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Stunting Interventions in Developing Countries: Literature Review

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Abstract

Stunting (dwarfism) is a condition in which a toddler is shorter than their own age. This condition is defined as having a body length or height that is greater than the - 2 SD median of WHO child development criteria. Childhood stunting can have an effect on growth and development. Growth is not ideal, and developmental hurdles arise from birth, resulting in low educational achievement later in life. To reduce the risk of stunting, it is essential to identify and implement appropriate and optimal action as soon as possible in order to avoid or minimize lasting negative effects on children's growth and development. It aims at determining the way in which stunt interventions take place in a few developing countries. The research plan utilized may be a Writing Survey utilizing the Prisma strategy, which depicts the comes about of hindering intercessions in creating countries. Fifteen articles met the incorporation criteria. Most come about of the article talks about education intervention and multi-micronutrients. In Indonesia, four articles show results with a significant impact on the p-value. and;0.05, 3 articles had no effect in Cambodia, 2 articles showed significant results in India, and 3 influential articles in Ethiopia with p-value and;0.05, impact had a p-value of <0.05.

Keywords: Intervention, Stunting, Education, Supplementation, Indonesia
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1. Introduction

Toddlers with stunting are shorter than average. This condition is defined as body length or height more than -2 SD median of WHO child growth criteria. Chronic nutritional problems like stunted toddlers are caused by socioeconomic situations,

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maternal nutrition during pregnancy, baby pain, and lack of nutrient intake. Future stunted toddlers will struggle to develop physically and cognitively..(Stratanas, 2019)

Nutritional interventions to prevent stunting focus on the first 1000 days (1000 HPK), including interventions for pregnant women, lactating mothers and children aged 0-23 months. Integrated stunting reduction interventions can be in the form of specific nutritional interventions and sensitive nutritional interventions.(Berawi, 2021) Childhood stunting can have an effect on growth and development. Growth is not ideal, and developmental hurdles arise from birth, resulting in low educational achievement later in life. If there are obstacles to cognitive and motor development, it can have an impact on reducing the ability to absorb lessons at school age which will affect productivity as an adult.(Berawi, 2021)

Reducing stunting requires finding appropriate and best early, measures should be made to prevent long-term effects that hurt children's growth and development. Two kinds of actions can help lower stunting: those that are specific and those that are sensitive. The results of (Kustiani & Misa, 2018) research in Indonesia stated that there were significant changes ($p<0.05$) in mothers' knowledge, attitudes, and practices in providing complementary foods after being given nutritional education. The results of (Sharma et al., 2020) research in India stated that the effectiveness of nutritional education interventions through health services for complementary foods for breastfed babies, there was an increase in weight and body length in the intervention group.

The results of (Lai et al., 2022) According to studies done in Cambodia on the effects of nutrition and sanitation interventions on the growth of children in rural Cambodia, the group that got the nutrition intervention was more likely to follow the rules than the group that got the sanitation intervention. The results of (Hess et al., 2015) study in Ethiopia stated that there was a 25% reduction in the effects on motor, language, and personal-social development were significantly positive, and the rate of stunting at 18 months dropped from 39% to 29%. (Andrew et al., 2020) research results in India. The home visit care program is effective in improving the development of children with disabilities.

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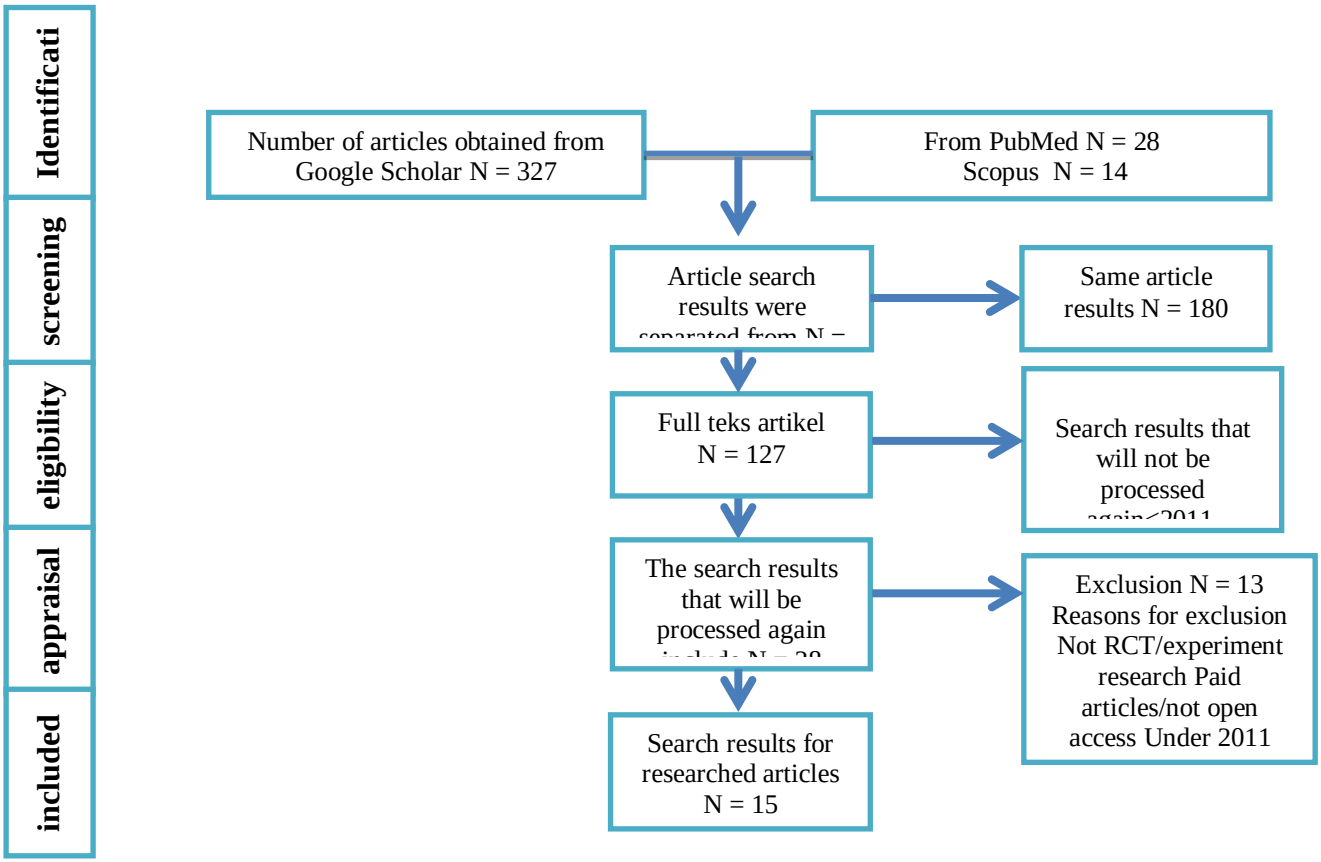
The high prevalence of stunting in Indonesia in 2021, 24.4%, is expected to decrease to 14% according to the RPJMN in 2024. Therefore, there is a need for a summary in the form of a literature review of nutritional interventions given to stunted children with the same conditions in developing countries that can be applied in Indonesia.

2. Research Methods

This research uses a literature review research design with the Prisma method. Search for published articles using Google Scholar, Scopus, and Pubmed. Subsequent articles will be analyzed according to the inclusion criteria (Original research articles (full text), RCT (Randomized Control Trial), Experiments, and stunting toddlers) and exclusion (Adolescent, adult subjects and journal types not open access/full text, only abstracts and title). This literature review uses published articles from 2012-2021 which can be accessed in full text from both Indonesian language journals and English language journals.



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3. Results And Discussions

After screening and fulfilling the inclusion requirements, 15 articles were reviewed.

Table 4.1 shows the results of the characteristics of research articles based on the category of the year of publication, type of intervention, and research design. Research articles were published from 2012-2021. The most published articles in 2020 were mostly types of educational interventions.

Researcher, year	Country	Sample	Design study	Description intervention	Duration intervention	Results
(Effendy et al., 2020)	Indonesia	Age 6–17 months n=266	RCT	1. Roviding nutritional education called "GEN ASIK" (Movement for Smart Mothers with Well-Nutritious and Nutritious Children) 2. Providing healthy cooking practices for toddlers, identifying foods that can be eaten according to the child's age.	2.5 to 3 hours twice a week during 2 weeks.	Signifi cancy p-value 0.03
(Dewi & Aminah, 2016)	Indonesia	Age 6 untill 24 months n=60	Quasiexp eriment	thee intervention takes the form of nutrition education using IYCF booklets, the correct way to wash hands, a list of household measurements, and examples of suitable dishesin the form of mixed soft porridge for ages 6-11 months and family food for children aged 12-24 months	3 time with a hosetime 7 days	p-value 0.00
(Kustiani & Misa, 2018)	Indonesia	Age 6-24 months n=34	Quasi Experimen t en	Nutrition education and maternal behavior in providing MP-ASI. The system used is the lecture and simulation method using teaching aids.	3 times in 1 month	p-value 0.00
(Vazir et al., 2013)	India	Age 3-15 months n=600	RCT	1. Twelve-month home visits by experts using flip charts, other visual materials, demonstration, and counseling sessions to deliver 11 nutritional education messages regarding sustained nursing and complementary breastfeeding in addition to ICDS services for the MP-ASI Group (/CFG). 2. Play groups and provision of	1. 2x or4x a month (depending on age of the baby) 2. Receive 5 developme ntal toys during interventio n 3. There were	0.19 Cm CI: 0.0–0.4

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				MP-ASIresponsive (RCF&PG):ICDS services, educationabout food 3. breastfeeding companions such as skills about responsive feeding, and developmental stimulation using five simple toys. 4. center-based supplemental feeding for 1–6-year-olds, pregnant and breastfeeding women, monthly growth monitoring, and non-formal preschool for 3-5-year-olds	30 home visits during 12 months	
(Sharma et al., 2020)	India	Age 4-6month n=404	Quasi Experimen t en	1. Pre-intervention focus group discussion (FGD) 2. Nutrition education, web-based surveillance of malnourished children, health talks and videos on supplemental foods, hand hygiene, and responsive feeding 3. At the ages of 6-8 months and 9-11 months, mothers are given nutritional education and counseling. shown a video about the importance of hand hygiene and sanitation, including how to keep hands clean when preparing food and eating.	1. 4 month before research 2. Every 2 weeks for 6 months 3. Each session lasts 30–45 minutes	0.01
(Ayale w & Belache w, 2021)	Ethiopia	Age 6-9month n=612	RCT	1. Baby sitters and members his family get complementary foods for breast milk behavior change communication 2. Home visits in the form of participatory discussions were conducted with family members (fathers and grandmothers of recruited babies) regarding practices giving food optimal breastfeeding companions, their impact on the health, growth and survival of babies and how they can support mothers in breastfeeding their babies. Each mother provides the family with a poster containing key messages at the end of each home visit.	1. for 9 months, 2. 1x/month for 2 days	RR= 0.68
(Teshom e et al., 2020)	Ethiopia	Age 6 up to15 months n= 772	RCT	Health education and recipe demonstration on preparing sprouts and cereal porridge, obtaining haricot bean seeds and fertilizer	Every 1 month (1 time per month for 2 days)	0.001

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(Oktarina N.H, 2013)	Indonesia	Age 1 to 36 months n=50	true mental experiment	1. Taburia contains 16 vitamins and minerals 2. Nutrition Education	1. 2 day once for 2 months 2. Every 2 weeks	p-value is 0.03

(Lanou et al., 2019)	Ethiopia	Age 6-23 months n=1106	RCT	1. Mothers of children without malnutrition and acute malnutrition are being invited for intensive counseling and cooking demonstrations, children with severe malnutrition are being referred to the clinic and given PlumpyNut 2. *Multinutrient Powder (*MNP)contains 15 micronutrients, including 10 mg of iron. Vit.A 400RE, Vit.D 5g, Vit.E 5mg, Vit C 30 mg, VIT B1 and B2 0.5 mg, B3 6mg, B6 0.5 mg, B12 0.9 mg, B9 150 g, zinc 4 .1 mg, copper 0.56 mg, selnium 17 g, iodine 90 g	1. biweekly 2. every day for 12 months	0.027
(Taneja et al., 2021)	India	Age 0- 6 month n=680 (partner Mother And baby)	Quasi Experimen t en	Mothers are given additional food in the form of 600 kcal snacks with 25-30% energy (150-180 kcal)	1. 1 week 2. 1 month 3. Every month for 6 months	P=0.89
(Lai et al., 2022)	Cambodia	Age 1-28 months n=4,124	RCT	Supplemental feeding activities and education through public growth-based promotion, caregiver groups, home visits, and conditional cash transfers connected to primary health and nutrition during the first thousand days of life are all examples of nutrition interventions.	2 years	+0.10, (CI 0.01-0.20)
(Helmizar & Lipoeto, 2019)	Indonesia	Age 12-24month n=65	RCT	1. Zinc sulfate supplementation at a dose of 10 mg was given 2. stimulation psychosocialManjujai consists of 24 games based on local culture 3. placebo vitamin B1 in the form of powder (puyer)	1. every day for 3 months 2. every 2week for 3 months	p-value 0.47
(Nugroho et al., 2014)	Indonesia	Age 24-48 months /63	Quasi Experime nt n	1. *micronutrient sprinkle*Once every 2 days with a dose of 1g (1 pack) 2. counseling	1. 2 months 2. every 2 weeks for 2 months	p-value 0.51

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(Wang et al., 2017)	Cambodia	Age 12-35 months n= 247	RCT	1. Received 20 mg zinc sulfate 2. Dose single albendazole (200 mg and 400 mg 3. Placebo maltodextrin and daily mnp 4. Zinc and albendazzole were dissolved in 20 ml of diluted fruit juice	1. Every day for 14 days 2. Once every 2 weeks for 6 months	0.087 0.26
(Menasria et al., 2018)	Cambodia	Age 6-23 months n = 360	RCT	Food addition Moringa powder (16 gr/sachet)+ CEN	1. Every Sunday 2. Every month	

To avoid stunting, interventions to promote the health of mothers, neonates, and children can be carried out through community-based service delivery platforms might be delivered locally in homes, villages, or community groups by trained health workers or community workers. This research has the potential to improve child health and nutritional outcomes in underserved communities.(World Health Organization, 2018)

In situations where households have sufficient resources to implement recommendations, caregiver education or counseling on appropriate complementary feeding practices, such as offering a variety of nutrient dense foods, safe and developmentally appropriate food preparation, age appropriate feeding frequency, and continuing breastfeeding, are effective strategies to increase a child's intake and reduce growth problems.(World Health Organization, 2018)

In Africa and Asia, more than one in three women have anemia and roughly a quarter of children under five are stunted. Lack of sufficient, nutritious, and safe food is not the main cause of malnutrition. It is also caused by a variety of issues connected to poor access to health care, education, water, sanitation, and cleanliness. Poor women can face additional challenges to resources and services. The research is clear that enhancing women's education and standing in their households and communities improves nutrition and food security, especially child nutrition.(World Health Organization, 2018)

Conflict causes food insecurity and malnutrition. The Borana, Garre, Guji, and Konso of Ethiopia are frequently involved in bloody wars with one another. Despite their local nature, these wars have had national and even regional implications, involving communities and their allies elsewhere in Ethiopia and even over the border in Kenya.

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According to(World Health Organization, 2018), appropriate nutritional intervention for babies born with stunting is giving exclusive breast milk for up to 6 months, giving MP-ASI according to balanced nutrition guidelines from 6 months and giving breast milk for up to 2 years. This has the potential to improve child health and nutrition among hard-to-reach populations with skilled/trained implementing staff, it is hoped that the intervention will be more effective.

The results of a literature review of the most influential intervention, namely the educational intervention carried out by (Teshome et al., 2020), stated that nutritional education delivered by health extension workers through home visits was successful in increasing children's consumption of nuts and their nutritional status. Nutrition education given to mothers for 9 months. (Dewi & Aminah, 2016) research results stated that nutritional education interventions three times per week at posyandu could increase the knowledge and feeding practice scores of stunted mothers of toddlers using food models.

4. Conclusion

The intervention that has an influence on stunting is education combined with the provision of micronutrient supplementation. Education is provided through home visits. In Cambodia, intervention in the form of community-based growth promotion was not very influential. In India, routine home visits for 12 months provide 5 developmental games to stimulate child stimulation, counseling sessions are carried out by providing flip charts, visual materials, and cooking demonstrations. In Ethiopia, home visits with participatory discussions, communication on MP-ASI behavior change with family members for 9 months, education and provision of supplementation.

5. Compliance with ethical standards

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stunted toddlers. Lincoln University which provided administrative terms and requirements, as well as parents of toddlers with consent to answer the researchers' questions.

Disclosure of conflict of interest

There is no conflict of interest.

Statement of informed consent

Every action we take as authors is a mutual agreement or consent.

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