



NutriKids Program to Build Clean and Healthy Behavior Habits and Balanced Nutrition Consumption among Elementary School Students in Ciater Village

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Abstract

Nutrition and health issues are significant challenges to the growth and development of school-age children and can impact academic achievement and performance in school. The NutriKids program aims to provide nutrition and health education to elementary school children. This program is implemented in two different elementary schools. Public elementary school Ciater, with 168 students, is divided into two counseling sessions: one in the morning for grades 1-3 and another in the afternoon for grades 4-6. And the public elementary school Giri Aji, with 284 participants in a single counselling session. The implementation procedure includes delivering material on Clean and Healthy Living Behavior (CHLB), the dangers of consuming ultra-processed foods, the importance of eating vegetables and fruits, and balanced nutrition using lecture and Q&A techniques, along with interactive activities such as singing handwashing songs, joyful nutrition movement, Rainbow of Fruits and Vegetables, and playing the "Isi Piringku" puzzle. The analysis method used is a descriptive qualitative approach through interviews to depict the overall activity process. The findings indicate an improved understanding of clean and healthy behavior, the dangers of consuming ultra-processed foods, the importance of eating fruits and vegetables, and the balanced-nutrition concept of "Isi Piringku," based on observations, interviews, and participant responses. Evaluation using the Kirkpatrick model at the reaction and learning levels indicates that participants found the activity enjoyable and easy to understand, and that it provided new knowledge about clean and healthy living behaviors, nutritious food, and proper handwashing practices, indicating a direct positive impact of the NutriKids program on students' understanding of nutrition and health. Overall, the NutriKids program can enhance knowledge and have a positive impact on elementary school children regarding health and nutrition.

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INTRODUCTION

The school-age period is an important phase in building a foundation for health that shapes future quality of life. The 2023 Indonesian Health Survey (SKI) shows that the prevalence of stunting in children aged 5–12 years reached 14.1%, with 4.6% classified as severely stunted (Kementerian Kesehatan Republik Indonesia, 2024). During this period of growth and development, children are more susceptible to nutritional problems that can hinder cognitive function, including the ability to understand lessons and solve problems (Dinatha, 2025).

Suboptimal nutritional status also affects learning focus, stamina, and academic achievement (Yazia & Suryani, 2022).

Health problems are more prevalent in rural areas, which face different obstacles to accessing information and health services than urban areas (Lubis & Usiono, 2024). The prevalence of stunting in rural areas reaches 16.3%, higher than in urban areas at 12.4% (Kementerian Kesehatan Republik Indonesia 2024). The contributing factors include low knowledge of balanced nutrition, suboptimal PHBS practices, and limited access to health services

(Handayani & Moedjiherwati, 2024). Similar conditions were found in Ciater Village, where students' knowledge of PHBS and balanced nutrition was still limited.

Initial observations indicate that many elementary school students in Ciater Village have not consistently practised PHBS and prefer to consume ultra-processed foods (UPF). This habit emphasizes the need for early health education, as clean living behaviours and healthy eating patterns play an important role in supporting children's growth and development (Terok & Patandung, 2024). Health education interventions need to be designed to be more attractive and easier to understand so that they can form sustainable, positive habits. The school environment plays a central role in shaping basic behaviors, including clean living habits, healthy eating habits, and an understanding of the risks of consuming unhealthy foods (Sativa & Buahana, 2025).

The use of interactive learning media has been proven to increase students' interest and understanding of health materials (Magdalena et al., 2021). However, many schools in rural areas have not yet integrated health education into daily learning activities in a structured manner, so materials related to healthy lifestyles and balanced nutrition have not been conveyed optimally. The limited facilities and a lack of attractive visual materials mean that students are less exposed to relevant health information. This reinforces the importance of innovative educational approaches that accommodate the learning styles of school-age children, who tend to prefer visual activities, games, and hands-on experiences.

The NutriKids program is an innovative approach to strengthening health education for school-age children. By using creative, interactive programs, health education has been shown to encourage behavioural change and increase children's understanding of healthy lifestyles (Hasibuan et al., 2024). This program integrates personal hygiene materials, handwashing practices using songs, the "Isi Piringku" concept, and an introduction to ultra-processed foods (UPF) through activities that are easy for students to understand and find interesting. This practical and enjoyable learning approach not only increases knowledge but also shapes healthy living habits through direct experiences in the school environment. With consistent practice, students are expected to apply healthy behaviors in their daily lives and become positive role models for their families and surrounding communities. This article outlines the planning, implementation, and evaluation stages of the NutriKids Program as a reference for developing similar health education programs in other regions, particularly in rural areas with limited access to information and health services.

MATERIALS AND METHODS

Materials

The NutriKids program includes educational posters on healthy lifestyles, balanced nutrition, and UPF. Educational games use plates and pictures of food to illustrate the concept of "Isi Piringku," as well as songs with accompanying movements to help students memorize the steps for handwashing. All media are prepared to make it easier for children to understand the material visually and through hands-on practice. In addition, all activities are documented as part of the evaluation and reporting process.

Methods

This activity employs a qualitative descriptive design, based on observation and interviews, to comprehensively describe the implementation process of the NutriKids program at SDN Ciater and SD Giri Aji. The program was conducted in two elementary schools to expand the reach of nutrition education activities and to accommodate varying school conditions and participant numbers. Preliminary observations in both schools indicated similar problems, including low awareness of balanced nutrition, high consumption of ultra-processed foods, and limited Clean and Healthy Living Behavior (CHLB) practices among students. The subjects in this activity included the school principals, teachers, parents, and elementary school students. Before implementation, the team made initial approaches to the schools to obtain permission, explain the objectives of the activity, and ensure the suitability of the material to the schools' needs as a form of compliance with program implementation ethics.

The activity was carried out in three stages: preparation, implementation, and evaluation. The preparation stage included the development of learning materials and media, as well as coordination with the school. The implementation stage consisted of interactive counseling on healthy lifestyles, balanced nutrition, and ultra-processed foods (UPF), followed by a question-and-answer session. The evaluation was conducted through observation of student engagement and initial understanding of the material.

Data collection instruments included observation, simple interviews, and documentation used to obtain a comprehensive picture of the activity process. Observations were conducted to see student involvement and the effectiveness of learning media. Informal interviews were conducted with teachers and several students to find out their perceptions of the activities. Documentation was conducted through photographs and field notes throughout the process. Data analysis uses the interactive model of Miles et al. (2013), which consists

of data condensation, data presentation, and conclusion drawing and verification. Condensation involves selecting and simplifying data from observations, interviews, and documentation. The data were then presented as structured narratives to facilitate the identification of patterns in the findings. The conclusion-drawing and verification stage was conducted to ensure the accuracy and consistency of the analysis results.

RESULTS AND DISCUSSION

The implementation of the NUTRIKIDS program began with a coordination phase with the principals of SDN Ciater and SDN Giriaji to identify nutritional education needs and develop a schedule and technical details for the activities. The program was implemented in two locations with different characteristics. The first activity was held at SDN Ciater on November 11, 2025, with 168 participants from grades 1–6, divided into two sessions: the first session for grades 1–3 at 9:00 a.m. and the second session for grades 4–6 at 11:00 a.m. The second activity was held at SDN Giri Aji on November 13, 2025, with 284 participants from grades 1–6 in one session at 6:30 a.m. Technical implementation differences were tailored to each school's conditions and policies to optimize the program's effectiveness. Discussions with school officials were held to identify nutritional problems among students and determine the program's implementation strategy (Fig. 1).



Fig. 1. Discussion with school officials

Based on discussions with the school, several nutritional and health behavior issues were identified among students. The first issue is low consumption of vegetables and fruit, as evidenced by frequent leftovers from the school's Free Nutritious Meals (MBG) program. The second issue is high consumption of unhealthy snacks, particularly ultra-processed foods such as macaroni, burgers, and cireng sold around

the school. The third problem is the lack of Clean and Healthy Living Practices (PHBS), as evidenced by students' habit of rarely washing their hands before eating and the suboptimal condition of their hands and nails. These findings form the basis for developing the NUTRIKIDS program educational materials.

The NUTRIKIDS program educational materials were developed based on the identification of problems in the field and cover four main topics, namely:

1. Clean and Healthy Living Behavior

Clean and Healthy Living Behaviors (PHBS) is an empowerment initiative to adopt healthy living practices in daily activities to create a clean and comfortable learning environment (Mustapa et al., 2025). Initial evaluations show that students' understanding of PHBS remains low, including knowledge of proper handwashing techniques. The PHBS material presented covered the benefits of implementing PHBS, its implementation at school and at home, and the six steps of proper handwashing. As shown in Fig. 2, nutrition and health education were delivered through interactive counseling sessions involving elementary school students. The activities included explanations regarding clean and healthy living behavior, balanced nutrition, and the importance of healthy food choices.



Fig. 2. Education counseling at an elementary school

2. Ultra-Processed Foods (UPF)

The second topic was the dangers of ultra-processed foods (UPF), which are industrially processed products with high levels of additives such as sweeteners, colorings, and preservatives (Juul et al., 2021). The evaluation results showed that students had misconceptions about healthy foods, as evidenced by their belief that burgers are healthy foods because they contain vegetables and meat. The UPF material presented included the definition and characteristics of UPF, examples of UPF products in everyday life, and the health effects of excessive UPF consumption.

3. The Importance of Eating Vegetables and Fruits
 Fruits and vegetables contain important vitamins and minerals that are needed for the growth and development of elementary school children. Adequate consumption helps maintain immunity, prevent constipation, and support optimal growth and development (Putri et al 2024).

Factors that inhibit vegetable consumption in children include taste preferences, lack of early exposure, and limited parental knowledge (Soman et al., 2025). The material presented covers the benefits of vitamins, minerals, and fibre for children's growth and development, the impact of insufficient vegetable and fruit intake, and strategies to increase children's vegetable and fruit consumption.

4. Gizi Seimbang Isi Piringku

The fourth topic is balanced nutrition with the "Isi Piringku" concept. This concept is the latest balanced nutrition guideline, replacing the "Empat Sehat Lima Sempurna" concept and aligning with scientific developments and the community's nutritional needs (Utari et al., 2022). However, the dissemination of this concept remains suboptimal, so the community's understanding of balanced eating proportions remains limited. The material presented covers the four pillars of balanced nutrition, the concept and proportions of "Isi Piringku," and the classification of foods by macronutrient.

One way to increase interest in learning among elementary school students is through the use of games (Bate'e et al., 2023). This approach can stimulate cognitive development while creating a more engaging learning environment (Yuliza et al., 2025). Langeveld states that playing is a child's main activity, through which children learn various things (Hayati & Putro, 2021). The use of the play method in this activity aims to encourage intelligence development, foster positive imagination, and increase student engagement during the learning process.

In addition to games, this activity also uses the method of learning through singing. This method uses song lyrics adapted to the learning material, helping children more easily understand and remember the information. The use of songs makes the learning process more interesting and less boring (Sudirman et al., 2024). Material delivered through songs and repeated consistently tends to be more easily embedded in memory, helping children memorize more effectively. This method also contributes to the development of self-confidence, the strengthening of cognitive abilities, and the formation of a positive mood (Nurohmah & Noviana, 2025).

In NUTRIKIDS activities, there are several types of interactive activities used, each of which has its own role in providing new knowledge and

experiences for elementary school students. The types of activities used include:

1. Hand Washing Song
 Students were introduced to the concept of Clean and Healthy Living, specifically, maintaining personal hygiene through handwashing. The presenter plays a song that outlines the six main steps of proper handwashing and demonstrates the movements in front of the students. Participants are then asked to sing along and imitate each step to understand the proper handwashing procedure.
2. Gerak Gizi Ceria Game
 Students were introduced to the concept of Ultra-Processed Food (UPF), examples of it, and its short- and long-term impact on health. The game was played in groups, with the instructor naming various types of food, both those that are and those that are not UPF. Participants were asked to move backwards or crouch when they heard a food classified as UPF, and move forward or jump when the food mentioned was not UPF. Through this game, students learn to distinguish between different qualities of food.
3. Rainbow of Fruits and Vegetables

Fig. 3 depicts students eagerly raising their hands and answering questions delivered by the instructor. Students were introduced to the benefits of fruits and vegetables, the types of fruits and vegetables according to the colors of the rainbow, and how each color of fruit and vegetable has different nutritional content. Students were then asked to name fruits or vegetables within the given color categories: white, yellow, orange, red, purple, and green. This activity encourages students to recognize the diversity of food in a fun way.



Fig. 3. Students actively participating in the question-and-answer session

4. Isi Piringku Game
 Fig. 4 presents the implementation of the "Isi Piringku" game, in which students arranged food pictures according to the recommended

proportions for balanced nutrition. This activity helped students understand the composition of a healthy meal through visual and practical learning.



Fig. 4. Isi piringku games

Students were introduced to the principles of balanced nutrition, the composition of Isi Piringku, and the benefits of consuming fruits and vegetables. The game aims to raise students' awareness that each meal should include food types aligned with the principles of balanced nutrition. The activity was carried out in groups. Participants received a plate and paper cutouts representing various types of food, including staple foods, animal protein, plant protein, vegetables, fruits, and Ultra-Processed Food (UPF). Students were asked to attach the cutouts to the plate prepared according to the proportions of Isi Piringku. Through this activity, students learned to arrange appropriate food choices visually and practically. To support the delivery of the materials, several interactive activities were designed to align with the learning objectives of each topic.

As shown in Table 1, each topic was delivered using different interactive approaches to facilitate students' understanding and encourage active participation during the learning process. However, visual documentation was not available for all activities due to differences in implementation settings and documentation opportunities during the program. Therefore, supporting figures are presented only for activities that were adequately documented, while achievement indicators for other activities were assessed through observations, participant engagement, and interview findings.

After the entire series of educational activities is completed, an evaluation is conducted. Evaluation is the process of determining the results achieved by a planned activity to support the achievement of objectives. Kirkpatrick states that evaluation is the effort to measure the effectiveness of a training program by assessing its alignment with the predetermined objectives. The results of the

evaluation form the basis for evaluators' decisions regarding program follow-up (Khosylin, 2022).

Table 1. Summary of learning materials, interactive methods, and achievement indicators

Materials	Interactive Methods	Achievement indicators
Clean and Healthy Living Behavior (CHLB)	Handwashing song and six-step handwashing demonstration	Students can practice the correct handwashing steps.
Ultra-Processed Foods (UPF)	Fun Nutrition Movement Game	Students can correctly identify examples of UPF and non-UPF.
The importance of eating vegetables and fruits	Fruit and Vegetable Rainbow Quiz	Students can identify different types of fruits and vegetables by color (Fig. 3).
Balanced Nutrition and Isi Piringku	Isi Piringku Game	Students can arrange a visual composition of a balanced meal and understand the recommended proportions of foods (Fig. 4).

This activity uses an evaluation based on Kirkpatrick's four-level model. Reaction assesses the level of participant satisfaction with the material, facilities, learning media, delivery methods, and activity schedule (Hapsari & Shofwan, 2023). Learning assesses increases in knowledge and skills, or changes in attitude, after participating in the training. The assessment can be conducted by asking participants to explain or present the material provided (Luthfi et al., 2024). Behavior assesses the extent to which participants apply the knowledge, skills, and attitudes they have acquired in their daily lives, through observation of behaviour and the suitability of these changes for the program objectives. The Result measures the long-term impact of the program on the organization or community, including improvements in learning quality, participant achievement, and changes in institutional performance. This evaluation demonstrates the program's contribution to broader, more sustainable change (Sava et al., 2024). Fig. 5

shows the documentation of the participants and facilitators after completing the NUTRIKIDS activities. The high level of student participation and enthusiasm reflected positive responses toward the program.

In NUTRIKIDS activities, evaluations are conducted at the reaction and learning levels immediately after the activities. To gain a deeper understanding of the participants' experiences, brief interviews are conducted with several students and teachers involved in the activities. To gain a deeper understanding of participants' experiences, brief interviews were conducted with several students involved in the activities. The thematic analysis of students' statements is presented in Table 2.

The students generally perceived the NUTRIKIDS activities as enjoyable and easy to understand. Games, songs, and hands-on activities helped students improve their understanding of healthy and unhealthy foods, handwashing

practices, and balanced nutrition concepts. In addition, many students expressed motivation to adopt healthier lifestyles after participating in the program.



Fig. 5. Group photo with participants

Table 2. Thematic analysis of student statements

Transcript	Coding	Re-coding
Fun education, interested in hygiene topics, understanding nutritious foods, easy-to-understand delivery, and want more detailed explanations.	Fun activities, interest in hygiene, understanding of nutritious food, and clear communication need additional explanation.	Positive learning experiences and the need for in-depth material.
Exciting activities, the most interesting part of Isi Piringku, the easiest to remember is washing hands, wanting to live healthily, wanting to know how to increase height.	Exciting activities, interested in Isi Piringku, memorizing handwashing, motivation to live a healthy lifestyle, and wanting additional materials.	Interest in games and motivation for behavioral change.
The game of Isi Piringku is the most interesting: understanding vegetables and fruits, learning to wash hands, wanting to eat healthy, and maintaining hygiene.	Interested in games, understanding vegetables and fruits, learning to wash hands, and intending to live healthily.	Improved understanding of nutrition and healthy lifestyles.
The most interesting handwashing song, understanding healthy and unhealthy foods, knowing that burgers are UPF, easy-to-understand delivery, and suggestions for additional games.	Interested in handwashing songs, understanding healthy and unhealthy foods, recognizing UPF, easy delivery, and want additional games.	Introduction to UPF and appreciation of interactive methods.
Lively and fun activities, most interesting games, understanding Isi Piringku, learning to wash hands, easy-to-understand presentation, suggestions for additional games.	Lively activities, interesting games, understanding Isi Piringku, learning to wash hands, clear presentation, and wanting additional games.	Strengthening understanding of Isi Piringku and preferences for playing methods.
Enjoyable activities, improved health knowledge, the Isi Piringku game was the most memorable, understanding healthy and unhealthy foods, and a desire to live a healthier life.	Enjoyable activities, increased knowledge, remembering the games, understanding healthy and unhealthy foods, and motivation to live a healthy life.	Improved nutrition literacy and motivation for healthy behaviors.

Table 3. Thematic analysis of teachers' statements

Transcript	Coding	Re-coding
The counseling was very useful for students in grades 1–6, helping them distinguish between healthy and unhealthy foods. The practice through games was easy to understand, and teachers could replicate the material. It is hoped that students will practice healthy eating behaviors at home and at school.	The activities were useful, helping students understand healthy and unhealthy foods. The practice through games was easy to understand, and teachers could replicate the material. It is hoped that students will apply healthy behaviors.	Perception of program benefits and learning relevance.
The activity ran smoothly; the children were enthusiastic; the games made the material easier to understand; the practical workshop helped children recognize healthy and unhealthy foods; and it is hoped that students will be able to distinguish between healthy and unhealthy snacks.	Children were enthusiastic; games helped understanding, hands-on practice; recognizing healthy snacks, and suggestions for improving the material.	Effectiveness of interactive methods
Health and nutrition education is important for improving students' understanding; children appeared happy and not bored; the Isi Piringku segment was the most remembered; the activities increased teachers' and students' knowledge; hoping that children will grow healthier; suggesting additional games.	Improved understanding of nutrition, children were happy, Isi Piringku was remembered, teachers' knowledge increased, hope for students' health, and a suggestion to add more games.	Impact of learning and improvement of nutrition literacy.

The analysis of student transcripts shows that NUTRIKIDS educational activities were very well received and provided an enjoyable learning experience. Students assessed that games, songs, and hands-on activities helped them understand the material on healthy and unhealthy foods, the importance of fruits and vegetables, and the principles of Isi Piringku. Improved understanding was reflected in the students' statements, as they were able to identify types of healthy foods, explain the steps of proper handwashing, and recognize examples of ultra-processed foods. In addition, most students were motivated to adopt healthy living behaviors after participating in the activities. These findings indicate that the interactive approach positively affected students' understanding and interest in learning basic concepts of nutrition and hygiene. In addition to students, teachers were interviewed to explore their perceptions of the program's implementation.

The findings presented indicate that teachers considered the NUTRIKIDS program beneficial and relevant to elementary school learning needs.

Teachers emphasized that interactive approaches effectively improved students' understanding and enthusiasm during the learning process (Table 3).

Analysis of teacher transcripts shows that the NUTRIKIDS program is considered very useful and relevant to learning needs in elementary schools. Teachers assess that games, workshops, and hands-on practice can significantly improve students' understanding because the material is conveyed not only verbally but also through direct practice. Teachers confirmed that students appeared enthusiastic, were able to distinguish between healthy and unhealthy foods, understood the composition of Isi Piringku, and were more aware of eating habits. In addition, teachers said that these activities not only increased students' knowledge but also broadened their own understanding of how to deliver relevant nutrition material. This shows that the program has an educational impact on students and educators.

The integration of findings from students and teachers resulted in three final themes, namely the effectiveness of interactive methods, increased

nutrition literacy and healthy lifestyles, and the formation of motivation to live a healthy lifestyle. Both students and teachers emphasized that the use of games, songs, and hands-on practice was an effective approach to increase engagement and understanding. This suggests that these activities helped strengthen students' understanding of personal hygiene, healthy and unhealthy food choices, and the principles of balanced nutrition. In addition, both students and teachers expressed a desire to apply this understanding in their daily lives, both in their eating habits and hygiene practices. These three themes confirm that the NUTRIKIDS program has succeeded in delivering a comprehensive educational impact across cognitive, affective, and motivational domains.

Several factors contributed to the successful implementation of the NUTRIKIDS program. Strong support from school principals and teachers facilitated coordination, participant management, and the smooth execution of activities in both schools. In addition, students showed high levels of enthusiasm and active participation throughout the educational sessions, games, songs, and practical activities. The use of interactive learning methods, such as the Hand Washing Song, Gerak Gizi Ceria Game, Rainbow of Fruits and Vegetables, and Isi Piringku Game, also enhanced student engagement and helped simplify nutrition and health concepts for elementary school students.

Despite these strengths, several challenges were encountered during program implementation. The limited duration of the activities limited opportunities to provide more in-depth explanations and follow-up discussions on nutrition and health topics. Differences in school schedules and implementation conditions required adjustments to the technical arrangements of each session. Furthermore, the absence of quantitative pre- and post-test assessments limited the ability to objectively measure knowledge improvement, while the lack of long-term monitoring made it difficult to evaluate sustained behavioural changes among participants after the program ended.

CONCLUSION

The implementation of the NutriKids program at two public elementary schools, namely SDN Ciater and SDN Giri Aji in Ciater Village, involved 452 elementary school students from grades 1–6 through interactive nutrition and health education activities, including games, songs, demonstrations, and practical learning sessions. Based on observations, interviews, and thematic analysis using the Kirkpatrick evaluation model at the reaction and learning levels, the findings suggest that the program contributed to students' understanding of Clean and Healthy Living

Behavior (CHLB), balanced nutrition, fruit and vegetable consumption, and the identification of ultra-processed foods (UPF). Most students were able to demonstrate the six steps of proper handwashing, identify examples of healthy and unhealthy foods, classify fruits and vegetables by color, and arrange balanced meal compositions according to the "Isi Piringku" concept. In addition, both students and teachers reported greater interest, enthusiasm, and motivation to adopt healthier eating and hygiene behaviors after participating in the program. These findings were derived from qualitative observations, interviews, and thematic analysis rather than quantitative measurements of knowledge change. However, the program was limited by its short implementation period and the absence of quantitative pre- and post-tests to assess knowledge gains and long-term behavioral changes objectively. Therefore, future programs are recommended to incorporate structured pre- and post-test instruments to quantify knowledge gains, as well as long-term behavioral monitoring, with teachers and parents as co-facilitators, to advance NutriKids toward a sustainable and replicable school nutrition education model in rural settings.

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