



Synergizing Halal Nutrition in Post-Pandemic: Integrating Pedagogy, Canteens, and Indonesia's Free Nutritious Meals Program

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Abstract

The COVID-19 pandemic significantly disrupted the dietary habits of elementary school children in Indonesia, triggering a public health concern due to increased consumption of ultra-processed foods. This study examines the integration of halal nutrition and health education as a strategic framework for post-pandemic recovery in school health systems. Using a qualitative exploratory approach, in-depth interviews were conducted with teachers from diverse school environments to analyze the synergy between health education, canteen management, and Indonesia's Free Nutritious Meals Program. The findings highlight critical themes: the shift in pediatric consumption patterns, challenges in maintaining public health nutrition standards within school environments, and the pivotal role of teachers in promoting halal-thayyiban principles. The results suggest that integrating these values into the school health infrastructure fosters safe, culturally-sensitive, and sustainable dietary patterns. This integration is vital for the physical and spiritual well-being of the younger generation, bridging the gap between religious values and holistic health outcomes. While limited by a small sample size, this research underscores the necessity of multi-sectoral collaboration to strengthen school-based health interventions. The study's originality lies in its comprehensive approach to halal nutrition as a foundation for building a resilient national health system in the post-pandemic era.

Keywords: Halal Nutrition Synergy, Post Pandemic, Elementary School

INTRODUCTION

The COVID-19 pandemic that has been raging since early 2020 has caused significant changes in the eating patterns of primary school children. Remote learning policies and restrictions on social activities have led to an increase in the consumption of unhealthy snacks and a decrease in the intake of nutritious foods. As a result of school closures and supply chain disruptions, children experienced irregular eating patterns and reduced physical activity (Ntambala & Chu, 2021; Prendergast, 2021). These conditions increase the risk of malnutrition and obesity, making effective nutritional interventions during and after the pandemic essential (Octavia & Ratih, 2023). The WHO (2022) reports that one in three elementary school children in low- and middle-income countries experienced nutritional disorders after the pandemic, adding urgency to school-based interventions. These impacts emphasize the importance of maintaining children's health through safe, nutritious, and culturally contextual diets (Intansari et al., 2023).

In the Indonesian context, the integration of halal nutrition literacy offers a holistic framework for post-pandemic recovery. This approach synergizes religious values with global public health nutrition standards, addressing both the physical and spiritual dimensions of well-being (Rusdiana et al., 2025). Evidence suggests that inclusive school nutrition programs reflecting local cultural practices significantly enhance program acceptance and foster sustainable healthy behaviors (Ruzita et al., 2007). While the benefits of such culturally-grounded education are recognized, a significant practice gap remains: there is limited empirical insight into how *halal*

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nutrition education can be effectively integrated with large-scale national meal programs at the grassroots school level.

Addressing this gap is increasingly vital following the 2025 launch of Indonesia's Free Nutritious Meals Program. This national initiative aims to mitigate stunting and malnutrition across all educational levels, from early childhood to high school, through cross-sectoral collaboration involving the National Nutrition Agency. The program is a cornerstone of the "Indonesia Emas 2045" vision, yet its success depends heavily on the school health system's ability to translate policy into pedagogical practice. Previous studies emphasize that nutrition programs achieve higher sustainability when they involve stakeholders in implementing interventions aligned with Sharia law and cultural norms (Sucipto et al., 2023; Wahyudin et al., 2018).

Despite the promising synergy between the national meal program and local values, the mechanism for integrating these elements within classroom pedagogy and canteen management remains underexplored. This article addresses this vacuum by examining the integration of halal and nutritious food education through three pillars: classroom learning, school canteen management, and the implementation of the Free Nutritious Meals Program. By framing *halal* as a component of comprehensive health education, this study seeks to establish a foundation for healthy, safe, and culturally-compliant eating habits that support holistic child development in the post-pandemic era.

RESEARCH METHOD

This study employed a qualitative design with an exploratory approach to investigate the integration of halal nutrition education within school health systems, following the framework proposed by (Creswell, 2017). Participants were selected through purposive sampling, focusing on four teachers from two distinct elementary schools in urban and rural settings. The inclusion criteria required participants to have at least five years of teaching experience and active involvement in school health committees or canteen oversight. While the sample size was intentionally small to facilitate a deep, idiographic inquiry, the researchers ensured that data saturation was achieved, whereby the final interviews yielded no new thematic categories regarding the integration of meal programs.

The research process was conducted systematically, beginning with the development of a semi-structured interview guide based on a synthesis of public health nutrition literature and *halal-thayyiban* principles. To ensure content validity, the guide underwent expert review by a specialist in health education, focusing on domains such as pedagogical integration, canteen management barriers, and the implementation of national meal programs. Data collection took place in August 2025 through in-depth interviews. Each session was digitally recorded, transcribed verbatim, and anonymized during the data handling phase to maintain strict participant confidentiality.

Data analysis followed the six-phase reflexive thematic analysis framework established by Braun and Clarke (2014). This process involved rigorous data familiarization, systematic coding, and the iterative refinement of themes to capture the essence of the teachers' experiences. To establish trustworthiness and rigor, specifically credibility, dependability, and confirmability, the study utilized data triangulation by comparing perspectives between urban and rural contexts. Furthermore, member checking was performed by returning transcripts to participants for verification, and peer debriefing was conducted during the coding stages to mitigate researcher bias and ensure the findings were firmly grounded in the data.

FINDINGS AND DISCUSSION

Results

Program Structure Description: Halal and Nutrition Literacy in Elementary Schools Post-Pandemic

The results of in-depth interviews regarding the implementation of halal and nutrition literacy programs in elementary schools post-pandemic are presented through concept mapping, which identifies seven main themes of intervention, challenges, and adaptation (See Figure 1). The main themes identified include: Student Nutrition Monitoring, Nutrition Education in the Classroom, Collaboration with School Canteen, Post-Pandemic Adaptation, Role of Parents and Community, Challenges and Solutions, and Nutritious Free Meal Program.



Figure 1. Mind Map of Halal and Nutrition Literacy in Elementary Schools Post-Pandemic, Including Main Themes of Intervention, Challenges, and Adaptation

Overall, the findings from the interviews show that schools have adopted a holistic approach in managing student health and nutrition, which consistently integrates aspects of balanced nutrition with halal literacy in various program settings. This approach is reflected in three main pillars: the classroom education curriculum, which includes material on nutrition and halal; school environment practices, particularly through the standardization of canteens and the Free Nutritious Meals Program, which has been certified as halal and nutritionally balanced; and community involvement through online communication with parents. This integration ensures that nutritional principles and religious values are not only taught as theory but also consistently practiced in the physical and social environment of the school, from food menus to the prohibition of unhealthy snacks, thereby creating an ecosystem that supports healthy behavior. This integrated structure functions as a school-based health intervention, transforming the school from a mere educational site into a vital component of the public health nutrition infrastructure.

Core Program Implementation and Mechanisms

1. Nutrition Monitoring and Education in Class

The nutrition program in elementary schools focuses on daily practices and concept reinforcement. Student nutrition monitoring is carried out routinely by teachers, mainly

through activities such as “Healthy Friday” or fruit eating activities, the distribution of two balanced nutrition catering meals, and a strict ban on the sale of unhealthy snacks in the school environment. However, this monitoring is still informal and not supported by an official recording system. In the classroom, nutrition education is integrated into topics on traditional foods and food processing, supported by special programs such as “My Healthy Plate” and healthy breakfast campaigns. Balanced nutrition materials are presented through nutrition literacy displays in the classroom. One important innovation found was the integration of nutrition education with daily meal programs through transparent infographics on menu composition. The school presented detailed infographics (see Figure 2) detailing the components of the daily menu and including nutritional and caloric analysis for small and large portions. This practice effectively links nutrition theory in the classroom with daily consumption practices, serving as a powerful literacy medium by providing information about the energy, protein, fat, and carbohydrates consumed by students. By making nutritional data transparent, the school addresses the health outcome of obesity prevention, effectively shifting children’s cognitive development towards healthier food choices in a post-pandemic recovery context.



Figure 2. Infographic of Menu Composition at School

2. Environmental Collaboration and Free Nutritious Meal Program

Collaboration is key to implementation, especially with school canteens. Canteens are managed through a partnership mechanism between teachers, parents, or external caterers, with a focus on strict ingredient and hygiene selection (See Figure 3). This standardization includes strict selection of raw materials, implementation of food hygiene practices, and a total ban on the sale of unhealthy snacks in the school environment. In addition, the Free Nutritious Meals Program is a major initiative involving effective collaboration between teachers, cafeteria staff, and external parties, ensuring that the menus provided meet halal and balanced nutrition standards. This program is also used as a project-based learning medium, demonstrating practical examples of balanced nutrition to students. The quality and variety of the menus served can be seen in the daily food offerings (see Figure 4). The involvement of parents and the community in this program is realized through communication and discussion.



Figure 3. School Canteen Atmosphere and Hygiene Implementation



Figure 4. Various Free Nutritious Meals (Halal and Balanced) Served

Post-Pandemic Adaptation and Community Involvement

Post-pandemic adaptation focuses heavily on mitigating new, negative behaviors that rapidly emerged during the prolonged school lockdowns and subsequent transition period. The sudden dependence on digital devices meant students developed habits that directly contradicted healthy living principles. Consequently, the core of the adaptation strategy was to effectively extend the school's health mandate into the home environment, primarily through digital means.

Online communication through WhatsApp groups became the main means of online nutrition monitoring and education. This digital channel was crucial for maintaining a connection with students' daily lives, which the school could no longer physically oversee. Through this platform, schools consistently educate parents on pressing post-pandemic issues such as excessive screen time and the resulting sedentary lifestyles, as well as the new economic and behavioral challenge of online snacking habits. The accessibility of food delivery apps during the lockdown led to an uncontrolled intake of non-nutritious items. To combat this, restrictions on access to online snacks were implemented, representing a proactive policy attempt by the school to regulate student intake even when they were not on campus. This demonstrated a critical shift in the school's role: from merely monitoring the canteen to actively influencing home consumption patterns.

This required a significant push for parent involvement, which was generally encouraged through online workshops, digital discussion forums, and the sharing of educational content designed to address these new risks. The school recognized that achieving sustainable behavioral change was impossible without parental cooperation, as parents held the keys to managing screen time and monitoring online purchases. The use of digital workshops, focusing on practical skills like

preparing healthy meals, aimed to empower parents to become co-educators in the nutrition program. This effort aligns with literature emphasizing that robust home-school collaboration is the cornerstone of effective health programs, especially when targeting complex behavioral issues (Turner et al., 2023).

However, the efficacy of this digital adaptation was inherently limited by several factors related to community capacity. Communication effectiveness often varied due to differences in parental digital literacy and socio-economic levels, leading to uneven compliance. While teachers commendably took on the role of nutrition counselors and health monitors via WhatsApp, the school faced a critical structural limitation: no formal collaboration with external health workers had been established. This absence meant that specialized or clinical nutritional advice, particularly for students showing signs of obesity or other nutritional deficiencies exacerbated by the pandemic, could not be readily provided. The entire burden of diagnosis, monitoring, and educational intervention fell solely on the dedicated but non-specialized school staff.

To bridge the gap between digital communication and practical home application, schools initiated community-based innovations. These included organizing cooking workshops for parents and compiling collections of healthy, traditional recipes with input from the community. These initiatives were designed to address low parental awareness and economic disparities by providing practical, affordable solutions to improve home diets, such as ensuring children receive a nutritious breakfast. By leveraging the community's cultural knowledge (traditional recipes), the schools made the nutrition program more culturally relevant and sustainable, transforming parents from passive recipients of information into active participants in the health intervention process. These adaptive strategies highlight the resilience of the school system in utilizing all available community channels to sustain its nutrition and literacy goals during an unprecedented health crisis.

Challenges and Innovative Solutions

The implementation of the program faces major challenges, namely uneven communication with parents, economic disparities among students, and low parental awareness of nutrition. To overcome these obstacles, the school developed several practical innovations, including: (1) Nutrition Literacy Innovation: Compiling traditional recipes with parents and healthy cooking workshops; (2) Practical Interventions: Providing basic education on breakfast importance and cooking skills to address incidents of students not eating breakfast or bringing unhealthy snacks; (3) Special Involvement: Respondents indicated that they pay attention to students with special nutritional needs, which is addressed through partnerships with nutrition educators, such as those from universities.

Discussion

This study highlights the fundamental role of *halal-thayyiban* literacy, a concept emphasizing that food must be both religiously permissible and nutritionally wholesome, as a critical determinant of children's well-being in Indonesian primary schools (Sumiati et al., 2024). Recent evidence suggests that thematic education and community engagement are essential for deepening students' understanding of these concepts, ensuring that their consumption patterns align with both Sharia principles and physical health requirements (Kurniawati et al., 2020; Rahardja et al., 2024). Schools, therefore, occupy a strategic position in operationalizing this literacy by bridging the gap between nutritional theory in the classroom and daily consumption practices through collaborative synergy with parents and canteen managers (Risdiani et al., 2022).

Building on this framework, the following discussion interprets the study's findings across three dimensions: the contextualization of results within existing literature, the practical implications of canteen-classroom integration, and the strategic opportunities presented by the

Free Nutritious Meal Program. Our findings confirm that the effectiveness of these interventions depends on a culturally sensitive, holistic approach that addresses the "practice gap" in current school nutrition research. While national initiatives like the Free Nutritious Meals Program provide a necessary policy response, this study demonstrates that their success is contingent upon their seamless integration into the school health system.

By explicitly linking *halal-thayyiban* principles with public health objectives, schools can effectively mitigate the long-term metabolic risks and sedentary behaviors exacerbated by the pandemic. This research moves beyond simple programmatic descriptions to show how a culturally-rooted school health infrastructure can address the systemic decline in pediatric nutrition. Ultimately, this integration provides a replicable model for post-pandemic recovery, ensuring that school-based interventions are not only nutritionally sound but also deeply resonant with the socio-economic and religious contexts of the community.

Interpretation of results in the context of the literature and conditions in Indonesia

The results of this study confirm that nutrition interventions in Indonesian schools have adapted to post-pandemic challenges with innovative approaches. A key finding is the adoption of a holistic approach that integrates nutrition and halal education through classroom and canteen settings. Specifically, the findings on the use of Infographics on Daily Menu Nutrition and Calorie Analysis represent an excellent nutrition literacy practice. This goes beyond simply providing healthy food, but also seeks to improve students' competence in understanding nutritional composition. This is particularly relevant given previous reports indicating an increased risk of obesity and eating disorders post-pandemic ([Gu et al., 2024](#)), making transparent education crucial.

Additionally, post-pandemic adaptations, such as the use of WhatsApp groups for nutrition monitoring and education on the dangers of screen time and online snacking, demonstrate the school's rapid response to changes in student behavior. This strategy, although informal (without a formal recording system), is very important in bridging the communication gap with parents, which was previously reported to be one of the main obstacles in school nutrition programs ([Zakaria et al., 2024](#)). The use of infographics and digital monitoring represents a shift toward health education that is data-driven, addressing the urgent need for public health nutrition strategies that can counteract the "infodemic" of unhealthy food marketing targeted at children post-pandemic.

Implications of implementing halal-nutrition integration in classrooms and canteen

The implementation of halal and nutrition education integration in classrooms and cafeterias has significant implications in shaping healthy eating patterns and consumption behaviors in children. Education that combines halal concepts with nutrition education provides students with a comprehensive understanding of the importance of choosing foods that are not only religiously halal but also nutritious and safe for their health. A study by [Rusdiana et al. \(2025\)](#) shows that interactive education related to halal and healthy food can improve children's memory and understanding in a fun way. In addition, transforming school cafeterias into environments that consistently provide halal and nutritious food can reinforce these positive behaviors in daily practice ([Al Amin et al., 2025](#); [Arsil et al., 2018](#); [Handayani et al., 2023](#)). This support is also backed by global studies showing that integrating nutrition education programs with healthy and culturally sensitive cafeteria management increases fruit and vegetable consumption and reduces the risk of obesity in children ([Silveira et al., 2011](#)). Thus, an integrated approach at the school level is crucial to ensure the sustainability of halal nutrition education while improving the health and quality of life of the younger generation. Furthermore, this integration strengthens the school health system by ensuring that food safety and religious compliance are not treated as separate silos, but as a

unified health outcome that increases community trust and program adherence.

Opportunities for the Free Nutritious Meals Program and the Critical Role of the Teacher

The Nutritious Free Meal Program offers a great opportunity to improve the nutritional status of children nationwide, but its effectiveness is highly dependent on the role of teachers. Research shows that active teacher involvement is essential, not only as implementers, but as program supervisors and key facilitators of education. Teachers are responsible for ensuring that food is safe, halal, and nutritionally adequate—a task that extends from monitoring menus to monitoring student consumption.

Supporting literature confirms this central role: nutrition education delivered by teachers can significantly improve children's knowledge and healthy eating behaviors (Cotton et al., 2020). Teacher involvement in contextual learning approaches and collaboration with parents are also important factors in the acceptance and sustainability of school nutrition programs (Billah et al., 2020). Furthermore, professional training for teachers in nutrition literacy has been shown to strengthen program effectiveness by improving teachers' ability to deliver material and motivate students (Dunn et al., 2019). Therefore, strengthening teacher capacity through structured training should be a priority in the implementation of the Nutritious Free Meal Program to ensure long-term impacts on children's health and eating habits, as demonstrated by schools' efforts to overcome obstacles such as communication and economic disparities through innovations such as cooking workshops for parents.

Ultimately, this study underscores that teachers act as the frontline of the public health system within schools. Their role in managing Indonesia's Free Nutritious Meals Program is not merely administrative but is a vital health intervention that addresses the practice gap between national policy and local dietary habits, ensuring that the vision of *Indonesia Emas 2045* is built upon a foundation of robust public health nutrition.

CONCLUSION

This study successfully addressed its primary objectives by examining how the integration of halal nutrition and health education serves as a strategic framework for post-pandemic recovery within classroom pedagogy, canteen management, and Indonesia's Free Nutritious Meals Program. The findings demonstrate that a holistic Whole School Approach provides a robust mechanism for restoring pediatric dietary habits through the functional integration of educational and environmental pillars.

Furthermore, these findings significantly enhance existing school health and behavior change frameworks by incorporating a vital cultural-religious dimension into the health education system. By embedding the concept of *halal-thayyiban*, which mandates that food must be both permissible and wholesome, the school health system evolves beyond clinical nutrition into a more inclusive, values-based intervention model. This approach contextualizes health behavior change within the local community's identity, thereby increasing trust and program adherence. This study underscores that the effectiveness of national health policies is fundamentally dependent on the school's ability to align public health objectives with the deeply held religious and cultural values of students and their families.

Moving forward, several action-oriented strategies are essential to ensure the sustainability of these health outcomes and to strengthen the national public health nutrition infrastructure. There is an urgent need to formalize *halal-thayyiban* nutrition standards for all school-based providers and to transition from informal monitoring toward integrated digital tracking systems that can more accurately record student nutritional progress. Additionally, the success of these programs requires strengthened intersectoral collaboration between the National Nutrition

Agency, local health offices, and universities to provide specialized clinical support. Finally, providing structured professional training for teachers must be prioritized, as their capacity to act as primary health educators and supervisors remains the cornerstone of any successful school-based health intervention in the post-pandemic era.

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