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Original article

Supplemental feeding and nutrition education to reduce stunting in Indonesian toddlers - The DASHAT programme

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Abstract. *Background and aim:* Dapur Sehat Atasi Stunting (DASHAT) is a flagship programme of the Indonesian National Population and Family Planning Board (BKKBN) to reduce the prevalence of stunting in Indonesian toddlers. The objective of the study was to evaluate the improvement in the nutritional status, food diversity, and nutrient adequacy of children participating in the DASHAT programme. The study also intended to analyse the nutrition knowledge of mothers of toddlers. *Methods:* A pre-post experimental design study without controls was conducted in Karawang, Indonesia from August 2022 to December 2022. The study involved the participation of approximately 85 toddlers who were underweight, severely underweight, stunted, and severely stunted, along with their mothers. Nutrition education was provided to the mothers, while supplementary feeding (meals and fortified milk) was given to the toddlers 3 times a week for 3 months. Paired t-tests were used to compare the baseline and postintervention data. *Results:* The results indicate a significant increase ($p<0.05$) in the adequacy levels of energy, protein, fat, and calcium after the intervention. The nutritional status of the toddlers postintervention also increased significantly. The prevalence of severely underweight, severe stunting, and severe wasting decreased by 17.4%, 23.1%, and 50%, respectively. Mean individual dietary diversity scores also increased from 4.2±1.5 (baseline) to 5.0±1.6 (end line). The mothers' nutrition knowledge increased significantly ($p<0.05$) after participating in the programme. There was a significant increase in the mean nutritional knowledge score from 56.2±13.0 (pre-education) to 70.4±13.8 (post-education). *Conclusions*: Combined nutrition education intervention and supplemental feeding through the DASHAT programme significantly improved toddlers' nutritional adequacy, food diversity, and nutritional status as measured by height-for–age Z-scores and weight-for–age Z-scores. This programme also helped to improve the nutrition knowledge of mothers, which will have an indirect sustainable effect on the toddlers' nutrition.

Key words: Food Consumption, Fortified Milk, Nutrition Knowledge, Stunting

Introduction

Stunting is a condition of diminished stature in relation to a child's chronological age, stemming from persistent or recurrent malnutrition, frequently interwoven with socioeconomically disadvantaged contexts, suboptimal maternal health and nutritional status, frequent occurrences of morbidity, and/or insufficient nurturing and feeding practices during the initial phases of life. It acts as a deterrent to the fulfilment of children's physiological and cognitive capacities, impeding their attainment of optimal growth

and cognitive prowess. Stunting is defined as short height for age (HAZ), where the height is less than minus two standard deviations (-2SD) of the WHO's median child growth standard (1). Malnutrition has considerable negative impacts on the physical growth, morbidity, mortality, and cognitive development of children. According to the Global Nutrition Report 2022, Indonesia displayed notable disparities in stunting and wasting, with stunting levels manifesting a four-fold variance and wasting prevalence revealing a nine-fold difference across diverse communities (2). A recent study by Laksono et al. in 2022 reported that the prevalence of stunting among 0–2-year-old Indonesian children was 32.9% (3). The growth and development of children are interdependent on genetic characteristics and environmental conditions in a non-uniform manner; during stages of faster growth, children are more susceptible to nutritional problems such as malnutrition and becoming overweight or obese (4).

Globally, Indonesia ranks fifth in terms of stunting (5). Non-exclusive breastfeeding for the first 6 months, low household socioeconomic status, premature birth, short birth length, and low maternal education are particularly identified as important determinants of child stunting in Indonesia. In addition, the other determinants of stunting include inadequate complementary feeding practices, delayed initiation or early cessation of breastfeeding along with the provision of supplementary food or fluids before the initial 6 months of exclusive breastfeeding, limited socioeconomic status within households, premature birth, below-average birth length, and limited maternal education (6). Promotion of breastfeeding can have short-term as well as long-term effects on the growth of infants, improving the overall health and decreasing the burden of disease and undernutrition in the country (7).

A large number of nutrition-specific and nutrition-sensitive programmes have been implemented at the community level to decrease the prevalence of stunting to 14% by 2024. Preparing a stunting-free generation begins with the provision of adequate nutrition to the prospective mother. Malnutrition in pregnant women can lead to short-term effects like growth failure or long-term effects such as low productivity or increased risk of developing degenerative diseases in the newborn (8). Government policies and reforms should identify the barriers to adequate nutrition and promote programmes that can help in reducing stunting prevalence.

In order to achieve a significant reduction in stunting prevalence, prevention programmes should approach both nutrition-specific and nutrition-sensitive aspects, with optimization of available resources from cross-sectoral teams (8–11). As identified by Candriasih et al., nutrition-sensitive interventions contribute 70% and nutrition-specific interventions contribute about 30% to reducing stunting (12). Reduction of stunting prevalence, which is a national priority, requires the involvement of five key elements (penta-helix model): the government, society/community, academics, entrepreneurs/industry, and the media. All elements of the penta-helix model must work in conjunction to analyse problems, explore potentials, and foster communities to optimise resources in their surroundings. Convergence between ministries and institutions in providing combination programmes should be achieved to address the nutrition-specific and nutrition-sensitive aspects of the programme with the available resources. To address the national priority on reduction of stunting prevalence, it is necessary to engage all stakeholders like the local government, community, academia, business, and media, contributing to the eight actions of stunting convergence framework, which are situation analysis, program planning, stunting discussion forum, regent/mayor regulation, training of human development cadre, system management of stunting data, stunting measure and publication, and annual performance review (13). In line with these activities, a corporate social responsibility initiative to eradicate stunting must be set up to promote programmes that facilitate and improve nutrition and health service facilities at the community level (14). Nutrition-specific intervention programmes that are currently conducted in Indonesia include immunisation, providing vitamin A for toddlers, iron (Fe) supplements for pregnant women, and a monitoring programme for the first 1000 days of life (from the moment the baby is in the womb until the baby reaches 2 years of age/24 months), zinc as adjunct therapy during diarrhoea episodes and

complementary feeding education counselling (15, 16) Nutrition-sensitive interventions include conditional cash transfers, egg-a-day, water sanitation, and hygiene behavioural counselling, all of which have been shown to reduce the prevalence of stunting (16). Due to limitations, the Supplemental Food Program at the Puskesmas (Community Health Center) only focuses on severely malnourished toddlers and pregnant women with chronic deficiencies (15). However, the importance of fortification in improving the nutritional status of a population cannot be emphasised enough. Targeted fortification, particularly in resource-constrained settings, is imperative to meet the nutritional needs of children in such households (17). The stunting problem cannot solely rely on specific programs supervised and guided by the Ministry of Health but must also be tackled by other ministries through sensitive programs, which have a more significant responsibility.

Dapur Sehat Atasi Stunting DASHAT (The Healthy Kitchen to Overcome Stunting) is a flagship programme by the National Population and Family Planning Board (BKKBN) to reduce stunting rates in Indonesia. DASHAT is an initiative to use practical food processing methods to maximise the potential of wholesome, delectable, and nutrient-dense local food. It is a community empowerment initiative with the purpose of providing healthy nutrition to infants and toddlers at risk of stunting, pregnant women, nursing mothers, and toddlers who are already stunted but come from disadvantaged families (18). As a nutrition-specific sensitive programme, DASHAT provides supplemental feeding to toddlers and nutrition education to mothers. In our research, supplemental feeding was provided 3 times a week for 3 months in the form of lunch meals and milk. Nutrition education was provided once during the program. It is essential to understand the effect of this program on the prevalence of stunting. Hence, the objectives of this study were to evaluate the nutritional status, food intake, and nutrient adequacy of underweight, severely underweight, stunted, and severely stunted children participating in the DASHAT programme. The study also intended to analyse the nutrition knowledge of mothers of toddlers participating in the DASHAT program.

Materials and Methods

Study design and participants

This study used a pre-post experimental design without controls. Supplemental feeding in the form of a complete meal was provided to toddlers. In addition, nutrition education was provided to the mothers of toddlers participating in the study. Data were collected before and after the intervention. The study was conducted according to the Declaration of Helsinki. Written informed consent was obtained from all the study participants.

Location and study period

This research was conducted at two locations: Gintungkerta Village of Karawang Regency and Karawang Kulon of Karawang City, from August 2022 to December 2022.

Inclusion criteria

This study enrolled underweight, severely underweight, stunted, and severely stunted toddlers aged 1–5 years (with height-for–age Z-score [HAZ] and weight-for-age Z-score [WAZ] ≤2 standard deviation [SD] of the normal scores) and their mothers.

Study sample and intervention

The study sample comprised pairs of 85 toddlers aged 1–5 years and their mothers. All mothers received nutrition education, and all toddlers received lunch meals. Each lunch meal contained 400–450 kcal energy and 20–25 g of protein. Each toddler also received 27 g of fortified milk powder 3 times a week for 3 months. The milk powder contained 5 g of protein per serving, fulfilling 8% of the daily dietary allowance of protein. The fortified powder also contained micronutrients such as iron, calcium, and vitamin D, contributing to 15%, 25%, and 30% of daily dietary allowance of these nutrients, respectively. The participants in this study were selected by the health volunteer (cadre) in the community based on a convenience sampling of 85 participants. Five participants were

lost to follow-up, and therefore, only 80 participants were analysed.

Data collection

Data collection for this research was performed by trained enumerators from the Nutrition Sciences Department at IPB University. The demographic data included age, gender, birth weight and height, family size of the toddlers, and education level and socioeconomic status of the mothers. Baseline data were collected in September 2022, and the final data were collected in December 2022.

The toddlers were assessed for nutritional adequacy, food diversity, and nutritional status. The nutritional adequacy was calculated and expressed as a percentage of the Indonesian Recommended Dietary Allowance. The food diversity was calculated using the individual dietary diversity score (IDDS). IDDS data were collected via 24-hour dietary recall. There were 10 food groups consisting of starchy staple food; green vegetables; fruits and vegetable sources of vitamin A; other fruits and vegetables; offal; meat and fish; eggs; pods, beans, and seeds; milk and dairy products; and fat and oil. A score of 1 was given when the subject consumed a food group and a score of 0 was given if the subject did not consume any food from that food group. An IDSS score of ≤3 indicates low food diversity, 4–5 indicates moderate food diversity, and >6 indicates high food diversity. Nutritional status was categorised based on WAZ, HAZ, and weight-for–height (WHZ) measurements. The body weight data were measured using a digital scale with a capacity of 150 kg and an accuracy of 0.1 kg. The height of the subjects was measured using a multifunctional height stadiometer with an accuracy of 0.10 cm.

Knowledge of nutrition among mothers was measured using a questionnaire administered before and after providing nutritional education to the participating mothers. In this study, a tested and validated questionnaire (Cronbach's alpha=0.7) was used to assess nutritional knowledge. The knowledge was assessed based on the number of correct answers (which were assigned a score of 1) and the number of incorrect answers (which were assigned a score of 0). Nutrition education was provided once by the researchers for about 2 hours. The nutrition knowledge was calculated as poor (<60), moderate (60–80), and good (>80) based on the scores (15). The family size was categorised into small (<4 family members), medium (5–6 family members), and large (>7 family members).

Statistical analysis

Descriptive statistics was used to analyse the demographic data. A frequency table was used to represent the data distribution for each variable. The food consumption data were analysed using the Nutrisurvey software for Windows (Indonesian version) (19). The nutritional status was analysed using the World Health Organization (WHO) Anthro 2005 software (20). Statistical analysis was performed using the Statistical Package for Social Sciences version 28 (SPSS v28) (21). Paired t-tests were used to compare the pre- and post-intervention data. A p-value of <0.05 was considered statistically significant.

Results

Demographic data of study participants

Table 1 shows that 57.5% of the toddlers included in the study were female and that 81.3% of the toddlers had a birth weight of ≥2.5 kg. Data from the KIA book was used to obtain the birth weights of children. However, some children (15.0%) did not have a KIA book. Unfortunately, several mothers did not know their baby's birth length. A majority (88.8%) of the toddlers were born full term, and 11.3% were preterm babies. More than half of the toddlers had a small family (57.5%). There were more mothers who graduated from high school or had equivalent education (55.0%) than mothers without high school education (45.0%). In comparison, 68.8% of the fathers had graduated from high school or had equivalent education. More than half of the participants (58.8%) had an average household income of US$342.7 per month, which was below the regional minimum wage.

Table 1. Characteristics of the toddlers participating in the DASHAT programme

Characteristics of toddlers	n	%
Gender		
Boys	34	42.5
Girls	46	57.5
Birth weight		
<2.5 kg	3	3.8
≥2.5 kg	65	81.3
Don't know	12	15.0
Birth length		
Short (<48 cm)	12	15.0
Normal (≥48 cm)	34	42.5
Don't know	34	42.5
Gestational age		
Preterm infants	9	11.3
Full-term infants	71	88.8
Family size		
Small	46	57.5
Medium	33	41.3
Large	1	1.3
Mothers' education level		
< Senior high school	36	45.0
Graduated from senior high school or another equivalent school	44	55.0
Fathers' education level		
< Senior high school	25	31.3
Graduated from senior high school or another equivalent school	55	68.8
Household income per month		
<342.7 USD	47	58.8
≥342.7 USD	33	41.3

Nutrition knowledge of mothers

The mean (+SD) of the mothers' nutrition knowledge scores at baseline was 56.2±13.0, which increased significantly ($p<0.05$) to 70.4±13.8 after the nutrition education intervention (Table 2). Before the education intervention, moderate nutrition knowledge was observed in 48.9% of mothers, which increased to 71.1% after the intervention. The proportion of mothers with poor nutrition knowledge reduced from 46.7% (pre-education) to 13.3% (post-education). The proportion of mothers with good nutrition knowledge increased from 4.4% (pre-education) to 15.6% (post-education).

Table 2. Mother's nutrition knowledge

	Pre-education		Post-education		
Nutrition knowledge	n	%	n	%	p-value
Poor	21	46.7	6	13.3	0.000*
Moderate	22	48.9	32	71.1	
Good	2	4.4	7	15.6	
Mean ± SD	56.2±13.0		70.4±13.8		

SD, Standard deviation; * p-value ≤ 0.05

Nutritional intake, adequacy, and diversity

As shown in Figure 1, the toddlers' food was divided into macronutrients (energy, protein, fat, and carbohydrates) and micronutrients (Fe, zinc [Zn], calcium [Ca], and vitamin A). After comparing the baseline and final values, the nutritional adequacy increased from 77.6% to 89.0% for energy, 153.4% to 187.9% for protein, 80.6% to 97.5% for fat, and 67.3% to 75.5% for carbohydrates. An increased intake of Fe, Zn, Ca, and vitamin A was also reported. Paired t-test analysis showed a significant increase in energy, protein, fat, and Ca intake from baseline to the end of study ($p<0.05$).

The toddlers' adherence to the intervention was assessed by the average amount of food remaining after they completed their meal during the intervention i.e., food wasted. In most cases (70.9%), the average remaining food was in the range of 0–25%. In some cases (24.3%), the average remaining food ranged between 26–50%; only 4.4% of the toddlers wasted 51–75% of the provided food. These results suggest good adherence to the intervention.

The food diversity score, as measured using the IDSS questionnaire, significantly increased from 4.2±1.5 (baseline) to 5.0±1.6 at the end of the study ($p<0.05$). The number of toddlers in the low food diversity category decreased, while that in the moderate and high food diversity categories increased from baseline to end of the study (Table 3).

Nutritional status

At baseline, 43.8% of the toddlers were underweight, 28.8% were severely underweight, 61.3%

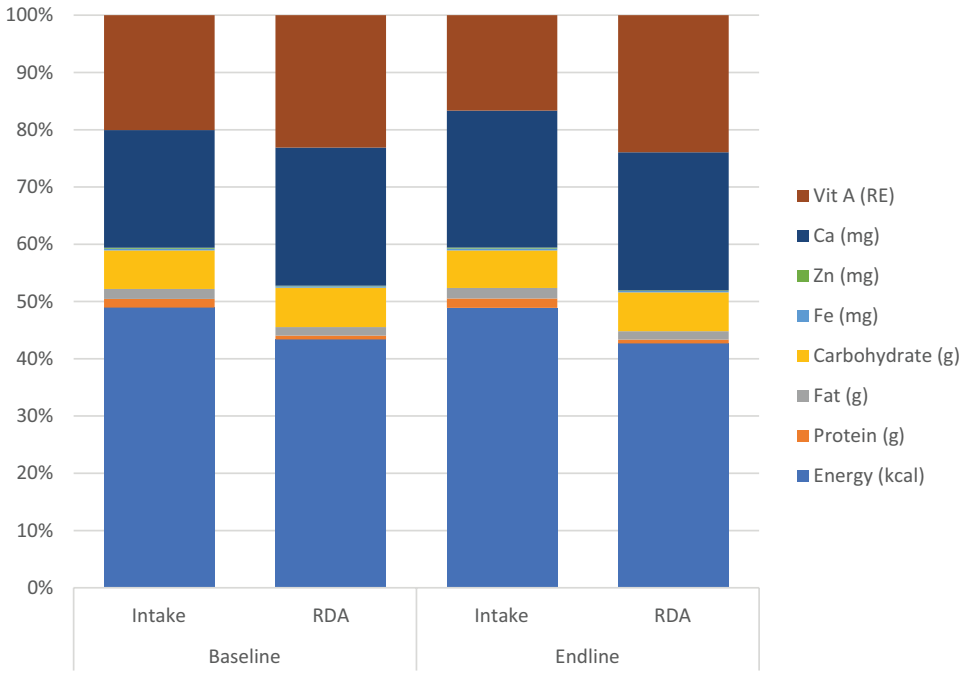

Figure 1: Nutritional adequacy (%)

Table 3. Individual dietary diversity score (IDDS)

Food diversity	Baseline		End of study		p-value
	n	%	n	%	
Low	29	36.3	11	13.8	0.000*
Moderate	46	57.5	56	70.0	
High	5	6.3	15	18.8	
Mean ± SD	4.2±1.5		5.0±1.6		

showed stunting, and 32.5% showed severe stunting based on WAZ and HAZ scores (Table 4). However, based on WHZ scores, most of the toddlers were categorised as being in the normal nutrition category (78.8%); however, 7.5% of them experienced severe wasting and 13.8% experienced wasting. These baseline data were compared with the data obtained at the end of the study to evaluate the changes in the toddlers' nutritional status. The proportion of toddlers with normal weight (WAZ) at baseline increased from 27.5% to 35%, and the proportion of toddlers in the severely underweight category decreased. A decrease in the proportion of toddlers with stunting (23.1%) and severe stunting (50%) was also seen after the intervention. According to the paired t-tests, there was a significant difference in the baseline and end of the study nutritional status of the toddlers as measured using WAZ and HAZ ($p<0.05$). However, there was no significant difference between the WHZ scores at baseline and end of the study ($p>0.05$) (Table 4).

Discussion

The present study assessed the nutritional status, nutrient adequacy, and food diversity score of underweight, severely underweight, stunted, and severely stunted children aged 1–5 years participating in the DASHAT programme. The study also analysed the nutrition knowledge of mothers of toddlers who participated in the programme. Eighty-five toddlers and their mothers were included. The results of the present study indicate that the nutrition status, nutrient adequacy, and food diversity scores of the participants improved significantly after the intervention. A significant improvement was also observed in the intake of certain nutritional categories such as protein, fat, and Ca.

Table 4. Nutritional status of toddlers participating in the DASHAT programme

Nutritional status	Baseline [n (%)]	End of study [n (%)]	Difference (%)	p-value
WAZ (Z score)				
Severe underweight (Z *score* <-3)	23 (28.8)	19 (23.8)	-17.4	0.000*
Underweight (-3≤ Z *score* <-2)	35 (43.8)	33 (41.3)	-5.7	
Normal (-2≤ Z *score* ≤2)	22 (27.5)	28 (35.0)	+27.3	
Overweight (Z *score* >2)	0 (0.0)	0 (0.0)	0.0	
HAZ (Z score)				
Severe stunting (Z *score* <-3)	26 (32.5)	20 (25.0)	-23.1	0.000*
Stunting (-3≤ Z *score* <-2)	49 (61.3)	48 (60.0)	+2.0	
Normal (-2≤ Z *score* ≤3)	5 (6.3)	12 (15.0)	+140	
WHZ (Z score)				
Severe wasting (Z *score* <-3) 1	6 (7.5)	3 (3.8)	-50	0.163
Wasting (-3≤ Z *score* <-2) 2	11 (13.8)	16 (20.0)	+45.5	
Normal (-2≤ Z *score* ≤2) 3	63 (78.8)	59 (73.8)	-6.3	
Overweight (2< Z *score* ≤3)	0 (0,0)	2 (2.5)	+200	

Note: Difference = [(end of study – baseline): baseline] x 100%.

The nutrition knowledge of mothers also improved significantly after the intervention.

A community's nutritional issues are characterised by multifaceted causative factors, encompassing challenges in food access due to economic limitations and constraints on nutritious food consumption (22). Food consumption insufficiency and infection are direct causes of nutritional problems, whereas sanitation, and nutrition knowledge are considered the indirect causes (22,23), Supplementary feeding programmes are nutrition improvement programmes used to overcome underweight and stunting problems in children (8,23). The type of nutrition intervention implemented should cover both specific and sensitive aspects in order to bring about a significant decrease in stunting prevalence (8). Specific nutrition intervention programmes target the direct determinants of nutrition, such as providing micronutrient supplements to all age groups, strategies for disease prevention, and support for exclusive breastfeeding. Meanwhile, nutrition-sensitive programmes include agriculture and food security, social security networks, early childhood development, mental health for mothers, empowerment for women, child protection, schooling and education, water facilities, sanitation and hygiene, and health and family planning services (24,25) Several similar programmes have been implemented by the Indonesian government, one of which is the DASHAT programme (21). DASHAT plays an important role as an educational tool in addressing food access and insufficiency problems. The programme also provides ongoing food assistance/food aid for poor households or households with stunted children. Thus, food assistance through DASHAT may help in reducing the prevalence of childhood stunting.

Nutrition knowledge of mothers is one of the major factors that can affect the nutritional adequacy and nutritional status of their children (26). Nutrition knowledge is influenced by several factors, including education, sociocultural factors, economical, and environmental factors, which can influence an individual's attitude towards understanding nutritional content, as well as eating habits (27). This study found a significant improvement in the nutrition knowledge score of mothers (p=0.000) before they were provided with nutrition education. Supporting this finding, a previous study indicated that mothers with poor knowledge were 10.2 times more likely (confidence interval [CI]:

3.76–27.75) to see stunting in their child at the age of 6–24 months than mothers with sufficient knowledge (28). A systematic review of 15 studies (11 conducted in Indonesia) concluded that nutritional education provided to mothers had a significant impact on their nutrition knowledge, which in turn significantly affected the child's nutritional status (29).

A study involving young soccer athletes underscored the significance of nutritional knowledge in shaping dietary behaviours and optimising overall performance (30). Nutritional intake is closely related to eating habits, and a significant relationship was observed between eating habits and nutritional status (31). Nutritional intake can influence brain growth in toddlers (32). Adequate intake can support excellent growth and development (33). When the level of nutritional adequacy is unbalanced, there is an increased risk of developing nutritional problems, including under-nourishment and over-nourishment (34).

Fortified milk is an effective way to increase food intake in stunted children since milk contains amino acids that help prevent stunting (33, 35). Amino acids activate mTORC1 (mammalian target of rapamycin), a master regulator for growth and development (36). Provision of proteins is imperative to reducing stunting in children, and this may be achieved by combining plant- and animal-based protein sources that are locally available. The consumption of animal proteins among children in Indonesia has been reported to be low. Sjarif et al. concluded that ≥300 mL of daily milk consumption during the growing phase of children protected against stunting (adjusted odds ratio 0.28, 95% CI 0.13–0.63) (37). Similarly, a cross-sectional study in Jakarta, Indonesia, found that children who consumed more than 300 mL of milk daily during their growth phase were protected against stunting (36). Sunardi D et al. (2019) showed that increased consumption of milk during the growth phase improves nutrient intake in children aged 1–5 years (38). A portion of 300 mL is consistent with the WHO recommendation for managing moderate and acute malnutrition, as milk contains 25%–30% dairy protein that boosts weight gain and linear growth (37). In this programme, there was an increase in the protein adequacy of toddlers at risk of being stunted from 153% to 187%. It is known that the consumption of fortified milk for 3 months can increase Ca intake. A study conducted in India that focused on examining the relationship between dairy milk consumption and anthropometric outcomes among children aged 6–59 months showed that children who had consumed milk exhibited lower odds of experiencing growth-related issues. The study used data from the fourth Indian National Family Health Survey conducted between 2015 and 2016, and involved a cross-sectional analysis of 107,639 participants. Overall, the findings revealed that milk consumpltion likely enhanced growth outcomes in Indian children (39). A study in rural Nepal examined how consumption of animal-source foods (ASF) affected child growth across different age groups, utilising a 3-year dataset. The results showed that even occasional ASF consumption, particularly milk, correlated with improved growth. This underscores the significance of milk consumption in addressing growth issues among undernourished rural Nepali children (40). Additionally, a systematic review and meta-analysis of 12 studies reported that consumption of fortified milk led to weight gain among vulnerable populations of children raised in resource-constrained settings, especially where the intervention was extended to periods greater than 6 months (41).

Nutritional status reflects the balance between intake and nutritional needs. The nutritional status of children is measured by anthropometric data, such as age, weight, and height (42). Nutrition is an essential part of the growth and development process of toddlers. Poor nutritional status can hinder their physical and mental abilities. Moreover, poor nutritional status makes them more vulnerable to infectious diseases, such as diarrhoea, acute respiratory infections, and pneumonia, which can be fatal (43). Stunting can interfere with children's physical and psychological growth and development, reduce cognitive development and function, and increase the risk of chronic diseases in adulthood. The direct cause of problems in toddlers' nutritional status is an unbalanced nutritional intake (44). The indirect factors affecting nutritional status are knowledge, perception, habits or taboos, food preferences, socioeconomic factors, infectious diseases, education, and environment (45).

The results from the present study are promising and show that the prevalence of stunting can be

reduced with the DASHAT programme, as indicated by a decline in the proportion of toddlers who are severely underweight (17.4%), have severe stunting (23.1%), and exhibit severe wasting (50%).

Ethics Committee Approval: Ethics committee approval was received from Universitas Muhammadiyah Semarang No. 011/KE/07/2022 dated July 22, 2022.

Informed Consent: Informed consent was obtained from the individuals who participated in this study.

Conclusion: The DASHAT programme has evidently improved the nutritional status of stunted and underweight children, accompanied by a substantial increase in maternal nutritional knowledge. The findings also show the effectiveness of the DASHAT programme in reducing stunting prevalence, emphasizing the importance of collaborative initiatives. Further research and evaluation should be undertaken for the continuous assessment and impact of the programme.

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Conflicts of Interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

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