



The Impacts of Free Nutritional Meals (FNM) on the Holistic Development of Elementary School Students in Indonesia: A Library Research

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Abstract

This study examines the impacts of the Makan Bergizi Gratis (MBG) or Free Nutritious Meal (FNM) program on the holistic development of elementary school children in Indonesia using a library research approach. The findings show that the program provides balanced meals to students in underdeveloped and low-resource areas, contributing significantly to their physical, cognitive, psychological, social, and academic development. Nutritionally balanced meals improve physical performance, growth, and overall health while reducing malnutrition, stunting, underweight prevalence, and anemia. The program enhances students' concentration, memory, and problem-solving skills, which leads to improved academic achievement and learning outcomes. In addition, the program increases student motivation, school attendance, engagement, and happiness, creating a more supportive and positive school environment. It fosters awareness of healthy eating habits and promotes long-term balanced dietary practices. Psychologically, the program helps reduce stress and anxiety while strengthening students' self-esteem and emotional well-being. Socially, it encourages peer interaction, discipline, and positive routines. Beyond individual benefits, the program provides economic and community advantages by reducing family financial burdens and supporting local food suppliers. It also contributes to long-term human resource development by sustaining students' learning interest, motivation, and discipline. Despite these positive impacts, the program still faces several implementation challenges that require further attention.

Keywords: Elementary School, Elementary Students, Free Nutritious Meal (FNM), Makan Bergizi Gratis (MBG), Holistic Development

Abstract

Penelitian ini mengkaji dampak Program Makan Bergizi Gratis (MBG) atau Free Nutritious Meal (FNM) terhadap perkembangan holistik siswa sekolah dasar di Indonesia dengan menggunakan pendekatan studi kepustakaan. Temuan penelitian menunjukkan bahwa program ini menyediakan makanan bergizi seimbang bagi siswa di daerah tertinggal dan berdaya sumber rendah, yang berkontribusi secara signifikan terhadap perkembangan fisik, kognitif, psikologis, sosial, dan akademik mereka. Asupan gizi seimbang meningkatkan performa fisik, pertumbuhan, dan kesehatan secara keseluruhan, sekaligus mengurangi angka malnutrisi, stunting, berat badan kurang, dan anemia. Program ini juga meningkatkan konsentrasi, daya ingat, serta kemampuan pemecahan masalah siswa, yang berdampak pada peningkatan prestasi

akademik dan hasil belajar. Selain itu, program ini meningkatkan motivasi belajar, kehadiran di sekolah, keterlibatan siswa, dan kebahagiaan, sehingga menciptakan lingkungan sekolah yang lebih positif dan suportif. Program MBG juga menumbuhkan kesadaran akan pola makan sehat serta mendorong praktik konsumsi gizi seimbang dalam jangka panjang. Secara psikologis, program ini membantu mengurangi stres dan kecemasan serta memperkuat harga diri dan kesejahteraan emosional siswa. Secara sosial, program ini mendorong interaksi antar teman sebaya, kedisiplinan, dan pembiasaan rutinitas positif. Selain manfaat bagi individu, program ini juga memberikan dampak ekonomi dan sosial bagi masyarakat dengan mengurangi beban finansial keluarga serta mendukung pemasok pangan lokal. Program ini turut berkontribusi terhadap pengembangan sumber daya manusia jangka panjang dengan menjaga minat belajar, motivasi, dan kedisiplinan siswa. Meskipun memberikan berbagai dampak positif, program ini masih menghadapi sejumlah tantangan dalam implementasinya yang memerlukan perhatian lebih lanjut.

Kata kunci: *Sekolah Dasar, Siswa Sekolah Dasar, Free Nutritious Meal (FNM), Makan Bergizi Gratis (MBG), Perkembangan Holistik*

Introduction

Children in elementary school are experiencing a phase of rapid growth and development, making proper nutrition essential (Ramadhani et al., 2025). Nutrition is a crucial factor determining the quality of human health and well-being. Nutrition plays a crucial role in human life, particularly in growth, development, and health (Nurhalizah, 2025). One preventative measure to address the nutrition problem in Indonesia is the government's launch of a free nutritious lunch program. This nutritious lunch program is designed to provide nutritious meals to school children.

School feeding programs are widely implemented across the globe as interventions to combat child malnutrition and support educational outcomes. These programs go beyond merely addressing hunger, aiming to provide children with the essential nutrients needed for physical, cognitive, and emotional development. By ensuring that students receive at least one balanced meal during the school day, these programs contribute to healthier growth patterns, improved energy levels, and better concentration, which collectively support holistic child development. Research shows that school feeding programs are associated with improved learning outcomes, reduced absenteeism, and enhanced engagement in classroom activities, highlighting the importance of integrating nutrition into educational strategies.

Indonesia faces ongoing challenges related to child nutrition, particularly in underdeveloped or low-resource regions known as 3T areas (frontier, outermost, and underdeveloped regions). Despite progress in public health initiatives, many elementary school children continue to experience nutritional deficiencies, including stunting, underweight, and anemia. These deficiencies can have long-term consequences on physical growth, cognitive development, and overall school performance. Additionally, socioeconomic disparities, limited access to quality food, and uneven distribution of health services exacerbate these nutritional challenges, making school-based interventions like the FNM program particularly critical in ensuring equitable opportunities for development among students.

Education in Indonesia, especially at the elementary level, plays a crucial role in preparing the nation's next generation to be intelligent, healthy, and ready to face global challenges (Asril et al., 2025). Nutritional problems in elementary school children remain a serious challenge because they can affect growth, cognitive development, and long-term health (Raisya et al., 2026). Nutritional issues among primary school children can lead to a higher susceptibility to illness, lower school attendance, and decreased academic achievement. To tackle these challenges, Indonesia introduced the national school feeding program (ProGAS—Program Gizi Anak Sekolah), which provides healthy breakfasts, nutrition education, and character development (Pramesthi et al., 2025).

The Free Nutritional Meal (FNM) program is a government-initiated school-based intervention designed to provide elementary students with balanced, nutritious meals. The program targets children in areas where access to healthy and sufficient food is limited, aiming to improve both nutritional intake and overall well-being. Beyond simply offering meals, the FNM program integrates educational components that encourage healthy eating habits and awareness about nutrition. By ensuring that children receive daily nutritional support, the program seeks to enhance students' capacity for learning, physical development, and social engagement within the school environment. The program's urgency lies in its role in addressing nutritional disparities, improving concentration, and reducing school dropout rates due to limited access to nutritious food (Qomarrullah et al., 2025).

The FNM Program is one of the government programs that aims to reduce nutrition problems in children, especially those from economically disadvantaged families (Simarmata et al., 2025). According to Nur et al. (2025), the nutritional status of elementary school children serves as a crucial indicator of both health and human resource potential. Baseline data are essential before implementing the FNM program, especially in border areas where access to food is limited, distribution logistics are challenging, and socio-economic conditions differ from urban regions. This information is also vital to support national stunting reduction policies and to strengthen the FNM program as a government strategy for improving child nutrition. The program's effectiveness, however, relies on the combined efforts of food provision, nutrition education, and active community involvement (Andini, 2025). The program is one of the Indonesian government's strategic initiatives under the leadership of President Prabowo Subianto, aimed at improving the nutritional status of school-age children and strengthening the foundation of education in preparation for the Golden Generation 2045 (Furkan et al., 2025).

The FNM program is a government initiative to provide healthy and nutritious meals for students from elementary to high school (Maksum et al., 2025). The FNM program is part of the national strategy to address malnutrition and stunting among school-aged children (Sari, 2025). The program aims to address nutritional issues such as stunting, anemia, and hidden hunger, which directly impact the learning process (Widyasari et al., 2025). Nutritional status is a fundamental factor in supporting the physical growth, cognitive development, and academic achievement of school children, especially elementary school-aged children (Moridu et al., 2025). The program, launched under the Prabowo-Gibran cabinet, aims to tackle food insecurity and malnutrition in Indonesia by providing free nutritious meals to underserved populations (Pancani & Ningsih, 2025). The policy is a key initiative on the part of the central government to support the fulfillment of nutritional quality and education for students (Yuliyawati et al., 2024).

Education in Indonesia encounters major challenges concerning students' nutritional needs, which affect their concentration and learning motivation (Arobi et al., 2025). Adequate nutrition has been demonstrated to enhance concentration, memory, and academic performance, positioning school-based nutritious meal programs as an effective approach to improving educational quality (Kasi et al., 2025). Some countries are experiencing malnutrition issues in school-age children and issues with the quality of their human resources (Febryanti et al., 2025). Therefore, these countries have made breakthroughs by implementing policies to provide healthy food to school-age children. The FNM program held by the Indonesian government requires guidance to support its implementation through positive ecological guidance and counseling (Aryani et al., 2025). The program suggests that the effectiveness of free school meal programs relies on several factors, such as consistent policies, coordinated collaboration among stakeholders at various levels, efficient food management systems, and routine program evaluations (Sari et al., 2025).

Nurwahida et al. (2025) explore the implementation of the FNM program in elementary schools as a form of social transformation within the framework of Islamic education. The results

reveal that the FNM program serves children's nutritional needs and enhances educational quality, fosters social equity, and supports the development of character. Holistic development encompasses multiple dimensions of a child's growth, including physical, cognitive, academic, social, and emotional aspects. Adequate nutrition plays a fundamental role in supporting these dimensions, providing the energy and nutrients required for healthy growth and brain development. Well-nourished children are more likely to show higher levels of concentration, better memory, problem-solving abilities, and greater resilience in coping with stress. Moreover, balanced nutrition contributes to positive social interactions, emotional stability, and motivation to participate actively in school activities. The holistic approach emphasizes that child development is multidimensional, and interventions such as the FNM program can address these interconnected areas simultaneously.

There are several previous studies related to this research. Rahmah et al. (2025) evaluate the effectiveness of the MBG program implementation at the elementary school level through a literature review approach. The findings indicate that MBG has a positive impact on children's nutritional status, including a reduction in stunting rates and improvements in student concentration and school attendance. The program contributes to alleviating the economic burden on families and empowering local entrepreneurs. Desiani & Syafiq (2025) explore the effectiveness of school feeding programs in enhancing the nutritional status of students. This review provides strong evidence on the effectiveness of free school meal programs in improving the nutritional status of primary school students across countries. These programs significantly increase dietary diversity, reduce the prevalence of wasting, and contribute to improvements in BMI/Age scores and a reduction in the prevalence of anemia through food fortification.

Previous studies have highlighted the importance of school feeding programs in improving children's nutritional status and educational participation. Rahmah et al. (2025) evaluated the implementation of the Makan Bergizi Gratis (MBG) program in Indonesian elementary schools and found that the program contributes positively to reducing stunting, improving student concentration and attendance, and alleviating families' economic burdens. Similarly, Desiani and Syafiq (2025) conducted a systematic review on school feeding programs across different countries and demonstrated that free meal programs effectively enhance students' nutritional status by increasing dietary diversity, reducing wasting, improving BMI-for-age, and lowering anemia prevalence through food fortification.

However, these studies primarily focus on nutritional and physical health outcomes, with limited attention to the broader dimensions of children's development. There is still a lack of comprehensive synthesis that examines how free nutritious meal programs influence holistic development, including not only physical growth but also cognitive performance, psychological well-being, social interaction, learning motivation, academic achievement, and long-term educational engagement. In addition, existing reviews tend to evaluate program effectiveness from a health or implementation perspective rather than integrating educational, psychological, and socio-economic dimensions into a unified analytical framework.

This study offers a novel contribution by providing a holistic and interdisciplinary synthesis of the impacts of the Free Nutritious Meal (FNM) program on elementary school students in Indonesia. Unlike previous reviews that emphasize nutritional indicators and program effectiveness, this literature review integrates findings from nutrition, education, psychology, and social development studies to examine how FNM supports children's physical, cognitive, emotional, social, and academic development simultaneously.

Furthermore, this study develops a comprehensive conceptual framework of holistic development in the context of school feeding programs, linking nutrition intake with learning motivation, classroom engagement, psychological well-being, social interaction, and long-term human resource development. By positioning FNM not only as a health intervention but also as an educational and social investment, this research extends existing scholarship and provides a

broader policy-relevant perspective on the role of school meal programs in supporting sustainable child development in Indonesia.

Method

This study employed a library research design to synthesize existing evidence regarding the impacts of the Free Nutritional Meals (FNM) program on the holistic development of elementary school children in Indonesia. Library research systematically collects, evaluates, and synthesizes published literature to answer research questions and identify patterns, trends, and research gaps (Fitria, 2023). This approach was considered appropriate because the study aimed to integrate findings from previous research without conducting primary fieldwork.

The literature search was conducted between May and June 2026 using several academic databases, including Google Scholar, Scopus, ScienceDirect, ERIC, and Garuda (Garba Rujukan Digital). The search employed combinations of the following keywords: "Free Nutritional Meals", "school feeding program", "free lunch program", "elementary school", "primary school", "Indonesia", "nutrition", "student development", "academic achievement", "cognitive development", "social development", "emotional development", and "holistic development". Boolean operators (AND, OR) were used to broaden or narrow the search.

The inclusion criteria were: (1) peer-reviewed journal articles, conference papers, government reports, and policy documents; (2) publications written in English or Indonesian; (3) studies published between 2020 and 2026; (4) studies discussing the implementation or impacts of the FNM program or comparable school feeding programs on elementary or primary school students; and (5) studies providing evidence related to students' physical, cognitive, academic, social, or emotional development. The exclusion criteria included duplicate publications, opinion articles without empirical evidence, studies focusing exclusively on preschool or secondary education, and publications with insufficient methodological information. The initial database search identified 87 publications. After removing 19 duplicates, 68 records remained for title and abstract screening. Following the application of the inclusion and exclusion criteria, 34 full-text articles were assessed for eligibility. Finally, 25 documents were selected for detailed analysis because they directly addressed the research objectives and met all eligibility criteria.

Data were collected through documentary analysis, which involves examining written documents as research data (Fitria, 2024). The selected documents included peer-reviewed journal articles, government reports, policy documents, and previous studies concerning the implementation and outcomes of the FNM program in Indonesian elementary schools.

The selected literature was analyzed using qualitative content analysis. The analysis consisted of four stages: (1) data organization, in which the selected documents were classified according to publication characteristics and research focus; (2) open coding, where relevant information related to the impacts of the FNM program was identified and coded; (3) categorization, in which similar codes were grouped into broader themes representing physical health, cognitive development, academic performance, social development, and emotional well-being; and (4) interpretation and synthesis, where findings across studies were compared, integrated, and interpreted to identify recurring patterns, consistencies, and research gaps. The synthesized findings were then used to draw conclusions regarding the contribution of the FNM program to the holistic development of elementary school children in Indonesia and to formulate recommendations for future policy and research.

Findings and Discussion

Findings

This study examines the impacts of the Free Nutritious Meal (FNM) program on the holistic development of elementary school children in Indonesia.

A. Positive Impacts of the Implementation of the Free Nutritious Meal (MBG) Program Toward Elementary Students

The Free Nutritious Meal (MBG) Program is a government-initiated school feeding initiative aimed at improving the nutritional status, health, and educational outcomes of elementary school students. This program provides students with balanced meals during school hours, particularly targeting children from low-income families and regions with limited access to nutritious food. Beyond addressing immediate nutritional needs, MBG is designed to support students' physical growth, cognitive development, learning motivation, and overall well-being. Numerous studies have examined the effects of this program, highlighting its role not only in reducing malnutrition and stunting but also in enhancing concentration, academic performance, and psychological health. The following section summarizes the key positive impacts of the MBG program as reported in recent research.

Positive Impacts of Free Nutritious Meal (MBG) Program Toward Elementary Students

No	Authors & Year of Publication	Purpose	Findings
1.	(Mautang, 2024)	This study aims to compare the daily Physical Education, Sports, and Health (PJOK) test scores of students at SD Inpres Rabiajala in Kepulauan Aru Regency, a 3T (Underdeveloped, Frontier, and Outermost) area, and SD Inpres Kinali in Minahasa Regency.	The results revealed that the average score of SD Inpres Rabiajala students was 80.62, whereas SD Inpres Kinali students averaged 85.34. t-test analysis yielded a t-value of -2.86154, which is below the t-table value (2.000), indicating that H0 is rejected and there is a significant difference between the two schools.
2.	(Furkan et al., 2025)	This article provides a critical analysis of the implementation of the MBG program, emphasizing the perspectives and experiences of elementary school teachers as central actors in educational institutions.	The findings reveal that teachers generally view the program positively, recognizing its role in boosting student motivation, enhancing attendance, and supporting daily nutritional intake, especially in underdeveloped regions.
3.	(Arifin et al., 2025)	This study investigated the impact of the "Free Nutritious Meal" or MBG program on the concentration levels of elementary school students.	The findings revealed a significant increase in concentration among students in the intervention group from baseline to endline ($p = 0.020$), while the control group showed no significant change ($p = 0.328$). These results indicate that the MBG program successfully improved students' concentration.
4.	(Yesi & Annur, 2025)	This study investigates the impact of the Free Nutritious Meal program on the mathematics learning achievement of	Descriptive statistics revealed an increase in the average mathematics score from 85.83 to 89.28 following the program. A paired-sample t-test produced a p-value of 0.000, indicating a statistically

		students at SDS Maniamas Ngabang.	significant improvement in students' scores.
5.	(Indrayani, 2025)	This study examines the perceptions of the community and stakeholders regarding the implementation of the Free Nutritious Meal Program, funded by the Regional Budget (APBD) in Penajam Paser Utara Regency.	The findings indicate that informants hold a positive view of the MBG Mandiri program as a strategic local government policy to improve students' nutritional quality and support human development objectives. The program is seen to have a direct effect on increasing student motivation, participation, and awareness of healthy eating within schools. The program's effectiveness largely depends on transparency in APBD management, cross-sector coordination, and active community involvement.
6.	(Pancani & Ningsih, 2025)	This study examines the effects of the MBG program on physical health and psychological well-being, specifically how access to free, balanced meals affects the health and mental outcomes of recipients.	The findings show notable improvements in physical health, including decreases in malnutrition, stunting, and underweight, especially among children. In addition, the program positively influenced psychological well-being by reducing anxiety, alleviating stress related to food insecurity, and boosting self-esteem. Participants reported feeling more secure and less worried about daily nutrition, which contributed to better mood and cognitive functioning.
7.	(Nur et al., 2025)	This study aimed to assess the nutritional status of students at SD Negeri Skouw Sae and examine its relationship with sex, age, ethnicity, recent illness, and parental occupation, while providing baseline data for evaluating the effectiveness of the MBG program in border regions.	The majority of students (89.3%) were found to have good nutritional status, while 10.7% were categorized as undernourished. Bivariate analysis using the Chi-square test showed no significant associations between nutritional status and sex, age, ethnicity, parental occupation, or recent illness. Most students at SD Negeri (89.3%) exhibited good nutritional status before the program was implemented. No significant relationships were observed between nutritional status and demographic factors or short-term health conditions.
8.	(Saputra, 2025)	This study investigates the relationship between the implementation of the nutritious meal program and improvements in concentration, attendance, and academic performance among	The findings show that balanced nutrition, especially during school-provided breakfast and lunch, positively influences students' cognitive abilities, concentration, and active participation in learning activities. The MBG program affects not only physical aspects such as growth and fitness but also psychological

		elementary school students.	and social dimensions, including enhanced learning motivation and a stronger sense of community within the school.
9.	(Rahmah et al., 2025)	This study aims to evaluate the effectiveness of the MBG program implementation at the elementary school level through a literature review approach.	The findings of this study indicate that MBG has a positive impact on children's nutritional status, including a reduction in stunting rates and improvements in student concentration and school attendance. The program also contributes to alleviating the economic burden on families and empowering local entrepreneurs.
10.	(Nurulaini & Afifah, 2025)	This study analyzes the implementation of the Free Nutritious Meals (MBG) Program in elementary schools in Semarang City as an effort to prevent stunting and improve the nutrition of children from low-income families.	The implementation of the Free Nutritious Meals Program in elementary schools in Semarang City has been running well and has had a positive impact on improving nutritional status, learning motivation, and healthy eating behaviors of students. The success of this program is supported by cross-agency coordination, the active role of teachers, and innovations in local food-based menus, although challenges remain in aspects of logistics, menu preferences, and monitoring mechanisms.
11.	(Wiranata et al., 2025)	This study aims to explore the perspectives and impacts of the MBG program as an investment in improving children's nutrition and education quality in the future.	The results show that the MBG program is routinely implemented five days a week with a standard 4 healthy 5 perfect menu adjusted based on grade level and exam schedule. This program has had positive impacts on students, such as increased focus and enthusiasm for learning, more diligent attendance, and reduced pocket money.
12.	(Azka et al., 2025)	This study aims to analyze the implementation of the MBG Program at SD Negeri Pesantren, Mijen Subdistrict, Semarang City, find out the students' response to the program, its impact on students' learning spirit, and the obstacles faced in its implementation.	The findings revealed that most students had a positive response to the MBG program, expressing happiness, increased enthusiasm for learning, and experiencing relief regarding their family's economic burden. However, several challenges were identified, including food flavors that did not suit students' preferences, portions deemed insufficient, and uneven distribution.
13.	(Desiani & Syafiq, 2025)	This study aims to explore the effectiveness of school feeding programs in enhancing the nutritional status of students.	This systematic review provides strong evidence on the effectiveness of free school meal programs in improving the nutritional status of primary school students across countries. These

			programs significantly increase dietary diversity, reduce the prevalence of wasting, and contribute to improvements in BMI/Age scores and a reduction in the prevalence of anemia through food fortification.
14.	(Fazri et al., 2025)	This study explores the effects of the free meal program on the academic performance of elementary school students at SDN 31 Palembang.	The findings show that the free meal program enhances elementary students' education by improving cognitive function, concentration, energy, and academic performance. Regular healthy meals help students become more attentive and active, reduce absenteeism due to illness or fatigue, and allow for better learning continuity. The program fosters a supportive learning environment and promotes social cohesion through shared meals, reducing stigma and encouraging a sense of community.
15.	(Puspa et al., 2025)	This study is to investigate the impact of the Free Nutritious Meal (MBG) program on the learning interest of 5th-grade elementary school students.	The MBG Program has a significant long-term impact on students' learning interests. Its implementation has successfully reduced stunting and improved nutrition, while enhancing students' interest in learning, enthusiasm, diligence, discipline, and active participation in classroom activities. Access to nutritious meals at school has been shown to increase concentration, learning motivation, and academic achievement, contributing to the sustainability of education and the development of higher-quality human resources. The MBG program improves student attendance and helps children maintain proper nutrition, especially for those from families with limited financial resources.
16.	(Wulandari et al., 2025)	The study determines students' knowledge of balanced nutritious foods, assesses their nutritional status as an indicator of the success of the MBG program for 5th and 6th-grade students at the school, and analyzes the relationship between	The results showed an increase in students' knowledge of balanced, nutritious foods, as evidenced by comparisons between pre-test and post-test scores. However, this increase in knowledge did not correspond with an improvement in nutritional status as an indicator of the program's success, with a p-value of 0.104. Therefore, it was concluded that there is no significant

		students' knowledge of balanced nutrition and their nutritional status as a measure of the program's effectiveness.	relationship between students' knowledge of balanced nutrition and the implementation success of the Free Nutritious Meal program.
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The Free Nutritious Meal (FNM) program is a school-based intervention designed to provide balanced meals to elementary students, particularly those in underdeveloped or low-resource areas. Beyond addressing immediate nutritional needs, FNM aims to support the overall development of children by enhancing their physical health, cognitive abilities, academic performance, and psychological well-being. Studies have shown that consistent access to nutritious meals can influence a wide range of outcomes, from concentration and learning motivation to healthy eating habits and community engagement. The following points summarize the documented positive impacts of the FNM program, highlighting how it contributes to students' holistic development and educational success.

1. **Improved Physical Performance** – Studies such as Mautang (2024) demonstrate that students who receive regular nutritious meals through the FNM program perform better in physical activities, as reflected in higher Physical Education, Sports, and Health (PJOK) scores. Adequate nutrition provides essential energy, protein, and micronutrients necessary for muscle development, endurance, and overall fitness. This effect is particularly important in underdeveloped regions (3T areas), where children often face nutritional deficiencies that can hinder physical growth and participation in school sports or activities. The FNM program enhances students' physical performance by providing essential nutrients such as proteins, vitamins, and minerals that support muscle development, endurance, and overall fitness. This nutritional support is particularly critical in underdeveloped or remote 3T regions where children often experience deficiencies that can hinder growth and participation in physical activities, including sports and Physical Education classes.
2. **Enhanced Student Motivation and Attendance** – According to Furkan et al. (2025), teachers observe that MBG participation positively influences students' willingness to attend school and engage in classroom activities. Students are motivated by the meals themselves and the structured daily support for proper nutrition. The FNM serves a dual function: improving health while encouraging positive behavioral outcomes, including regular attendance and classroom participation. Regular access to nutritious meals encourages students to attend school consistently and engage actively in classroom activities. The provision of daily meals serves as both a health and behavioral intervention, motivating students while supporting structured routines that reinforce attendance and learning participation.
3. **Improved Concentration** – Proper nutritional intake supports cognitive functioning, including attention span, memory, and problem-solving abilities. Arifin et al. (2025) found that students participating in FNM programs exhibited significantly higher concentration levels compared to peers who did not receive meals. Improved focus enhances learning efficiency, reduces classroom distractions, and supports better academic engagement. Proper nutrition directly influences cognitive functioning, including attention span, memory, and problem-solving skills. Students participating in the FNM program demonstrate higher concentration levels compared to peers without access to school meals, which contributes to better learning efficiency, reduced classroom distractions, and greater academic engagement.
4. **Higher Academic Achievement** – Adequate nutrition directly contributes to learning performance. Research by Yesi & Annur (2025) shows that access to FNM meals significantly improved mathematics scores. Balanced meals provide the nutrients needed for brain development, supporting cognitive processes such as memory retention,

analytical thinking, and problem-solving, which are crucial for academic success. Adequate nutrition supports brain development and cognitive processes, leading to improved academic outcomes. The participants often perform better in subjects requiring analytical thinking and memory, such as mathematics, as the nutrients in balanced meals enhance memory retention, reasoning, and problem-solving abilities.

5. **Increased Awareness of Healthy Eating** – FNM programs expose students to balanced meals that model healthy eating behaviors. Indrayani (2025) reports that students develop greater awareness of nutrition, which can influence their food choices both at school and at home. This educational aspect promotes long-term dietary habits that extend beyond the immediate program benefits. The MBG program exposes students to balanced meals that model healthy eating habits. Through regular exposure, students develop nutrition knowledge, which influences food choices at school and at home, fostering long-term dietary practices and promoting healthier lifestyles beyond the immediate school environment.
6. **Physical Health Benefits** – Pancani & Ningsih (2025) highlight that FNM reduces malnutrition, stunting, and underweight prevalence among children. Regular access to nutritionally balanced meals ensures intake of essential vitamins, minerals, and macronutrients, supporting physical growth, immune function, and overall health, particularly in vulnerable populations. Consistent access to balanced meals helps reduce malnutrition, stunting, and underweight prevalence among children. Adequate intake of vitamins, minerals, and macronutrients ensures proper physical growth, strengthens the immune system, and supports overall health, particularly for students in vulnerable populations.
7. **Psychological Well-being** – Consistent meals alleviate anxiety and stress related to food insecurity. Pancani & Ningsih (2025) also found that students reported increased self-esteem and improved mood when confident in their daily nutrition. This emotional stability contributes to better learning focus and social interactions in school. The program contributes to emotional stability by alleviating stress and anxiety associated with food insecurity. When students are confident in receiving regular meals, they exhibit higher self-esteem, improved mood, and greater resilience, which supports better focus in learning and more positive social interactions.
8. **Maintained or Improved Nutritional Status** – Studies by Nur et al. (2025) and Nurulaini & Afifah (2025) show that most students maintain good nutritional status with FNM implementation. This indicates the program's effectiveness in preventing undernutrition, a key determinant of health and learning capacity for school-aged children. FNM effectively prevents undernutrition among school-aged children. Regular meals ensure that students maintain or improve their nutritional status, which is essential for physical growth, cognitive development, and overall capacity to participate in school activities.
9. **Cognitive and Social Development** – FNM not only improves physical health but also enhances cognitive and social skills. Saputra (2025) notes that students become more engaged in school activities, show better motivation, and build stronger peer relationships, fostering a more interactive and supportive learning environment. Beyond physical health, FNM supports cognitive and social growth. Students become more engaged in school programs, demonstrate greater motivation to learn, and build stronger peer relationships, resulting in a more interactive and supportive school environment.
10. **Economic and Community Benefits** – Rahmah et al. (2025) and Indrayani (2025) report that FNM helps reduce the financial burden on families who struggle to provide daily nutritious meals. Additionally, local food suppliers and small entrepreneurs benefit economically, creating wider community development effects. The program helps reduce the financial burden on families who may struggle to provide daily nutritious meals. Additionally, FNM creates economic opportunities for local food suppliers and small

entrepreneurs, contributing to broader community development and supporting local economies.

11. Encourages Healthy Eating Habits and Attendance – Wiranata et al. (2025) emphasize that regular school meals help students establish consistent routines for healthy eating and attendance. Reducing dependence on pocket money for snacks also encourages more balanced dietary patterns, further supporting health and academic outcomes. By providing consistent meals, FNM helps students establish routines for healthy eating and regular school attendance. Reducing dependence on pocket money for snacks encourages better dietary choices, which reinforces both physical health and academic engagement.
12. Positive Student Engagement – Azka et al. (2025) found that students feel happier, more motivated, and less worried about family economic pressures when receiving FNM meals. This enhances emotional well-being and contributes to a positive school climate conducive to learning. Receiving regular nutritious meals positively affects students' emotional well-being. Students feel happier, more motivated, and less worried about family economic pressures, creating a supportive school climate that fosters learning and positive social interaction.
13. Nutritional Improvements Across Populations – Desiani & Syafiq (2025) systematically reviewed school feeding programs and found significant population-level benefits, including improved dietary diversity, reduced anemia, and better BMI/age scores. This shows that FNM has broad impacts beyond individual students, improving overall child health in participating regions. School feeding programs like FNM generate population-level benefits, including increased dietary diversity, reduced anemia, and better growth indicators such as BMI-for-age. These broader effects enhance overall child health and demonstrate the program's impact beyond individual participants.
14. Enhanced Academic Performance – Fazri et al. (2025) highlight that FNM leads to better cognitive function, energy, and school attendance. Social benefits, such as peer cohesion and a sense of community, further support learning by creating an encouraging and collaborative school environment. FNM contributes to better cognitive functioning, higher energy levels, and improved school attendance. Social benefits, including peer cohesion and a collaborative environment, further enhance learning outcomes by creating an encouraging and inclusive atmosphere.
15. Long-term Learning Interest – Puspa et al. (2025) note that FNM has lasting effects on students' motivation, discipline, and active participation, which support long-term educational outcomes. By fostering sustained engagement, the program contributes to the development of higher-quality human resources over time. Beyond immediate academic performance, FNM fosters sustained motivation, discipline, and active participation in school. These long-term effects support the development of human resources and help cultivate skills necessary for future educational and professional success.
16. Increased Knowledge of Balanced Nutrition – Wulandari et al. (2025) report that FNM serves an educational function by increasing students' knowledge of nutritious foods. Even if immediate improvements in nutritional status are limited, knowledge gained can influence healthier choices and habits in the long run, extending the program's benefits beyond school. The program educates students about the importance of nutrition, allowing them to make healthier food choices even if short-term improvements in nutritional status are limited. This educational component extends the benefits of FNM beyond school and promotes lifelong healthy eating habits.

The FNM program demonstrates comprehensive benefits spanning physical, cognitive, psychological, academic, social, and economic domains. By providing regular access to nutritious meals, FNM addresses immediate nutritional needs, enhances students' ability to learn and concentrate, fosters healthy habits, reduces stress and malnutrition, and supports broader community and economic development. While challenges remain in logistics, infrastructure, and sustainability, the positive impacts indicate that FNM is a critical intervention for promoting student well-being and educational success.

B. Challenges of the Implementation of Free Nutritious Meal (FNM) Program Toward Elementary Students

Besides the numerous positive impacts and benefits of the Free Nutritious Meal (FNM) program on elementary students, such as improving physical health, cognitive abilities, academic performance, and psychological well-being, the program also faces several challenges in its implementation. Despite these benefits, the program faces several operational and structural challenges that may hinder its full potential. Understanding these challenges is crucial for improving program implementation, ensuring sustainability, and maximizing the positive impact on students' holistic development.

1. **Logistical Issues and Distribution.** Uneven or delayed food distribution has been reported as a major challenge that reduces the overall effectiveness of the FNM program and may cut into students' learning time (Furkan et al., 2025; Wiranata et al., 2025; Azka et al., 2025; Rahmah et al., 2025). These challenges are particularly pronounced in remote or underdeveloped areas, such as 3T regions (Underdeveloped, Frontier, and Outermost), where infrastructure and access difficulties further complicate distribution (Mautang, 2024). In addition, inefficient communication between institutions and the lack of technical guidelines exacerbate logistical difficulties, potentially affecting program delivery and consistency (Yuliyawati et al., 2024).
2. **Limited School Infrastructure.** Many schools lack adequate kitchen facilities, storage, and proper equipment to prepare or store meals safely and effectively. This limitation affects the quality and consistency of meals provided to students (Furkan et al., 2025; Indrayani, 2025; Rahmah et al., 2025). Furthermore, program effectiveness is often constrained by the readiness of human resources and differences in managerial capabilities across schools (Indrayani, 2025).
3. **Human Resource and Training Limitations.** Teachers and school staff often carry additional responsibilities related to the FNM program without receiving sufficient training, which can hinder proper implementation (Furkan et al., 2025; Yuliyawati et al., 2024). Their heavy workloads may begin to affect the quality of teaching and learning. Varying managerial capabilities and limited preparation of school staff also affect the consistency and success of the program (Indrayani, 2025).
4. **Curriculum and Integration Issues.** The FNM program is not always well-integrated into teaching activities or school curricula, which may limit its potential educational benefits and reduce its impact on student learning (Furkan et al., 2025).
5. **Student Preferences and Food Quality.** Food flavors and types sometimes do not match students' preferences, and meal portions may be perceived as insufficient, reducing satisfaction and program uptake (Azka et al., 2025; Nurulaini & Afifah, 2025). Variability in nutritional awareness within communities can also affect how effectively students and families utilize the meals (Rahmah et al., 2025).
6. **Monitoring, Evaluation, and Sustainability.** The FNM program requires regular evaluation and monitoring of food quality, nutritional outcomes, and long-term impacts to ensure continued effectiveness (Wulandari et al., 2025; Puspa et al., 2025; Rahmah et al., 2025). Additionally, ensuring fiscal sustainability and preventing excessive strain on government budgets is necessary to maintain the program over time (Furkan et al., 2025). Transparency in budget management, cross-sector coordination, and active community involvement are also crucial for sustaining the program (Indrayani, 2025).
7. **Socioeconomic and Regional Disparities.** Although the FNM program benefits children from low-resource families, gaps remain between regions with differing resources and levels of school readiness. These disparities can influence the program's overall impact on student nutrition and learning outcomes (Mautang, 2024; Indrayani, 2025).

8. Additional Operational Challenges. Teachers face increasing responsibilities without proper guidance, and operational pressures may reduce their long-term motivation (Yuliyawati et al., 2024). While the program positively affects student attendance and breakfast habits, its impact on household spending and broader social outcomes remains unclear.

Discussion

The findings of this review are largely consistent with previous studies, which consistently report that the Free Nutritious Meal (FNM) program contributes to students' physical health, cognitive performance, learning motivation, and academic achievement. For example, Arifin et al. (2025) found that the program significantly improved elementary students' concentration, while Yesi and Annur (2025) reported a statistically significant increase in mathematics achievement following program implementation. Similar evidence was presented by Saputra (2025) and Fazri et al. (2025), who emphasized that improved nutritional intake enhances cognitive functioning, classroom participation, and academic performance. Likewise, Furkan et al. (2025), Indrayani (2025), and Wiranata et al. (2025) highlighted increased attendance, learning enthusiasm, and student motivation, suggesting that the educational benefits of the program extend beyond nutritional improvement alone. The consistency of these findings indicates that adequate nutrition serves as a foundation for students' physical readiness to learn, which subsequently enhances cognitive engagement, classroom participation, and learning outcomes. Moreover, the present review extends previous research by synthesizing evidence across multiple dimensions of holistic development, demonstrating that the program simultaneously influences physical, cognitive, psychological, social, and economic well-being rather than affecting only isolated educational outcomes.

The Free Nutritious Meal (FNM) program has demonstrated extensive positive impacts on elementary students, particularly in underdeveloped or low-resource areas. By providing balanced meals, the program improves students' physical performance, motivation, concentration, academic achievement, and overall psychological well-being. Students benefit from enhanced nutrition, which supports cognitive and social development, encourages healthy eating habits, and fosters long-term learning interest. Additionally, the program contributes to broader economic and community benefits by reducing family financial burdens and supporting local food suppliers. These highlight the program's role in promoting holistic development and creating a supportive learning environment that nurtures both individual and community growth.

However, despite these advantages, the implementation of FNM faces several significant challenges that can limit its overall effectiveness. Logistical issues, such as uneven or delayed meal distribution, are particularly prominent in remote 3T regions, sometimes cutting into students' learning time. Limited school infrastructure, including insufficient kitchen facilities, storage, and equipment, combined with the added responsibilities placed on teachers and staff, can impede consistent delivery of meals. The program also struggles with menu acceptability, portion sizes, and integration into the school curriculum, which may reduce its impact on learning and nutrition. Furthermore, differences in community nutritional awareness, inadequate monitoring and evaluation mechanisms, and concerns over fiscal sustainability pose additional barriers. Socioeconomic and regional disparities can influence the degree to which students benefit, while operational pressures on school staff may affect long-term program sustainability. Lastly, although FNM enhances attendance and school meal habits, the program's effects on household spending and broader dietary patterns at home remain less clear, and social and economic well-being, while contributing to long-term educational success.

The Free Nutritious Meal (FNM) program faces several key challenges despite its positive impacts on students. Logistical issues, including uneven or delayed distribution, particularly in remote 3T regions, reduce program effectiveness and can cut into learning time. Many schools lack adequate kitchen facilities, storage, and equipment, while teachers and staff often manage

additional responsibilities without sufficient training, affecting consistent implementation. The program is not always well-integrated into school curricula, and meal flavors or portions may not meet student preferences. Variability in community nutritional awareness, insufficient monitoring and evaluation, and concerns about fiscal sustainability further limit the program's effectiveness. Socioeconomic and regional disparities influence outcomes, and operational pressures on teachers may reduce long-term motivation. Additionally, while the program improves attendance and breakfast habits, its effects on household spending remain unclear.

After recognizing both the positive impacts and the challenges of the FNM program, it is important to consider strategies for improving its implementation and sustainability. Strengthening cross-sector coordination between education, health, and local government authorities can ensure more efficient logistics, timely meal distribution, and adequate monitoring. Community involvement, including participation from parents, local organizations, and food suppliers, can enhance program ownership, ensure menu acceptability, and foster accountability in managing resources. This collaborative approach helps to bridge gaps in infrastructure, knowledge, and human resources, particularly in underdeveloped or remote areas.

Furthermore, integrating the FNM program into the school curriculum can maximize its educational value. Beyond providing meals, the program can serve as a platform to teach students about nutrition, healthy eating habits, and food preparation. Nutrition education can reinforce the benefits of the meals provided, leading to sustained behavioral changes at school and at home. Teachers and staff should receive continuous training on nutrition, food safety, and program management to improve their capacity to deliver meals effectively while maintaining classroom responsibilities.

Monitoring and evaluation are also critical to enhancing the program's effectiveness. Collecting regular data on student nutritional status, academic performance, attendance, and satisfaction with meals can help identify gaps, inform program adjustments, and provide evidence for policymakers to ensure fiscal sustainability. Evaluation systems should also account for regional and socioeconomic disparities to tailor interventions according to local needs. Finally, promoting long-term sustainability requires attention to resource allocation and financial planning. Balancing budget constraints with program needs is essential to maintain the quality and consistency of meals. Exploring partnerships with local businesses, NGOs, and community organizations can provide additional support and reduce dependency on limited government funding. By addressing these operational, educational, and fiscal factors, the FNM program can continue to enhance students' holistic development while ensuring lasting positive impacts on both individual children and the wider community.

Taken together, these findings suggest that while FNM provides substantial benefits for students' holistic development, addressing logistical, infrastructural, and operational challenges is essential to maximize its effectiveness and ensure sustainable, long-term outcomes. Strategic improvements, such as enhanced training for staff, better integration into school activities, and robust monitoring systems, can help overcome these barriers and strengthen the program's impact on child development and educational success.

Conclusion and Suggestion

Conclusion

The Free Nutritious Meal (FNM) program has demonstrated substantial contributions to the holistic development of elementary school students in Indonesia by improving their physical, cognitive, psychological, social, and economic well-being. The provision of balanced and nutritious meals enhances students' physical performance, supports healthy growth, reduces malnutrition, stunting, anemia, and underweight prevalence, and helps maintain adequate nutritional status. Improved nutrition also strengthens cognitive functions, including concentration, memory,

problem-solving skills, and overall academic achievement, particularly in mathematics and classroom learning. Furthermore, the program increases students' motivation to attend school, promotes consistent attendance, encourages active classroom participation, and fosters long-term interest in learning. Beyond academic outcomes, the FNM program contributes to psychological well-being by reducing stress and anxiety while improving self-esteem, happiness, and positive student engagement. It also promotes social development by strengthening peer interaction and creating a more supportive school environment. Additionally, the program increases students' awareness and knowledge of balanced nutrition, encourages healthy eating habits, reduces dependence on unhealthy snacks, alleviates the financial burden on families, and supports local food suppliers, thereby generating broader community and economic benefits.

Despite these positive impacts, several challenges hinder the effective implementation of the FNM program. These include logistical constraints, such as uneven or delayed meal distribution, particularly in remote and disadvantaged (3T) regions; inadequate school facilities, including kitchens, storage, and food preparation equipment; increased administrative and operational workloads for teachers without sufficient training; limited integration of nutrition education into the school curriculum; meal preferences that do not always align with students' tastes; insufficient monitoring and evaluation systems; concerns regarding long-term fiscal sustainability; and persistent socioeconomic and regional disparities.

Suggestion

Based on the findings regarding the benefits and challenges of the Free Nutritious Meal (FNM) program, several recommendations can be proposed to enhance its effectiveness and sustainability. Improving logistics and infrastructure, particularly in remote or underdeveloped regions, is crucial to ensure the timely and consistent delivery of nutritious meals. Strengthening teacher and staff capacity through ongoing training in nutrition education, food safety, and program management can support proper implementation without overburdening school personnel. Integrating nutrition education into the school curriculum can reinforce knowledge and encourage long-term healthy eating habits, while increasing community involvement, including parents, local organizations, and food suppliers, can improve menu acceptability and foster program ownership. Regular monitoring and evaluation of students' nutritional status, academic performance, attendance, and satisfaction are necessary to identify gaps and guide program improvements. Addressing socioeconomic and regional disparities, ensuring fiscal sustainability through budget planning and partnerships, and improving meal quality and acceptability are also essential for maximizing the program's positive outcomes. Additionally, promoting awareness and motivation among students, teachers, and parents, while maintaining the program's holistic approach to physical, cognitive, social, and psychological development, can ensure that the MBG program continues to contribute meaningfully to students' well-being and educational success.

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