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Optimizing the Free Nutritious Meal Program through SI-AMAN (Food Safety Education) to Improve Children's Health in Muhammadiyah Elementary Schools in Banyumas, Indonesia

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Abstract:
The Free Nutritious Meal Program (MBG) is a national policy initiative aimed at improving the nutritional status of school-aged children, preventing stunting, and supporting academic achievement. However, since its implementation in 2025, the program has encountered significant challenges related to food safety. In Banyumas, a total of 6,452 food poisoning cases associated with the MBG program were reported by September 2025. Furthermore, the level of food safety knowledge among caregivers remains inadequate. A preliminary survey revealed that mothers' average knowledge score for identifying spoiled food in toddlers was only 52, indicating limited awareness of food safety practices. The SI-AMAN (Food Safety Education) training program was developed to improve food safety knowledge among students, teachers, and members of the Banyumas Branch of the Nasyiatul 'Aisyiyah (Pimpinan Cabang Nasyiatul 'Aisyiyah, PCNA). The training focuses on food safety principles, the identification of food poisoning symptoms, and appropriate first-aid management of food poisoning. One of the key strengths of the SI-AMAN program is its interactive, engaging, and practice-oriented learning approach, enabling participants to easily understand and apply knowledge related to safe food handling, early recognition of food poisoning, and appropriate management of food poisoning in children. The SI-AMAN training was conducted at Muhammadiyah Elementary School, Banyumas, on April 10, 2026, and was attended by 25 teachers and 'Aisyiyah community cadres from Banyumas. A significant improvement in participants' knowledge was observed following the training intervention. The mean knowledge score increased from 55 at baseline (pre-training) to 80 after the completion of the training program (post-training), demonstrating the effectiveness. of the SI-AMAN Food Safety Education program in enhancing participants' knowledge of food safety.

Keyword: MBG, Safety Food, Education, Children

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Introduction

The Free Nutritious Meal Program (MBG) is a national initiative introduced to improve the nutritional status of school-aged children, prevent stunting, and support academic achievement. However, since its implementation in 2025, the program has encountered significant challenges related to food safety. As of September 2025, a total of 6,452 food poisoning cases associated with the MBG program had been reported (Tempo, 2025). Thousands of food poisoning incidents linked to the provision of MBG meals have also been documented across several regions of Indonesia, with nausea, vomiting, and diarrhea being the most frequently reported symptoms

among schoolchildren (Reuters, 2025). Identified contributing factors include inadequate kitchen sanitation, improper food storage practices, delayed food distribution, and insufficient implementation of comprehensive food safety monitoring systems (UNAIR News, 2025).

In Central Java Province, similar incidents have been reported in several districts and municipalities. A total of 722 children experienced food poisoning after consuming meals provided through the MBG program, prompting the provincial government to strengthen food safety monitoring, improve inspection procedures, and tighten certification requirements for food service providers (CNN Indonesia, 2025). These incidents highlight substantial gaps in food safety management, particularly regarding hygiene standards and quality control in large-scale meal services for school-aged children.

In Banyumas Regency, one of the most serious incidents involved 420 students who developed food poisoning after consuming MBG meals (Kompas, 2025). Following the outbreak, the Banyumas District Health Office conducted epidemiological investigations, including food sampling and medical examinations. Preliminary laboratory findings suggested contamination with pathogenic bacteria resulting from inadequate food processing and distribution practices (Detik Jateng, 2025).

These findings demonstrate that although the MBG program plays an important role in improving children's nutritional status, food safety should receive equal attention. School-aged children, as the primary beneficiaries of the program, have the right to receive food that is not only nutritionally adequate but also safe for consumption. Nevertheless, knowledge regarding food safety among students and teachers remains limited, particularly in recognizing safe and spoiled food, practicing appropriate hygiene before and after meals, and understanding the principles of balanced nutrition. Therefore, comprehensive food safety education involving students, teachers, parents, and food service providers is urgently needed. Such education should emphasize the identification of safe food, the principles of balanced nutrition, and basic hygiene practices to prevent food contamination and foodborne illnesses.

Through this community service program, schools are expected to become centers for food safety education, enabling children not only to benefit from the Free Nutritious Meal Program but also to actively participate in protecting their own health. This initiative aligns with the principles of child rights protection while supporting the long-term sustainability of the MBG program through safer, healthier, and higher-quality food services.

The educational intervention was implemented in Saudagaran Village, Banyumas District, Banyumas Regency, Central Java, Indonesia. Saudagaran Village covers an area of 326.95 hectares and is situated at an average elevation of 70 meters above sea level. The village receives an average annual rainfall of 2,152 mm and has a mean annual temperature of approximately 26°C. The topography is predominantly flat, with land use consisting mainly of residential areas, commercial facilities, public spaces, plantations, and agricultural land. Administratively, the village is bordered by the Serayu River to the north, Kedunguter Village to the east, Pekunden Village to the west, and Kedunggede and Kejawar Villages to the south. The village administration comprises two hamlets, six neighborhood associations (RW), and twenty-four community units (RT), while the traditional community clustering system known as grumbul continues to be maintained.

Muhammadiyah Elementary School of Banyumas, one of the program partners, employs 25 teachers and serves 257 students. Saudagaran Village is among the areas in Banyumas Regency that has experienced a relatively high incidence of food poisoning associated with the MBG program. An outbreak involving students from Sudagaran Elementary School resulted in multiple

cases of vomiting and diarrhea after the consumption of spaghetti served through the MBG program. According to preliminary data from the Banyumas District Health Office, at least 12 students developed symptoms consistent with food poisoning.

Food safety knowledge within the community also remains inadequate. A preliminary survey revealed that mothers achieved a mean knowledge score of only 52 regarding the identification of spoiled food for toddlers. In addition, the routine monthly activities conducted by the Banyumas Branch of Nasyiatul 'Aisyiyah (Pimpinan Cabang Nasyiatul 'Aisyiyah, PCNA) have primarily focused on religious gatherings. Expanding these activities to include health education and health promotion is expected to strengthen community cadres' capacity to recognize the signs and symptoms of food poisoning and provide appropriate first aid.

The SI-AMAN (Food Safety Education) training program was therefore developed to enhance the knowledge and practical skills of students, teachers, and PCNA cadres regarding food safety, early recognition of food poisoning, and appropriate initial management. A major strength of the SI-AMAN program is its interactive and learner-centered approach, which facilitates participants' understanding and application of concepts related to safe food handling, recognition of food poisoning symptoms, and appropriate first-response management for children experiencing food poisoning (Ministry of Health of the Republic of Indonesia, 2021).

The community partners involved in this program were Muhammadiyah Elementary School Banyumas and the Banyumas PCNA cadres. PCNA is a women's youth organization committed to empowering families and promoting child health. This community engagement program is expected to strengthen community support for improving children's health status, enhance the quality of life of children, and reduce the incidence of food poisoning, particularly in Saudagaran Village, Banyumas Regency.

The objectives of this community service program were to contribute to reducing childhood morbidity associated with food poisoning, improve the knowledge and practical skills of Pimpinan Cabang 'Aisyiyah (PCA) cadres regarding the management of food poisoning in children, and increase community awareness of clean and healthy living behaviors as well as appropriate parenting practices to promote optimal child health.

Method

This community service program was conducted at the auditorium of Muhammadiyah Elementary School, Banyumas. The participants consisted of teachers from Muhammadiyah Elementary School and cadres from the Banyumas Branch of Nasyiatul 'Aisyiyah (Pimpinan Cabang Nasyiatul 'Aisyiyah, PCNA). The training employed a combination of lectures, group discussions, and practical demonstrations as the primary educational methods. The program comprised two educational sessions. The first session, entitled "Food Safety for School-Aged Children," was delivered by Dr. Evicenna Naftuhah Riani, M.Kes., while the second session, "Growth and Development of School-Aged Children," was presented by Dr. Bdn. Inggar Ratna Kusuma, MPH. Participants completed a pre-test before the educational sessions and a post-test immediately after the completion of the training to assess changes in knowledge. Third session, entitled “Material on the management of poisoning in children” by dr Paramita Septianawati, M.Si. The SI-AMAN (Food Safety Education) training was conducted on April 10, 2026, at Muhammadiyah Elementary School, Banyumas, and was attended by 25 teachers and 'Aisyiyah cadres from Banyumas. The findings demonstrated an improvement in participants' knowledge following the training intervention. The mean knowledge score increased from 55 before the training (pre-test) to 80 after the training (post-test), indicating a substantial enhancement in participants'

understanding of food safety. Data were analyzed using a descriptive qualitative approach by comparing observations and participants' knowledge before and after the implementation of the training program to evaluate its effectiveness.

Results and discussions

A. Pre -Activity

The team conducted a survey and discussion to partners For get information needed at the time training , as well as together partners set target in training . At this stage preparations are also being made prepare materials and tools props For used in training . Community Service Team measures knowledge Mother before and after implemented activity counseling and Training . Implementation of the program offered to cadres Aisyiyah, Banyumas District , Banyumas Regency, is a training program for Nasyiatul 'Aisyiyah cadres and young mothers using the learning *-by-doing* method . The transfer of science and technology is carried out through counseling, training , and communication practice .

NO	PARTNER PROBLEMS	ACTIVITY STAGES
1	The low knowledge student about safe and unsafe food safe as well as nutrition balanced	1. Organize socialization and education for students and teachers regarding a. Safe and unsafe food b. Nutrition in food c. There is a guide detection early poisoning in children 2. Do demonstration method check food safe and not 3. PCA cadres together with cadre integrated health post perform a role play of management poisoning outcome: 1. Increase self-awareness of students, teachers and food cadres regarding safe food consumption.
2	The low teacher knowledge about base security food and detection symptom poisoning .	
3	Limited knowledge cadre about principle security food House stairs and community	
4	CA cadres in assisting the community in advocacy is not yet optimal If There is security food that is violated	
5	PCA cadres have not yet own skills wash hygienic hands and processing food	Stage SI-AMAN training includes 1) Food signs stale 2) Signs of poisoning food 3) Management poisoning food Outcome: 1. Increase knowledge about spoiled food, signs of poisoning and how to manage it
6	The low food processing knowledge and skills healthy and nutritious balanced as well as references poisoning	1. Work The same with party community health center to compile SOP flow references for poisoning in children Outcome: 1. The existence of SOP for referral flow

Evaluation to all program activities with objective For know as far as where level the success of the program being implemented . Evaluation is carried out to measure the level

of success of the program offered, which includes:

a. Evaluation of the understanding and information of Posyandu health cadres.
   Evaluation to determine aspects of knowledge and understanding (*knowledge*) was conducted using *pre-* and *post-tests* on all training participants. The value range used as a benchmark for this evaluation is:
   1. n value < 60 : poor
   2. value 60 - 80 : moderate
   3. value >80 : good

   Participants' average knowledge increased from 55 to 80 after carrying out community service activities.
b. skill aspects that are assessed are knowledge and skills regarding food safe and decent eating , nutrition balanced for children , Interpersonal Communication (KAP) and SI-AMAN (Responsive) Training Emergency in Toddlers)

B. Post Activity

Community Service Team monitors activities and evaluates them . implementation activities .Sustainability activity expected more socialization Still about SI-AMAN and internal monitoring Banyumas PNCA activities

Photos of training SI-AMAN activities

Figure 1. First Session

Figure 2. Second Session

Conclusion

The SI-AMAN (Food Safety Education) training program successfully improved the knowledge of teachers and *Pimpinan Cabang Nasyiatul 'Aisyiyah* (PCNA) cadres regarding food safety and the prevention of food poisoning. Following the training, participants were equipped to disseminate food safety knowledge to students and other community cadres, thereby contributing to the reduction of the risk of food poisoning associated with the Free Nutritious Meal Program (MBG).

Participants' knowledge showed a substantial improvement, with the mean knowledge score increasing from 55 before the training to 80 after the intervention. These findings indicate that the SI-AMAN training program was effective in enhancing participants' understanding of food safety and the early recognition and initial management of food poisoning.

The implementation of this educational program is expected to contribute to reducing the incidence of foodborne illness and preventing child morbidity and mortality by strengthening food safety awareness and promoting preventive practices within schools and the community.

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