be considered as one of the effective and sustainable alternatives for specific nutritional interventions.

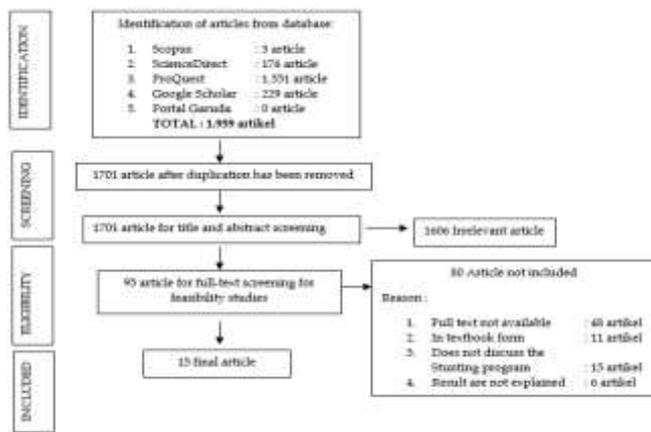


Figure 1. Flow process literature search based on prisma guidelin

Result and Discussion

A literature search of articles through 5 databases resulted in 1.959 articles that matched the keywords used by the researcher. Among them, 258 articles were found to be duplicates, and 1.606 articles were deemed irrelevant due to their population being outside of Indonesia and not using either English or Indonesian language. Consequently 95 articles were selected for a comprehensive review of their content. After the review process, 15 articles were found to align with the research objectives, inclusion criteria, and exclusion criteria. These 15 articles were included in this study and will proceed to the quality assessment stage. After undergoing various stages in the systematic review, the final outcome was 15 articles that will be discussed in this research.

Based on table 1, it can be observed that the 15 reviewed articles consist of two Randomized Control Trial (RCT) research articles, one experimental research article, three Quasi-experimental research article, one single group pre-test post-test research article, two quantitative research article, one True experiment research article, one non- randomized pre-post intervention research article, one community empowerment research article, and one qualitative research article. From the results of the reviewed articles, several nutrition interventions or programs for stunting prevention were identified, including nutrition education throught training, interactive education programs, nutrition intervention packages (INP), Mother Smart Grounding (MSG) program, Interprofesional collaboration program, program evaluation, Short course for cadres, LAKTASI program, GASTIZI 1000 days of life program (HPK), Supplementary feeding, and PMBA training for posyandu cadres.

Based on the results of the article review, eight articles were found that discuss stunting prevention

programs throught nutrition education. Nutrition education is a method and effort aimed at enhancing nutritional knowledge and nutritional behavior to create optimal nutritional status (Perdana et al., 2017). The eight reviewed articles indicate that nutrition education has a positive impact on stunting prevention. Based on the research conducted by Siswati (2022a) nutrition education interventions provided to cadres have been shown to significantly enhance maternal understanding and communicate behavior changes throught home visits for CGM, CDM, IYCF, and also help determine their impact on mothers and children, which is greater than that observed in the control group not receiving the intervention. Home visits also provide a broader opportunity for interaction between cadres and mothers with toddlers and can bridge the gap between ignorance and mistakes in action. Among the factors mediating the positive effect are maternal caregiving practices for child health and the knowledge and practices conveyed through interventions by cadres to mother. Simultaneous PMBA instruction with food items enables parent to directly implement proper dietary practices for their children. INP intervention significantly increases the weight of toddlers compared to the control group that did not receive treatment. This is related to the extent to which the intervention can influence maternal outcomes compared to the untreated control group.

This is in line with the research by Wijayanti and Fauziah (2019) which states that nutrition education provided to cadres through training can enhance the cadre’s knowledge in providing counseling and delivering information to mothers of toddlers and the community effectively and accurately. Cadre workers play a crucial role in community development through activities in posyandu. Training for these cadres is highly effective in preventing stunting, especially during the fetal development or pregnancy and the growth of children aged 0 to 2 years (1000 HPK). Furthermore, this training is highly effective in improving the nutritional status of toddlers and altering parental caregiving practices because the information provided on children’s dietary patterns based on age, frequency, quantity, texture, and food diversity can impact nutritional status. Thus by providing nutrition education such as PMBA, these cadres can help reduce, and even prevent, stunting rates and improve the nutritional status of children under five years old through family nutrition awareness support. This research is further supported by Purwanti’s (2019) study, which states that the GASTIZI 1000 program in this study, when provided to cadres, has an impact on improving the knowledge and skills of posyandu cadres in stunting prevention through nutritional improvement during the 1000 day life period. This is evident from the

results of statistical tests showing an increase in knowledge about exclusive breastfeeding, complementary feeding, recognition of various types of complementary foods, the causes and consequences of stunting. The measurement of body length or height as an indicator of stunting, and the first 1000 days of life (HPK). The study by (Varakina et al., 2020) also indicates that the most effective prevention is carried out during the first 1000 days of life and delayed growth in the first second 1000 days.

Cadres trained to provide nutrition education to mothers with toddlers can enhance maternal knowledge about nutrition, which will subsequently be put into practice by mothers to meet their child's energy and protein requirements. Therefore, this nutrition education can enhance the fulfillment of energy and protein needs in toddlers and effectively prevent stunting (Abdillah et al., 2020). This is in line with the research by Martha et al. (2020) which suggests that the empowerment of cadres and doctors through early detection and prevention education of stunting is considered quite effective. In the study (Muhamad et al., 2023) it was found that there was a significant difference in the behavior of pregnant women before and after receiving intervention through the guidance of health cadres for prenatal check-ups. This is because the better the knowledge, the better the attitude. This positive attitude is then put into practice by individuals in their daily lives. This study is also consistent with research conducted by Sari (2023), which demonstrates that nutritional counseling activities and cooking demonstration for meal preparation have been successful in preventing stunting. These activities aim to enhance the knowledge and behaviors of mothers with toddlers. The educational intervention involving the enhancement of maternal knowledge about nutrition and cognitive stimulation is known to be associated with improvements in child health, survival, and development (Ahmed et al., 2023).

In a study conducted in India, it was found that nutritional education provided by cadres or community health workers (CHW) through home visits allowed mothers of toddlers to consult and receive advice from CHW. This has been significantly proven to be a key factor in achieving nutritional improvement and enhancing complementary feeding practice alongside breastfeeding (Garg et al., 2023). Maternal nutritional knowledge is a critical factor that influences a mother's ability to select nutritious food for her child. Maternal education through nutrition education has been proven effective in addressing poor feeding practices and is carried out through home visits conducted by cadres as agents to deliver accurate nutritional education (Effendy et al., 2020). The same

study also indicates that health education through health promotion using lecture based methods and leaflets has proven to be effective in enhancing maternal knowledge because information is conveyed through spoken and written means. The mother's attitude will determine her dietary consumption behavior during pregnancy, thereby impacting the birth weight of the baby. Low birth weight is a risk factor for stunting (Tambuwun et al., 2019). Because of the mother's lack of knowledge regarding the importance of nutrition and health for pregnant mothers, it is one of the factors that can lead to stunting in infants (Darus et al., 2023).

Nutritional education is not only provided to trained cadres but also directly to mothers of toddlers by healthcare personnel through innovative programs. This education has the potential to enhance maternal self sufficiency in preventing stunting. Nutritional education, through lecture methods, the provision of printed booklets, and demonstrations of how to prepare healthy snacks using local products, are bundled together in the Mother Smart Grounding (MSG) program. The result indicate a significant difference in the knowledge, attitudes, and motivation of mothers before and after the intervention (Andriani et al., 2017). This is consistent with the research conducted by Maryati (2022) which states that interactive education programs provided to mothers have proven to be effective in preventing stunting in Indonesia. Family support is also crucial for the success of stunting prevention programs. Education delivered in the form of community empowerment encourages self sufficiency in improving health, particularly nutrition, among toddlers. Empowerment activities are one of the community nursing interventions, such as the LAKTASI program (Smart Parent Education Class Indonesia) using the Focus Group Discussion (FGD) method in which parents actively participate. This provides insight to mothers and results in changes in maternal perceptions of balanced nutrition, improved child caregiving practices to ensure balanced nutrition, and an increase in the weight and height of toddlers (Wicaksono et al., 2021).

Nutritional education on stunting is one of the government's programs aimed at reducing stunting rates, particularly in Indonesia. This nutritional education is also a part of specific nutritional interventions targeting pregnant women, breastfeeding mothers, adolescents or prospective mothers, and women of childbearing age. However, there is currently no program for strengthening educators, namely cadres. Based on the findings of the articles reviewed above, it can be observed that trained cadres can reduce stunting rates. Therefore, the government should strengthen cadres through training to optimized stunting prevention

through nutritional education. With the target of education being mothers, expectant mother, and families through promotive and preventive efforts to enhance the family's ability to support their health, as the family plays a crucial role in influencing an individual's health status (Oktaviana et al., 2022). The study by Sukmawati et al. (2021) states that continuous education and monitoring of the dietary patterns of pregnant mothers are highly necessary to prevent stunting in children.

Stunting prevention can also be achieved through interprofessional collaboration (IPC) programs involving professionals such as doctors, nurses, midwives, nutritionists, and sanitarian personnel. In essence, IPC aims to enhance collaboration among healthcare sectors so that all healthcare workers have the same awareness and concern regarding stunting. This shared understanding and concern can help the community evaluated and provide input on stunting to change public perceptions or attitudes. The research results indicate that IPC programs effectively influence the thinking and actions of mothers. This is marked by a significant difference in the actions and attitudes of mothers and healthcare cadres before and after IPC. With these changes in thinking and actions, mothers with toddlers will pay greater attention to their child's health (Astuti et al., 2021). A study conducted in Lebanon reported that IPC collaboration has a positive impact, improving patient outcomes. The feedback from the experience of IPC collaboration practice is very positive and enhances healthcare service outcomes (Habre et al., 2023). This interprofessional collaboration program is comprehensive as it involves various stakeholders, professions, and different sectors working together to create a more holistic and effective program for addressing stunting in Indonesia. Therefore, the government may consider strengthening this interprofessional collaboration program across all sectors to prevent stunting, with qualified facilitators capable of supporting mothers with toddlers.

In research Suryawan et al. (2022) it is stated that there is a correlation between food diversity scores and the occurrence of stunting. A less diverse dietary pattern indicates poor food quality, leading to suboptimal growth in stunted children due to deficiencies in individual nutrients or a combination of several nutrients. This is consistent with research conducted in India by Saha et al. (2023) it is reported that a significantly varied dietary pattern is associated with a decrease in stunting, and the risk of stunting decreases significantly as the number of food groups consumed increases. Therefore, the analysis of food diversity score and minimum dietary diversity (MDD) indicates that children who consume a varied or diverse diet are less

likely to experience nutritional deficiencies compared to children with less varied dietary patterns. In the study (Agustin et al., 2021) it is also mentioned that there is a significant relationship between the diversity of family food consumption and the occurrence of stunting in toddlers. Research conducted in Africa also indicates that poor infant and young child feeding (IYCF) practices have been identified as one of the main causes of stunting (Gassara et al., 2023).

The provision of supplementary foods, such as cookies or specific nutritional additives, can be part of a strategy to assist in reducing stunting in children. Cookies are a popular snack among children due to their crispness and consistency. Supplementary foods have the advantage of their limited ability to create a long lasting feeling of fullness and have a minor impact on the consumption of primary meals. Potato almond orange cookies indicate that each 50 gram portion of these cookies contains 254 calories, 27,7 grams of carbohydrates, 3,25 grams of protein, 14,4 grams of fat, 0,425 mg of zinc, 32,75 mg of calcium, and 2,84 mg of vitamin E. The research result indicate a significant improvement in the HAZ scores of the intervention group (Fatmah et al., 2023).

The stunting prevention program implemented in Indonesia has not been able to achieve optimal results in reducing stunting prevalence. This is due to various challenges encountered in the field. Research conducted by Mutia (2020) states that the stunting prevention program has not been successful in reducing stunting rates due to the lack of specific funding for nutritional interventions, a shortage of nutrition professionals, the absence of guidelines or standard operating procedures (SOP) for addressing stunting, top-down planning, and the lack of recording and reporting for program interventions. This study aligns with the research conducted by Rahayu et al. (2023) which mentions that the field constraints are in the input aspect, namely the lack of human resources (HR) for support and insufficient budgetary support for program implementation. These challenges hinder the achievement of the program's objectives in stunting prevention (Syafrawati et al., 2023) the factors hindering the implementation of the stunting prevention program in Indonesia are limited funding, inadequate roles and responsibilities of stakeholders, weak oversight functions, and a lack of program innovation to support the implementation of stunting prevention programs. And the study conducted by Ginting et al. (2023) mentions that the barriers that occur include limited human resources and dual roles, availability and adequacy of anthropometric equipment, lack of coordination in activity planning between program managers and leaders, families' fear of negative

stigmatization related to stunting and low community participation levels. This is consistent with the study (Herawati et al., 2022) which suggests that the challenges at the district and village levels involve issues of commitment, staff capacity, and weak coordination.

Stunting prevention can be achieved through various efforts, including education for those involved in stunting prevention, such as cadres, mothers with toddlers, pregnant women, and women of childbearing age who are prospective mothers. Education can also be delivered through various methods such as counseling, training, lectures, short courses, and community empowerment. To empower mothers with toddlers, stunting can also be prevented through the interprofessional collaboration (IPC) program that involves all professions influential in stunting prevention, such as doctors, nurses, midwives, nutritionists, and sanitarian workers. Through this interprofessional collaboration program, it is effective in improving the attitudes of both mothers and healthcare cadres in preventing stunting. Additionally, stunting prevention can also be achieved through the provision of supplementary foods to toddlers, which are easy to prepare and can be practiced by mother at home, using easily accessible ingredients like potato almond orange cookies.

For the stunting prevention program to be carried out optimally, attention must be given to input and process aspect. This includes ensuring the availability of high quality human resources for support and revisiting financial considerations. In terms of the process aspect, involvement should begin from mothers with toddlers to cross sector policy stakeholders for program planning and reporting. The study conducted by (Tamir et al., 2022) in Ethiopia also mentions that policymakers should design interventions to reduce stunting in children, particularly those under the age of five, through educational outreach for women and the implementation of economic empowerment strategies in areas at risk of stunting. Achieving optimal input and process aspects will yield an optimal program output. Due to the urgent nature of the stunting issues in Indonesia, as nearly one-third of children under the age of five in Indonesia experience stunting (Permatasari et al., 2021).

Conclusion

The most effective stunting prevention program can be accomplished by providing nutritional education to influential parties such as community health workers, mother of toddlers, and women of reproductive age or prospective mothers, interprofessional collaboration, and supplementary food provision. Trained community

health workers can effectively reduce stunting rates. Therefore, the government needs to strengthen community health worker capacity through training to optimize stunting prevention

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