

Education on the Preparation of Supplementary Feeding (PMT) Using Local Foods for Undernourished Toddlers at the Asoka 8 Posyandu in Lubuk Linggau

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Keywords

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Abstract

Undernutrition among toddlers remains a significant public health challenge that can negatively affect children's growth, cognitive development, immunity, and future productivity. One strategy to address this issue is the provision of Supplementary Feeding (Pemberian Makanan Tambahan/PMT) based on locally available food ingredients, which can improve nutritional intake while encouraging family independence in preparing nutritious meals. This community service activity aimed to increase the knowledge and skills of mothers of undernourished toddlers regarding the preparation of local food-based PMT at Posyandu Asoka 8, Lubuk Linggau. The activity was conducted using an educational approach involving interactive lectures, leaflet-based nutrition education, discussions, and question-and-answer sessions. The participants consisted of 13 mothers of undernourished toddlers in the working area of Megang Health Center. Evaluation was carried out by assessing participants' understanding before and after the educational intervention through question-and-answer activities and observation of participation during the session. The results showed that prior to education, several mothers had limited knowledge regarding the concept, purpose, nutritional composition, and appropriate preparation methods of local PMT. After receiving education through leaflets and interactive discussions, participants demonstrated improved understanding of PMT preparation, including selecting nutritious local ingredients, determining appropriate portions, and applying proper food processing techniques. This activity indicates that local food-based PMT education is an effective approach to improving maternal knowledge and supporting sustainable nutritional practices for undernourished toddlers. Continuous nutrition education integrated into routine Posyandu activities is recommended to strengthen mothers' capacity in preventing and reducing toddler malnutrition.

INTRODUCTION

Toddlers are an age group that is prone to nutritional problems and requires special attention because malnutrition can cause serious negative impacts (Ramazana, Zuheri and Alaydrus, 2024). Nutrition problems are a global health problem because they reach almost all corners of the world. The problem of malnutrition and undernutrition in toddlers is still a public health challenge in Indonesia (Rahma, 2025). Currently, nutritional issues have become the main focus in the health sector, including undernutrition. Undernutrition refers to an imbalance

between food intake and body needs, which generally results in a lack of energy intake and nutrients, especially protein. In 2016, undernutrition is estimated to have caused 1 million deaths, with a loss of life rate of about 3.9% per year, and the occurrence of life disabilities of about 3.8% per year globally (Ssentongo et al., 2021). The World Health Organization (WHO) classifies undernutrition into four categories, namely wasting, stunting, underweight, and macronutrient deficiencies (Wardani and Renyoet, 2022). Based on data from WHO in 2020, there are 45.4 million children under five worldwide who experience wasting, or about 8% of the number of children under five. Meanwhile, the prevalence of wasting in Indonesia, according to Basic Health Research in 2018, reached 10.2%. Wasting in toddlers increases the risk of morbidity and death, increases susceptibility to infectious diseases, and has an impact on intellectual development and health in the future. Wasting's impact on Indonesia's economic losses in 2013 is estimated to range from Rp. 1.042 billion to Rp. 4.687 billion, or around 0.01% to 0.06% of the total national Gross Domestic Product (GDP) (Wardani and Renyoet, 2022). Inadequate nutrition in children under the age of five remains a public health problem that continues to challenge the world, especially in efforts to achieve the Sustainable Development Goals by 2030. A recent report issued by UNICEF, WHO, and the World Bank Group (2023) states that around 6.8% or 45 million children under five worldwide experience malnutrition, which is an acute malnutrition condition that increases the risk of death and affects long-term growth and development.

Malnutrition can hinder the growth process in children. Children who have difficulties in their growth will experience a decrease in intelligence levels, are more susceptible to diseases, and are at risk of experiencing a decline in productivity in the future, which will ultimately hamper a country's economy. Therefore, it is important for the state to pay special attention to dealing with current nutritional problems (Hanifah, Djais and Fatimah, 2020). The achievement of optimal nutritional status is an important factor in ensuring the success of human resource development. In particular, pregnant women and children under five are a group that is vulnerable to nutritional problems and therefore requires extra attention, considering the long-term impacts that can occur if they experience malnutrition (Ministry of Health of the Republic of Indonesia, 2023).

Poor nutritional conditions, if not immediately intervened appropriately, will provide a great opportunity to become a malnourished status that ultimately causes stunting in toddlers (Ningsih, 2022). Malnutrition can reduce the ability to explore. In the long term, children who are malnourished can also experience a decrease in intelligence, productivity, and the quality of human resources (Amirah and Rifqi, 2019). To meet the nutritional needs of toddlers, the government has developed a supplementary feeding program (PMT). This program aims to improve children's nutritional status and meet their nutritional needs, so as to achieve a good nutritional status according to the child's condition (Ghodsi et al., 2017; Organization, 2018; Prasetyo et al., 2023; Vieira et al., 2021).

PMT for the ages of 6-59 months functions as an addition, not a substitute for their main daily meal, and is based on local food ingredients with a typical regional menu adapted to local conditions (Hosang, Umboh and Lestari, 2017). Based on data from the Megang Lubuk Linggau Health Center, the overall prevalence of toddlers in 2025 is 3,645, while around 117 children experience malnutrition, resulting in a malnutrition prevalence rate of approximately 3.21%. When compared to other nutritional problems, malnutrition is still higher.

Undernourished toddlers in the Megang Lubuk Linggau health center area, in addition to receiving local PMT from the health center, mothers of toddlers also need to be given independent education to process nutritious local PMT, understand balanced nutritional portions, and form long-term healthy eating habits for children.

The main key is for mothers to be able to independently provide nutritious food after the PMT program ends. Local PMT processing education for mothers aims to increase knowledge and skills in processing highly nutritious food ingredients that are easy to obtain, using local food ingredients that are rich in animal proteins, carbohydrates, vitamins, and minerals, as well as the correct way of processing local PMT because errors in the processing method can damage the nutritional content. This makes the daily calories and proteins that enter the child's body insufficient, thus triggering weight loss and malnutrition. Several previous studies have examined the effectiveness of local food-based PMT interventions.

Hendriana and Mulyani (2024) found a significant increase in weight-for-height (BB/TB) in undernourished toddlers after 56 days of receiving local PMT (p -value = 0.000) at the Glagah Health Center, Lamongan. Similarly, research by Ramazana et al. (2024) demonstrated a significant effect of local supplementary feeding on the nutritional status of undernourished toddlers at the Simpang Tiga Aceh Besar Health Center. Benita et al. (2025) identified that the increase in weight-for-age in toddlers receiving PMT was not significant compared to the increase in weight-for-height, highlighting the importance of evaluating different anthropometric indicators. Sari et al. (2025) showed that locally sourced food-based interventions combined with nutrition education effectively improved children's nutritional status and strengthened maternal knowledge in North Aceh. Indrastata et al. (2025) demonstrated a significant increase in cadre knowledge ($p = 0.001$) through nutrition education combined with local PMT cooking demonstrations at Medokan Ayu Public Health Center, Surabaya. Izzatie et al. (2025) reported weight gain in 7 out of 9 stunted children in Kejawang Village through a 90-day local PMT program combined with nutrition education. Subarkah et al. (2024) evaluated the supplementary feeding program targeted at malnourished toddlers in Prabumulih City, Indonesia, emphasizing the importance of local food utilization and community empowerment.

However, a research gap remains in understanding the specific educational interventions that effectively improve maternal knowledge and skills in preparing local food-based PMT, particularly in the Lubuk Linggau context. Most previous studies have focused on evaluating the impact of PMT provision on nutritional status outcomes rather than examining the educational process itself. There is a lack of research that specifically investigates how educational methods using leaflets combined with interactive discussions can improve mothers' understanding of local PMT preparation, including the selection of nutritious local ingredients, determination of appropriate portions according to age, and application of proper food processing techniques. Additionally, few studies have examined the educational process from assessing initial knowledge through pre-education questions and answers to delivering material and evaluating improvements. This study addresses that gap by providing a detailed analysis of the effectiveness of education using leaflets on local PMT processing for mothers of undernourished toddlers at Posyandu Asoka 8, Lubuk Linggau.

The urgency of this research is driven by several critical factors. First, the malnutrition prevalence of 3.21% at the Megang Lubuk Linggau Health Center remains a concern that requires immediate intervention, as malnutrition can have long-term impacts on children's growth, development, and future productivity. Second, there is a pressing need to empower mothers of undernourished toddlers with knowledge and skills to independently prepare nutritious local food, ensuring sustainability beyond government assistance programs and preventing reliance on external aid. Third, educational interventions that combine print media (leaflets) with interactive discussions have been proven effective in various settings, but their application in the Lubuk Linggau context has not been adequately studied. Fourth, the use of local food ingredients is a sustainable strategy that considers local wisdom, availability, and affordability, making it appropriate for long-term nutritional improvement and community empowerment. Fifth, without proper education, mothers may not understand the correct processing methods, portion sizes, and nutritional composition required for PMT, potentially leading to continued malnutrition despite program availability.

The novelty of this study lies in several aspects. First, it provides empirical evidence on the effectiveness of leaflet-based education combined with interactive discussion methods in improving maternal knowledge of local PMT processing specifically in the Lubuk Linggau context, where such research has not been previously conducted. Second, it offers practical guidance on the types of local food ingredients available in the Megang Health Center area that can be used for PMT preparation, including specific recipes and nutritional information tailored to local availability. Third, it demonstrates the complete educational process from assessing mothers' initial knowledge through pre-education questions and answers, to delivering material via leaflets, and finally evaluating improvements through post-education discussions and observations. Fourth, it provides a replicable educational model that can be integrated into routine Posyandu activities with minimal resources, using affordable print media that participants can take home for independent learning. Fifth, this study addresses both knowledge and practical skills aspects of PMT processing, distinguishing it from previous research that primarily focused on nutritional outcomes.

The purpose of this research is to identify and analyze the understanding of local food-based PMT processing before and after education using leaflets among mothers of undernourished toddlers at Posyandu Asoka 8, Megang Health Center, Lubuk Linggau, and to determine whether there is an effect of providing education on local PMT processing on maternal understanding. The specific objectives are: (1) to identify understanding of local food-based PMT processing before being educated with leaflets; (2) to identify understanding after being educated with leaflets on local food-based PMT processing; and (3) to analyze whether there is an effect of providing education about local PMT processing on understanding in mothers of toddlers.

This research contributes theoretically to the development of nutrition education literature, particularly in the context of community-based interventions for toddler undernutrition and the application of health education theories in community settings. Practically, it offers strategic insights for health centers and Posyandu cadres in designing effective nutrition education programs using local resources and print media, as well as providing evidence-based recommendations for integrating nutrition education into routine health services. The findings are expected to provide a framework for understanding how

educational interventions using print media can improve maternal knowledge and skills in preparing nutritious local food, ultimately supporting the reduction of toddler malnutrition rates and contributing to the achievement of national nutritional targets.

METHODS

Counseling Topics

The topic of community service activities was "Education on Local PMT Processing in Undernourished Toddlers at Posyandu Asoka 8 Lubuk Linggau" This topic was chosen based on the need to strengthen the knowledge, understanding and skills of mothers under five about the processing of local PMT for undernourished toddlers and support programs to reduce malnutrition in the working area of the Megang Health Center.

Objectives

The target of this activity is undernourished mothers of toddlers in the Megang health center area, precisely at the asoka 8 posyandu with a total of 13 participants.

Location

The activity was carried out in the house of the Posyandu Asoka 8 cadres, so that community service events were more conducive and mothers of toddlers were more focused on providing education.

Day/Date

The activity will be held on Wednesday, June 17, 2026, at 11.30-12.30 WIB

Chief Executive

The chief executive of this activity:

Chief executive : Dr.Nurwijayanti.,M.Kes

NIDN :0704017601

Structural Departments : Vice Chancellor 3

Functional Positions : Head Lecturer

Members

Meanwhile, the members of the activity are:

Member Name : Tasya Diajeng Ayu

NIM : 2413101120013

Purpose

The general purpose of the implementation of this community service activity is to understand the influence of providing education on the processing of local food-based PMT on the level of knowledge and skills of undernourished mothers under five at the Megang Lubuk Linggau Health Center. While the specific objectives are:

1. Identify understanding of local food-based PMT processing before being educated with leaflets
2. Identify understanding after being educated with leaflets on local food-based PMT processing
3. To analyze whether there is an effect of providing education about local PMT processing on understanding in mothers under five

Benefits

For Strada University Indonesia

As part of the implementation of the tri dharma of higher education, namely community service as one of the academic obligations and the establishment of continuous cooperation between Strada Indonesia University and the Megang Health Center.

For the Megang Lubuk Linggau Health Center

Helping health centers achieve national targets in reducing stunting prevalence and increasing regional nutrition coverage

For the Community

This knowledge enables mothers to make healthy menus using affordable and easily accessible ingredients, so that family nutrition is still fulfilled in a sustainable manner.

Material

The material presented in the community service activities are:

- Definition of PMT
- The purpose given by PMT
- Criteria for PMT for undernourished toddlers
- PMT schedule and rules
- Sample PMT menu for children aged 6-59 months
- An example of processing one of the PMT menus (Ingredients, how to make and nutritional value information)

Method of Activity

The methods used in this activity are:

- Question and answer session about the meaning of PMT etc (before being educated)
- Interactive lectures (educational with leaflets)
- Discussion and Q&A

Media

The media used in this activity includes:

- Education using leaflets

Time Allocation

Table 1. Time Allocation of Community Service Activities

Yes	Events	Activities	Time	Hours
1.	Opening	Response by health center nutritionists	5 minutes	11.30-11.35 WIB
		Introducing yourself and your goals	5 minutes	11.35-11.40 WIB
2.	Core Events	Questions and answers before education	15 minutes	11.40-11.55 WIB
3.		Delivery of material	20 minutes	11.55-12.15 WIB
4.		Discussion and Q&A	10 minutes	12.15-12.25 WIB
5.	Closing	Group Photo	5 minutes	12.25-12.30 WIB

Source: Prepared by the authors based on the Community Service Activity Plan, 2026.

Composition of the Committee

Table 2. Composition of the Community Service Committee

Yes	Name	Duties
	Dr. Nurwijayanti., M.Kes	Chief executive of the activity
	Harmonedi., Str. Gz	Coordinating with posyandu cadres related to undernourished toddlers for community service activities
	Tasya Diawana Ayu	Prepare activity events (activity event units), coordinate with nutrition officers related to participants, make leaflets for events and prepare facilities and infrastructure as well as documentation of activities.

Source: Prepared by the authors based on the Community Service Committee Structure, 2026.

Venue Settings

This community service activity was carried out at the house of the Asoka 8 posyandu cadre located on Jl. Asoka No.8, Marga Rahayu, Kec. The selection of the location at the Posyandu Asoka 8 cadre house is so that community service event activities are more conducive because at the time of the community service event at the same time as the posyandu the elderly and teenagers are also in front of the yard of the cadres' house.

For the event, the participants sat side by side, nutritionists and students sat in the middle in front of the participants to make it easier to convey material and increase the focus of the participants during the activity.

Evaluation

The evaluation stage is a stage that is carried out to assess the activity as a whole and review whether there are deficiencies during the activity. This evaluation stage aims to ensure that the activities carried out can run effectively and in accordance with expectations. This evaluation was conducted to assess the effectiveness of the implementation of educational activities and their impact on improving the knowledge, understanding and skills of mothers in the processing of local PMT.

During the process of implementing activities, evaluation will be carried out through observation during the activity, assessment of active participation of participants and documentation of activities. Meanwhile, the evaluation of the results of community service activities is carried out based on the success indicators of community service activities that have been determined.

The indicators of the success of local PMT processing education activities for undernourished toddlers at Posyandu Asoka 8 are determined based on input, process, and output aspects, which are as follows:

- a. Input indicators, including the following:
 1. >80% of the mothers of toddlers who were invited attended the activity.
 2. Availability of counseling facilities (leaflet)
 3. Support from the health center and cadres
- b. Process indicators, including the following:
 1. Activities were carried out in accordance with the schedule and time allocation plan.

2. Participants are active in the discussion (at least 50% of participants participate in the question and answer session).
- c. Output indicators, including the following:
 1. There was an increase in knowledge and understanding after being given education on local PMT processing in undernourished toddlers
 2. Participants are ready to increase their role as mothers who understand the processing of local PMT to reduce the malnutrition rate of toddlers at Posyandu Asoka 8.

RESULTS AND DISCUSSION

This educational activity was carried out at the Posyandu Asoka 8 Cadre House located on Jl. Asoka No. 8, Marga Rahayu, Lubuk Linggau. The attendance rate of participants reached 80%, with 13 mothers of undernourished toddlers present at this educational event. The implementation time was delayed by 60 minutes due to waiting for toddlers to complete the Posyandu activities, which affected the initial schedule and required adjustment. The activity proceeded smoothly and in accordance with what had been planned. The event began with the gathering of undernourished mothers of toddlers, continued with attendance registration, then the health center nutritionist opened the main event, and students introduced themselves and their objectives. After that, before the material delivery session, the mothers participated in a question-and-answer session to assess the extent of their knowledge and understanding regarding local PMT, followed by material delivery, discussion, and questions and answers about the material that had been given.

The educational activity at Posyandu Asoka 8 demonstrated the success of the intervention. The outputs produced from this activity included increased knowledge and understanding of participants related to the definition of PMT, the purpose of giving PMT, PMT criteria for undernourished toddlers, schedules and rules for giving PMT, examples of PMT menus for children aged 6-59 months, and good and correct PMT processing methods. Before being educated, many mothers still did not understand local PMT processing; during the question-and-answer session, several mothers remained silent or answered incorrectly when responding to questions. After being given education and followed by a question-and-answer session, all mothers demonstrated improved understanding—those who previously did not know became knowledgeable, and those initially confused gained clarity. These results are consistent with findings from Indrastata et al. (2025), who reported a significant increase in cadre knowledge from pre-test scores of 80.33 to post-test scores of 88.00 ($p = 0.001$) through nutrition education and local PMT cooking demonstrations at Medokan Ayu Public Health Center, Surabaya.

The leaflet used as the educational media contained various examples of food menus from local ingredients combining animal proteins, vegetables, carbohydrates, and other nutrients, which served as examples of local menu processing at home according to toddler age. The leaflet sheet also contained nutritional content in various portions that could serve as examples for mothers during PMT processing according to children's nutritional needs. This finding aligns with research by Kusmiati et al. (2024), Masrikhiyah (2020), Ramadhani et al. (2024), and Yanti et al. (2025), which demonstrated that nutrition education using print educational media such as leaflets combined with discussions and questions and answers has been widely implemented to increase the knowledge of mothers of toddlers. The leaflet's

advantage lies in its accessibility—participants could take it home to learn and repeat the material independently at any time.

In addition to the immediate outputs, this activity is expected to produce several long-term outcomes relevant to the reduction of malnutrition at the Asoka 8 health center through education on local PMT processing. The expected outcomes include improved nutritional understanding, where mothers better comprehend the importance of balanced nutrition and are able to distinguish between local foodstuffs that are calorie-dense and protein-dense as well as hygienic processing techniques. The outcomes also include menu variation, where mothers become skilled in processing local food ingredients that are easily accessible and affordable into food that children enjoy, thus preventing children from getting bored. This finding is supported by Sari et al. (2025), who found that locally sourced food-based interventions combined with nutrition education effectively improved children's nutritional status and strengthened maternal knowledge in North Aceh.

The expected long-term outcome is maternal independence in serving nutritious food consistently without relying entirely on assistance from government programs. This aligns with the principles of local supplementary feeding, which emphasize community empowerment and sustainable practices. As stated by the Ministry of Health of the Republic of Indonesia (2018), local supplementary feeding is an activity outside the health center building with a community empowerment approach that can be integrated with other related cross-program and related activities. Additionally, the expected outcome includes improvement in nutritional status, where there is an improvement in the weight-to-height index (BB/TB) of the target toddlers, with the percentage of toddlers with normal nutrition increasing gradually within 1 to 3 months of intervention. This is consistent with Hendriana and Mulyani (2024), who found a significant increase after 56 days of receiving PMT, with differences in BB/TB before and after PMT administration (p -value = 0.000), and with Ramazana et al. (2024), who demonstrated a significant effect of local supplementary feeding on the nutritional status of undernourished toddlers.

The implementation of this educational activity was not without obstacles. One significant barrier was the late attendance of participants. As mothers with household responsibilities as their primary occupation, the voluntary role of mothers caused this educational activity to have to adjust to the participants' personal schedules. This condition resulted in a postponement of the implementation time and the activity took place while waiting for the toddler Posyandu to be completed. Some mothers who finished the Posyandu immediately went home and did not participate in educational activities. The implementation of this education was about 60 minutes late from the starting time. This finding highlights the importance of integrating nutrition education into routine Posyandu activities to ensure better attendance and participation, as recommended by the Ministry of Health (2023).

Despite these obstacles, the educational activity demonstrated that leaflet-based education combined with interactive discussion is effective in increasing maternal knowledge of local PMT processing. The pre-education question-and-answer session revealed that many mothers had limited knowledge about PMT concepts, purposes, nutritional composition, and appropriate preparation methods. After receiving education through leaflets and interactive discussions, participants demonstrated improved understanding of PMT preparation, including selecting nutritious local ingredients, determining appropriate portions, and applying proper

food processing techniques. This finding is consistent with the study by Indrastata et al. (2025), which found that 53.3% of respondents experienced increased knowledge, 40% remained unchanged, and 6.7% decreased, with an overall significant improvement ($p = 0.001$).

The use of leaflets as educational media aligns with the principles of effective health education, which emphasize the importance of accessible and understandable information. The leaflet's content, which included practical examples of local food menus and nutritional information, enabled mothers to apply the knowledge at home. This practical applicability is crucial for long-term behavior change, as mothers can refer to the leaflet when preparing meals for their toddlers. The combination of print media with interactive discussion also addressed the different learning preferences of participants, allowing both visual learners and those who benefit from verbal explanation to gain understanding. This approach is supported by the Ministry of Health's technical guidelines (2018), which emphasize that PMT activities must be accompanied by nutrition and health education to promote behavioral change.

The finding that mothers who initially did not know became knowledgeable, and those who were initially confused gained clarity, demonstrates the effectiveness of the educational intervention. The discussion and question-and-answer session after the material delivery allowed participants to clarify misconceptions and deepen their understanding. Mothers who were sufficiently understanding could also answer all questions correctly, indicating knowledge retention. This is particularly important because maternal knowledge is a key determinant of children's nutritional status. As noted by Khair et al. (2021), mothers are the determinants of the food that will be consumed by their children, and lack of nutritional knowledge for parents, especially mothers, is one of the factors that causes malnutrition in children.

The relationship between these findings and existing theories is evident. According to Almatier (2010), nutritional status is the state of the body due to the consumption of food from the use of nutrients. The educational intervention addressed the knowledge gap identified by Khair et al. (2021), which stated that mothers with higher education are able to know about nutrition in their children, while mothers with low education tend to ignore the nutritional status of their children due to lack of knowledge. The leaflet-based education effectively bridged this knowledge gap by providing accessible, understandable information that mothers could refer to independently. Furthermore, the practical demonstration aspects of the leaflet addressed the skills component, which is crucial for effective PMT preparation.

The practical implication of this study is that health centers and Posyandu cadres should integrate local food-based PMT education into routine Posyandu activities. This integration would address the attendance barriers identified in this study and ensure sustained knowledge improvement. The leaflet media used in this activity provides a replicable model that can be adapted to other contexts, with local food ingredients and menu examples tailored to regional availability and preferences. Furthermore, the educational approach that combines initial assessment of knowledge, interactive lecture, and discussion can be implemented by health workers and cadres with minimal resources. Continuous nutrition education integrated into routine Posyandu activities is recommended to strengthen mothers' capacity in preventing and reducing toddler malnutrition, as suggested by Izzatie et al. (2025), who emphasized the importance of sustained interventions for optimal nutritional outcomes.

A specific finding of this study is that the educational intervention successfully addressed mothers' understanding of PMT criteria and portion sizes according to age. The

leaflet contained information on age-specific serving sizes (6-12 months: 2-3 tablespoons to half a cup, 2-3 times daily; 12-23 months: 3/4 to 1 full cup, 3 times daily; 24-59 months: 1 full cup, 3 times daily plus healthy snacks). This practical information, as recommended by the Ministry of Health (2023), enabled mothers to provide appropriate portions according to their child's age and nutritional needs. The finding that all mothers demonstrated improved understanding of these age-specific guidelines after education suggests that the leaflet effectively communicated complex nutritional information in an accessible format.

Comparing these findings with previous research, Subarkah et al. (2024) evaluated the supplementary feeding program targeted at malnourished toddlers in Prabumulih City, Indonesia, and emphasized the importance of local food utilization and community empowerment. The current study builds upon these findings by demonstrating the specific educational mechanisms that can effectively empower mothers with knowledge and skills for local PMT preparation. Similarly, Benita et al. (2025) found that the increase in weight-for-age in toddlers receiving PMT was not significant compared to the increase in weight-for-height, highlighting the importance of evaluating different anthropometric indicators. This finding underscores the need for comprehensive nutritional monitoring that considers multiple indicators of nutritional status.

The discussion also addresses the role of local food availability in PMT programs. Local food ingredients that are rich in animal proteins, carbohydrates, vitamins, and minerals can be processed into nutritious PMT. As stated by the Ministry of Health (2018), the foodstuffs used can be easily purchased in the local area and are easy to get throughout the year. By using local foodstuffs, it is hoped that it will improve the economy of rural communities through the development and utilization of regional potential. The leaflet used in this activity specifically highlighted local food ingredients available in the Lubuk Linggau area, making it contextually relevant and practical for participants.

The findings of this study contribute to the broader understanding of nutrition education effectiveness in community settings. Health education is an important thing that must be considered, as mothers who have higher education are able to know about nutrition in their children, so parents who have a good education always pay attention to the nutritional status of their children by monitoring the development and growth of their children (Khair et al., 2021). The educational intervention effectively compensated for variations in maternal education levels by providing accessible, visually engaging information through leaflets. This suggests that well-designed print media can be an equalizing tool in nutrition education, making complex nutritional information accessible to mothers regardless of their formal education background.

The sustainability of the educational intervention's impact is an important consideration. The leaflet provided to participants can be taken home and referenced repeatedly, supporting long-term behavior change. This aligns with the principles of effective health education, which emphasize the importance of reinforcement and repeated exposure to information. Future studies should evaluate the long-term retention of knowledge and the actual implementation of PMT practices at home, as well as the impact on toddlers' nutritional status over a longer follow-up period. The integration of such education into routine Posyandu activities, as recommended by the Ministry of Health (2023), would provide the ongoing reinforcement necessary for sustained behavior change and nutritional improvement.

CONCLUSION

This educational activity on the processing of local food-based Supplementary Feeding (PMT) in undernourished toddlers at Posyandu Asoka 8 Lubuk Linggau demonstrated that participants' knowledge and understanding were significantly improved through the intervention. Before education, many mothers had limited understanding of PMT, its purpose, and proper processing methods, as evidenced by their inability to answer questions during the pre-education question-and-answer session. However, after receiving education using leaflets combined with interactive discussion and question-and-answer sessions, mothers who initially did not know became knowledgeable, those who were confused gained clarity, and participants demonstrated the ability to answer questions correctly when given refresher questions. This improvement indicates that the educational method using printed media (leaflet) is effective in increasing the knowledge of mothers of undernourished toddlers. The leaflet's advantage lies in its accessibility, as participants can take it home to learn and repeat the material independently at any time. The results of this educational activity confirm that providing education on local PMT processing has a positive effect on the knowledge and understanding of mothers of undernourished toddlers.

For future research, several recommendations can be made based on the findings and limitations of this study. First, scholars are encouraged to conduct quantitative studies with pre-test and post-test designs to measure the statistical significance of knowledge improvement using validated instruments, which would provide more robust evidence of the educational intervention's effectiveness. Second, future studies could evaluate the long-term impact of such educational interventions on toddlers' nutritional status, particularly changes in weight-for-height (BB/TB) and weight-for-age (BB/U) indicators over a 1–3-month period following the intervention, as recommended by the Ministry of Health (2023). Third, researchers might investigate the effectiveness of various educational media (leaflets, videos, cooking demonstrations, mobile applications) in improving maternal knowledge and skills in local PMT processing, comparing their relative effectiveness and cost-efficiency. Fourth, future studies could explore the barriers and facilitators to sustained implementation of local PMT practices at the household level, including economic factors, cultural beliefs, and family support systems. Fifth, comparative studies between different regions with varying local food availability would provide insights into the adaptability of the educational model. Sixth, research could examine the role of Posyandu cadres in sustaining nutrition education efforts and the impact of refresher training on long-term knowledge retention. Finally, future studies could investigate the integration of this educational model into broader community health programs, such as the Integrated Health Post (Posyandu) and Family Planning programs, to maximize reach and sustainability.

REFERENCES

- Almatsier, S. (2010). *Prinsip dasar ilmu gizi*. PT Gramedia Pustaka Utama.
- Almatsier, S. (2021). *Prinsip dasar ilmu gizi*. Gramedia.
- Amirah, A. N., & Rifqi, M. A. (2019). Characteristics of maternal nutrition knowledge and nutritional status of toddlers (BB/TB) aged 6–59 months. *Amerta Nutrition*, 3(3), 189. <https://doi.org/10.20473/amnt.v3i3.2019.189-196>

- Anitah, S. (2010). *Media pembelajaran*. Yuma Pustaka.
- Ghodsi, D., Omidvar, N., Rashidian, A., Raghfar, H., Eini-Zinab, H., & Ebrahimi, M. (2017). Key informants' perceptions on the implementation of a national program for improving nutritional status of children in Iran. *Food and Nutrition Bulletin*, 38(1), 78–91.
- Hanifah, R. N., Djais, J. T., & Fatimah, S. N. (2020). Prevalence of underweight, stunting, and wasting in children aged 12–18 months in Jatinangor District. *Jurnal Sistem Kesehatan*, 5(3), 1–5.
- Hosang, K. H., Umboh, A., & Lestari, H. (2017). The relationship of supplementary feeding to changes in the nutritional status of undernourished children under five in Manado City. *e-CliniC*, 5(1).
- Kementerian Kesehatan Republik Indonesia. (2010). *Laporan nasional Riset Kesehatan Dasar (Riskesdas) 2010*. Badan Penelitian dan Pengembangan Kesehatan.
- Kementerian Kesehatan Republik Indonesia. (2018). *Petunjuk teknis edukasi gizi dalam pemberian makanan tambahan (PMT) lokal bagi ibu hamil dan balita*. Kementerian Kesehatan Republik Indonesia.
- Kementerian Kesehatan Republik Indonesia. (2021). *Laporan kesehatan masyarakat Indonesia 2021: Hasil Survei Kesehatan Rumah Tangga (SKRT)*. Kementerian Kesehatan Republik Indonesia.
- Kementerian Kesehatan Republik Indonesia. (2022). *Profil kesehatan Indonesia 2022*. Kementerian Kesehatan Republik Indonesia.
- Kementerian Kesehatan Republik Indonesia. (2023). *Petunjuk teknis pemberian makanan tambahan (PMT) berbahan pangan lokal*. Kementerian Kesehatan Republik Indonesia.
- Khair, A., et al. (2021). *Dinamika Kesehatan: Jurnal Kebidanan dan Keperawatan*, 12(1). <https://doi.org/10.33859/dksm.v12i1>
- Ningsih, D. A. (2022). A study of determinants related to poor nutritional status.
- Organization, W. H. (2018). *Reducing stunting in children: Equity considerations for achieving the Global Nutrition Targets 2025*. World Health Organization.
- Prasetyo, Y. B., Permatasari, P., & Susanti, H. D. (2023). The effect of mothers' nutritional education and knowledge on children's nutritional status: A systematic review. *International Journal of Child Care and Education Policy*, 17(1), 11.
- Rahma, F. R. (2025). The relationship between PMT and the status of undernourished toddlers at the Mlati 1 Sleman Health Center. *Pontianak Nutrition Journal*, 8, 677–686.
- Ramazana, C. V., Zuheri, Z., & Alaydrus, S. Q. (2024). The effect of local supplementary feeding on nutritional status in undernourished toddlers at the Simpang Tiga Aceh Besar Health Center. *Jurnal Ilmu Kedokteran dan Kesehatan*, 11(11), 2066–2072. <https://doi.org/10.33024/jikk.v11i11.16048>
- Ssentongo, P., et al. (2021). Global, regional and national epidemiology and prevalence of child stunting, wasting and underweight in low- and middle-income countries, 2006–2018. *Scientific Reports*, 11(1), 1–12.
- Subarkah, J., Chunaeni, S., & Arfiana, A. (2024). Evaluation of the supplementary feeding programme targeted at malnourished toddlers in Prabumulih City, Indonesia. *Malahayati International Journal of Nursing and Health Science*, 7(4), 413–424.
- Vieira, M., Teixeira, A., & Carvalho, G. S. (2021). Effectiveness of the "Planning Health in School" programme on children's nutritional status. *International Journal of*

Environmental Research and Public Health, 18(23), 12846.

Wardani, K., & Renyoet, B. S. (2022). Literature study: Estimation of potential economic loss due to undernutrition in Indonesia. *Jurnal Gizi dan Kesehatan*, 14(1), 114–127.