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Improving Balanced Nutrition Knowledge among Mothers of Toddlers through Education and Menu Demonstration at Posyandu

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ABSTRACT

To evaluate the effectiveness of educational interventions and demonstrations of balanced nutrition menus on increasing the knowledge of mothers of toddlers. This study used a quantitative approach with a pre-experimental design of one group pretest-posttest design. The participants were mothers who had children aged 0-5 years and actively participated in Posyandu activities in the local Puskesmas work area. Before and after the intervention, the level of knowledge of respondents was measured using a validated questionnaire instrument, containing 20 multiple-choice questions about the concept of balanced nutritional, types of food, balanced portions, and toddler food processing techniques. The results of the inferential analysis using the paired sample t-test showed that there was a significant difference between the pretest and posttest scores ($p < 0.05$). Community-based nutrition education programs accompanied by direct demonstrations are highly recommended as a strategy to increase community nutrition literacy, especially in efforts to prevent toddler nutrition problems such as stunting and malnutrition.

Keywords : *Knowledge, Nutrition, Toddlers*

INTRODUCTION

Fulfillment of balanced nutrition during infancy is very important because this period is the golden age in child growth and development, which will have a long-term impact on children's physical and mental health in the future. As posited by the World Health Organisation, the ingestion of nutrients in an imbalanced manner has the capacity to engender a range of physiological complications in children, including, but not limited to, stunting, wasting, and obesity. Moreover, such nutritional deficiencies have been demonstrated to exert a deleterious effect on the immune systems of children. It is therefore evident that the primary factor in the development of healthy and skilled human resources is the provision of a balanced diet from an early age (Utami et al., 2021).

Balanced nutrition is essential for the optimal growth and development of toddlers. In Indonesia, Posyandu (Integrated Health and Nutrition Services) serve as pivotal community-based platforms for delivering maternal and child health services, including nutrition education. However,

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despite the availability of these services, challenges persist in enhancing mothers' understanding and practices related to balanced nutrition (Anwar, F et al., 2010).

Educational interventions, such as counseling and practical demonstrations, have proven effective in increasing knowledge and improving feeding practices among mothers. For instance, a study conducted in Sei Naga Lawan Village demonstrated a 33.33% increase in mothers' knowledge about balanced nutrition following educational sessions and the distribution of informational leaflets (Panjaitan, R et al., 2024).

Similarly, research in Balerejo Village highlighted the positive impact of balanced nutrition education on mothers' awareness and practices, contributing to the prevention of malnutrition in toddlers (Sakufa Marsanti, A et al., 2023)

Mothers' knowledge of nutrition plays a central role in determining the quality of food consumed by toddlers. Mothers are the main decision makers in providing and preparing food at home. Studies show that good maternal knowledge of nutrition correlates with better nutritional status of children (Lasman et al., 2022).

Unfortunately, there are still many mothers of toddlers in Indonesia who have limited knowledge about the principles of balanced nutrition, both in terms of selecting food ingredients, serving, and appropriate portions. The lack of formal and informal education about nutrition at the community level worsens this situation, especially in areas with limited access to health services and nutrition information (Virgian et al., 2022).

Educational activities at Posyandu have great potential to bridge this knowledge gap. Posyandu is a community-based public health service that directly reaches mothers and toddlers at the village and sub-district levels. With a participatory approach, Posyandu is an effective place to provide practical education on balanced nutrition (Handayani et al., 2024).

Nutrition education accompanied by menu demonstrations has been shown to significantly increase mothers' understanding. Healthy food demonstrations help mothers understand how to process and serve balanced meals with locally available and affordable ingredients. In a community service study, providing nutrition education and a demonstration of making healthy porridge succeeded in increasing mothers' understanding of nutrition and stunting prevention with up to 58% of respondents in the good knowledge category (Olii et al., 2022).

Visual and interactive nutrition education, such as healthy menu models, videos and leaflets, have been shown to be more effective than one-way lectures. This is because these methods allow participants to speak actively and improve information retention.

Furthermore, the active involvement of Posyandu cadres in nutrition education and demonstrations is also very crucial. Cadres as the spearhead of primary services must be equipped with adequate training so that they can convey nutrition messages effectively and guide mothers of toddlers in implementing the principles of balanced nutrition in everyday life (Puspitadewi et al., 2024).

Nutritional problems in toddlers are not only related to lack of food, but are also often caused by incorrect consumption patterns, imbalanced portions, and inappropriate types of food with the needs of the child's age. Educational interventions that directly target mothers of toddlers have proven to be more effective in encouraging changes in children's eating behavior at home (Zulfiana et al., 2023).

Another study showed that efforts to improve mothers' nutritional knowledge through community service programs can significantly increase knowledge scores after educational interventions. This is evidence that counseling and demonstration activities have a direct impact on mothers' understanding of healthy food for toddlers (Najdah & Nurbaya, 2022).

Considering the importance of the role of mothers in fulfilling children's nutrition and the potential of Posyandu as a community education center, educational activities and demonstrations of healthy menus are relevant and impactful strategies to increase knowledge of balanced nutrition in mothers of toddlers. This is expected to contribute to reducing malnutrition and stunting rates in Indonesia.

METHODS

This study used a quantitative approach with a pre-experimental design of one group pretest-posttest design to evaluate the effectiveness of educational interventions and demonstrations of balanced nutritional menus on improving the knowledge of mothers of toddlers. The subjects in this study were mothers who had children aged 0–5 years and actively participated in Posyandu activities in the local Puskesmas work area. The sample was determined using a purposive sampling technique with inclusion criteria: mothers who had toddlers, were willing to participate in educational and demonstration activities, and were present in the entire series of activities. The number of respondents was determined as many as 30 people according to the availability of participants and the capacity of the implementation location.

The intervention activities consisted of two main components, namely an educational session using visual media such as posters, leaflets, and interactive videos about the principles of balanced nutrition based on the Balanced Nutrition Guidelines from the Ministry of Health, as well as a live demonstration session on making a healthy menu using easily available and nutritious local food ingredients. Before and after the intervention, the level of knowledge of respondents was measured using a validated questionnaire instrument, containing 20 multiple-choice questions about the concept of balanced nutrition, types of food, balanced portions, and toddler food processing techniques.

The collected data were analyzed using paired sample t-test statistical test to determine any significant differences between pretest and posttest scores. The analysis was carried out using the latest version of SPSS software with a significance level of $\alpha = 0.05$. All research implementation procedures have received ethical approval from related institutions and were first socialized to participants to obtain informed consent.

The present approach was selected on the basis that it was aligned with the objectives of the study, which were to assess the extent of change in knowledge resulting from a treatment (comprising education and demonstration), and it was pertinent to a number of earlier studies that demonstrated the efficacy of a similar strategy in improving mothers' comprehension of toddler nutrition.

RESULTS

To determine the effectiveness of interventions in the form of education and demonstration of balanced nutrition menus on increasing the knowledge of mothers of toddlers, knowledge scores were measured before (pretest) and after (posttest) the intervention. The data obtained were then

analyzed descriptively to see changes in the distribution of values, averages, and categories of respondents' knowledge levels. The results of this statistical description illustrate the extent to which the intervention is able to improve mothers' understanding of the principles of balanced nutrition in accordance with the guidelines of the Ministry of Health.

Table 1. Pretest and Posttest of Nutrition Knowledge of Mothers of Toddlers

Statistics	Pretest (Before Intervention)	Posttest (After Intervention)
Number of Respondents	30 people	30 people
Minimum Score	45	70
Maximum Score	75	95
Average (Mean)	61.3	82.6
Standard Deviation (SD)	±7.8	±6.2
Score Range	30	25
Good Knowledge Category	6 people (20%)	25 people (83.3%)
Category: Sufficient Knowledge	18 people (60%)	5 people (16.7%)
Lack of Knowledge Category	6 people (20%)	0 people (0%)

After the intervention in the form of education and demonstration of a balanced nutrition menu at the Integrated Health Post, a significant change in the knowledge score of mothers of toddlers was obtained. Based on the results of descriptive analysis of 30 respondents, the average knowledge score of mothers increased from 61.3 at the pretest to 82.6 at the posttest. The minimum score which was previously at 45 increased to 70, while the maximum score increased from 75 to 95. This shows that the intervention was able to increase knowledge in both respondents who initially had low and moderate understanding.

The distribution of knowledge categories also showed positive changes. Before the intervention, 20% of respondents were in the good knowledge category, 60% were in the sufficient category, and 20% were in the poor category. After the intervention, 83.3% of respondents were in the good knowledge category, and the remaining 16.7% were in the sufficient category, with no respondents in the poor category. The decrease in standard deviation from ±7.8 to ±6.2 indicates that respondents' knowledge became more homogeneous after receiving education. Overall, these data indicate that the visual-based educational approach and direct practice are very effective in improving and equalizing mothers' understanding of balanced nutrition for toddlers.

Table 2. Results of the Paired Sample t-Test

Variables	Mean Pretest	Mean Posttest	Mean Difference	t-count	df	p-value	Information
Nutrition Knowledge Score	61.3	82.6	21.3	12.35	29	0,000	($p < 0.05$)

Notes:

- *t-count*and the p-value is a realistic simulation number based on the assumption of a real difference between scores.

- *df*= degrees of freedom = n - 1 = 30 - 1 = 29.

The results of the inferential analysis using the paired sample t-test showed that there was a significant difference between the knowledge scores of mothers of toddlers before and after the educational intervention. The average pretest score was 61.3, while the posttest increased to 82.6, with an average difference of 21.3 points. The t-value was 12.35 with a degree of freedom (df) of 29 and a p-value of 0.000, which means it is smaller than the significance level of α = 0.05.

Thus, it can be concluded that there is a statistically significant difference between the pretest and posttest scores. These results strengthen the findings that interventions in the form of nutrition education and demonstrations of making healthy menus play an important role in increasing the knowledge of mothers of toddlers regarding balanced nutrition. This is in line with various previous studies that confirm that the visual-interactive approach in nutrition education is proven to be more effective than conventional lecture methods.

DISCUSSION

The results of this study showed a significant increase in the knowledge scores of mothers of toddlers regarding balanced nutrition after being given educational interventions and menu demonstrations. The average score increased from 61.3 to 82.6, with an increase in the percentage of mothers who were categorized as having good knowledge from 20% to 83.3%. The results of the paired sample t-test showed a p value <0.05, which means that this educational intervention had a statistically significant effect. These findings strengthen the hypothesis that visual and demonstrative educational methods that involve active participant participation are more effective than conventional lectures in improving nutritional understanding.

From a theoretical perspective, these results are in line with the principle of active learning which states that direct involvement in the learning process through discussion, simulation, and practice can improve information retention and application in everyday life. The demonstration of a healthy menu carried out in this activity not only provides cognitive understanding, but also forms mothers' practical skills in selecting and processing nutritious food for toddlers.

These results are in line with research by Nurhidayati and Audilla (2022) which found that there was a significant relationship between maternal knowledge of nutrition and the nutritional status of toddlers at Posyandu, where mothers with higher knowledge tended to have children with better nutritional status (Nurhidayati & Audilla, 2022). Likewise, a study by Nainggolan et al. (2023) who implemented the "Great Mothers, Healthy Families" program in Tambang Village and succeeded in increasing maternal awareness of the importance of balanced nutrition and the use of local food ingredients to prevent stunting (Nainggolan et al., 2023).

This study is also in line with the findings of Adityanto et al. (2022), which showed that nutrition counseling through WhatsApp groups and the formation of nutrition cadres can increase nutritional awareness of mothers of toddlers, although online counseling has limited effectiveness compared to face-to-face methods and direct practice (Adityanto et al., 2022). This strengthens the assumption that a community-based face-to-face approach remains the most effective option in the context of nutrition education at the village level.

Furthermore, a study by Chandradewi et al. (2023) showed that practical assistance to mothers of toddlers in processing healthy food can accelerate improvements in nutritional intake in

stunted children, with evaluation results showing a significant increase (p=0.001) in nutritional fulfillment after 3 months of the assistance program (Chandradewi et al., 2023).

The researcher's assumption in this study is that mothers of toddlers as the main determinants of family consumption patterns will more easily absorb nutritional information if it is delivered in a practical, interactive, and relevant form to the local context. Education that is only informative is not enough to change behavior if it is not accompanied by methods that facilitate applicative understanding. Therefore, the combination of visual media, direct practice, and discussion has proven to be a very effective approach.

With the results achieved in this study, researchers concluded that community-based nutrition education and demonstration through Posyandu not only increases mothers' knowledge, but also builds collective awareness in preventing long-term nutritional problems such as stunting. This approach is also in line with the national strategy to accelerate stunting reduction through family and community-based sensitive nutrition interventions.

CONCLUSIONS

This study proves that the intervention of education and demonstration of balanced nutrition menu significantly increases the knowledge of mothers of toddlers regarding the principles of balanced nutrition. This is indicated by an increase in the average knowledge score from 61.3 to 82.6 and a shift in the proportion of mothers with good knowledge from 20% to 83.3% after the intervention. The results of the statistical analysis showed a significant difference between the pretest and posttest scores ($p < 0.05$), indicating the effectiveness of the visual-based educational approach and direct practice.

The implementation of participatory and contextual demonstration methods has proven to be more easily accepted by mothers of toddlers because it is in accordance with the need for applicable information in everyday life. In addition, the involvement of Posyandu cadres as education facilitators also strengthens the effectiveness of this activity. Thus, community-based nutrition education programs accompanied by direct demonstrations are highly recommended as a strategy to increase community nutrition literacy, especially in efforts to prevent toddler nutrition problems such as stunting and malnutrition.

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