



Research

Stunting Prevention Interventions in Fulfilling Nutrition in Toddlers

Albrina Roza Rezkillah*, Anton Surjoputro, Ayun Sriatmi

Faculty Public Health, Diponegoro University, Jl. Prof. Jacub Rais, Tembalang, Semarang City, Central Java 50275, Indonesia

ARTICLE INFORMATION

Received: October, 26, 2023
 Revised: November, 15, 2023
 Accepted: December, 01, 2023
 Available online: December, 25, 2023

KEYWORDS

Intervention; Stunting; Nutrition; Toddler

CORRESPONDING AUTHOR

Albrina Roza Rezkillah
 E-mail: albrinaroza0@gmail.com

A B S T R A C T

Background: Malnutrition especially during the critical period of the first 1000 days of life, will affect the growth and development of children, especially brain development, thus increasing the likelihood of suffering from chronic diseases in adulthood. The World Health Organization has set targets for nutritional status development, one of which aims to reduce the number of stunted children under the age of five by 40% by 2025.

Purpose : To provide an overview of stunting prevention interventions in fulfilling nutrition in toddlers.

Methods: This research design uses Scoping Review and article search and selection is based on the PRISMA method. Search results on the ProQuest, Science Direct, and Scopus. Obtained as many as 238 articles that match the keywords searched.

Results: After screening according to the inclusion and exclusion criteria, 7 articles were selected to be included in this study, which are stunting prevention interventions in fulfilling nutrition in toddlers with lipid-based nutrient supplements (LNS), animal protein source complementary foods, complementary feeding of breast milk, combination of fish oil supplementation, provision of nutritious biscuits, and feeding containing hibiscus sabrida.

Conclusion: Intervention of Stunting Prevention in the Fulfillment of Nutrition in toddlers can improve stunting prevention and increase linear growth in toddlers.

INTRODUCTION

Stunting is a condition in which the growth of toddlers is stunted due to prolonged (chronic) malnutrition. This malnutrition, especially during the critical period of the first 1000 days of life, will affect the growth and development of children, especially brain development, increasing the likelihood of suffering from chronic diseases in adulthood. Stunting requires quick and appropriate priority solutions because it is not only a problem in Indonesia but also a problem faced by the world today[1]. Data from the World Health Organization (WHO) in 2022 shows the prevalence of stunting (stunted) in toddlers is 22.3%, 6.8% underweight (wasting), 5.6% overweight (overweight). The Asian region ranks first for stunted toddlers at 52.0%, underweight toddlers at 70.0%, and obese toddlers at 48.0%. The second place is in the African region with 43.0% of stunted toddlers, 27.0% of underweight toddlers, and 28.0% of obese toddlers [2].

The results of the Indonesian Nutrition Status (SSGI) in 2022 showed that the prevalence of stunting in Indonesia was 21.6%, wasting was 7.7%, and overweight was 3.5% [3]. The prevalence of stunting at this rate is still very high when compared to the standards set by WHO, namely the number of stunting cases should not be more than 20% [4]. The World Health Organization (WHO) has set targets for nutritional status development, one of which aims to reduce the number of stunted children under the age of five by 40% by 2025. The government places stunting among the national development priorities. The focus of the RPJMN 2020-2024 policy direction and strategy is to improve access and quality of health services towards universal health coverage, with an emphasis on strengthening basic health services, or basic health services. One way to achieve this goal is to accelerate improvements in community nutrition and reduce stunting [5].

In addition, stunting will impact the growth and development of children under five, both in the short and long term. The short-term impacts include failure to thrive, motor and cognitive development problems, non-ideal body size, and metabolic problems. The longterm impacts include decreased intellectual capacity, impaired neural structure and function and permanent brain cells, which can lead to decreased ability to absorb lessons at school age, decreased productivity as an adult, and increased risk of non-communicable diseases such as hypertension, coronary heart disease, stroke, and diabetes mellitus. Many factors influence stunting, both directly and indirectly. Direct factors include low nutrient intake and health status, while indirect factors include income and economic inequality, food systems, health systems, urbanization, and others [6].

Nutritional fulfillment related to diet in children is an important component in preventing stunting. Information about the type and amount of food consumed daily is called a diet. Having good eating habits contributes to optimal nutrition. During the growth period, children should consume protein and carbohydrates in a balanced manner and still eat the recommended amount of fruits and vegetables [7]. The role of parents, especially mothers in caring for toddlers, determines how the conditions of nutritional intake received by these toddlers. Thus, the mother's behavior must be good in providing balanced nutritional intake to her toddler so that the toddler will be able to grow into a healthy child and be able to grow and develop according to his age. In line with research conducted by Maulina et al in 2021, it shows that there is a positive and significant relationship between the behavior of mothers of toddlers and stunting in the Kuta Baro Puskesmas work area [8]. Another study was also conducted by Amelia et al in 2022, the results showed that there was a relationship between maternal behavior and the incidence of stunting in toddlers in Babul Makmur Village, West Simeulue District, Simeulue Regency [9]. Therefore, researchers want to provide an overview of interventions carried out in preventing stunting by fulfilling nutrition in toddlers.

METHOD

Scoping review is the method used in this study. The search and selection of articles was carried out based on the Preferred Reporting Items for Systematic Review and MetaAnalysis (PRISMA) method. Literature searches were conducted with various electronic databases such as ProQuest, Science Direct, and Scopus using the keywords "Intervention" AND "Stunting" AND "Nutrition" AND "Toddler". This study followed the five stages recommended by Arksey and O'Malley: [10] namely: (1) identifying the research question; (2) finding relevant literature; (3) selecting literature; (4) charting data; and (5) analyzing the literature. (5) Organize, summarize and report results. The steps in this scoping review are as follows:

Stage 1: Identify the review question

As with systematic reviews, the initial stage is to identify the research question to be analyzed because it guides the way the search strategy is constructed. It is therefore important to consider aspects of the research question specifically, for

example, the study population, intervention or outcome. The researcher used the PICO (population, intervention, comparison, outcome) format to develop the focus of the review and the article search strategy.

Table 1. PICO Analysis

Population	Intervention	Comparison	Outcome
Toddler	Nutritional fulfillment	-	Outcomes or effects of prevention interventions stunting.

Stage 2: Finding relevant literature

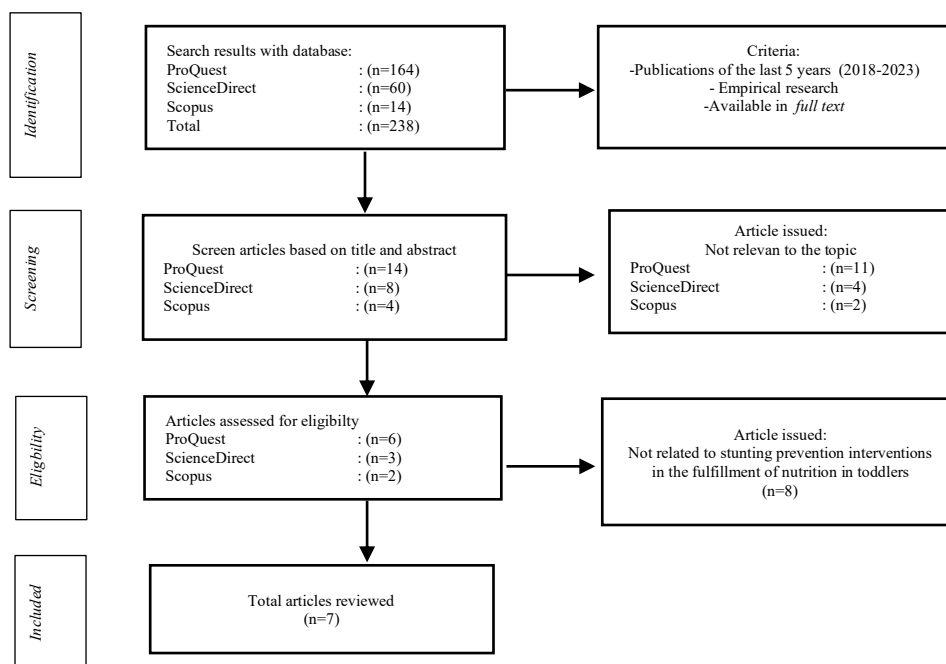
Selection of articles relevant to this scoping review, the researcher determines the inclusion and exclusion criteria.

The inclusion and exclusion criteria in this scoping review are:

Inclusion criteria; (a) Articles published in the last 5 years 2018 to 2023; (b) Articles published in English; (c) Articles that discuss Stunting Prevention in Fulfilling Nutrition in Toddlers; (d) Articles that can be accessed free full text; (e) Original article. Exclusion Criteria; (a) Opinion articles, commentaries, reports, review articles; (b) Review of books, letters, and papers; (c) Articles on risk factors associated with the impact of stunting.

Stage 3: Selecting literature

In this review process, researchers will identify articles that are relevant to the inclusion criteria and exclusion criteria, conduct database searches using keywords that have been determined in each database proquest, science direct, and scopus). Then each article is downloaded and then entered in mendeley and synchronized, then record the findings of the number of articles and the screening process in the Prisma Flow Diagram, as follows:



Picture 1. Literature Search Based on PRISMA

Stage 4: Mapping the Data

Relevant articles were entered in a table (Data Charting) which included title/author, research country, study design, research intervention, research results, and the database used in the article search. The researcher recorded information from the data obtained and then compiled the findings from all relevant articles.

Table 2. Literature in the study

	Title/Author/Year	Country	Study Design	Intervention	Results	Database
1	<i>Comparison of An Interactive 24-H Recall and Weighed Food Record For Measuring Energy and Nutrient Intakes From Complementary Foods Among 9–10-Month-Old Malawian Infants Consuming Lipid-Based Nutrient Supplements/</i> Hemsworth Jaimie, et al/2018	Malawi	<i>Randomised control trial</i>	Intervention LNS (lipid-based nutrient supplements)	Feeding Complementary feeding with lipid-based nutritional supplements (LNS) can improve the energy and nutrient intake of infants at risk of malnutrition..	<i>Proquest</i>
2	<i>Consumption of Animal-Source Protein is Associated with Improved Height-for-Age Z Scores in Rural Malawian Children Aged 12–36 Months/</i> Kaimila Yankho, et al/2019	Malawi	<i>Randomized controlled trials</i>	Complementary food intervention sources animal protein	Feeding food Companion with consumption of animal food sources is associated with increased height in children.	<i>Proquest</i>
3	<i>Effect of an Integrated Package of Nutrition Behavior Change Interventions on Infant and Young Child Feeding Practices and Child Growth from Birth to 18 Months: Cohort Evaluation of the Baduta Cluster Randomized Controlled Trial in East Java, Indonesia/</i> Fahmida Umi, et al/2020	Indonesia	<i>Cluster randomized cohort trial</i>	Complementary feeding intervention	The intervention was effective in improve child feeding practices to address undernutrition during the first 1000 days of life.	<i>Proquest</i>
4	<i>Complementary Feeding of Sorghum-Based and Corn-Based Fortified Blended Foods Results in Similar Iron, Vitamin A, and Anthropometric Outcomes in the MFFAPP Tanzania Efficacy Study/</i> Delimont M Nicole, et al/2019	Tanzania	<i>Randomized cluster study</i>	Complementary feeding intervention	Feeding complementary feeding based on sorghum, cowpea, maize, and soybean associated with nutritional improvement for anemia and vitamin A deficiency.	<i>Science Direct</i>
5	<i>Effects Of N–3 Long-Chain PUFA Supplementation to Lactating Mothers and</i>	Ethiopia	<i>Double-blind randomized controlled trial</i>	Fish oil supplementation combination intervention	Fish oil supplementation intervention significantly	<i>Science Direct</i>

					increased blood n-3 LC-PUFA concentrations and decreased arachidonic acid donuts at all intervention groups.
6	Indonesia	<i>Quasi experimental pre and post-test with measurement of height and development of stunted toddlers before and after treatment.</i>	Intervention of nutritious biscuits	Nutritious biscuit feeding intervention significantly improves height and cognitive development of toddlers	<i>Scopus</i>
7.	Northern Ghana	<i>Quasi-experimental design with the primary focus of assessing and improving iron status of dyads, determined by hemoglobin and stfr</i>	Food feeding intervention containing Hibiscus Sabrida	A feeding intervention containing Hibiscus Sabrida was associated with preventing stunting and increasing linear growth in toddlers.	<i>Scopus</i>

Stage 5: Organize, summarize and report results

The results of the article search using three databases relevant to the scoping review question obtained 7 quantitative articles.

RESULT DAN DISCUSSION

Based on the results of the type of research from 7 selected articles, the research design was randomized control trial (n = 3), cluster randomized cohort trial (n = 1), double-blind randomized controlled trial (n = 1), and quasi-experimental design (n = 2).

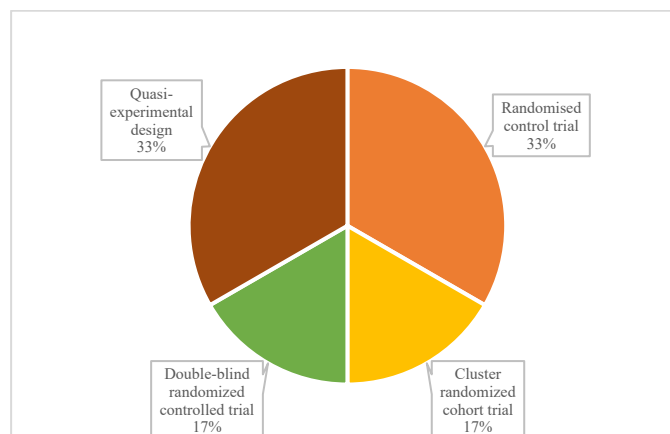


Diagram 1. Research Design

Furthermore, based on articles obtained from several countries, it can be seen in the following diagram:

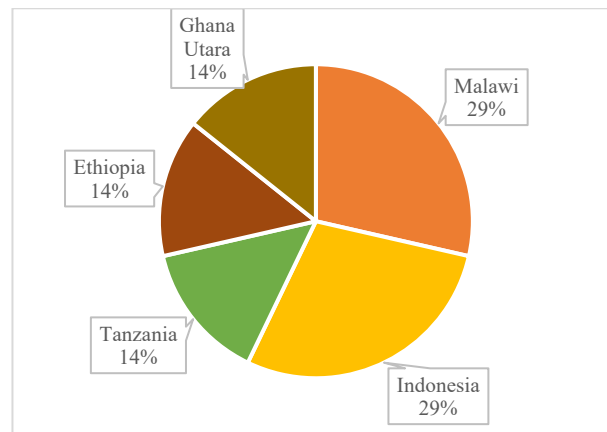


Diagram 2. Research Location

The results of the analysis and evaluation of seven relevant articles, stunting prevention interventions in fulfilling nutrition in toddlers, namely:

Lipid-Based Nutrient Supplements (LNS)

Lipid-based nutritional supplements (LNS) can increase the energy and nutrient intake of infants at risk of malnutrition. The main sources are portion sizes of staple foods (phala, rice and nsima) meat, fish and eggs as well as nuts and seeds. LNS is an energy-dense food [11]. LNS is a product available in various formulations for the prevention or treatment of malnutrition and is designed to provide energy, protein, essential fatty acids and micronutrients. LNS are considered lipid-based as the energy provided by these products is predominantly derived from lipids (fats).

The composition of LNS can consist of a variety of ingredients, but LNS generally consists of vegetable fat, peanut or groundnut paste, milk powder and sugar. LNS is a nutrient-dense product, does not need to be cooked before use, and can be stored for months even in warm conditions. Giving LNS to children under 2 years old is effective in preventing stunting. Various studies prove this such as research conducted by Matias et al in 2018 who provided LNS intervention to children aged 6-18 months reported significantly smaller anemia, iron deficiency, and anemia in children given the intervention compared to children who were not given the intervention [12]. Another study was also conducted by Smuts et al in 2019, showing that the prevalence of anemia, iron deficiency, and anemia became significantly smaller after the provision of LNS compared to the group that was not given [13]. Research conducted by Stewart et al showed that the improvement in iron status due to LNS supplementation was also supported by a significant increase in Hcpidin levels [14].

Companion Foods for Animal Protein Sources

Consumption of animal source protein containing isoenergetic common bean (*Phaseolus vulgaris*), cowpea (*Grape Unguiculata*), or CSB flour and consisting of 70% corn and 30% soybean, with added sugar and enriched with vitamins A, B1, B2, B3 and B12, folate, calcium, zinc and iron to be added into porridge as complementary food [15]. Foods sourced from animal protein have high essential amino acids and can also increase the absorption of minerals such as zinc and iron, where zinc and iron are nutrients that can affect growth. Amino acids in animal protein itself are needed to synthesize several hormone, one of which is thyroid hormone.

Thyroid hormones play a role in determining the metabolic rate in the body as a whole, so it can be said that thyroid hormones can accelerate the growth and development of the body. There are also several other hormones that can affect growth

such as human growth hormone (HGH) or what can be called growth hormone. Therefore, it can be concluded that food sourced from animal protein can accelerate the growth rate. In line with previous research conducted by Nurul et al in 2020, showing that consuming animal protein in a week is protective against the incidence of stunting in toddlers, the number of children under five years who do not have animal protein intake is 9 times more likely to experience stunting than children who eat animal protein sources during the week [16]. Another study also conducted by Anggita et al in 2018, showed that there was a significant relationship between the total consumption of heawain protein and its role as an element of growth failure in children. animal protein plays a role in preventing stunting in children under five. Because animal protein is one of the nutrients needed by the body for the growth and development of body structures (muscles, skin, and bones), this protein can help replace damaged tissue. So that children who consume enough animal protein can avoid the incidence of stunting [17].

Complementary Feeding

Breastfeeding program interventions and supplementary feeding practices are provided immediately after birth and monthly in the first six months [18]. Fortified complementary foods (FBFs) are micronutrient fortified food aid products containing cereals and legumes [19]. Complementary feeding is food that is given along with breastfeeding until the child is two years old. Complementary feeding is a transition process from milk-based to semi-solid food.

The introduction and provision of complementary foods should be done gradually in both form and amount, according to the digestive ability of the baby/child. Proper provision of complementary foods is expected to not only fulfill the baby's nutritional needs, but also stimulate eating skills and stimulate self-confidence in the baby. In line with research conducted by Sastria et al in 2019, it shows that the number of toddlers and children who are given complementary foods at the age of 6 months is smaller experiencing stunting compared to toddlers and children who are not given complementary foods experiencing more stunting [20]. Another study also conducted by Wandini et al in 2020, showed that there was a significant relationship between complementary feeding and the incidence of stunting in toddlers [21].

Combination Fish Oil Supplementation

A pediatric food supplement consisting of an extruded corn-soybean mixture enriched with micronutrients. The food supplement is designed to provide energy and fat equivalent to half of the estimated average requirement and micronutrients at the recommended dose of nutrient intake from complementary foods for an 11-month-old infant. Iron is added at a lower dose of 12.5 mg/day. This food supplement is also enriched with microencapsulated fish oil, providing a daily dose of 500 mg n-3 LC-PUFAs (169 mg DHA+EPA 331 mg [22]). One solution to overcome stunted children is the intake of fortified foods. Fortification is the deliberate practice of increasing the content of one or more micronutrients (i.e., vitamins and minerals) in foods or condiments to improve the nutritional quality of the food supply and provide public health benefits with minimal risk to health. In addition to improving the nutritional content of staple foods, the addition of micronutrients can help restore the micronutrient content lost during processing [23].

Several strategies have been shown to be effective in resolving micronutrient deficiencies to obtain an adequate food supply and are proposed as follows: Food-based approaches (e.g. micronutrient-containing foods; micronutrient powders for sprinkle fortification) and micronutrient supplementation (e.g. vitamin A capsules). In addition, fortification of staple foods (e.g. fortification of salt, flour or oil) is widely used to address micronutrient deficiencies in the general population.

Research on the combination of food supplements for children as a prevention of stunting has been widely conducted such as the research conducted by Albelbeisi et al in 2020 showed that giving multiple supplements Vitamin A 400 g Vitamin C 30 mg Vitamin D 5 g Vitamin E 5mg α -TE Vitamin B1 0.5 mg Vitamin B2 0,5 mg Vitamin B6 0.5 mg Vitamin B12 0.9 g Folic Acid 90 g Niacin 6 mg Iron (Fumarate) 10 mg Zinc 4.1 mg Copper 0.56 mg Selenium 17 g Iodine 90 g has good benefits

on child growth including weight and height which are higher in value than the control group in children aged 12 and 15 months [24]. Another study also conducted by Wang et al in 2017 showed that a soy-based complementary food supplement called Yingyangbao (YYB) which can be taken one sachet daily contains 3gram protein, 7.5 mg iron, 5mg zinc, 200 mg calcium, 250 g vitamin A, 5 g vitamin D, 0.5 mg vitamin B1, 0.5 mg vitamin B2, 0.5 g vitamin B12 and 75 g folic acid. These supplements can reduce the prevalence of stunting [25].

Providing Nutritious Biscuits

Supplementary food is often provided in the form of locally-based family meals with recommended recipes and biscuits that are specially formulated and fortified with vitamins and minerals [26]. Stunting and other nutritional problems can be prevented especially in the first 1,000 days of life and other efforts such as supplementary feeding, and iron fortification in food. Supplementary feeding can be given to children by consuming local foods that have high nutritional value. Like previous research conducted by Lidya et al in 2021, namely the use of pumpkin biscuits as additional food is beneficial to prevent stunting [27]. Another study was also conducted by Zul et al in 2023, namely the provision of additional food, namely sponge cake made from moringa leaves. Moringa is called the most economical plant and contains excellent nutritional value so that it can be used as an alternative in overcoming nutritional problems [28].

Feeding containing Hibiscus Sabrida

Local food containing hibiscus sabdariffa is a local Ghanaian soup/food made mostly from sabdariffa leaves. This food is in the form of soup made rather dilute and consumed with "tou zaafi" (pasta cooked from corn) [29]. Rosella (*Hibiscus sabdariffa*) is one of the plants known to have functional benefits for health, one of which herbal plants grow most easily in many regions. Generally, this plant has the highest content of minerals (Fe) and vitamin C among others such as spinach, cassava leaves, and katuk leaves. In 100 grams of Rosella flower petals, it has 8.98 mg of Fe and 244.4 mg of vitamin C. The use of Hibiscus sabrida to improve health has been done a lot as in previous research conducted by Afrina et al in 2022, showing that giving Fe tablets with Hibiscus sabrida increases hemoglobin in pregnant women [30]. Another study also conducted by Harmawati et al in 2020, showed that there was an increase in hemoglobin levels by giving Hibiscus Sabrida to adolescent girls who were anemic [31].

Stunting Prevention Efforts in Nutrition Fulfillment

Consumption of carbohydrates, proteins, fats, fruits, vegetables containing vitamins, minerals, and fiber are simple indicators of balanced nutrition. Macro- and micro-nutrient deficiencies will occur as a result of a decline in the quality of household food consumption, characterized by limitations in purchasing foods containing protein, vitamins and minerals. To prevent stunting, it is important to ensure that toddlers have a balanced diet. Stunting is when a toddler has a lower length or height than their age. A varied diet that fulfills the five nutrient groups in sufficient, not excessive, and not deficient amounts is called balanced nutrition. The four pillars of fulfilling balanced nutrition for toddlers should pay attention to food diversity, instilling healthy living habits, exercising, and maintaining normal body weight. Adequate fulfillment of macro and micronutrients is essential in stunting management. Good quality and quantity of complementary foods are essential as they contain macro and micronutrients that are important for linear growth. Foods that contain plenty of protein, calcium, vitamin A and zinc can help children grow taller. Normal growth patterns are also influenced by adequate nutrient intake so that children can catch up [32].

Feeding History of Toddlers

According to the IYCF (Infant and Young Child Feeding) Code, the recommended provisions for complementary feeding are as follows: food is given after six months, the amount and texture of food is adjusted to the age of the infant or child, and food is given with a variety of food ingredients from the time the child is given complementary food. One of the causes of feeding discrepancies in infants and children is the lack of maternal knowledge about proper feeding. Ultimately, there are several things that can lead to undernutrition, including stunting. Previous research has found that feeding parenting is the biggest factor leading to stunting, with mothers of toddlers who have poor feeding parenting having a 6 times higher risk of stunting compared to toddlers who have good feeding parenting [33].

One way to help toddlers prevent stunting is to teach them an animal protein-based diet, which will help nourish the brain and increase height. Animal protein, which contains a complete range of essential amino acids, is more easily digested by the body and serves to prevent stunting. Previously conducted research also found that there is an association between stunting in children aged 24 to 59 months and feeding practices and dietary diversity [34].

To prevent stunting, Infant and Young Child Feeding (IYCF) is a critical component of infant and young child-specific interventions. Its implementation must be supported by good and healthy behaviors of mothers, caregivers, and families. Good and healthy behaviors include 1) washing hands with soap in running water, 2) boiling water before using it for cooking or drinking, 3) not smoking in the family, 4) keeping feeding utensils clean, and 5) not using pacifiers. To meet the nutritional needs of toddlers in terms of quantity and nutritional value, the mother's role is very important in choosing various types of healthy food for the menu. Therefore, mothers should try their best to ensure that toddlers eat a nutritious and varied diet [35].

A healthy diet starts with complementary foods until the age of two. During the age of six months, a child's energy needs can be met with breast milk alone. However, starting at six months of age, complementary foods can also be given. WHO recommendations related to IYCF include Early Breastfeeding Initiation (EBI), exclusive breastfeeding, complementary feeding, and breastfeeding until two years of age [36]. The purpose of complementary feeding is to fulfill the nutritional needs of infants/children, introduce the family diet to infants/children, develop the baby's ability to accept various foods with various tastes and shapes (swallowing and chewing ability), try to adapt to foods that contain high energy [37].

Specific Nutrition Interventions in Toddlers

Intervensi yang ditujukan kepada anak selama 1.000 Hari Pertama Kehidupan (HPK) dikenal sebagai intervensi gizi spesifik dan intervensi gizi sensitif. Intervensi gizi Interventions aimed at children during the first 1,000 days of life are known as nutrition-specific and nutrition-sensitive interventions. Specific nutrition interventions are usually carried out in the health sector. In addition, these interventions are short-term, so the results can be recorded in a relatively short period of time. These interventions are carried out on pregnant women, and include providing supplementary feeding (PMT) to pregnant women to address chronic energy and protein deficiencies, iron and folic acid deficiencies, iodine deficiencies, helminthiasis in pregnant women and protecting pregnant women. Specific nutrition interventions with The target of breastfeeding mothers and children aged 0-6 months is carried out through several activities that encourage early breastfeeding initiation, especially through the provision of breast milk / colostrum and encourage exclusive breastfeeding.

Specific nutrition interventions targeting breastfeeding mothers and children aged 7-23 months include encouraging continued breastfeeding until the infant or baby is 23 months old. Then, after the baby is over 6 months old, complementary feeding, deworming, zinc supplementation, strengthening iron in the diet, protection against malaria, complete immunization, and disease prevention and treatment [38].

The First 1000 Days of Life movement seeks to prevent stunting by offering specific nutrition interventions for pregnant women, breastfeeding mothers, and children aged 0 to 23 months. The specific nutrition intervention program involves various programs such as maternal MCH, child MCH, promkes, immunization, kesling, village midwives, and cadres, but additional

nutrition personnel are needed to maximize the activities of this program which focuses on improving maternal nutrition from the time of pregnancy until the baby is two years old [39].

CONCLUSION

This scoping review research provides an overview of stunting prevention interventions in fulfilling nutrition in toddlers. There are 6 interventions provided, namely lipid-based nutrient supplements (LNS), animal protein source complementary foods, complementary breastfeeding, a combination of fish oil supplementation, nutritious biscuits, and food containing hibiscus sabrida. This study concluded that stunting prevention interventions in the fulfillment of nutrition in toddlers with lipid-based nutrient supplements (LNS), animal protein source complementary foods, complementary feeding, combination of fish oil supplementation, provision of nutritious biscuits, and provision of foods containing hibiscus sabrida can increase stunting prevention and increase linear growth in toddlers. Nutrition is important for the development of toddlers, therefore the role of mothers is very important in choosing and applying various types of healthy and varied foods for the toddler's diet. As well as the need for assistance and training in infant and child feeding on health workers to assist mothers of toddlers, especially in making good complementary feeding.

ACKNOWLEDGMENT

Thanks to the Chairperson of the Diponegoro University Master of Health Promotion Study Program who has facilitated this research.

REFERENCE

- [1] I. Fitrotuzzaqiyah and S. Rahayu, "Implementasi Intervensi Spesifik Dalam Upaya Pencegahan Stunting Balita Di Desa Gambarsari Kecamatan Pagaden Kabupaten Subang," *J. Nutr. Coll.*, vol. 11, no. 3, pp. 236–247, 2022, doi: 10.14710/jnc.v11i3.32165.
- [2] World Health Organization, *Levels and trends in child malnutrition*. 2022. [Online]. Available: https://r.search.yahoo.com/_ylt=AwrjcCIR7LdkfgkI3RhXNyoA;_ylu=Y29sbwNncTEEcG9zAzEEdnRpZANDQVEyNTUyM0FfMQRzZWMDc2M-/RV=2/RE=1689803985/RO=10/RU=https%3A%2F%2Fdata.unicef.org%2Fwp-content%2Fuploads%2F2023%2F05%2FJME-2023-Levels-and-trends-in-child-malnutrit
- [3] Kemenkes RI, *Hasil Studi Status Gizi Indonesia (SSGI) Tingkat Nasional, Provinsi, dan Kabupaten/Kota Tahun 2022*. Kementerian Kesehatan Republik Indonesia, 2022.
- [4] A. D. Prakoso, A. Azmiardi, G. A. Febriani, and A. Anulus, "Studi Case Control : Pemantauan Pertumbuhan, Pemberian Makan Dan Hubungannya Dengan Stunting Pada Anak Panti Asuhan Di Kota Semarang," *J. Ilmu Kesehat. Bhakti Husada Heal. Sci. J.*, vol. 12, no. 2, pp. 160–172, 2021, doi: 10.34305/jikbh.v12i2.336.
- [5] I. G. Pratiwi, "Studi Literatur: Intervensi Spesifik Penanganan Stunting," *Indones. Heal. Issue*, vol. 2, no. 1, pp. 29–37, 2023, doi: 10.47134/inhis.v2i1.43.
- [6] N. W. D. Ekayanthi and P. Suryani, "Edukasi Gizi pada Ibu Hamil Mencegah Stunting pada Kelas Ibu Hamil," *J. Kesehat.*, vol. 10, no. 3, p. 312, 2019, doi: 10.26630/jk.v10i3.1389.
- [7] Kementerian PPN/ Bappenas, "Pedoman Pelaksanaan Intervensi Penurunan Stunting Terintegrasi di Kabupaten/Kota," *Rencana Aksi Nas. dalam Rangka Penurunan Stunting Rembuk Stunting*, no. November, pp. 1–51, 2018, [Online]. Available: <https://www.bappenas.go.id>
- [8] E. Rizka Utari Maulina, Cut Ana Marfari, "HUBUNGAN PENGETAHUAN, SIKAP DAN PERILAKU IBU BALITA TERHADAP STUNTING DI KECAMATAN KUTA BARO," *J. Ilmu Kedokt. Dan Kesehat.*, vol. 8, no. 2(24), pp. 19–178 Rezkillah, Albrina Roza, *et al* DOI: <http://dx.doi.org/10.35730/jk.v14i3.1101>

- 27, 2021, doi: 10.25140/2411-5363-2021-2(24)-235-243.
- [9] F. Amelia and M. I. Fahlevi, "Hubungan Perilaku Ibu Dengan Kejadian Stunting Pada Balita Di Desa Babul Makmur Kecamatan Simeulue Barat Kabupaten Simeulue," *J. Biol. Educ.*, vol. 10, no. 1, pp. 12–22, 2022, doi: 10.32672/jbe.v10i1.4113.
- [10] H. Arksey and L. O'Malley, "Scoping studies: towards a methodological framework," *Int. J. Soc. Res. Methodol.*, vol. 8, no. 1, pp. 19–32, Feb. 2005, doi: 10.1080/1364557032000119616.
- [11] J. Hemsworth *et al.*, "Comparison of an interactive 24-h recall and weighed food record for measuring energy and nutrient intakes from complementary foods among 9–10-month-old Malawian infants consuming lipid-based nutrient supplements," *Br. J. Nutr.*, vol. 120, no. 11, pp. 1262–1271, Dec. 2018, doi: <https://doi.org/10.1017/S0007114518002374>.
- [12] S. L. Matias *et al.*, "Prenatal and Postnatal Supplementation with Lipid-Based Nutrient Supplements Reduces Anemia and Iron Deficiency in 18-Month-Old Bangladeshi Children: A Cluster-Randomized Effectiveness Trial," *J. Nutr.*, vol. 148, no. 7, pp. 1167–1176, Jul. 2018, doi: 10.1093/jn/nxy078.
- [13] C. M. Smuts *et al.*, "Effect of small-quantity lipid-based nutrient supplements on growth, psychomotor development, iron status, and morbidity among 6- to 12-month-old infants in South Africa: a randomized controlled trial," *Am. J. Clin. Nutr.*, vol. 109, no. 1, pp. 55–68, Jan. 2019, doi: 10.1093/ajcn/nqy282.
- [14] C. P. Stewart *et al.*, "Effects of lipid-based nutrient supplements and infant and young child feeding counseling with or without improved water, sanitation, and hygiene (WASH) on anemia and micronutrient status: results from 2 cluster-randomized trials in Kenya and Bangladesh," *Am. J. Clin. Nutr.*, vol. 109, no. 1, pp. 148–164, Jan. 2019, doi: 10.1093/ajcn/nqy239.
- [15] Y. Kaimila *et al.*, "Consumption of animal-source protein is associated with improved height-for-age Z scores in rural malawian children aged 12–36 months," *Nutrients*, vol. 11, no. 2, pp. 1–22, 2019, doi: 10.3390/nu11020480.
- [16] N. Afiah *et al.*, "Rendahnya Konsumsi Protein Hewani Sebagai Faktor Risiko Kejadian Stunting Pada Balita Di Kota Samarinda," *Nutr. Diaita*, vol. 12, no. 1, pp. 23–28, 2020.
- [17] A. C. Oktaviani, R. Pratiwi, and F. A. Rahmadi, "Asupan Protein Hewani Sebagai Faktor Risiko Perawakan Pendek Anak Umur 2-4 Tahun," *J. Kedokt. Diponegoro (Diponegoro Med. Journal)*, vol. 7, no. 2, pp. 977–989, 2018, [Online]. Available: <https://ejournal3.undip.ac.id/index.php/medico/article/view/20846>
- [18] U. Fahmida *et al.*, "Effect of an integrated package of nutrition behavior change interventions on infant and young child feeding practices and child growth from birth to 18 months: Cohort evaluation of the baduta cluster randomized controlled trial in east Java, Indonesia," *Nutrients*, vol. 12, no. 12, pp. 1–16, 2020, doi: 10.3390/nu12123851.
- [19] N. M. Delimont *et al.*, "Complementary Feeding of Sorghum-Based and Corn-Based Fortified Blended Foods Results in Similar Iron, Vitamin A, and Anthropometric Outcomes in the MFFAPP Tanzania Efficacy Study," *Curr. Dev. Nutr.*, vol. 3, no. 6, p. nzz027, 2019, doi: <https://doi.org/10.1093/cdn/nzz027>.
- [20] A. Satria, Hasnah, and Fadli, "Faktor Kejadian Stunting Pada Anak Dan Balita Pendahuluan Metode," *J. Ilm. Keperawatan Stikes Hang Tuah Surabaya*, vol. 14, no. 2, pp. 100–108, 2019.
- [21] E. Resti, R. Wandini, and R. Rilyani, "Pemberian Makanan Pendamping Asi (Mp-Asi) Berhubungan Dengan Kejadian Stunting Pada Balita," *J. Kebidanan Malahayati*, vol. 7, no. 2, pp. 274–278, 2021, doi: 10.33024/jkm.v7i2.4138.
- [22] A. Argaw *et al.*, "Effects of n-3 long-chain PUFA supplementation to lactating mothers and their breastfed children on child growth and morbidity: a 2 × 2 factorial randomized controlled trial in rural Ethiopia," *Am. J. Clin. Nutr.*, vol. 107, no. 3, pp. 454–464, 2018, doi: <https://doi.org/10.1093/ajcn/nqx057>.
- [23] Aliyya Divania, "Pengaruh Makanan Fortifikasi Terhadap Kasus Stunting Anak," *Kartika J. Stud. Keislam.*, vol. 3, pp.

54–60, 2023.

- [24] A. Albelbeisi, Z. M. Shariff, C. Y. Mun, H. A. Rahman, and Y. Abed, “Multiple micronutrient supplementation improves growth and reduces the risk of anemia among infants in Gaza Strip, Palestine: a prospective randomized community trial,” *Nutr. J.*, vol. 19, no. 1, p. 133, 2020, doi: 10.1186/s12937-020-00652-7.
- [25] J. Wang *et al.*, “Effectiveness of community-based complementary food supplement (Yingyangbao) distribution in children aged 6-23 months in poor areas in China,” *PLoS One*, vol. 12, no. 3, pp. 1–14, 2017, doi: 10.1371/journal.pone.0174302.
- [26] Pusparini, N. Isdiany, and S. Tursilowati, “The effects of multiple-nutrients fortified biscuits and/or psychosocial parenting education intervention programs on anthropometric and cognitive measures of toddlers,” *J. Nutr. Sci. Vitaminol. (Tokyo)*, vol. 66, pp. S443–S449, 2020, doi: 10.3177/jnsv.66.S443.
- [27] L. N. Br Sinuhaji, J. Munthe, A. Ginting, M. Asia, and N. Isnaniyah, “Self Efficacy Dan Pemanfaatan Biskuit Labu Kuning Sebagai Makanan Tambahan Terhadap Pencegahan Stunting Pada Gold Period Di Siosar [Self Efficacy and the Usage of Pumpkin Biscuit As Food Supplements for Stunting Prevention on Gold Period in Siosar],” *J. Sinergitas PKM CSR*, vol. 5, no. 3, p. 565, 2021, doi: 10.19166/jspc.v5i3.4752.
- [28] Z. F. Ahmad, W. Y. Dulahu, and U. Aulia, “Sosialisasi dan Konseling Pencegahan Stunting Serta Pemberian Makanan Tambahan berbahan Daun Kelor,” *J. Pengabd. Masy. Farm.*, vol. 2, no. 1, pp. 14–21, 2023, [Online]. Available: <https://ejournal.ung.ac.id/index.php/Jpmf>,
- [29] C. K. Kubuga, H. G. Hong, and W. O. Song, “Hibiscus sabdariffa Meal Improves Iron Status of Childbearing Age Women and Prevents Stunting in Their Toddlers in Northern Ghana,” *Nutrients*, vol. 11, no. 1, p. 198, Jan. 2019, doi: <https://doi.org/10.3390/nu11010198>.
- [30] A. Mizawati, S. Yaniarti, and L. Hartini, “Efektivitas Pemberian Bunga Rosella+ Fe dan Fe Terhadap Peningkatan Hemoglobin Ibu Hamil Dengan Anemia Ringan,” *J. Kesehatan–Proceeding IStandalas Int. Conf. Midwifery Med. Fac. Univ. Andalas*, vol. 13, pp. 32–41, 2022.
- [31] H. Harmawati, S. Hardini, and P. Yulianti, “Peningkatan Kadar Hemoglobin Dengan Pemberian Rebusan Ekstrak Bunga Rosela (Hibiscus Sabdariffa) Pada Remaja Putri Yang Mengalami Anemia Di Sman 9 Padang,” *J. Kesehat. Saintika Meditory*, vol. 5, no. 1, p. 72, 2022, doi: 10.30633/jsm.v5i1.1478.
- [32] R. Suriany Simamora and P. Kresnawati, “Pemenuhan Pola Makan Gizi Seimbang Dalam Penanganan Stunting Pada Balita Di Wilayah Puskesmas Kecamatan Rawalumbu Bekasi,” *J. Bid. Ilmu Kesehat.*, vol. 11, no. 1, pp. 34–45, 2021, doi: 10.52643/jbik.v11i1.1345.
- [33] T. A. E. Permatasari, “Pengaruh Pola Asuh Pembrian Makan Terhadap Kejadian Stunting Pada Balita,” *J. Kesehat. Masy. Andalas*, vol. 14, no. 2, p. 3, 2021, doi: 10.24893/jkma.v14i2.527.
- [34] M. R. Nirmala Sari and L. Y. Ratnawati, “Hubungan Pengetahuan Ibu tentang Pola Pemberian Makan dengan Status Gizi Balita di Wilayah Kerja Puskesmas Gapura Kabupaten Sumenep,” *Amerta Nutr.*, vol. 2, no. 2, p. 182, 2018, doi: 10.20473/amnt.v2i2.2018.182-188.
- [35] R. D. Pratiwi, N. K. Martini, and M. Nyandra, “Peran Ibu dalam Pemberian Makanan Bergizi pada Balita Status Gizi Baik yang Kesulitan Makan,” *J. Kesehat.*, vol. 14, no. 2, pp. 119–125, 2021, doi: 10.23917/jk.v14i2.11759.
- [36] World Health Organization, “Global strategy for infant and young child feeding,” *WHO*, 2017. <http://www.who.int/nutrition/publications/infantfeeding/9241562218/en/>
- [37] M. E. Rahmuniyati, C. M. Bintari, and H. Mukaromah, “Edukasi Pemberian Makan Pada Bayi Dan Anak (Pmba) Untuk Pemenuhan Asupan Gizi Anak,” *Community Dev. J. J. Pengabd. Masy.*, vol. 2, no. 3, pp. 1026–1030, 2022, doi: 10.31004/cdj.v2i3.2866.

- [38] R. A. Saputri and J. Tumangger, "Hulu-Hilir Penanggulangan Stunting Di Indonesia," *J. Polit. Issues*, vol. 1, no. 1, pp. 1–9, 2019, doi: 10.33019/jpi.v1i1.2.
- [39] H. Novi Lasmadasari, Nengke Puspitasari, Iin Nilawati, "Monitoring Program Percepatan Penurunan Stunting : Intervensi Gizi Spesifik terhadap Pengetahuan dan Perilaku Ibu dalam Pemenuhan Gizi Bayi dan Balita Stunting Monitoring Program To Accelerate Determination : Specific Nutrition Intervention On Mother ' s," *Ris. Media Keperawatan*, vol. 6, no. 1, pp. 61–68, 2023.