



## Family Nutrition Management Using Rice Bran Milk to Prevent Stunting

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### Abstract

This study aimed to analyze family nutrition management through the utilization of rice bran milk in preventing stunting among children aged 4–6 years. The study employed a Research and Development design using the Analysis, Design, Development, and Implementation model. The subjects consisted of 30 families in Mranggen District, Demak Regency, selected through purposive sampling. Data were collected through observation, a family nutrition management questionnaire, and measurements of children's nutritional status based on body mass index for age. The data were analyzed using descriptive quantitative analysis followed by simple linear regression testing. The results indicated that 36.67% of families demonstrated very good nutrition management, 36.67% good, and 26.66% poor. The majority of children (63.33%) had normal nutritional status, while 10% were underweight, 20% overweight, and 6.67% obese. Regression analysis showed a significance value of 0.001, indicating a significant influence of family nutrition management on children's nutritional status. The implementation of training programs and regular consumption of rice bran milk demonstrated potential as a functional local food alternative to support children's nutritional intake. The findings concluded that systematic family nutrition management supported by the utilization of rice bran milk contributed to maintaining and improving children's nutritional status as an effort to prevent stunting.

**Keywords:** *Family Nutrition Management, Rice Bran Milk, Nutritional Status, Stunting Prevention, Early Childhood.*

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## INTRODUCTION

Stunting remains a major public health problem in Indonesia, characterized by impaired growth due to chronic malnutrition during early life. This condition not only affects physical development but also has long-term consequences on cognitive ability, academic performance, and productivity in adulthood. Despite various national intervention programs, the prevalence of stunting in Indonesia is still above the standard set by the World Health Organization (WHO), indicating that current efforts have not been fully effective (Imeldawati, 2025). Previous studies have examined various strategies to prevent stunting, such as nutritional supplementation, health education, and food assistance programs. Several studies highlight the importance of family roles in managing children's nutrition, including meal planning, food preparation, and monitoring of nutritional status. In addition, the utilization of local food resources such as soy milk and supplementary feeding programs has been explored. However, research specifically focusing on the integration of family nutrition management with the use of rice bran milk as a functional local food is still limited (Permana et al., 2025). In the context of the research location, preliminary observations indicate that several families still face challenges in implementing proper nutrition management. These challenges include irregular meal patterns, low consumption of vegetables and protein sources, and a tendency to provide instant or low-nutrient foods to children (Chowdhury et al., 2024). As a result, nutritional problems such as underweight and overweight conditions are still found among children. This situation shows that the problem is not only related to food availability but also to how families manage and utilize available food resources in daily life (Uzogara, 2016).

Rice bran milk was selected in this study because it contains important nutritional components such as dietary fiber, protein, essential fatty acids, and micronutrients, including vitamins and minerals (Alves et al., 2023). Previous studies have shown that rice bran has antioxidant properties and potential health benefits that support growth and immune function. Therefore, its use as a functional beverage is considered relevant in supporting children's nutritional needs and preventing stunting, especially when combined with proper family nutrition management practices (Yusriadi et al., 2024). This study aims to analyze the role of family nutrition management through the utilization of rice bran milk in preventing stunting among children aged 4–6 years (Dahal et al., 2026). This research seeks to provide empirical evidence regarding the effectiveness of integrating family-based nutrition management with local food innovation (Sujud, 2026). The hypothesis of this study is that better family nutrition management is associated with improved nutritional status in children (Anjelina & Rodiyah, 2024). Furthermore, the use of rice bran milk is expected to support children's nutritional intake as an alternative functional food (Agri et al., 2024). In addition, current nutrition intervention programs often focus on external support such as supplementation and food assistance, while the role of family-based nutrition management has not been optimally emphasized. In many cases, interventions are not sustainable because they do not fully involve behavioral changes at the household level (Fikri & Rahma, 2025).

This condition highlights the need for an approach that not only improves food availability but also strengthens families' capacity to manage nutrition independently (Wulandari et al., 2025). Therefore, integrating local food utilization, such as rice bran milk, with family nutrition management becomes a relevant and strategic effort to address nutritional problems in a more sustainable and culturally appropriate manner (Idrus et al., 2025). The novelty of this research lies in the combination of family nutrition

management and the utilization of rice bran milk as a locally available, affordable, and functional food innovation (Santoso & Abror, 2020). This study also integrates a development approach using the ADDIE model, which has rarely been applied in nutrition intervention studies for early childhood (Ramlah, 2021).

## **METHODS**

This study employed a Research and Development (R&D) approach using the ADDIE model, which consists of analysis, design, development, and implementation stages. This approach was selected to develop and apply a practical family nutrition management model based on the utilization of rice bran milk. In the analysis stage, initial observations and needs assessments were conducted to identify problems in family nutrition practices and children's dietary patterns. The findings indicated that many families had not consistently implemented balanced nutrition, with limited consumption of vegetables, protein, and nutritious food among children. In addition, irregular meal patterns and reliance on low-nutrient food were identified as key issues affecting children's nutritional status.

In the design stage, a family nutrition management model was systematically formulated based on the results of the analysis. The model was designed to include structured components such as meal planning, food selection, preparation of rice bran milk as a supplementary nutritional source, feeding practices, and monitoring of children's nutritional intake. The design was developed by integrating theoretical perspectives on nutrition management and early childhood development with practical family needs. The development stage involved producing the main outputs of this research, including educational materials, training modules, practical guidelines for preparing rice bran milk, and monitoring instruments for evaluating children's dietary intake and nutrition practices. These components were organized into a comprehensive family nutrition management model. The model was reviewed and refined to ensure clarity, feasibility, and applicability in real-life family settings.

In the implementation stage, the developed model was applied through training sessions and mentoring activities involving parents and teachers over a defined period. Participants were guided in applying the model in daily practice, including preparing rice bran milk, organizing balanced meals, and monitoring children's food consumption. Observations during this stage indicated improvements in parental awareness, consistency in feeding practices, and children's dietary patterns. Data were collected through observation, a family nutrition management questionnaire, and measurement of children's nutritional status based on body mass index for age (BMI-for-age). The questionnaire was developed based on key indicators, including meal planning, food selection, food preparation, feeding practices, and monitoring of children's nutrition.

Data analysis was conducted using descriptive qualitative and quantitative approaches. Qualitative analysis was used to describe the development process, implementation of the model, and observed changes in family behavior. Quantitative analysis was conducted to describe the distribution of family nutrition management and children's nutritional status. Furthermore, simple linear regression analysis was used to examine the relationship between family nutrition management and children's nutritional status as supporting statistical evidence.

## RESULTS AND DISCUSSION

### Results

In addition to presenting quantitative findings, this study also produced a practical model of family nutrition management based on the ADDIE approach. The developed model includes structured steps consisting of planning balanced meals, preparing rice bran milk as a supplementary food, implementing regular feeding practices, and monitoring children's nutritional intake. This model was applied during the implementation stage and showed positive responses from families, particularly in improving awareness and consistency in providing nutritious food for children. The results of this study indicate that family nutrition management among respondents varies, with the majority of families categorized as having good and very good practices. This finding suggests that awareness of balanced nutrition has begun to develop among parents, although it has not been consistently implemented across all families. A smaller proportion of families still demonstrate poor nutrition management, reflecting gaps in knowledge, access to nutritious food, and consistency in applying healthy dietary practices. To provide a clearer overview of family nutrition management, the data are presented in Table 1.

Table 1. Family Nutrition Management

<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Very Good	11	36.67%
Good	11	36.67%
Poor	8	26.66%
Very Poor	0	0%
<b>Total</b>	<b>30</b>	<b>100%</b>

Based on Table 1, most families fall into the good and very good categories, indicating relatively adequate nutrition management practices. However, the presence of families in the poor category highlights the need for targeted interventions. Children's nutritional status also shows variation. Most children were classified as having normal nutritional status, although cases of underweight, overweight, and obesity were still identified. This indicates that nutritional problems among children are not limited to undernutrition but also include overnutrition.

Table 2. Children's Nutritional Status

<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Underweight	3	10.00%
Normal	19	63.33%
Overweight	6	20.00%
Obese	2	6.67%
<b>Total</b>	<b>30</b>	<b>100%</b>

Table 2 shows that most children have normal nutritional status. However, the presence of both underweight and overweight conditions reflects a double burden of malnutrition that requires attention. The relationship between family nutrition management and children's nutritional status is presented in Table 3.

Table 3. Relationship Between Nutrition Management and Nutritional Status

<b>Nutrition Management</b>	<b>Underweight</b>	<b>Normal</b>
Very Good	0	7
Good	0	10
Poor	4	1
Very Poor	0	0

Table 3 demonstrates a clear pattern in which children from families with good and very good nutrition management tend to have normal nutritional status. In contrast, poor nutrition management is associated with underweight and normal, indicating nutritional imbalance. To examine the effect of family nutrition management on children's nutritional status, a regression analysis was conducted. The results are summarized in Table 4.

Table 4. Regression Analysis Results

<b>Variable</b>	<b>Coefficient (B)</b>	<b>Beta</b>	<b>Sig</b>
Constant	65.108	-	-
Nutrition Management	0.410	0.090	0.001

The regression analysis shows that the significance value (Sig.) is below the accepted threshold, indicating that family nutrition management has a statistically significant effect on children's nutritional status. The positive coefficient suggests that better nutrition management is associated with improved nutritional outcomes.

## Discussion

The findings of this study show that family nutrition management has a clear relationship with children's nutritional status. Most families who implemented structured nutrition management practices were able to maintain their children's nutritional status within the normal category (Rahmawati et al., 2025). However, the presence of underweight, overweight, and obesity indicates that nutritional problems are still complex and reflect a double burden of malnutrition. This finding suggests that nutrition issues are not only caused by insufficient intake but also by improper dietary patterns and lack of balanced nutrition practices within the family. In addition to these findings, this study produced a family nutrition management model using rice bran milk developed through the ADDIE approach. The application of this model demonstrates that structured intervention at the family level can improve parents' awareness and practices in managing children's nutrition. The ADDIE model in this study was

implemented systematically, starting from the identification of problems in family nutrition practices, followed by the design of a nutrition management model, the development of practical guidelines, and the implementation through training and mentoring activities (Sarjito, 2024).

The analysis stage revealed that families generally lacked consistency in providing balanced meals, and children's consumption of vegetables, protein, and nutritious foods was still low. In the design stage, a nutrition management framework was developed, focusing on improving meal planning and integrating rice bran milk as a supplementary nutritional source (Hidayah et al., 2023). The development stage resulted in practical tools, including guidelines for preparing rice bran milk, meal planning formats, and monitoring sheets for children's dietary intake. These tools were then applied during the implementation stage, where parents and teachers were involved in training sessions and guided practices (Gionte et al., 2022).

The management of family nutrition in this study consists of several key steps, including planning balanced meals, selecting appropriate food ingredients, preparing nutritious meals, providing regular feeding schedules, and monitoring children's nutritional intake (Aidah Juliaty, 2025). The inclusion of rice bran milk in this process serves as an additional nutritional intervention that enhances dietary quality. This structured management approach helps families implement nutrition practices more consistently in daily life (Ardiansyah et al., 2020). The indicators developed to measure family nutrition management include meal planning, food selection, food preparation, feeding practices, and monitoring of children's nutritional status. These indicators are based on theoretical concepts of family nutrition management and are adapted to the context of early childhood nutrition. The results show that improvements in these indicators are associated with better nutritional outcomes in children (Aura et al., 2025).

Empirical findings from the field indicate that after the implementation of the model, parents showed increased awareness and engagement in providing nutritious food for their children (Syerli Putri Afriliany, 2024). The use of rice bran milk was well accepted and contributed to diversifying children's food intake. This confirms that combining behavioral approaches with local food utilization can provide more practical and sustainable solutions compared to conventional nutrition interventions (Wahongan, 2021). Compared to previous studies, this research provides a more comprehensive approach by integrating nutrition management behavior with a functional local food innovation. While earlier studies focused mainly on supplementation or education, this study demonstrates that structured family-based management supported by practical tools and local resources can produce more applicable outcomes in real-life settings (Soru et al., 2025). Overall, the findings indicate that the developed model is not only theoretically relevant but also practically applicable. This study highlights that improving children's nutritional status requires not only knowledge but also structured guidance, consistent practice, and the utilization of accessible local food resources.

## CONCLUSION

This study aimed to analyze family nutrition management through the utilization of rice bran milk in preventing stunting among children aged 4–6 years using a Research and Development approach with the ADDIE model. The implementation of this model resulted in the development of a practical family nutrition management framework that includes meal planning, preparation of rice bran milk, feeding practices, and monitoring of children's

nutritional intake. The findings indicate that most families demonstrated good nutrition management, which is associated with the predominance of normal nutritional status among children. However, the presence of underweight, overweight, and obesity reflects a double burden of malnutrition, highlighting that nutrition problems are not limited to insufficient intake but also involve imbalanced dietary patterns.

The results of the analysis confirm that family nutrition management has a significant effect on children's nutritional status. The integration of rice bran milk as a local functional food within the developed model provides an accessible and sustainable approach to improving children's nutritional intake. Therefore, this study concludes that strengthening family-based nutrition management through a structured and practical model, supported by local food innovation such as rice bran milk, can contribute to improving children's nutritional status and supporting stunting prevention efforts.

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