



EFFECTIVENESS OF 'ISI PIRINGKU' NUTRITION EDUCATION ON STUDENTS' NUTRITIONAL KNOWLEDGE AT SMPN 2 JOGOROTO

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ABSTRACT

The increasing prevalence of unhealthy dietary habits among adolescents highlights the importance of effective nutrition education in school settings. This community service activity aimed to improve students' knowledge of balanced nutrition through education on the "Isi Piringku" guideline among junior high school students at SMPN 2 Jogoroto, Jombang Regency. The activity used a pre-experimental one-group pre-test and post-test design involving 60 students. Nutrition education was delivered through lectures, posters, interactive discussions, and practical simulations of balanced meal portions. Students' nutritional knowledge was assessed using pre-test and post-test questionnaires, and data were analyzed using a paired t-test. The results showed a significant increase in the mean knowledge score from 56.3 ± 10.2 before the intervention to 78.6 ± 8.5 after the intervention ($p < 0.05$). Students demonstrated better understanding of food portion distribution and balanced nutrition concepts after participating in the educational sessions. The program was well received, and students actively participated during discussions and simulation activities. In conclusion, the "Isi Piringku" nutrition education program effectively improved adolescents' nutritional knowledge and awareness regarding healthy eating patterns. Integrating interactive nutrition education into school-based programs may support the promotion of healthy dietary behaviors among adolescents.

Keywords: Nutrition Education, Isi Piringku, Adolescents, Balanced Diet.

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INTRODUCTION

Adolescence is a critical period characterized by rapid physical growth and psychological development, requiring adequate and balanced nutritional intake. However, unhealthy eating habits among adolescents remain a major public health concern. Dietary behaviors formed during adolescence often continue into adulthood and contribute to long-term health outcomes, including obesity and non-communicable diseases (World Health Organization, 2020). Global recommendations therefore emphasize the importance of balanced diets rich in fruits, vegetables, and diverse nutrients to support healthy growth and disease prevention (World Health Organization, 2018; Food and Agriculture Organization, 2019).

In Indonesia, adolescent nutritional problems are still prevalent. Based on the Indonesian Nutritional Status Survey (Survei Status Gizi Indonesia/SSGI) 2022, the national prevalence of stunting was 21.6%, while overweight and obesity cases among school-age children and adolescents continue to increase due to unhealthy dietary patterns and low physical activity levels ([Upk Kemenkes RI][1]). In East Java, the prevalence of stunting remained relatively high at approximately 19.2%, indicating that nutritional problems among children and adolescents are still a public health concern. In addition, national data show that adolescents' consumption of fruits and vegetables is still below the recommended level, while the intake of sugary, salty, and fatty foods continues to rise. These conditions highlight the urgent need for effective nutrition education programs targeting adolescents.

To address these problems, the Indonesian government promotes balanced nutrition through the "Isi Piringku"

guideline introduced by Kementerian Kesehatan Republik Indonesia (2018). This guideline provides a simple visual representation of ideal food proportions in one meal, making nutrition messages easier for adolescents to understand and apply in daily life. Nutritional knowledge is an important factor influencing dietary behavior, as adolescents with limited knowledge are more likely to adopt unhealthy eating patterns influenced by peers, media exposure, and environmental factors (Notoatmodjo, Soekidjo, 2012; Indarwati & Sefrina, 2023).

Previous school-based nutrition education programs generally focused on conventional lecture methods and theoretical explanations. The novelty of this community service activity lies in the use of an interactive educational approach combining visual learning media, practical simulation of "Isi Piringku," and active student participation. This approach was designed not only to improve students' knowledge but also to encourage practical understanding of balanced meal composition in everyday life. Interactive and audiovisual methods have been reported to improve learning effectiveness and knowledge retention among adolescents (Contento, I. R., 2016; Pushpa et al., 2024).

Preliminary observations conducted at SMPN 2 Jogoroto showed that many students had limited understanding of balanced nutrition concepts and the implementation of the "Isi Piringku" guideline in daily meals. Therefore, this community service program was conducted to improve students' nutritional knowledge through an interactive and practical nutrition education intervention.

As part of the implementation of the Tri Dharma Perguruan Tinggi, which

includes education, research, and community service, the Undergraduate Nutrition Study Program of Husada Jombang Health Sciences College organized this community service activity entitled “Effectiveness of Educational Guidelines ‘Isi Piringku’ on the Level of Nutrition Knowledge of Students at SMPN 2 Jogoroto.”

OBJECTIVES

General Purpose

To improve students’ knowledge of balanced nutrition through the introduction of the “Isi Piringku” guideline.

Special Purpose

To provide nutrition education using visual media and interactive simulation of balanced meal portions. as well as establishing collaboration with PERSAGI Jombang

PLAN OF ACTION

Strategy Plan

The community service program was conducted through nutrition education sessions using posters and practical simulations of the “Isi Piringku” guideline for junior high school students at SMPN 2 Jogoroto. The activity was facilitated by PERSAGI organization, lecturers and undergraduate nutrition students from STIKes Husada Jombang.

The education session was carried out in one meeting with a total duration of approximately 90 minutes. The activity began with a 30-minute lecture session explaining the concepts of balanced nutrition, the importance of healthy eating habits during adolescence, and the recommended food proportions according to the “Isi Piringku” guideline. Educational posters were used as visual learning media

to improve students’ understanding and attention.

Following the lecture, a 20-minute interactive discussion session was conducted to encourage students to ask questions and share their eating habits and daily dietary challenges. The final session consisted of a 40-minute practical simulation in which students practiced arranging balanced meal portions based on the “Isi Piringku” concept using food illustrations and sample meal compositions. This interactive approach was intended to enhance students’ understanding, participation, and ability to apply balanced nutrition principles in daily life.

Implementation

This community service activity involved collaboration between academic staff and school stakeholders. Educational sessions were conducted using visual aids and interactive discussions to improve students’ understanding of balanced nutrition. The schedule of this community service activity is as follows:

1. Preparation of educational materials
2. Coordination with the school
3. Pre-test assessment
4. Delivery of educational sessions
5. Simulation of food portion distribution
6. Post-test evaluation
7. Reporting

Setting

The community service activity was conducted on January 25, 2026, SMPN 2 Jogoroto, Jombang Regency.

Target

The target participants were 60 junior high school students who participated voluntarily in the educational program.

RESULTS AND DISCUSSION

The community service activity involved 42 students from SMPN 2 Jogoroto who participated in nutrition education sessions regarding balanced nutrition and the “Isi Piringku” guideline. Participant characteristics are presented in Table 1.

Table 1. Characteristics of Participants.

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	18	42,9
Female	24	57,1
Grade Level		
Grade VII	20	47,6
Grade VIII	22	52,4
Total	42	100

The educational intervention was conducted using lecture methods, interactive discussions, posters, and practical simulations of “Isi Piringku.” To evaluate the effectiveness of the activity, students completed pre-test and post-test questionnaires assessing their nutritional knowledge. Statistical analysis was performed using a paired t-test to compare mean knowledge scores before and after the intervention.

Table 2. Compare mean knowledge scores before and after the intervention

Variable	Mean ± SD	p-value
Pre-test	56.3 ± 10.2	
Post-test	78.6 ± 8.5	<0.05

The results showed a significant improvement in students’ nutritional knowledge after the educational intervention. The mean score increased from 56.3 ± 10.2 during the pre-test to 78.6

± 8.5 in the post-test ($p < 0.05$). These findings indicate that the nutrition education program effectively improved students’ understanding of balanced nutrition and the “Isi Piringku” guideline.

The improvement in knowledge was likely influenced by the use of visual and interactive educational approaches. Students showed high enthusiasm during poster-based explanations and simulation sessions, particularly when arranging food portions according to the “Isi Piringku” concept. Interactive learning activities encouraged students to actively participate in discussions, ask questions, and demonstrate their understanding through practical exercises. This finding is consistent with previous studies reporting that interactive and audiovisual nutrition education methods improve adolescents’ nutrition knowledge more effectively than conventional lectures alone (Sunı et al., 2024; Mufidah et al., 2024).

Process evaluation during the activity indicated that most students were actively engaged throughout the session. The use of posters and food illustrations helped students understand balanced meal composition more easily. In addition, teachers and school staff responded positively to the program and supported the implementation of the educational activities.

However, several implementation barriers were identified during the activity. Some students initially had difficulty understanding portion sizes and food group classifications. Limited time allocation also restricted deeper discussion regarding daily dietary practices and behavioral changes. In addition, differences in students’ prior nutritional knowledge influenced the speed of comprehension during the educational sessions. Despite these challenges,

facilitators addressed the barriers by providing repeated explanations, using simple language, and conducting direct demonstrations during the simulation activities.



Figure 1. Documentation of nutrition education activities using “Isi Piringku” media at SMPN 2 Jogoroto

Student engagement during the educational sessions was high, particularly during simulation activities. This supports the theory that active learning strategies enhance knowledge acquisition more effectively than passive learning methods (Contento, I. R. et al., 2002). Similar findings have been reported in recent studies demonstrating that interactive and audiovisual education significantly improves knowledge and attitudes toward balanced nutrition (Tamara et al., 2026; Suni et al., 2024).

In addition, the simplicity and practicality of the “Isi Piringku” concept contribute to its effectiveness as an educational tool. Visual-based nutrition education has been shown to improve understanding and recall among adolescents, particularly when complex information is simplified into easily digestible formats (Helen et al., 2025).

Students actively participated in discussions and simulations, demonstrating increased engagement and understanding. Similar studies have shown that interactive

education methods improve both knowledge and attitudes toward healthy eating (Mufidah et al., 2024).

However, it is important to acknowledge that increased knowledge does not always translate into behavioral change. According to Gibney, M. J. et al. (2004), dietary behavior is influenced by a complex interplay of factors beyond knowledge, including environmental and social influences. Recent intervention studies also highlight that sustained behavioral change requires comprehensive strategies involving family, school, and policy-level support (BMC Nutrition, 2024).

Overall, this community service activity successfully improved students’ nutritional knowledge and increased their awareness regarding balanced nutrition practices. The findings suggest that school-based nutrition education using interactive and practical methods can serve as an effective strategy to improve adolescent nutrition knowledge. Continuous and sustainable educational programs involving schools, families, and health institutions are recommended to support long-term behavioral change among adolescents.

CONCLUSION

Eating behavior among adolescents is influenced by various factors, including knowledge, environment, and personal preferences. This community service program demonstrated that nutrition education using the “Isi Piringku” guideline effectively improves students’ knowledge of balanced nutrition.

The use of visual and interactive educational methods enhances understanding and engagement among students. Continuous implementation of such programs, supported by schools and

health institutions, is essential to promote sustainable healthy eating behaviors among adolescents.

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