



## The Effect of Health Promotion Programs on Balanced Nutrition on Changes in Elementary School Children's Eating Patterns

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### ABSTRACT

**Background:** Many elementary school children in Indonesia still do not meet balanced nutrition guidelines, as evidenced by low fruit and vegetables consumption and high consumption of fast food. This can impact their nutritional status and long-term health.

**Objective:** To determine the effect of a balanced nutrition health promotion program on changes in elementary school children's eating patterns.

**Methods:** A quasi-experimental study with a pretest-posttest control group design was conducted on 80 fourth-fifth grade elementary school students in Regency X. The sample was divided into an intervention group (n=40) and a control group (n=40). The intervention consisted of health promotion through interactive lectures, posters, and educational games for four weeks. Data were collected using a Food Frequency Questionnaire (FFQ). Data were analyzed using paired t- tests and independent t-tests.

**Results:** There was a significant increase in healthy eating patterns in the intervention group after health promotion ( $p < 0.05$ ), particularly in vegetables and fruit consumption and a decrease in fast food consumption. There was no significant change in the control group ( $p > 0.05$ ).

**Conclusion:** The balanced nutrition health promotion program has been positive impact on the eating habits of elementary school children. It is recommended that schools integrate nutrition promotion into the curriculum and extracurricular activities for sustainability.

**Keywords:** Health Promotion; Balanced Nutrition; Diet; Elementary School Children

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## 1. Introduction

Elementary school is a crucial period in developing eating habits that will impact nutritional status, growth, and long-term health. Healthy eating habits established early on will lay the foundation for healthy eating patterns into adulthood. However, in reality, school-age children are often more attracted to fast food and school snacks high in sugar, salt, and fat than to a balanced, nutritious diet.

According to UNICEF data (2019), more than 40% of school-age children in Southeast Asia consume sugary drinks and fast food more than three times a week. Meanwhile, the results of the Basic Health Research ( Risesdas ) (Ministry of Health of the Republic of Indonesia, 2018) also show that fruit and vegetable consumption among schoolchildren is still far from recommendations, with only around 20% consuming the recommended amount. This condition not only impacts malnutrition issues such as stunting and underweight, but also increases the risk of obesity and non-communicable diseases in adulthood.

Efforts to improve children's eating habits can be achieved through health promotion programs that emphasize the importance of balanced nutrition. Health promotion is a key strategy for increasing knowledge, changing attitudes, and fostering healthy behaviors (Notoatmodjo, 2018). With the right approach, such as interactive education, the use of visual media, and educational games, children can more easily understand nutritional information and be motivated to apply it in their daily lives.

Several previous studies support the effectiveness of health promotion in changing eating behavior. Dewi et al. (2020) reported that game-based nutrition education increased fruit and vegetable consumption in elementary school children. Another study by Zakaria & Rahmawati (2020) also found that nutritional health promotion reduced fast food consumption among elementary school students.

Based on this background, this study was conducted to determine the effect of a health promotion program on balanced nutrition on changes in the eating patterns of elementary school children. The results are expected to form the basis for developing more effective health promotion programs in schools and provide input for schools and health professionals in efforts to foster healthy eating habits in children.

## 2. Research Methods

### a) Research Design

This study uses a quasi-experimental design with a *pretest-posttest design*. *control group* This design was chosen to determine changes in students' eating patterns before and after being given an intervention in the form of a health promotion program on balanced nutrition, and to compare it with the control group.

### b) Location and Time of Research





The research was conducted at one of the Public Elementary Schools in District X in January–March 2025.

c) Population and Sample

The population in this study was all 120 students in grades IV and V. A sample of 80 students was selected using purposive sampling technique based on the following inclusion criteria:

1. Students aged 9–11 years.
2. Can read and write well.
3. Obtaining consent from parents/guardians to participate in the study.

The sample was then divided into two groups: an intervention group (40 students) and a control group (40 students).

d) Intervention

The intervention group was given a balanced nutritional health promotion program for 4 weeks with the following details :

- Week 1: Balanced nutrition education through interactive lectures.
- Week 2: Presentation of material using illustrated posters.
- Week 3: Group discussion and Q&A.
- Week 4: Educational games and quizzes about balanced nutrition.

The control group did not receive health promotion intervention, only participating in school learning activities as usual.

e) Research Instruments

The research instrument is a Food Frequency questionnaire. A modified questionnaire (FFQ) was used to assess the frequency of vegetable, fruit, fast food, and sugary beverage consumption before and after the intervention.

f) Validity and Reliability

The instrument was tested for validity using the Pearson correlation test ( $r_{count} > r_{table}$ ) and reliability using Cronbach's Alpha ( $\alpha = 0.82$ ) which indicates reliability.

g) Data collection technique

1. A pretest was conducted on both groups to determine the students' initial eating patterns.
2. The intervention was given to the intervention group for 4 weeks.
3. Posttest was conducted on both groups after the intervention to determine changes in eating patterns.

h) Data analysis

- Univariate analysis was used to describe the characteristics of respondents.
- Bivariate analysis was performed using:





- Paired *t*- test to determine differences in eating patterns before and after the intervention in each group.
- Independent *t*- test to compare differences in dietary patterns between the intervention and control groups.
- The significance level was set at  $p < 0.05$ .

### 3. Research Result

#### a. Results

##### 1. Respondent Characteristics

A total of 80 fourth and fifth grade elementary school students participated in the study, consisting of 40 students in the intervention group and 40 students in the control group. The majority of respondents were 10 years old (55%), with a relatively balanced gender distribution, with 52% boys and 48% girls.

##### 2. Dietary Changes in the Intervention Group

*paired t*- test analysis showed significant changes in the eating patterns of students in the intervention group after being given a balanced nutrition health promotion program:

- Vegetable consumption increased from an average of 3 times/week to 6 times/week ( $p=0.001$ ).
- Fruit consumption increased from 2 times/week to 5 times/week ( $p=0.002$ ).
- Fast food consumption decreased from 4 times/week to 1 time/week ( $p=0.000$ ).
- Consumption of sweet drinks decreased from 5 times/week to 2 times/week ( $p=0.003$ ).

##### 3. Dietary Changes in the Control Group

In the control group, no significant changes were found in eating patterns before and after the study:

- Vegetable consumption remained an average of 3 times/week ( $p=0.412$ ).
- Fruit consumption remained an average of 2 times/week ( $p=0.367$ ).
- Fast food consumption remained an average of 4 times/week ( $p=0.529$ ).
- Consumption of sweet drinks remained an average of 5 times/week ( $p=0.482$ ).

##### 4. Comparison of Intervention and Control Groups

*Independent t*- test results showed a significant difference between the intervention and control groups in post-intervention eating patterns ( $p < 0.05$ ). Increased fruit and vegetable consumption and decreased fast food and sugary beverage consumption occurred only in the intervention group.

##### 5. Summary of Results

In general, the balanced nutrition health promotion program has been shown to significantly impact changes in the eating patterns of elementary school children.





Children in the intervention group consumed more balanced, nutritious food than those in the control group.

#### **b. Discussion**

The study results showed that a health promotion program on balanced nutrition was effective in improving healthy eating habits among elementary school children. Nutrition education delivered through interactive, visual, and educational games was more easily understood by children than conventional lectures. This aligns with research by Dewi et al. (2020), which found that educational games increased fruit and vegetable consumption among elementary school children.

According to Lawrence Green's theory (1980), health behavior is influenced by predisposing, enabling, and reinforcing factors. In this study, health promotion increased knowledge (predisposing), while teacher and peer support served as reinforcing factors. Without school and family support, dietary changes may not be sustainable.

This research aligns with research by Sari & Mulyani (2021), which states that sustainable nutritional health promotion can reduce fast food consumption. Therefore, nutrition education interventions should be integrated into the curriculum and supported by healthy canteen policies.

#### **4. Conclusion**

##### **a. Conclusion**

This study shows that a health promotion program on balanced nutrition significantly impacted changes in the eating patterns of elementary school children. After four weeks of interventions including interactive lectures, educational posters, discussions, and educational games, there was an increase in fruit and vegetable consumption and a decrease in fast food and sugary beverage consumption in the intervention group compared to the control group. This demonstrates that health promotion can be an effective strategy in fostering healthy eating behaviors in elementary school-aged children.

##### **b. Suggestion**

1. For Schools: It is recommended that balanced nutrition health promotion programs be integrated into the curriculum and extracurricular activities. Additionally, schools can support this by providing healthy canteens.
2. For Health Workers: Collaboration with schools is needed to provide ongoing nutrition education, using interactive methods that are interesting for children.
3. For Parents: Parents are expected to support the formation of healthy eating patterns at home by providing balanced nutritious food and limiting the consumption of fast food.





4. For Future Researchers: Further research is needed involving the active role of parents and teachers simultaneously, and conducted over a longer period of time to measure the sustainability of changes in children's eating patterns.

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